Mk8 M.M.

Installation and Commissioning Guide

Mk8 控制模块安装与调试指南

AUTOFLAME®

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THE QUEEN'S AWARDS FOR ENTERPRISE: INNOVATION 2007

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Department 部门:

Important Notes
重要说明

A knowledge of combustion related procedures and commissioning is essential before embarking work on any of the M.M./E.G.A. systems. This is for safety reasons and effective use of the M.M./ E.G.A. system. Hands on training is required. For details on schedules and fees relating to group training courses and individual instruction, please contact the Autoflame Engineering Ltd. offices at the address listed on the front.
为了安全有效地使用控制模块/EGA 系统，控制模块/EGA 系统的操作员必须具有与燃烧相关的流程知识和调试知识。我们要求操作员参加实践培训，请按首页所述地址联系上 Autoflame 办公室详细了解团体培训课程和个别辅导的时间和费用。

Short Form - General Terms and Conditions
一般条款

A full statement of our business terms and conditions are printed on the reverse of all invoices. A copy of these can be issued upon application, if requested in writing.
所有发票背面均都印有我方商业条款全文。客户可书面申请获取我公司的商业条款文件。

The System equipment and control concepts referred to in this Manual MUST be installed, commissioned and applied by personnel skilled in the various technical disciplines that are inherent to the Autoflame product range, i.e. combustion, electrical and control.
仅有专业人员才能安装、调试、使用本手册所提及的系统设备和控制原理。他们必须精通 **Autoflame** 产品所涉及的燃烧、电气和控制等技术学科。

The sale of Autoflame's systems and equipment referred to in this Manual assume that the dealer, purchaser and installer has the necessary skills at his disposal. i.e. A high degree of combustion engineering experience, and a thorough understanding of the local electrical codes of practice concerning boilers, burners and their ancillary systems and equipment.

经销商、采购商和安装人员必须具有丰富的燃烧工程从业经验、全面了解当地涉及锅炉、燃烧器和辅助系统/设备相关的电气行业规范方能使用本手册提及的 **Autoflame** 系统和设备。
Autoflame's warranty from point of sale is two years on all electronic systems and components.
Autoflame 保修条款**:** 对所有电子系统和部件实行两年售后保修
One year on all mechanical systems, components and sensors.
对所有机械系统、部件和传感器实行一年售后保修。

The warranty assumes that all equipment supplied will be used for the purpose that it was intended and in strict compliance with our technical recommendations. Autoflame's warranty and guarantee is limited strictly to product build quality, and design. Excluded absolutely are any claims arising from misapplication, incorrect installation and/or incorrect commissioning.

保修前提**:** 所有设备均按预期使用目的使用并严格遵守我方提供的的技术建议。**Autoflame** 产品保修条款仅适用于产品制造质量问题和设计问题。根据保修条款，**Autoflame** 不接受因误操作、误安装和/或调试导致的任何索赔请求。

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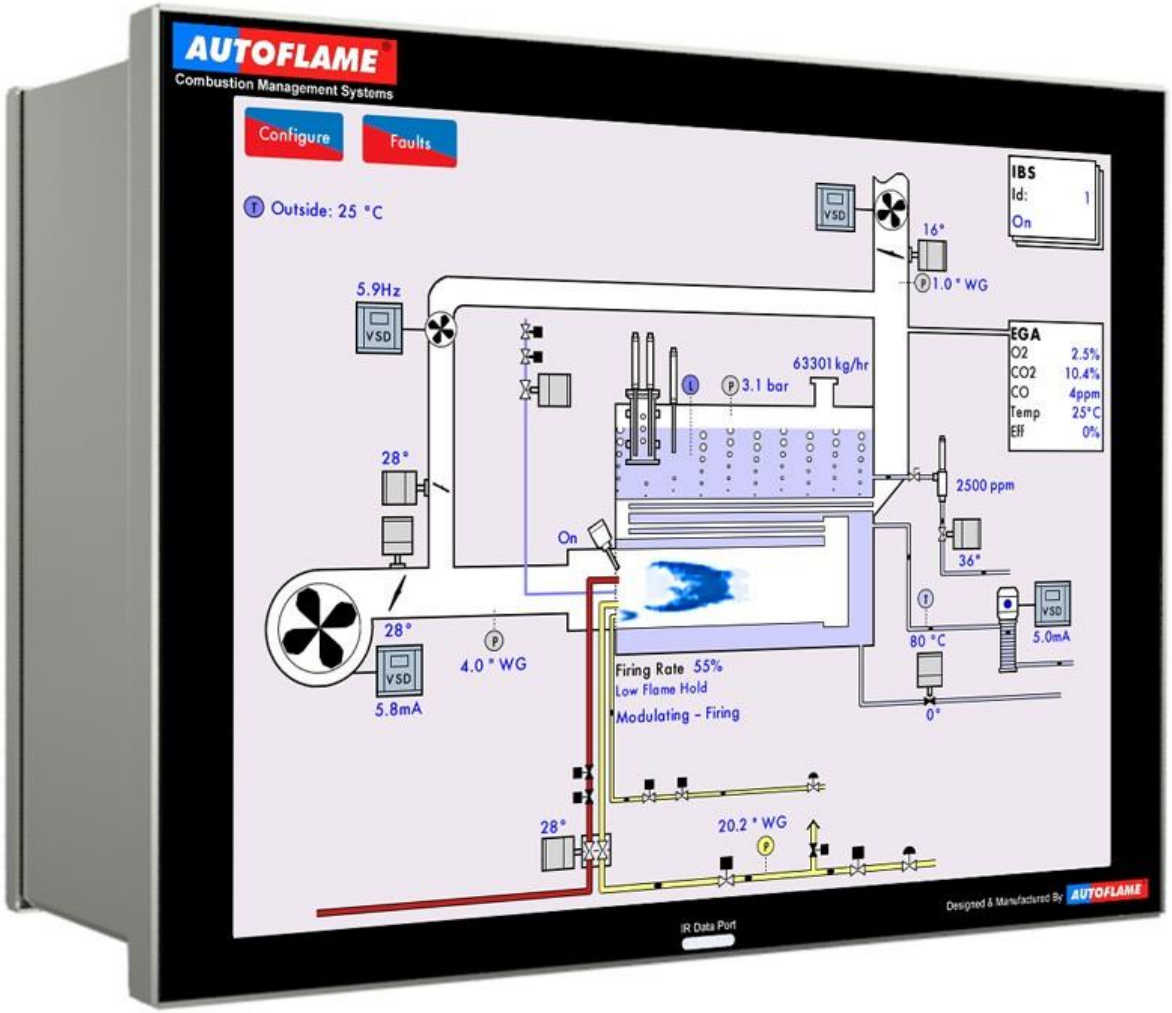
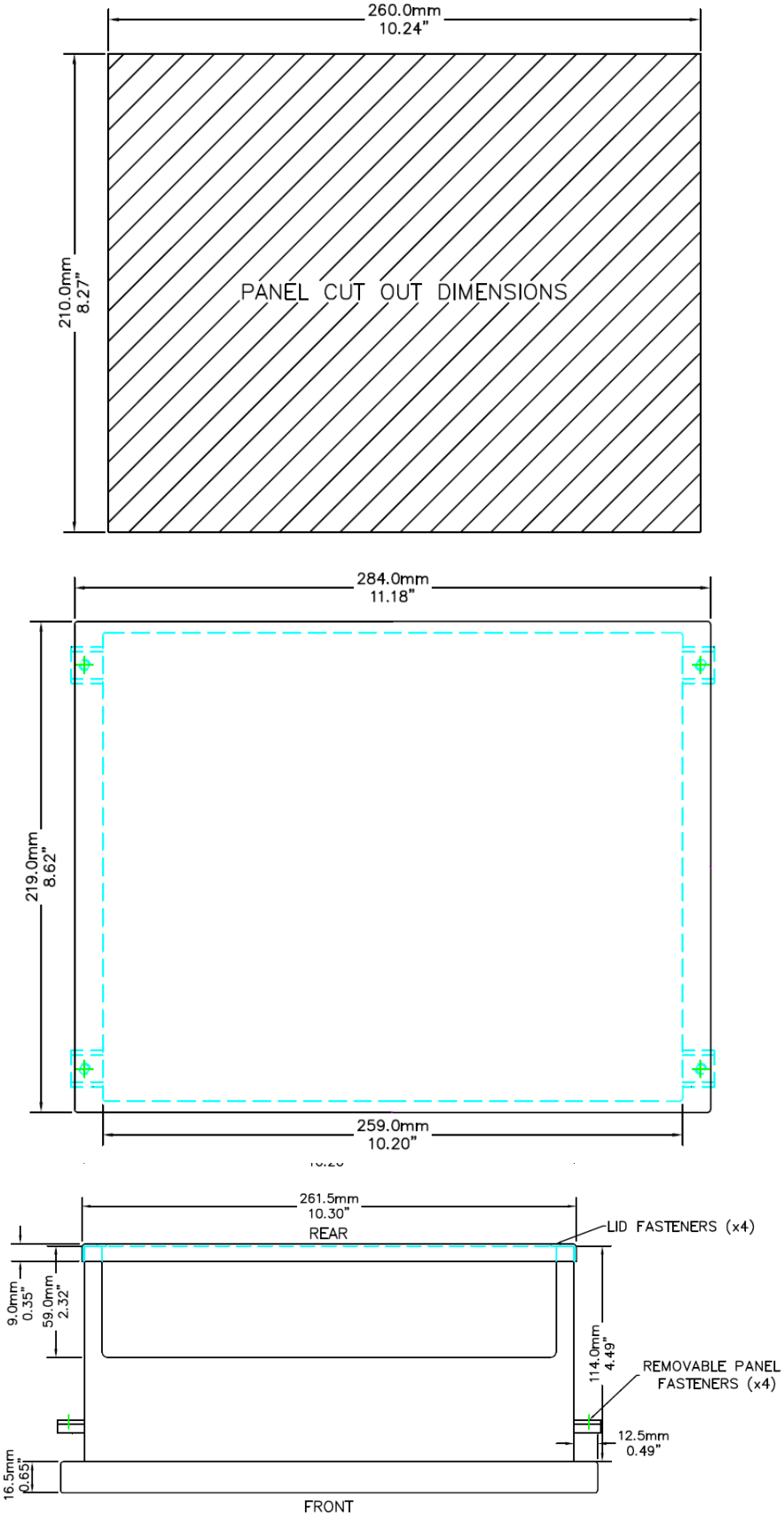
1.1 Mk8 MMMk8 控制模块



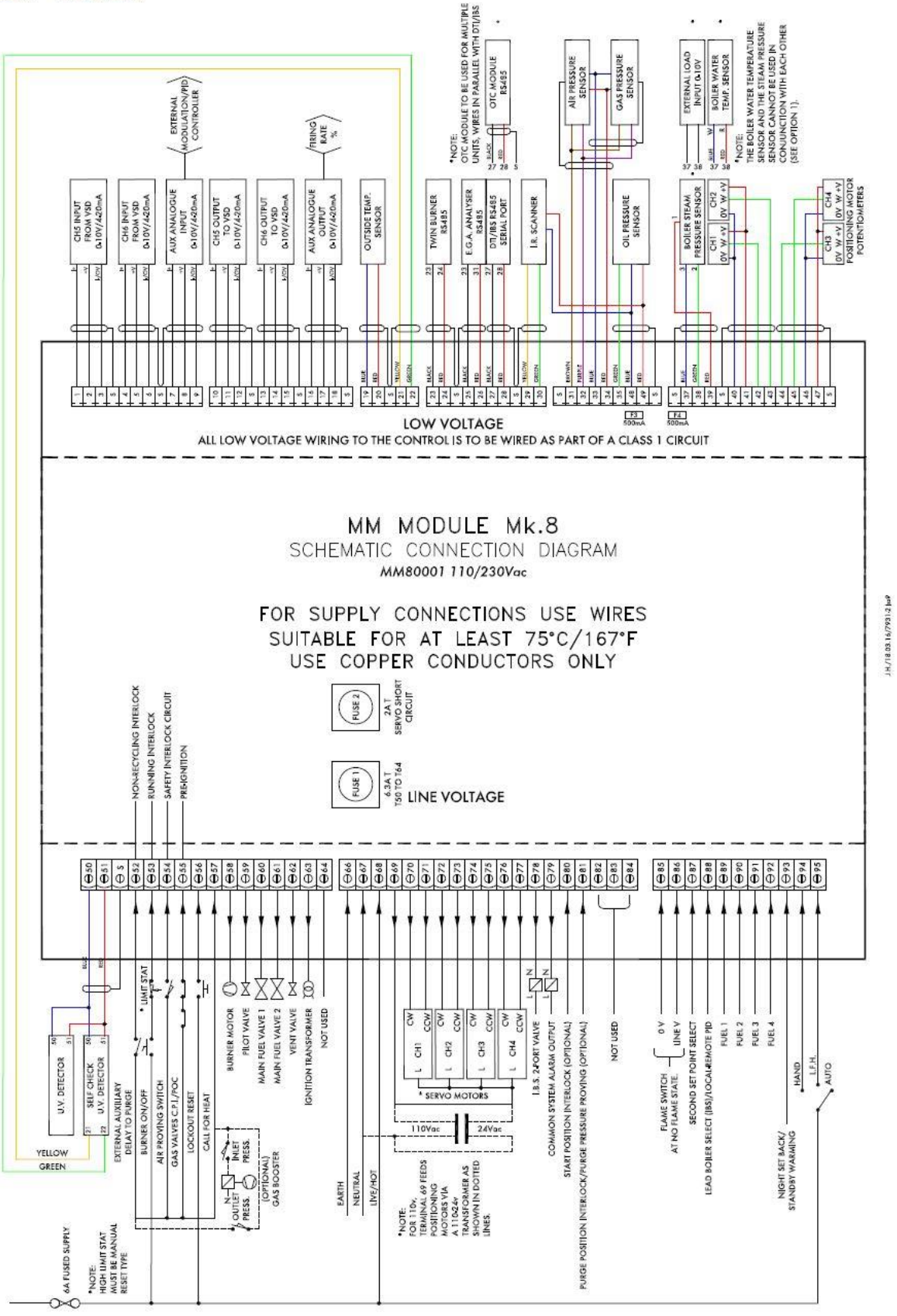
1.1.1 Fixing Holes and Dimensions 固定孔与尺寸



1.2 Wiring Schematic 接线示意图

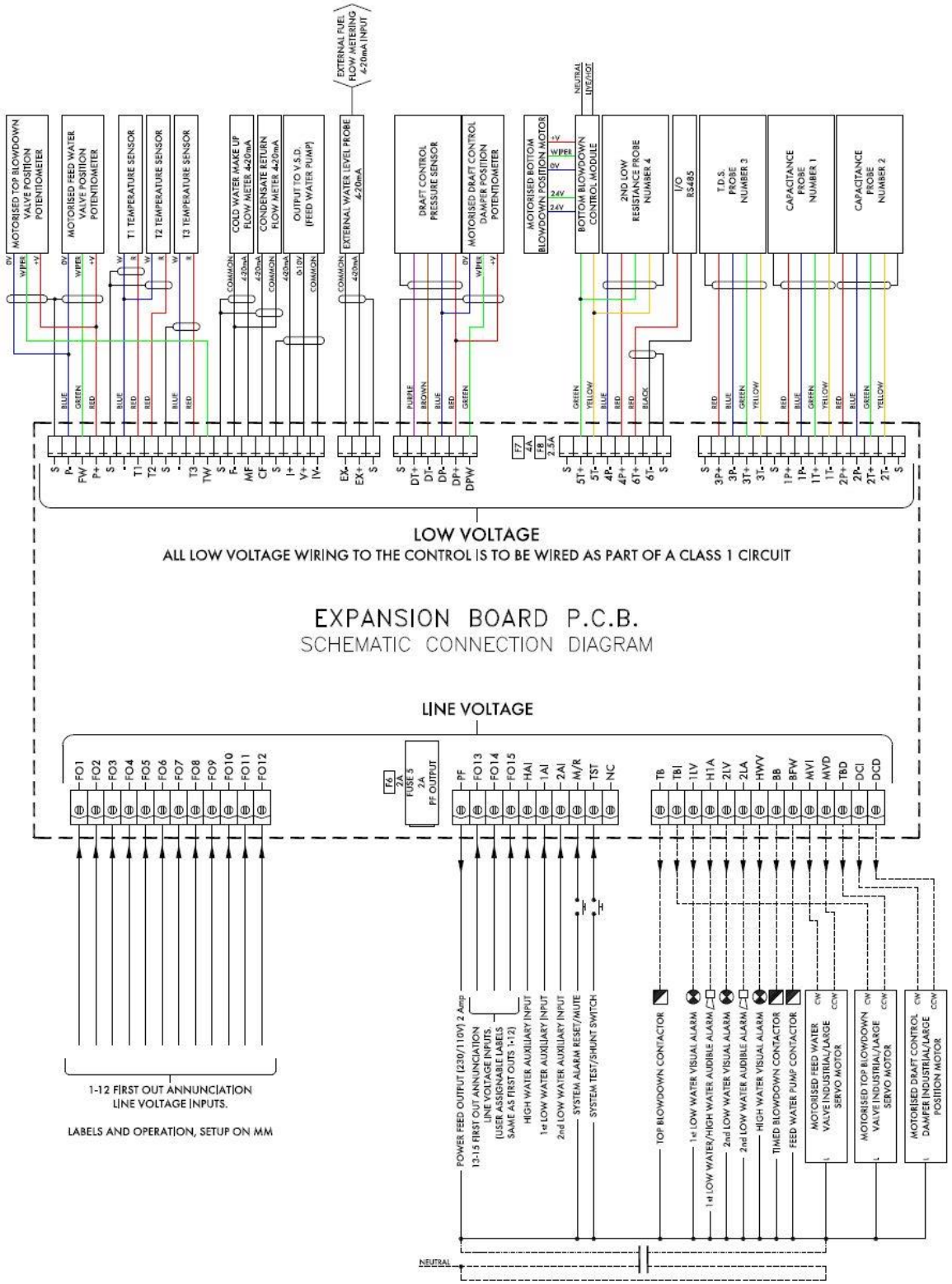
1.2.1 Mk8 MM MK8 控制模块

1.2.1 Mk8 MM



1.2.2 Mk8 Expansion Board　Mk8 扩展板

1.2.2 Mk8 Expansion Board



1.2.3 Fuse Ratings 保险丝额定值

Fuse 保险丝	Rating 额定值	Spare Part Number 零件编号
1	6.3A (T)	FU10026
	Fuse 1 protects the mains input to the MM, including the mains output terminals 50 – 64. 保险丝 1 用于保护控制模块的主电源输入，包括主电源输出终端 50 – 64。	
2	2A (T)	FU10034
	Fuse 2 protects the power supply (terminal 69) for the servomotors, alarm and 2 port valve. If this fuse blows, the error 'Triac Power Supply Error (Check F2)' will occur. 保险丝 2 用于保护伺服电机、警报和 2 个端口阀的电源（终端 69）。如果该保险丝烧断，则会出现"双向电源错误（检查保险丝 2）"错误消息。	
3	500mA	FU10040
	Fuse 3 protects the 13.5V power supply to the oil pressure sensor and IR scanner on terminal 49. If this fuse blows, the error 'Fused 13.5V Supply Error (Check F3)' will occur. 保险丝 3 用于保护油压传感器和终端 49 上红外扫描仪的 13.5V 电源。如果该保险丝烧断，则会出现"保险丝 13.5V 供电错误（检查保险丝 3）" 错误消息。	
4	500mA	500mA
	Fuse 5 protects the power supply (terminal PF) for the expansion servos and alarm outputs. If fuse 5 blows, the error 'Expansion PF Output (Check F5)' will occur. 保险丝 4 用于保护扩展伺服系统和报警输出的电源（终端 PF）。如果该保险丝烧断，则会出现"扩展 PF 输出（检查保险丝 4）"错误消息。	
5	2A (T)	FU10034
	Fuse 5 protects the power supply (terminal PF) for the expansion servos and alarm outputs. If fuse 5 blows, the error 'Expansion PF Output (Check F5)' will occur. 保险丝 5 用于保护扩展伺服系统和报警输出的电源（终端 PF）。如果该保险丝烧断，则会出现"扩展 PF 输出（检查保险丝 5）"错误消息。	
6	2A	FU10027
	Fuse 6 protects the DC circuits. If this fuse blows, the display will be off and both LEDs adjacent to fuse 7 and 8 will be off. 保险丝 6 用于保护直流电路，如果该保险丝烧坏，显示器将关闭，紧邻保险丝 7 和 8 的两个发光二极管也将关闭。	
7	4A	FU10050
	Fuse 7 protects the internal 5V supply. If this fuse blows the display will be off and the LED adjacent to the fuse will be off. 保险丝 7 用于保护内部 5V 电源，如果该保险丝烧坏，显示器将关闭，紧邻保险丝的发光二极管也将关闭。	
8	2.5A	FU10042
	Fuse 8 protects the internal 12V supply. If this fuse blows the display will be off and the LED adjacent to the fuse will be off. 保险丝 8 用于保护内部 12V 电源，如果该保险丝烧坏，显示器将关闭，紧邻保险丝的发光二极管也将关闭。	

1.3 Electrical Specifications 电气规格

Classification according to BS EN298:2012 根据 BS EN298:2012 分类

Mains Supply
主电源: Single phase 单相 230V, +10%/-15%} 47-63 Hz, unit max. consumption 140W
Single phase 单相 120V, +10%/-15%} 单位最大消耗

Climate
环境:

Min. Temperature 最低温度	0°C (32°F)
Recommended Temperature 建议温度	Less than 40°C (104°F) 小于 40°C (104°F)
Max. Temperature 最高温度	60°C (140°F)
Humidity 湿度	0 to 90% non-condensing 0 至 90%，无凝结

Storage 储存: Temperature 温度 -20 to 85°C (-4 to 185°F) -20 至 85°C (-4 至 185°F)

Protection Rating: The unit is designed to be panel mounted in any orientation and the front facia is IP65, NEMA4. The back of the unit is IP20, NEMA1.
保护等级： 设备设计用于安装于任何方向的面板，前面板为 IP65, NEMA4，设备后面板是 IP20, NEMA1.

1.3.1 MM Inputs and Outputs 控制模块输入输出

230V Unit: 单位：230V

Outputs	Terminal 输出终端				
		57	250mA	Must be connected through contactor 必须通过接触器连接	
		58	250mA	Must be connected through contactor 必须通过接触器连接	
		59	1A	0.6 power factor 0.6 功率因数	
		60	1A	0.6 power factor0.6 功率因数	
		61	1A	0.6 power factor0.6 功率因数	Max Load 5A 最大负载 5A
		62	1A	0.6 power factor0.6 功率因数	
		63	1A	0.6 power factor0.6 功率因数	
		78	100mA	To drive relay only – switched neutral 仅驱动继电器-切换至中性	
		79	100mA	To drive relay/lamp only – switched neutral 仅驱动继电器/灯光-切换至中性	

120V Unit:单位：120V

Outputs	Terminal 输出终端				
		57	250mA	Must be connected through contactor 必须通过接触器连接	
		58	250mA	Must be connected through contactor 必须通过接触器连接	
		59	2A	0.6 power factor0.6 功率因数	
		60	2A	0.6 power factor0.6 功率因数	
		61	2A	0.6 power factor0.6 功率因数	Max Load 5A
		62	2A	0.6 power factor0.6 功率因数	最大负载 5A
		63	2A	0.6 power factor0.6 功率因数	
		78	100mA	To drive relay only – switched neutral 仅驱动继电器-切换至中性	
		79	100mA	To drive relay/lamp only – switched neutral 仅驱动继电器/灯光-切换至中性	

Note:注

1. The high and low voltage connections are not safe to touch. Protection against electric shock is provided by correct installation. **CAUTION – ELECTRIC SHOCK HAZARD.**
   为安全起见不得接触高、低压连接部位，必须正确安装以防止触电。警告-触电危险
2. Control voltage cabling should be maximum 10m, screened (if not screened then less than 1m, however servomotors can be unscreened up to 10m)
   控制电压电缆最大应为 10 米并进行屏蔽（如未屏蔽则小于 1m，伺服电机可以不屏蔽，最长 10m）。
3. Any cabling over 10m must have additional surge protection.
   长于 10m 的任何电缆都必须有额外过载保护。
4. Low voltage cables should be screened cable as specified in section 1.3.3.
   如 1.3.3 所述低压电缆应是屏蔽电缆。
5. The burner 'High Limit Stat' must be a manual reset type.
   燃烧器"高限值状态"必须是手动重置类型。

Note: There is a lid (back plate) fitted onto the back of the Mk8 MM with a Warning label to prevent any unauthorised fuse replacements.
注：Mk8 控制模块背面固定有一个盖板（背板）并带有警示标签以防止更换未经批准的保险丝。

1.3.2 Expansion Board Inputs and Outputs 扩展板输入输入

Outputs: 输出：	120/230 V	All outputs with the exception of PF are switched neutrals 除 PF 之外的所有输出都切换至中性
BFW	250mA	Must be connected through contactor 必须通过接触器连接
BB	250mA	Must be connected through contactor 必须通过接触器连接
HWV	100mA	(alarm indicator 报警指示灯)
2LA	100mA	(alarm indicator 报警指示灯)
2LV	100mA	(alarm indicato 报警指示灯)
H1A	100mA	(alarm indicator 报警指示灯)
1LV	100mA	(alarm indicator 报警指示灯)
TB	250mA	Solenoid only, must be connected through contactor 仅用于伺服电机，必须通过接触器连接
PF	Maximum 2A 最大 2A	(load currents for above terminals) 为上述终端加载电流

Note: Max number of alarm indicators on at any time is 3 (1LV, 2LA, 2LV)
注： 任何时候的报警指示灯最大数量都为 3(1LV, 2LA, 2LV)

Main Voltage Signal Inputs: 主电压信号输入
At 120V current loading is approximately maximum 0.7mA per input.
At 230V current loading is approximately maximum 1.5mA per input.
120V 时每个输入的电流加载最大约为 0.7mA。
230V 时每个输入的电流加载最大约为 1.5mA。

1.3.3 Cable Specifications 电缆规格

High/ Control Voltage 高压/控制电压

Screened cable should not exceed 10m and unscreened cable should not exceed 1m. The ionisation/ flame rod cable must be shielded to prevent interference with other cables, as it is a high voltage and high frequency signal.
屏蔽电缆不应超过 10 米，未屏蔽电缆不应超过 1 米。 电离电缆和电极电缆必须屏蔽，以防止与其他电缆发生干扰，因为这种电缆是一种用于高压和高频信号电缆。

Low Voltage 低压

The screened cable used from the MM to the servomotors and detectors must conform to the following The screened cable used for low voltage wiring from the MM to the servomotors, detectors and variable speed drive must conform to the following specification:
将控制模块与伺服电机和探测器相连的屏蔽电缆必须与将控制模块与伺服电机和探测器相连的低压线路屏蔽电缆相符，变速传动装置必须符合以下规范:

16/0.2mm PVC insulated overall braid, screened, PVC sheathed.
16/0.2mmPVC 绝缘整体编织、屏蔽、PVC 护套。

- Sixteen wires per core
  每芯 16 根电线
- Diameter of wires in each core 0.2mm
  每芯电线直径 0.2mm
- Rated at 440V AC rms at 1600Hz
  1600Hz 时额定为 440V 交流有效值
- DEF 61-12 current rating per core 2.5A
  每芯 DEF 61-12 额定电流为 2.5A
- Maximum operating temperature 70°C (158°F)
  最高运行温度 70℃（158℉）
- Nominal conductor area 0.5sq mm per co
  每芯额定导线面积为 0.5sq
- Nominal insulation radial thickness on core 0.45mm
  线芯额定绝缘径向厚度为 0.45mm
- Nominal conductor diameter per core 0.93mm
  每芯额定导体直径为 0.93mm
- Nominal core resistance at 20°C. 40.1Ω/1000m
  20℃时额定线芯阻力为 40.1 Ω /1000m
- Nominal overall diameter per core 1.83mm
  每芯额定总直径为 1.83mm
- Fill factor of braid screen 0.7
  编织网填充因数为 0.7
- Equivalent imperial conductor sizes 14/0.0076
  等效额定导体尺寸为 14/0.0076

Use the number of cores suitable for the application. A universal part numbering system appears to have been adopted for this type of cable as follows:
使用适于应用的线芯数量。 通用零件编号系统采用了此类型电缆:
16-2-2C 2 Core
16-2-2C 2 芯
16-2-3C 3 Core
16-2-3C 3 芯
16-2-4C 4 Core
16-2-4C 4 芯
16-2-6C 6 Core
16-2-6C 6 芯
(5 Core not readily available)
（无五芯电缆)

Note: If using 4 Core cable and interference is detected, use 2 sets of 2 Core.
注：使用四芯电缆并检测到有干扰时请使用 2 套双芯电缆。

Data Cable 数据电缆

Data cable must be used for connections between MMs for sequencing applications and between MMs and EGAs and for connection between MMs and DTI 数据电缆必须用于连接用于测序应用程序的控制模块、控制模块和尾气分析仪以及控制模块和数据传输接口。

Types of data cable that can be used:
可以使用以下类型数据电缆

1 eldon 9501 for 2-core shielded cable (1 twisted pair)
百通 9501 双芯屏蔽电缆（1 个绞线对）
2 Beldon 9502 for 4-core shielded cable (2 twisted pairs)
百通 9502 四芯屏蔽电缆（2 个绞线对）
3 STC OS1P24

Samples are available upon request. Low voltage and data cable can be ordered directly from Autoflame Engineering, please contact Autoflame Sales.
客户可以要求提供样本。 低压电缆和数据电缆可以直接从 Autoflame 工程部订购，请联系 Autoflame 销售人员。

1.3.4 MM Terminals Description 控制模块终端说明

S — All terminals marked S are internally connected. They are provided for connections to the various screened cables.
所有标有 S 的终端都为内部连接，这些终端用于各种屏蔽电缆的连接。

1 — Current Input, 0-20mA/ 4-20mA. For channel 5 only. Can be connected to the current output of a VSD or tachometer system or 4-20mA servomotor feedback
电流输入 0-20mA/ 4-20mA，仅用于通道 5，可以与 VSD 或转速表系统或 4-20mA 伺服电机反馈的电流输出连接。

2 — Voltage Input, 0-10V. For channel 5 only. Can be connected to the voltage output of a VSD or tachometer system or 4-20mA servomotor feedback
电压输入 0-10V，仅用于通道 5，可以与 VSD 或转速表系统或 4-20mA 伺服电机反馈的电压输出连接。

3 — Common for Terminals 1 or 2 常见于终端 1 或 2。

4 — Current Input, 0-20mA/ 4-20mA. For channel 6 only. Can be connected to the current output of a VSD or tachometer system or 4-20mA servomotor feedback
电流输入 0-20mA/ 4-20mA，仅用于通道 6，可以与 VSD 或转速表系统或 4-20mA 伺服电机反馈的电流输出连接。

5 — Voltage Input, 0-10V. For channel 5 only. Can be connected to the voltage output of a VSD or tachometer system or 4-20mA servomotor feedback
电压输入 0-10V，仅用于通道 5，可以与 VSD 或转速表系统或 4-20mA 伺服电机反馈的电压输出连接.

6 — Common for Terminals 4 or 5 常见于终端 4 或 5。

7 — Current Input, 4-20mA. Used for external modulation or external required setpoint
电流输入，4-20mA，用于外部模块或外部所需设定点。

8 — Voltage Input, 2-10V. Used for external modulation or external required setpoint
电压输入，2-10V，用于外部模块或外部所需设定点。

9 — Common for Terminals 7 or 8 常见于终端 7 或 8。

10 — Current Output, 0-20mA/ 4-20mA. For channel 5 only. Can be connected to the current input of a VSD or 4-20mA servomotor feedback
电流输出 0-20mA/ 4-20mA，仅用于通道 5，可以与 VSD 或 4-20mA 伺服电机反馈的电流输入连接。

11 — Voltage Output, 0-10V. For channel 5 only. Can be connected to the voltage input of a VSD or 4-20mA servomotor feedback
电压输出，0-10V，仅用于通道 5，可以与 VSD 或 4-20mA 伺服电机反馈的电压输入连接。

12 — Common for Terminals 10 or 11 常见于终端 10 或 11。

13 — Current Output, 4-20mA. For channel 6 VSD use only. Can be connected to the current input of a VSD
电流输出 4-20mA，仅用于通道 6，可以与 VSD 的电流输入连接。

14 — Voltage Output, 0-10V. For channel 6 VSD use only. Can be connected to the voltage input of a VSD

电压输出，0-10V，仅用于通道 6，可以与 VSD 的电压输入连接。

15 Common for Terminals 13 or 14 常见于终端 13 或 14

16 Current Output, 4-20mA. Varies in accordance with firing rate
电流输出，4-20mA，随燃烧率的不同而不同。

17 Voltage Output, 0-10V. Varies in accordance with firing rate
电压输出，0-10V，随燃烧率的不同而不同。

18 0V common for Terminals 16 or 17
常见于终端 16 或 17。

19, 20 Connections to an Autoflame outside temperature sensor
连接 Autoflame 外部温度传感器。

21, 22 Connections to an Autoflame self-check UV sensor
连接 Autoflame 自检紫外线传感器连接。

23, 24 Communications port connections for multi-burner operation
多燃烧器运行的通信端口连接。

25, 26 Communications port connections to an Exhaust Gas Analyser (EGA)
尾气分析仪的通信端口连接。

27, 28 Communications port connections for DTI and/or IBS
数据传输接口和/或 IBS 的通信端口连接。

29, 30 Digital communications connections to an Autoflame IR scanner
Autoflame 红外扫描仪的数字通信连接。

31, 32 Digital communications connections to an Autoflame air pressure sensor and/or Autoflame gas pressure sensor
Autoflame 空气压力传感器和/或 Autoflame 气体压力传感器的数字通信连接。

33, 34 +12V supply to an Autoflame air pressure sensor and/or Autoflame gas pressure sensor Autoflame
向空气压力传感器和/或 Autoflame 气体压力传感器提供+12V 电源。

35 Signal inputs from Autoflame oil pressure sensor
来自 Autoflame 燃油压力传感器的信号输入。

48, 49 +13.5V supply to an Autoflame oil pressure sensor and/or Autoflame IR scanner
向 Autoflame 燃油压力传感器和/或 Autoflame 红外扫描仪提供+13.5V 电源。

37, 38 (39) Connections to an Autoflame boiler temperature detector (pressure) or external load input 0-10V Autoflame
锅炉温度检测器（压力）或外部负载输入 0-10V 连接。

40 0V supply to channel 1 and channel 2 servomotors
向通道 1 和通道 2 的伺服电机提供 0V 电源。

41 +12V supply to channel 1 and channel 2 servomotors
向通道 1 和通道 2 的伺服电机提供+12V 电源。

42 Signal from channel 1 servomotor, indicating position
来自通道 1 伺服电机的信号，用于指示位置。

43 Signal from channel 2 servomotor, indicating position
来自通道 2 伺服电机的信号，用于指示位置。

44 Signal from channel 3 servomotor, indicating position
来自通道 3 伺服电机的信号，用于指示位置。

45 Signal from channel 4 servomotor, indicating position
来自通道 4 伺服电机的信号，用于指示位置。

46 0V Supply to channel 3 and channel 4 servomotors
向通道 3 和通道 4 的伺服电机提供 0V 电源。

47 +12V supply to channel 3 and channel 4 servomotors
向通道 3 和通道 4 的伺服电机提供+12V 电源。

50, 51 Connections to an Autoflame UV scanner
连接 Autoflame 紫外线扫描仪。

52 Mains voltage input – external auxiliary delay to purge/ secondary proving set in option/parameter 157
主电压输入-外部辅助继电器吹扫/二级检验，在选项/参数 157 中设置。

53 Mains voltage input – burner on/off signal, running interlock circuit
主电压输入-燃烧器启动/停止信号，运行联锁电路。

54 Mains voltage input – air proving switch
主电压输入-空气检验开关。

55 Mains voltage input - proving circuits, e.g. gas valve proof of closure
主电压输入-检验电路，如燃气阀关闭检验。

56 Mains voltage input- lockout reset
主电压输入-锁定重置。

57 Mains voltage output – call for heat
主电压输出-热量请求。

58 Mains voltage output – burner motor
主电压输出-燃烧器电机。

59 Mains voltage output – start/pilot valve
主电压输出-启动阀/导阀。

61 Mains voltage output – main fuel valve 2
主电压输出-主燃料阀 2。

62 Mains voltage output – vent valve
主电压输出-排气阀。

63 Mains voltage output – ignition transformer
主电压输出-点火变压器。

64 Unused – do not connect
未使用-请勿连接。

66 Mains supply – earth
主电源-地线。

67 Main supply – neutral
主电源-零线。

68 Mains supply – live/hot
主电源-火线。

69 Mains voltage output, power to servomotors and/or servomotor stepdown transformer
向伺服电机和/或伺服电机降压变压器提供主电压输出和电力。

70 Switched neutral – drives channel 1 servomotor clockwise
切换至中性-顺时针驱动通道 1 伺服电机。

71 Switched neutral – drives channel 1 servomotor counter clockwise
切换至中性-逆时针驱动通道 1 伺服电机。

72 Switched neutral – drives channel 2 servomotor clockwise
切换至中性-顺时针驱动通道 2 伺服电机。

73 Switched neutral – drives channel 2 servomotor counter clockwise
切换至中性-逆时针驱动通道 2 伺服电机。

74 Switched neutral – drives channel 3 servomotor clockwise
切换至中性-顺时针驱动通道 3 伺服电机。

75 Switched neutral – drives channel 3 servomotor counter clockwise
切换至中性-逆时针驱动通道 3 伺服电机。

76 Switched neutral – drives channel 4 servomotor clockwise
切换至中性-顺时针驱动通道 4 伺服电机。

77 Switched neutral – drives channel 4 servomotor counter clockwise
切换至中性-逆时针驱动通道 4 伺服电机。

78 Switched neutral – 2-port valve for IBS operation
切换至中性-IBS 探针 2 端口阀。

79 Switched neutral – alarm output for MM lockout/MM error/EGA error.
切换至中性-控制模块锁定/控制模块错误/尾气分析仪错误报警输出。

80 Start position interlock (optional)
启动位置联锁（可选）。

81 Purge position interlock/ delay purge time (optional)
吹扫位置联锁/延迟吹扫时间（可选）。

82 Unused – do not connect
未使用-请勿连接。

83 Unused – do not connect
未使用-请勿连接。

84 Unused – do not connect

未使用-请勿连接。

85 Mains voltage input. For use when using an external flame switch- 0V when at no flame state
主电压输入，使用外部火焰开关时使用-无火焰状态下为 0V。

86 Mains voltage input. For use when using an external flame switch- line voltage when at no flame state
主电压输入，使用外部火焰开关时使用-无火焰状态下为线压。

87 Mains voltage input. Select second required setpoint- second set-point facility
主电压输入，选择第二个所需设定点-第二设定点设备。

88 Mains voltage input. Lead boiler select (overrides DTI) / Local – remote PID select for external modulation
主电压输入，主锅炉选择（覆盖数据传输接口）-远程 PID 选择用于外部模块。

89 Mains voltage input – selects fuel 1 curve
主电压输入-选择燃料 1 曲线

90 Mains voltage input – selects fuel 2 curve
主电压输入-选择燃料 2 曲线

91 Mains voltage input – selects fuel 3 curve
主电压输入-选择燃料 3 曲线

92 Mains voltage input – selects fuel 4 curve
主电压输入-选择燃料 4 曲线

93 Mains voltage input – if low pressure steam operation is optioned, this input is used to detect low boiler temperature (by means of an appropriate temperature switch/aquastat). If outside temperature compensation is optioned, this input is used to activate the night setback
主电压输入-如果选择低压蒸汽运行，则使用输入检测锅炉低温（通过合适的温度开关或水温自动调节仪），如果选择外部温度补偿，则使用输入激活夜间温度降低

94 Mains voltage input – selects hand operation
主电压输入-选择手动运行

95 Mains voltage input – selects low flame hold operation
主电压输入-选择低火焰保持运行

1.3.5 Expansion Board Terminals Description 扩展板终端说明

S	All terminals marked S are internally connected. They are provided for connections to the various screened cables. 所有标有 S 的终端都为内部连接，这些终端用于各种屏蔽电缆的连接。
P-	0V supply to top blowdown and feed water servomotors 用于顶部排污和给水伺服电机的 0V 电源。
FW	Signal from feed water servomotor, indicating position 来自给水伺服电机的信号，用于指示位置。
P+	+12V supply to top blowdown and feed water servomotors
-	Common for terminals T1, T2 and T3 用于顶部排污和给水伺服电机的+12V 电源，常见于终端 T1、T2 和 T3。
T1	Signal input from T1 temperature sensor 来自 T1 温度传感器的信号输入。
T2	Signal input from T2 temperature sensor
-	Common for terminal T1, T2 and T3 来自 T2 温度传感器的信号输入，常见于终端 T1、T2 和 T3。
T3	Signal input from T3 temperature sensor 来自 T3 温度传感器的信号输入。
TW	Signal from top blowdown servomotor, indicating position 来自顶部排污伺服电机的信号，用于指示位置。
F-	Common for terminals MF and CF 常见于终端 MF 和 CF。
MF	Current input, 4-20mA for cold water make up flow meter 电流输入至冷水流量计为 4-20mA。
CF	Current input, 4-20mA for condensate return flow meter 电流输入至冷凝水回流计为 4-20mA。
I+	Current output, 4-20mA to feed water VSD 电流输出至给水 VSD 为 4-20mA
V+	Voltage output, 0-10V to feed water VSD 电压输出至给水 VSD 为 0-10V
IV-	Common for terminals I+ and V+ 常见于终端 I+ 和 V+。
EX-	Common for terminal EX+ 常见于终端 EX+
EX+	Current input, 4-20mA for external water level probe or fuel flow feedback 电流输入至外部水位探针或燃料流量反馈为 4-20mA。

DT+, DT-	Digital communications from draft control pressure sensor 来自通风控制压力传感器数字通信。
DP-	0V supply to draft control pressure sensor and draft control servomotor 用于通风控制压力传感器和通风控制伺服电机的 0V 电源。
DP+	+12V supply to draft control pressure sensor and draft control servomotor 用于通风控制压力传感器和通风控制伺服电机的+12V 电源。
DPW	Signal from draft control servomotor, indicating position 来自通风控制伺服电机的信号，用于指示位置。
5T+, 5T-	Digital communications from bottom blowdown module and 2nd low probe 来自底部排污模块和第二低水位探针的数字通信。
4P-	0V supply to 2nd low resistance probe 用于第二低水位电阻探针的 0V 电源。
4P+	+12V supply to 2nd low resistance probe 用于第二低水位电阻探针的+12V 电源。
6T+, 6T-	Communications port connections I/O module RS485 通信端口连接输入输出模块 RS485。
3P+	+9V supply to TDS probe 用于总溶解固体探针的+9V 电源。
3P-	0V supply to TDS probe 用于总溶解固体探针的 0V 电源。
3T+, 3T-	Digital communication connections from TDS probe 来自总溶解固体探针的数字通信连接。
1P+	+9V supply to capacitance probe 1 用于电容探针 1 的+9V 电源。
1P-	0V supply to capacitance probe 1 用于电容探针 1 的 0V 电源。
1T+, 1T-	Digital communications connections from capacitance probe 1 来自电容探针 1 的数字通信连接。
2P+	+9V supply to capacitance probe 2 用于电容探针 2 的+9V 电源。
2P-	0V supply to capacitance probe 2 用于电容探针 2 的 0V 电源。
2T+, 2T-	Digital communications connections from capacitance probe 2 来自电容探针 2 的数字通信连接。
FO1	First Out annunciation line voltage input 1 先出通信线电压输入 1
FO2	First Out annunciation line voltage input 2

先出通信线电压输入 2

FO3 First Out annunciation line voltage input 3
先出通信线电压输入 3

FO4 First Out annunciation line voltage input 4
先出通信线电压输入 4

FO5 First Out annunciation line voltage input 5
先出通信线电压输入 5

FO6 First Out annunciation line voltage input 6
先出通信线电压输入 6

FO7 First Out annunciation line voltage input 7
先出通信线电压输入 7

FO8 First Out annunciation line voltage input 8
先出通信线电压输入 8

FO9 First Out annunciation line voltage input 9
先出通信线电压输入 9

FO10 First Out annunciation line voltage input 10
先出通信线电压输入 10

FO11 First Out annunciation line voltage input 11
先出通信线电压输入 11

FO12 First Out annunciation line voltage input 12
先出通信线电压输入 12

PF Power feed 2A output (230V/110)
供电 2A 输出（230V/110）

FO13 First Out annunciation line voltage input 13
先出通信线电压输入 13。

FO14 First Out annunciation line voltage input 14
先出通信线电压输入 14。

FO15 First Out annunciation line voltage input 15
先出通信线电压输入 15。

HAI External high water auxiliary input
外部高水位辅助输入。

1AI External 1st low water auxiliary input
外部第一低水位辅助输入。

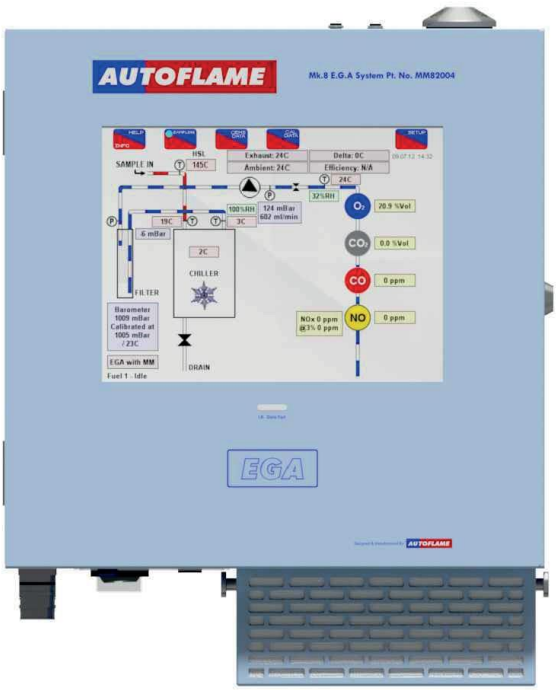
2AI External 2nd low water auxiliary input
外部第二低水位辅助输入。

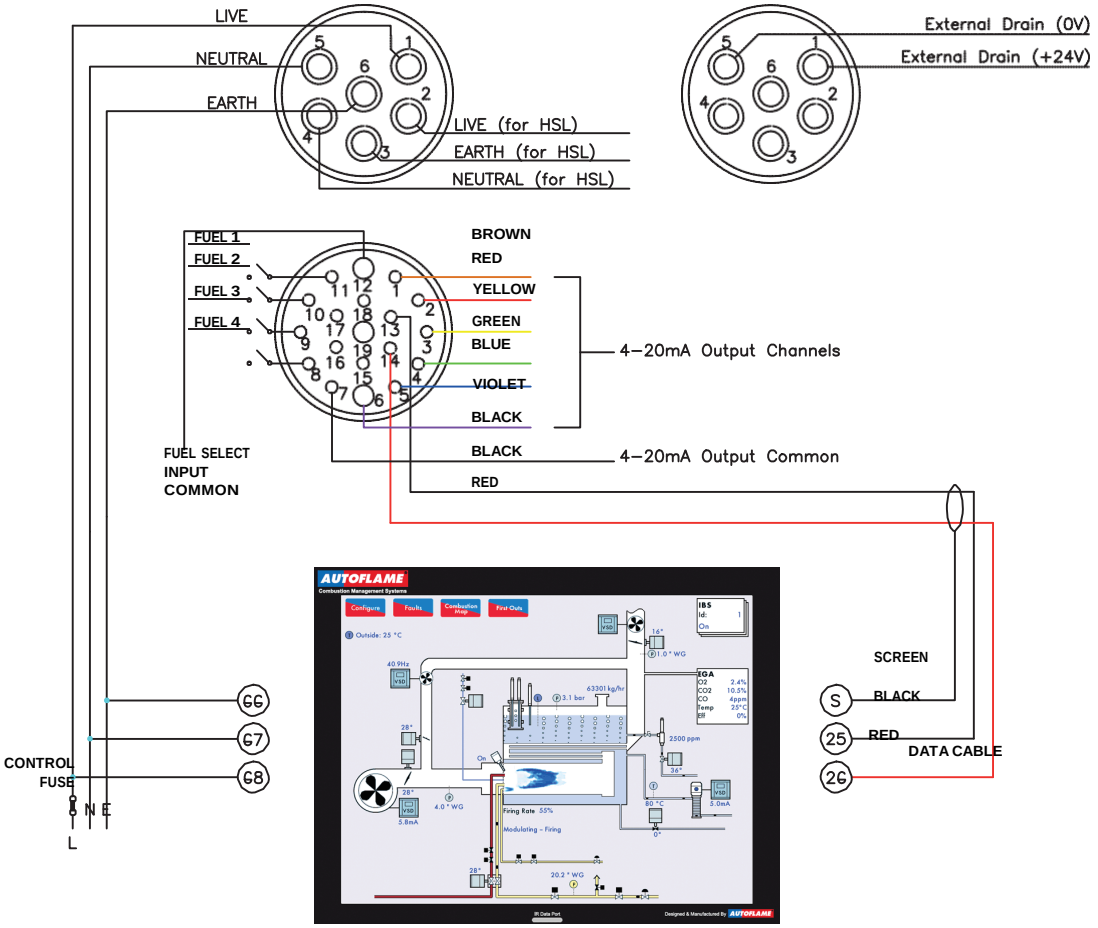
M/R System alarm mute/reset
系统报警静音/重置。

TST System test alarm inputs/ shunt switch
系统测试报警输入/并联开关。

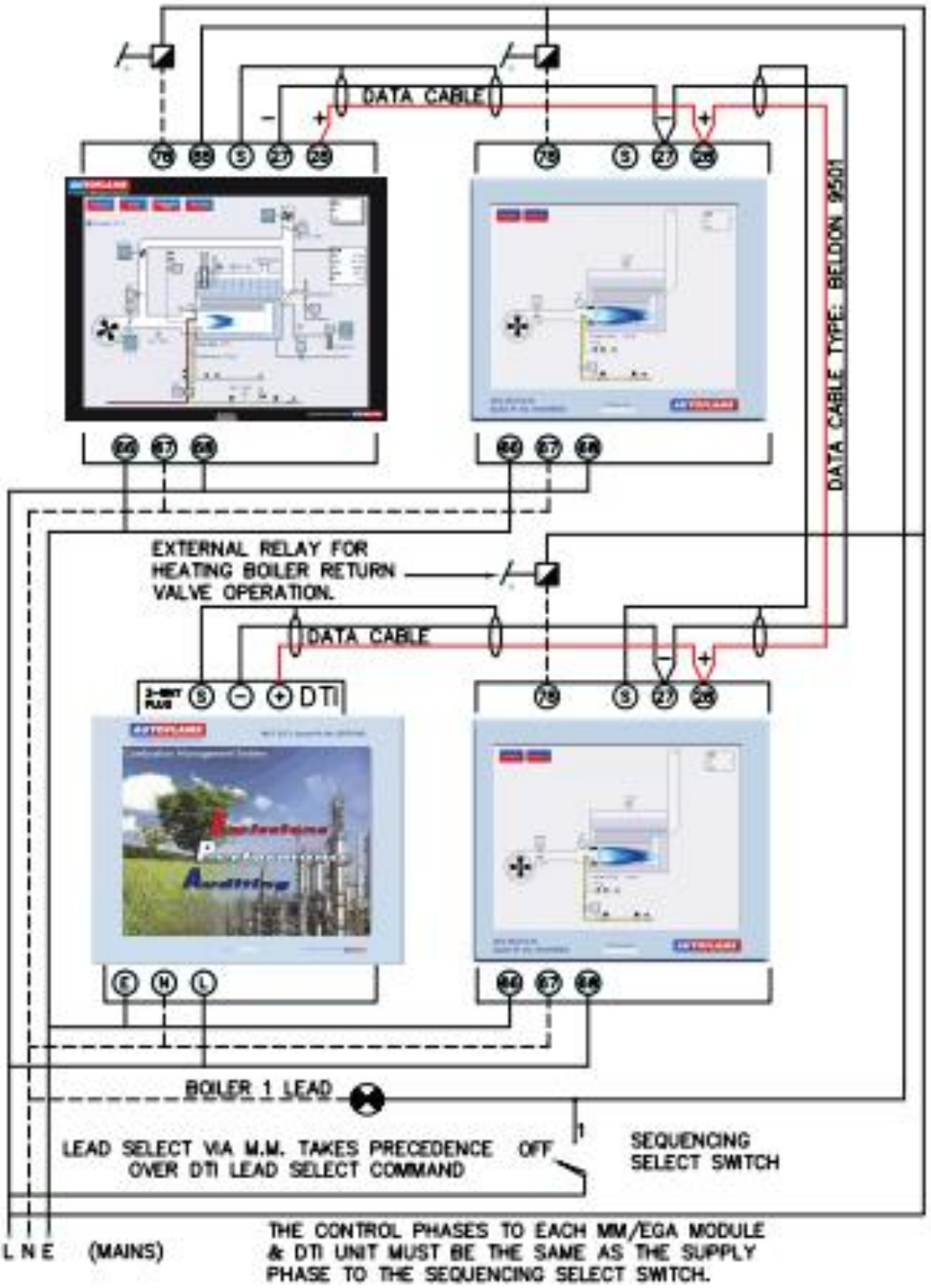
NC	Unused – do not connect 未使用-请不要连接。
TB	Switched neutral – top blowdown contactor 切换至中性-顶部排污接触器。
TBI	Switched neutral – drives top blowdown servomotor clockwise 切换至中性-顺时针驱动顶部排污伺服电机。
1LV	Switched neutral – 1st low water visual alarm 切换至中性-第一低水位视觉报警。
H1A	Switched neutral – 1st low/ high water audible alarm 切换至中性-第一低/高水位声音报警
2LV	Switched neutral – 2nd low water visual alarm 切换至中性-第二低水位视觉报警
2LA	Switched neutral – 2nd low water audible alarm 切换至中性-第二低水位声音报警
HWV	Switched neutral – High water visual alarm 切换至中性-高水位视觉报警
BB	Switched neutral – Bottom blowdown contactor 切换至中性—底部排污接触器
BFW	Switched neutral – Feed water pump contactor 切换至中性-供水泵接触器
MVI	Switched neutral – drives feed water servomotor clockwise 切换至中性-顺时针驱动供水伺服电机
MVD	Switched neutral – drives feed water servomotor counter clockwise 切换至中性—逆时针驱动供水伺服电机
TBD	Switched neutral – drives top blowdown servomotor counter clockwise 切换至中性-逆时针驱动顶部排污伺服电机
DCI	Switched neutral – drives draft control servomotor clockwise 切换至中性-顺时针驱动通风控制伺服电机
DCD	Switched neutral – drives draft control servomotor counter clockwise 切换至中性-逆时针驱动通风控制伺服电机

1.4 Connection Between Mk8 MM and Mk8 EGA Mk8 控制模块和 Mk8 尾气分析仪的连接

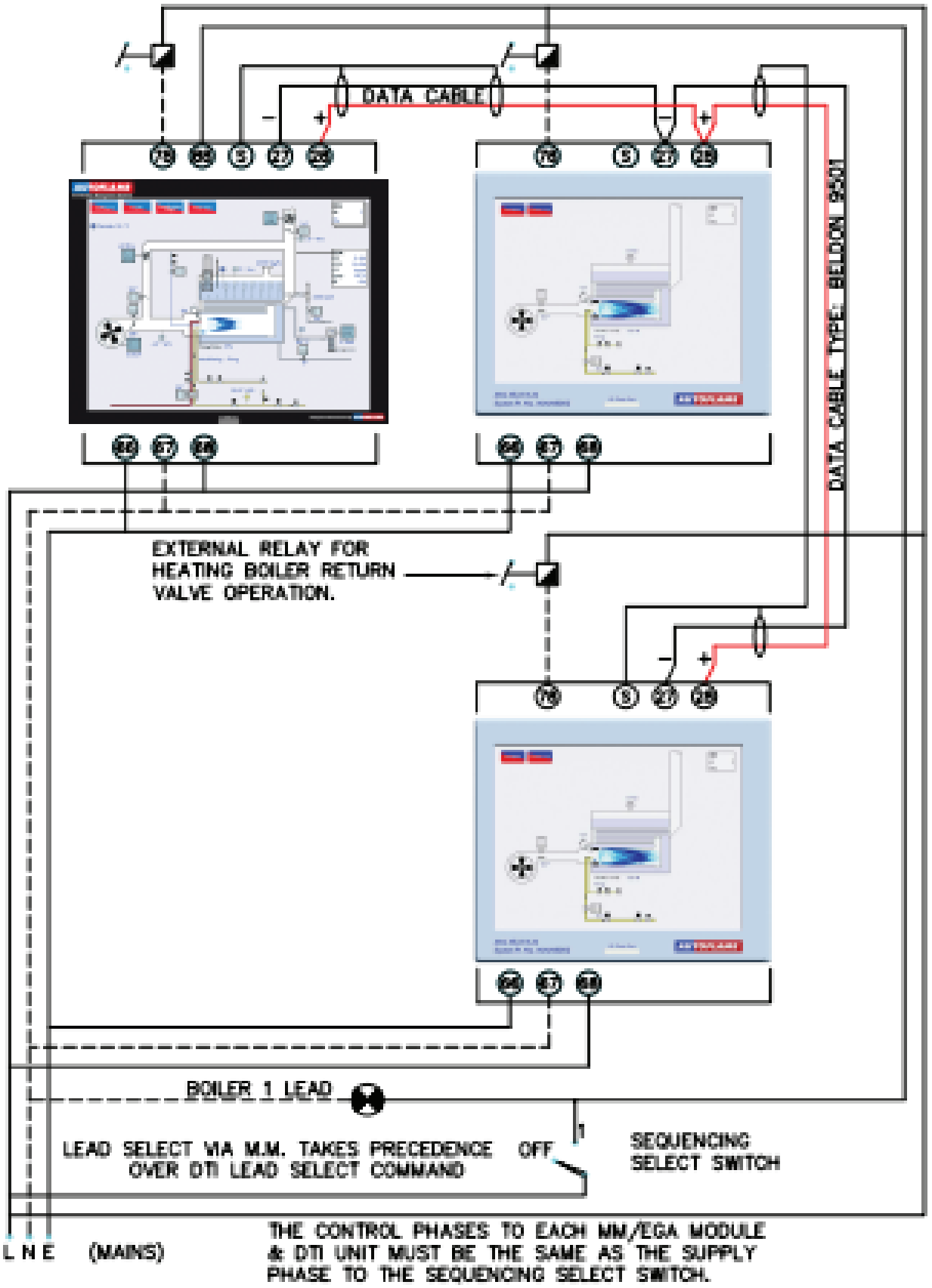




1.5 Connection Between Mk8 MM and Mk7 DTI
Mk8 控制模块和 Mk7 数据传输接口的连接



1.6 Sequencing Connection Diagram 排序连接图



2 OPTIONS AND PARAMETERS 选项与参数

2.1 Options 选项

The Options, Parameters and Expansion Options must only be changed by factory trained and certified technicians who have a thorough appreciation of the Autoflame combustion systems and the combustion process in general. Any person changing these settings without the correct factory training and understanding of the boiler plant may place themselves and others in a potentially dangerous situation.

所有选项、参数和扩展选项都必须由经过工厂培训和持证的技术人员进行更改，同时技术人员应对 Autoflame 燃烧系统和燃烧过程有彻底的了解。任何没有经过工厂正确培训并了解锅炉厂的人更改这些设置有可能会对他人造成潜在危险。

CH1, CH2, CH3, CH4, CH5, CH6 and CH7 refer to the rows of  buttons respectively start with CH1 at the top.

CH1, CH2, CH3, CH4, CH5, CH6 和 CH7 分别指  按钮，起始按钮是上部的 CH1。

The options, parameters and expansion options are all viewable while the MM is in run mode. In commissioning mode, all of the options, parameters and expansion options can be adjusted according to the application. Non safety-critical options, parameters and expansion options can be adjusted through Online Changes.

控制模块处于运行模式时可以看到所有选项、参数和扩展选项。在调试模式中，所有选项、参数和扩展选项都可以根据应用领域进行调整。非关键安全性选项、参数和扩展选项通过在线调整进行更改。

Figure 2.1.i Splash Screen
图2.1.i 启动屏幕

Power up the unit. If the MM has already been commissioned, press 

when the system starts up. If the system is not already commissioned, the MM will go into commissioning mode automatically.

为设备加电，如果控制模块已经过调试，则当系统启动时按下 

按钮。如果系统未经过调试，则控制模块将自动进入调试模式。

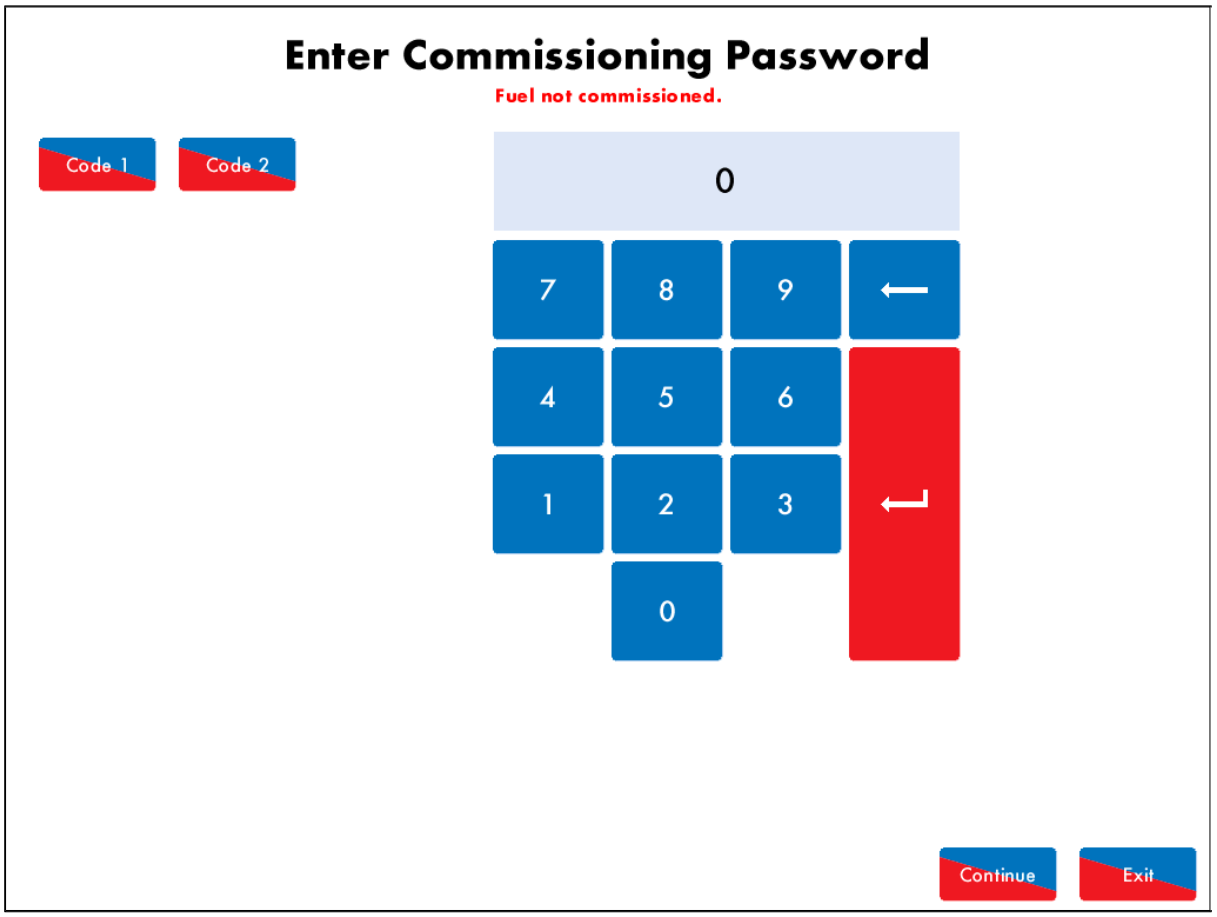


Figure 2.1.ii Enter Commissioning Password
图2.1.ii 输入调试密码

"Enter Commissioning Password" is displayed. Use the keypad to enter the password, then press Continue. Press on Code 1 or Code 2 to change the value of an incorrect entry.

显示"输入调试密码"。使用键盘输入密码后按下按钮，然后按下 Code 1 或 Code 2 按钮更改错误条目的数值。

Note: The commissioning password should not be distributed to anyone who is not a factory trained and a certified engineer.
注：不得将调试密码告知未经过工厂培训的人员以及无证的工程师。

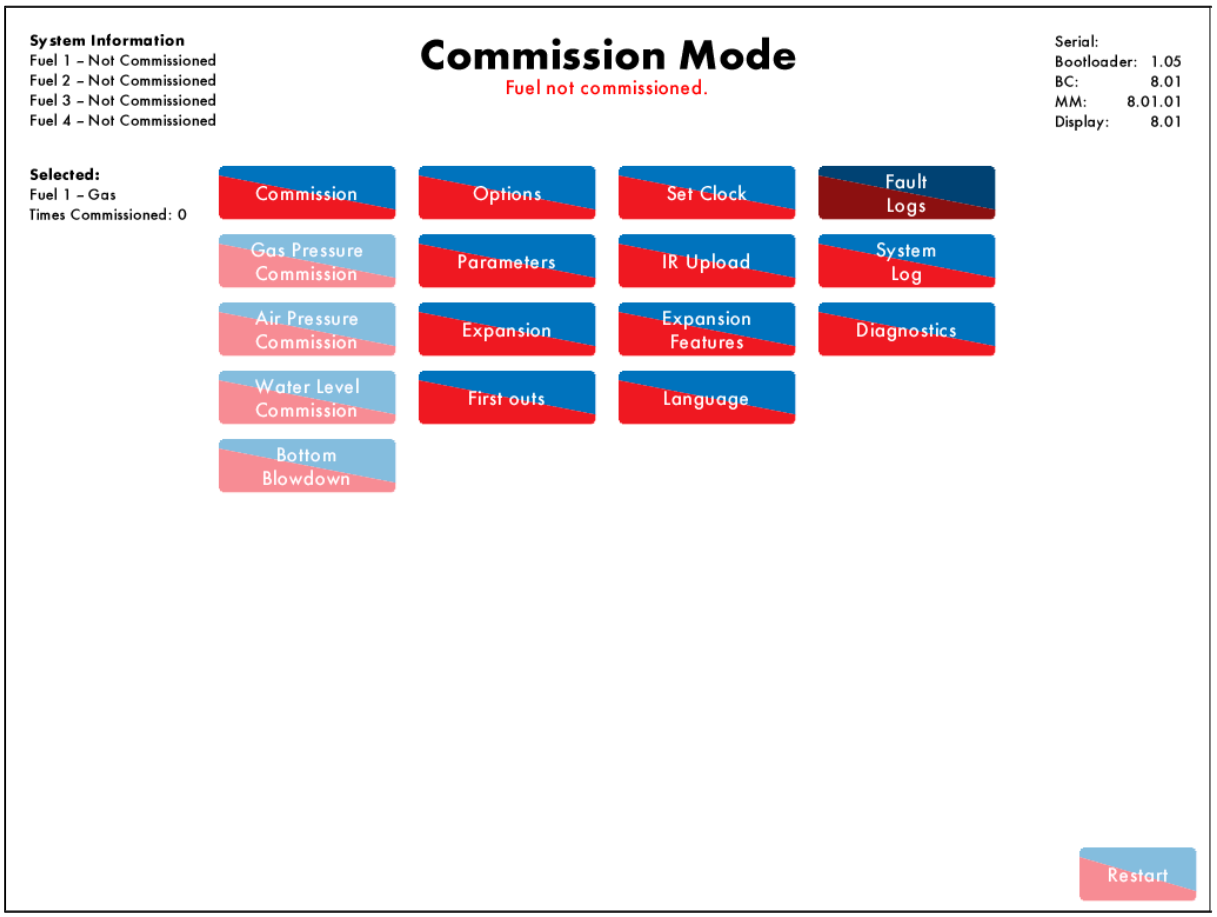


Figure 2.1.iii Commission Mode
图2.1.iii 调试模式

The Commission Mode screen gives information on the following:
调试模式屏幕给出以下信息：

- Current selected fuel 当前选择的燃料
- Which fuels have been commissioned 已经调试的燃料
- Number of times the unit has been commissioned 调试设备的次数
- Seral number 序列号
- Bootloader version 引导装载程序版本
- BC, MM and Display software BC、控制模块和显示软件

In Commission Mode, the engineer can: 在调试模式中，工程师可以：

- Commission the burner for selected fuel 调试已选择燃料的燃烧器
- Commission gas and air pressure sensors 调试燃气和空气压力传感器
- Commission water level 调试水位
- Commission the bottom blowdown module 调试底部排污模块
- Adjust options, parameters and expansion options 调整选项、参数和扩展选项
- Configure first out settings and labels 设置先出功能和标签
- Set the time and date 设置时间和日期
- Upload/download commissioning data 上传/下载调试数据
- Unlock expansion features 解锁扩展功能
- Set the language 设置语言
- View fault logs, system log and diagnostics 查看故障日志、系统日志和诊断日志

Note: The Times Commissioned is for the total system and will increment with every fuel commission, single point change and commission upload.
注：调试次数用于整个系统并随着每次燃料调试、单点变化和调试上传而增加。

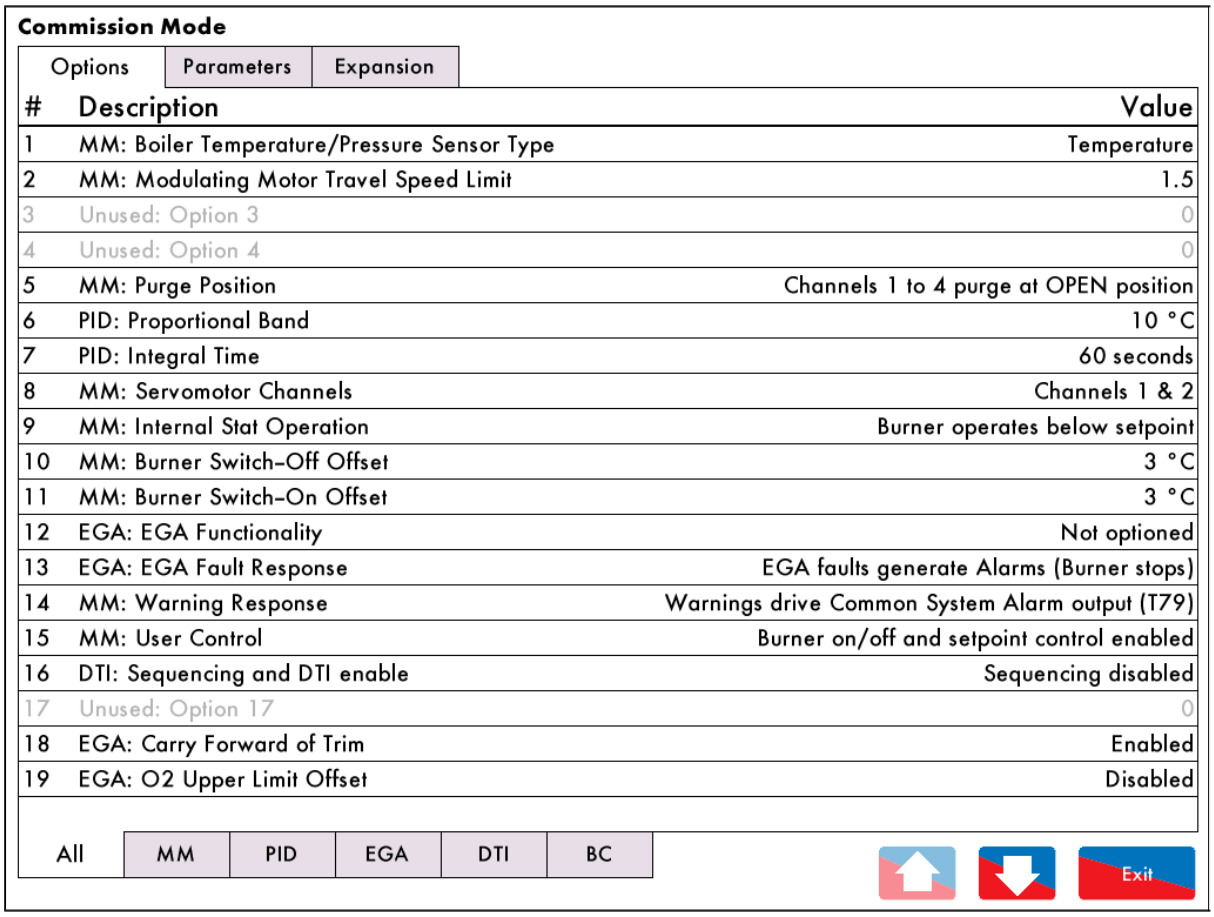


Figure 2.1.iv Options

图2.1.iV 选项

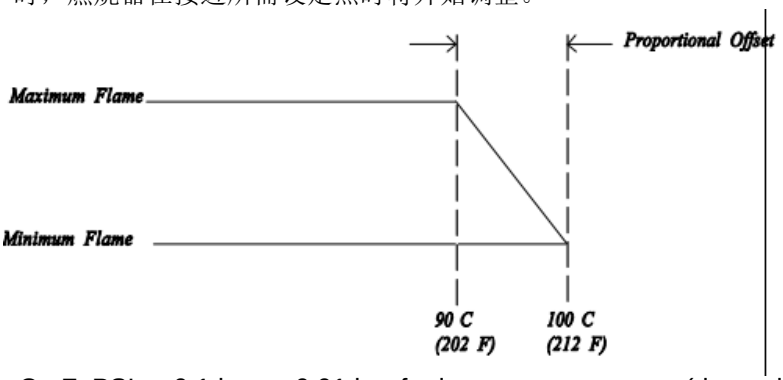
Press Options in the Commission Mode screen to access the Options. Any number of options/ parameters can be changed at one time. By pressing MM, PID, EGA, DTI or BC at the bottom of the screen, the options/ parameters can be grouped together by feature.

在调试模式屏幕中按下 Options 按钮可以访问各种选项，操作员每次可以调整任意数量的选项和参数。按下屏幕底部的控制模块、PID、尾气分析仪、数据传输接口或 BC 按钮可以按功能将选项和参数归类。

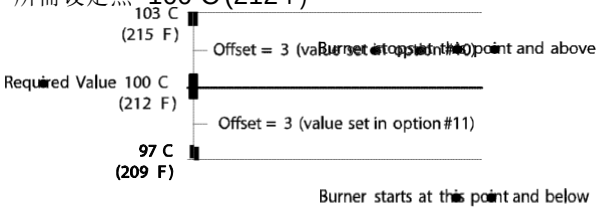
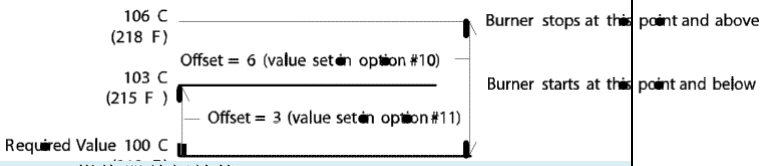
When the changes have been made to suit the application's needs, press Exit to go back to the Commission Mode screen.
进行更改适应应用程序需求是，按下推出按钮可以返回调试模式屏幕。

Options/ parameters 110 – 160 are the burner control settings and are safety critical; these must be entered the same for both the option and parameter value. If these BC options and parameters do not match, there will be an option/parameter conflict.
选项/参数 110-160 用于燃烧器控制设置，对安全性极为重要。选项和参数值必须输入相同的值，如果 BC 选项和参数不匹配，则将存在选项/参数冲突。

To set all the options, parameters and expansion options to the default values and erase the commissioning data, set option/ parameter 160 to 5. The MM will then automatically restart.
设置选项、参数和扩展选项至默认值时应删除调试数据并将选项/参数 160 设为 5。此时控制模块将自动重启。

Option 选项	Default 默认值	Range 范围	Description 说明
1	0		Boiler Temperature/Pressure Sensor Type 锅炉温度/压力传感器类型
		0	Temperature 温度 MM10006 0 – 400°C (0 – 752°F)
		1	Low pressure 低压 MM10010 0.2 – 3.8 Bar (15 – 55 PSI)
		2	Medium pressure 中压 MM10008 2 – 23 Bar (30 – 330 PSI)
		3	High pressure 高压 MM10009 2 – 38 Bar (30 – 550 PSI) Extra
		4	high pressure 高压 MM10017 0 – 100 Bar (0 – 1450 PSI)
		5	External temperature (voltage input, range set by parameters 52 to 56)
		6	External pressure (voltage input, range set by parameters 52 to 56) 外部温度（电压输入和范围在参数 52 至 56 中设置） 外部压力（电压输入和范围在参数 52 至 56 中设置） *Note: External load detector wiring low voltage to terminal 37 and high voltage to terminal 38.* *注：外部负载检测器将低压连接与终端 37，高压连接于终端 38。*
2	15		Modulating Motor Travel Speed Limit 调整电机速度限值
			If the speed of the motor is too fast, then decrease the value, and vice versa. At other times other than modulation, the motors move at full speed or at the value set in option 75. Movement is limited by the slowest channel i.e the slowest moving motor. 如果电机速度过快，则减少数值，反之亦然。在调整以外的其他时间内，电机全速运行或在选项 75 中设置的数值下运行，运行受最慢通道（即最慢移动电机）的限制。
3	-	10 – 100	1.0 – 10.0
4	-		Unused 未使用
			Unused 未使用
5	1		Purge Position 吹扫位置
			This purge position applies to channels 1-4 as selected in options 67-70, however VSD channels will always purge at open position as default. This setting applies for post-purge if set, see option/ parameter 118 and 135. 吹扫位置适用于通道 1-4，可以在选项 67070 中设置。但 VSD 通道总是在默认的打开位置吹扫。该设置适用于后吹扫，见选项/参数 118 和 135.
		0	Channels 1 to 4 purge at HIGH position.
		1	Channels 1 to 4 purge at OPEN position. 通道 1 至 4 在高位吹扫 通道 1 至 4 在打开位置吹扫
6	10		Proportional Band 比例范围
			The proportional band is on offset below the required setpoint; when the actual temperature/ pressure reaches this band, the burner will begin to modulate as it approaches the required setpoint. 比例范围是低于所需设定点的一种补偿，当实际温度/压力达到该范围时，燃烧器在接近所需设定点时将开始调整。 
		5 – 2000	°C, °F, PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40)
7	60		Integral Time 整体时间

			Every ‘n’ seconds, 10% of the present offset from the required setpoint is added or subtracted when below or above the setpoint, respectively, to the present proportional value. The value of ‘n’ is the number of seconds set in this option; if set to 0, there will be no integral control. 每个 n 秒，当低于或高于设定点时，所需设定点将增加或减少当前补偿值的 10%至当前比例值。该值时该选项中设置的秒数，如果设为 0，则没有整体控制。
		0	Disabled 禁用
		1 – 250	Seconds 秒

Option 选项	Default 默认值	Range 范围	Description 说明
8	0		Servomotor Channels 伺服电机通道
			Channel 1 is always enabled for fuel; this option sets the channels in use. 通道 1 始终用于燃料启用，该选项将设置使用的通道
		0	Channels 1 & 2 通道 1 和 2
		1	Channels 1, 2 & 3 通道 1、2 和 3
		2	Channels 1, 2, 3 & 4 通道 1、2、3 和 4
			Note: If option 8 is changed after commissioning, then the MM will need to be re-commissioned, unless this option is returned to its previous setting. *注：如果选项 8 在调试后更改，则控制模块将需要重新调试，除非该选项返回其原先的设定值。*
9	1		Internal Stat Operation 内部状态运行
			The internal stat turns the burner on and off according to the actual value relative to the required setpoint. For setting 0, the internal stat is kept closed all the time, and a working stat must be fitted to the boiler. For setting 1, the internal stat is opened at an offset above the required setpoint, and closed at an offset below the required setpoint. For setting 2, the internal stat is opened at an offset above the required setpoint, and closed an at offset above the required setpoint. The offset values are set in options 10 and 11. Internal stat always closed 内部状态将根据与所需设定点对应的实际值启动和关闭燃烧器。当设定值为 0 时，内部状态将始终保持关闭状态，工作状态则必须与锅炉对应。当设定值为 1 时，内部状态在补偿值大于所需设定点时打开，在补偿值低于所需设定点时关闭。当设定点为 2 时，内部状态在补偿值大于所需设定点时打开，在补偿值低于所需设定点时关闭。补偿值在选项 10 和 11 中设置，内部状态始终为关闭状态。
		0	Burner operates below setpoint 燃烧器在低于设定点时运行
		1	Burner operates above setpoint 燃烧器在高于设定点时运行
		2	E.g. Option 9 = 1, required setpoint = 100°C (212°F) 例如：选项 9 = 1，所需设定点=100°C (212°F)  E.g. option 9 = 2, required setpoint = 100°C (212°F) 例如：选项 9 =2，所需设定点=100°C (212°F) 
10	3		Burner Switch-Off Offset 燃烧器关闭补偿
		2 – 1000	°C, °F, PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) *Note: This option is only relevant if option 9 is set to 1 or 2.* 低压传感器为 °C, °F, PSI 或 0.1 bar 或 0.01 bar（取决于选项 1 中设置的负载检测器和参数 40 中设置的公制/英制单位）。 注：选项 9 设为 1 或 2 时与本选项相关。
11	3		Burner Switch-On Offset 燃烧器启动补偿
		2 – 1000	°C, °F, PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) *Note: This option is only relevant if option 9 is set to 1 or 2.* 低压传感器为 °C, °F, PSI 或 0.1 bar 或 0.01 bar（取决于选项 1 中设置的负载检测器和参数 40 中设置的公制/英制单位）。 注：选项 9 设为 1 或 2 时与本选项相关。
12	0		EGA Functionality 尾气分析仪功能

			For settings 2 or 3, the E.G.A will trim on the channel 2 air damper, once trim data has been added. If option 12 is set to 0 or 1, then trim can be added at a later date by changing this to 2 or 3 in online changes, going through single point change, and added trim data for each fuel-air position. 设定值为 2 或 3 时，尾气分析仪将在通道 2 空气阻尼器上微调并增加微调数据。如果选项 12 设为 0 或 1，则可以通过在线更改将该值变为 2 或 3 随后增加微调值，增加的微调值用于每个燃料-空气位置。
		0	Not optioned 未选择
		1	Monitoring only 仅监控
		2	Applies trim 应用微调
		3	Applies trim, combustion limits tested 应用微调和测试的燃烧限值

Option 选项	Default 默认值	Range 范围	Description 说明
13	0		EGA Fault Response 尾气分析仪故障响应
		0	EGA faults generate alarms (burner stops) 尾气分析仪故障导致报警（燃烧器停止）
		1	EGA faults generate warnings (burners runs) 尾气分析仪故障导致警告（燃烧器运行） *Note: EGA alarms will drive the common system alarm output (terminal 79), see option 14 for EGA warnings.* *注：尾气分析仪报警将驱动常见系统报警输出（终端 79），关于尾气分析仪报警见选项 14.*
14	1		Warning Response 警告响应
		0	Warnings do not drive common system alarm output (terminal 79)
		1	警告将驱动常见系统报警输出（终端 79） Warnings drive common system alarm output (terminal 79) 警告将驱动常见系统报警输出（终端 79）
15	3		User Control 用户控制
			This option sets whether the use can turn the burner on and off, or change the required setpoint via the flame screen on the MM 本选项用于设置使用时是否能启动和关闭燃烧器或通过控制模块上的火焰屏幕更改所需设定点。
		0	Burner on/off and setpoint control disabled 燃烧器启动/停止和设定点控制禁用
		1	Burner on/off disabled and setpoint control enabled 燃烧器启动/停止和设定点控制启用
		2	Burner on/off enabled and setpoint control disabled 燃烧器启动/停止和设定点控制禁用
		3	Burner on/off and setpoint control enabled 燃烧器启动/停止和设定点控制启用
16	0		Sequencing and DTI Enable 排序和 DTI 启用
			A lead boiler can be selected by pressing Lead Boiler in the IBS screen or via the DTI if optioned. Only 1 MM may be selected as lead boiler at a time, or the sequencing will not operate. The Lead Boiler button on the MM and the Lead Boiler Select on terminal 88 (see option 55) both override the DTI Lead Boiler Select. 主锅炉可以通过按下 IBS 屏幕上的主锅炉按钮或通过选择的数据传输接口选择。一次只能选择一个控制模块作为主锅炉，否则排序将无法进行。控制模块上的主锅炉按钮和终端 88 上（见选项 55）的主锅炉选项将覆盖数据传输接口主锅炉选项。
17	-	0	Sequencing disabled 排序禁用
		1	Sequencing enabled 排序启用
		2	DTI enabled 数据 传输接口启用
		3	Sequencing and DTI 排序和数据传输接口 Unused 未使用
18	1		Carry Forward of Trim 执行微调

			When the system modulates, the correction that may already exist on the air damper position can be carried forward (only relevant if an EGA is operational on the system). Trim will be reset if the rate of change of the fuel valve angle is greater than that set in parameter 14. 进行系统调整时，可以对空气阻尼器位置进行纠正（如果在系统中选择尾气分析仪时有关联）。如果燃料阀角度大于参数 14 中的设定值，则需要重新设置微调。
		0	Disabled 禁用
		1	Enabled 启用
19	0		O_2 Upper Limit Offset 氧气上限值补偿
			If the current O_2 value is above this offset limit from the commissioned value, an alarm/ warning (see option13) will occur, for option 12 set to 3. 如果当前的氧气值大于调试值的补偿限值，则会出现报警/警告（见选项 13），选项 12 设为 3。
		0 1 – 100	Disabled 禁用 0.1% - 10.0% O2 0.1% - 10.0%氧气
20	0		CO_2 Upper Limit Offset 二氧化碳上限值补偿
			If the current CO_2 value is above this offset limit from the commissioned value, an alarm/ warning (see option 13) will occur, for option 12 set to 3 如果当前的二氧化碳值大于调试值的补偿限值，则会出现报警/警告（见选项 13），选项 12 设为 3。
		0 1 – 100	Disabled 禁用 0.1% - 10.0% CO_2 0.1% - 10.0%二氧化碳
21	0		CO Upper Limit Offset 一氧化碳上限值补偿
			If the current CO value is above this offset limit from the commissioned value, an alarm/ warning (see option 13) will occur, for option 12 set to 3 如果当前的一氧化碳值大于调试值的补偿限值，则会出现报警/警告（见选项 13），选项 12 设为 3。
		0 1 – 200	Disabled 禁用 1 – 200 ppm CO 1 – 200 ppm 一氧化碳

Option 选项	Default 默认值	Range 范围	Description 说明
22	0		O_2 Lower Limit Offset 氧气下限值补偿
			If the current O_2 value is below this offset limit from the commissioned value, an alarm/ warning (see option13) will occur, for option 12 set to 3. 如果当前的氧气值小于调试值的补偿限值，则会出现报警/警告（见选项 13），选项 12 设为 3。
		0 1 – 100	Disabled 禁用 0.1% - 10.0% O_2 0.1% - 10.0%氧气
23	0		CO_2 Lower Limit Offset 二氧化碳下限值补偿
			If the current CO_2 value is below this offset limit from the commissioned value, an alarm/ warning (see option 13) will occur, for option 12 set to 3. 如果当前的二氧化碳值小于调试值的补偿限值，则会出现报警/警告（见选项 13），选项 12 设为 3。
24	-	0 0 – 100	Disabled 禁用 0.1% - 10.0% CO_2 0.1% - 10.0%二氧化碳 Unused 未使用
25	0		O_2 Absolute Limit 氧气绝对限值
			If the current O_2 value is below this absolute limit, an alarm/ warning (see option13) will occur, for option 12 set to 3. 如果当前的氧气值小于调该绝对限值，则会出现报警/警告（见选项 13），选项 12 设为 3。
		0 1 – 200	Disabled 禁用 0.1% - 20.0% O_2 0.1% - 20.0%氧气
26	0		CO_2 Absolute Limit 二氧化碳绝对限值
			If the current CO_2 value is above this absolute limit, an alarm/ warning (see option13) will occur, for option 12 set to 3. 如果当前的二氧化碳值大于该绝对限值，则会出现报警/警告（见选项 13），选项 12 设为 3。
		0 1 – 200	Disabled 禁用 0.1% - 20.0% CO_2 0.1% - 20.0%二氧化碳
27	0		CO Absolute Limit 一氧化碳绝对限值
			If the current CO value is above this absolute limit, an alarm/ warning (see option13) will occur, for option 12 set to 3. 如果当前的一氧化碳值大于该绝对限值，则会出现报警/警告（见选项 13），选项 12 设为 3。
		0 1 – 200	Disabled 禁用 1 – 200 ppm CO 1 – 200 ppm 一氧化碳
28	20		Trim Threshold 微调阈值
			The trim threshold is an offset from the required setpoint; if the actual value is below this offset, then the EGA will not trim. This option should be set to 0 if trim is to be effective at all times during firing, and/or if external modulation is optioned. No single point changes can be made if the actual value is below this trim threshold. 本微调阈值是所需设定点的补偿值，如果实际值低于该补偿值，则尾气分析仪将不会微调。当微调在燃烧器燃烧时有效且选择了外部调节模块，则本选项应设为 0。如果实际值低于该微调阈值，则不会更改单个点。
		0 – 50	°C, °F, PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) 低压传感器为 °C, °F, PSI 或 0.1 bar 或 0.01 bar（取决于选项 1 中设置的负载检测器和参数 40 中设置的公制/英制单位）。

29	0		Golden Start 黄金启动
			Golden start allows an optimum ignition position to be set in the fuel-air curve, which is not necessarily low flame or part of the standard modulating index. Parameter 15 sets how long golden start is maintained after ignition. 黄金启动允许在燃料-空气曲线中设置最优点火位置，且未必是低火焰或标准调节系数的一部分。参数 15 用于设置黄金启动在点火后的保持时间。
		0 1	Disabled 禁用 Enabled 启用
30	50		Minimum Remote Setpoint (DTI/ Modbus) 最小远程设定点（数据传输接口/Modbus）
			If a required value command is received from the DTI or Modbus that is below this minimum remote setpoint value, then it will be ignored by the MM The MM will continue to fire to meet the previous required setpoint. 如果从数据传输接口或 Modbus 接收所需值命令且该值小于最小远程设定点值，则该值将会被控制模块忽略，控制模块将继续燃烧以满足先前的所需设定点。
		5 – 9990	°C, °F, PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) 低压传感器为 °C, °F, PSI 或 0.1 bar 或 0.01 bar（取决于选项 1 中设置的负载检测器和参数 40 中设置的公制/英制单位）。

Option 选项	Default 默认值	Range 范围	Description 说明
31	100		Maximum Remote Setpoint (DTI/ Modbus) 最大远程设定点（数据传输接
		5 – 9990	If a required value command is received from the DTI or Modbus that is above this maximum remote setpoint value, then it will be ignored by the MM The MM will continue to fire to meet the previous required setpoint. 如果从数据传输接口或 Modbus 接收所需值命令且该值大于最大远程设定点值，则该值将会被控制模块忽略，控制模块将继续燃烧以满足先前的所需设定点。 °C, °F, PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) 低压传感器为 °C, °F, PSI 或 0.1 bar 或 0.01 bar（取决于选项 1 中设置的负载检测器和参数 40 中设置的公制/英制单位）。
32	20		Trim Delay 微调延迟
		0 – 250	After ignition, the EGA does not sample for the time delay set in this option (if EGA is set to 2 or 3). This allows for the combustion to stabilise before sampling commences. The delay timer starts at the ignition point. 点火后，尾气分析仪将不会选项（如果尾气分析仪设置为 2 或 3）设定的时间延迟范围内采样，这允许在采样开始前使燃烧稳定。延迟计时器将在点火点启动。 Seconds 秒
33	1		MM Identification 控制模块标识
34	·	1 – 10	Each MM within a sequencing/ DTI/ Modbus/ twin burner loop must be set with an individual ID number. For communications between the MMs, there cannot be more than 1 MM with the same ID number. 每个带有排序/数据传输接口/双燃烧器循环的控制模块都必须设置一个单独的标识号，至于控制模块间的通信不得超过一个带有相同标识号的控制模块。 ID number 标识号 Unused 未使用
35	10		Sequence Scan Time 顺序扫描时间
		1 – 100	This is the time period between sequencing requests from the lead and the lag M.Ms. On the sequence scan time, the lead MM will demand lag burners to be brought online or offline, depending on load requirements. See parameters 86 and 87 for change down and up thresholds. Accurate fuel flow metering must be entered for sequencing to operate. The MMs must be connected with data cable (Beldon 9501), screened at one end. 该时间是来自主控制模块和延迟控制模块排序请求见的一个时间段，在顺序扫描时间内，主控制模块将根据负载要求请求延迟燃烧器在线或脱机。关于向下或向上更改阈值请见参数 86 和 87。必须输入准确的燃料流量计量值才能使排序进行。控制模块必须与数据线连接（百通 9501）并在端部屏蔽。 Minutes 分钟
36	0		Sensor Selection (Mk7 EGA only) 传感器的选择（仅适用 Mk7 尾气分析
		0 1 2 3	This option selects if the Mk7 EGA is fitted with additional cells. 如果 Mk7 尾气分析仪装有额外电池，则选择本选项。 No optional sensor 未选择传感器 NO_2 optioned 已选择二氧化氮 SO_2 optioned 已选择二氧化硫 NO_2 and SO_2 optioned 已选择二氧化氮和二氧化硫
37	0		Derivative Time 微分时间

		0 1 – 200	The time taken to add/ remove an additional 10% to the firing rate based on the actual value and the required value. 根据实际值和所需值添加/删除额外 10%时间用于燃烧率 Disabled 禁用 Seconds 秒
38	2		Derivative Deadband 衍生无控制区
		0 1 - 15	This deadband is the margin above and below the required setpoint in which no derivative control occurs. 无控制区是大于和低于所需设定点的范围，其中没有衍生控制。 Disabled 禁用 °C, °F, PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) 低压传感器为 °C, °F, PSI 或 0.1 bar 或 0.01 bar（取决于选项 1 中设置的负载检测器和参数 40 中设置的公制/英制单位）。
39	-		Unused 未使用

Option 选项	Default 默认值	Range 范围	Description 说明
40	0		Warming Facility for Low Pressure Steam 低压蒸汽警告设备
		0 1	For sequencing applications where non-return valves are not installed, it is not possible to use a setpoint to keep the boielrs in a standby condition. A thermostat (aquastat) can be installed into the boiler shell. Set option/parameter 156 to 0 to enabled terminal 93) for warming stat. When terminal 93 sees a 230/120V input, warming is stopped. The boiler will remain in a warming state based on the settings in options 53 and 54. 在排序应用程序中没有安装止回阀，因此不可能使用设定点将锅炉保持在待机状态。锅炉外壳上可以安装恒温器(水温自动调节仪)。设置选项/参数 156 至 0 可以启用终端 93，用于警告状态。当终端 93 有 230/120V 输入时，警告将停止。锅炉将根据选项 53 和 54 的设置保持保温状态。 Steam sequencing with non-return valves 带止回阀的蒸汽排序 Steam sequencing without non-return valves 无止回阀的蒸汽排序
41	0		Warming Mode 警告模式
		0 1	For setting 0, the first lag is kept in a standby state with the second lag in warming, and the remaining lag boilers off. For setting 1, the first lag boiler is in standby, and the remaining lag boilers are in warming. 设定值为 0 时，第一延迟保持待机状态，第二延迟处于警告状态，其他延迟锅炉则关闭。当设定值为 1 时，第一延迟锅炉处于待机状态，其他延迟锅炉处于警告状态。 One MM in warming state 警告状态有一个控制模块 All unused MMs in warming state 警告状态所哟未使用的控制模块
42	20		Standby Setpoint 待机设定点
		5 – 9990	For sequencing applications where non-return valves are installed, the first lag boiler uses a standby setpoint to keep the boiler in a standby condition. The standby setpoint is set as an absolute value in this option. When the standby setpoint is in effect, the burner is held at low flame hold. 在排序应用程序中没有安装止回阀，第一延迟锅炉使用了待机设定点将锅炉保持在待机状态。待机设定点在本选项中设置为绝对值。当待机设定点有效时，燃烧器将保持低火焰。 °C, °F, PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) 低压传感器为 °C, °F, PSI 或 0.1 bar 或 0.01 bar（取决于选项 1 中设置的负载检测器和参数 40 中设置的公制/英制单位）。
43	0		Multi-Burner Function 多燃烧器功能

			The multi-burner function can be used for up to 10 burners, allowing the firing rates to be synchronised for all the burners in the multi-burner loop. For setting 1, if an error or lockout occurs on a burner, all of the other burners will shut down; setting 1 is suitable for firetube boilers. For setting 2, if an error occurs on a burner, all if the other burners will shut down, however if a lockout occurs, the other burners will continue to fire; setting 2 is suitable for watertube boilers. Fuel flow metering must be commissioned accurately for the multi-burner function to operate. Please refer to the MM Application Possibilities manual for commissioning of the multi-burner function. 多燃烧器功能可以用于最多 10 个燃烧器，允许燃烧率与所有处于多锅炉循环的燃烧器保持同步。当设定值为 1 时，如果一个燃烧器发生一个错误或锁定，则其他所有锅炉将关闭，设定值为 1 适用于火焰管锅炉。当设定值为 2 时，如果一个锅炉发生一个错误，则其他所有燃烧器将关闭，如果出现锁定，则其他燃烧器将继续燃烧。设定值 2 适用于水管锅炉。要使多燃烧器功能发挥作用则必须准确地设置燃料流量，关于多燃烧器功能的调试请参考控制模块应用手册。
		0	Disabled 禁用
		1	Fully linked 完全连接
		2	Independent fault 独立故障
44	-		Multi-Burner Id 多燃烧器标识
		1 – 10	When using the multi-burner function, the multi-burner IDs must be set on the MMs This option should be set to 1 for the master, and 2 onwards for the slave MMs. 使用多燃烧器功能时，必须在控制模块中设置多燃烧器标识，主控制模块应将该选项设为 1，从控制模块应设为 2。 Multi-burner Id 多燃烧器标识。
45	0		External Modulation 外部调节
			When enabled, the internal PID control is disabled and the firing rate is set by an external controller applied to the appropriate input terminals 7, 8, 9. This input control signal can be 0-10V (2-10V) or 4-20mA (0-20mA) set through parameter 69, and represent zero/ low to high fire by setting parameter 68. A manual reset high limit stat must be fitted. For setting 1, an external working stat is required and option 9 should be set to 0. For setting 2, option 9 should be set to 1 or 2. 启用外部调节时，内部 PID 控制器禁用，燃烧率通过用于终端 7、8、9 的外部控制器设置。输入控制信号可以是通过参数 69 设置的 0-10V (2-10V) 或 4-20mA (0-20mA)。代表参数 68 设置的零火焰/低火焰至高火焰。手动重置高限值状态必须匹配。当设定值为 1 时，需要外部工作状态，选项 9 应设为 0，当设定值为 2 时，选项 9 应设为 1 或 2。
		0	Disabled 禁用。
		1	Enabled, load sensor not shown 启用，负载传感器未显示。
		2	Enabled, load sensor shown 启用，负载传感器显示。

Option 选项	Default 默认值	Range 范围	Description 说明
46	0		Cold Start Inhibit Time 冷启动抑制时间
		0 1 – 120	If the MM progresses from low fire cold start to firing and the burner shuts down within this cold start inhibit time, a cold start will not occur when the burner starts up again. This allows the burner to come straight on in normal firing in situations where the demand has increased drastically and the actual value drops fast. 如果控制模块从冷火启动至燃烧以及燃烧器在冷启动抑制时间内关闭，当燃烧器再次启动时不会出现冷启动。这允许燃烧器直接进入正常燃烧状态，从而使需求大幅增加，实际值大幅下降。 Disabled 禁用。 Minutes 秒。
47	0		Cold Start Routine 冷启动流程
		0 1 – 2000	On burner start-up, if the actual value is at 30% or below of the required setpoint, then the burner will be held at low fire for the number of minutes set in this option. It will then go to mid-fire. If the actual value is below 60% of the required setpoint, then the burner will be held at mid-fire for the set minutes. Once this cold start time has elapsed, or the value goes above 60% of the required setpoint, the burner will go to high fire as per the internal PID. It is not recommended to use cold start routine with external modulation or sequencing. 燃烧器启动时，如果实际值为 30%或低于所需设定点，则燃烧器将保持低燃烧状态，时间为在本选项设置的分钟数。然后，燃烧器将进入中火状态。如果实际值低于所需设定点 60%，则燃烧器将在设定的分钟数内保持中火状态。当冷启动时间下降时或数字大于所需设定点 60%，燃烧器将进入高火状态，建议使用带有外部调节或排序的冷启动流程。 Disabled 禁用。 Minutes 分钟。
48	0		Flue Gas Recirculation – Timer 烟气再循环-定时器
		0 1 – 600	This is the time that the MM channels (servomotors/ VSDs) are held at the FGR start positions, after which modulation takes place. This timer starts at the end main flame proving. FGR allows approximately 15% of the boiler flue gases via an auxiliary channel (e.g. 3) to be fed back to the burner and mixed with combustion air, to reduce NOx. 在该时间内，控制模块通道（伺服电机/VSD）将保持在烟气再循环启动位置，随后进行调整。该计时器在主火焰检验后启动。烟气再循环允许 15%的锅炉燃气通过辅助通道（如通道 3）进入燃烧器并与燃烧空气混合以减少氮氧化物。 Disabled 禁用。 Seconds 秒。
49	0		Flue Gas Recirculation – Offset 烟气再循环-补偿

		0 1 – 50	This is an offset from the required setpoint. The MM channels (serovmotors/ VSDs) are held at the FGR start positions until the actual value reaches this offset value below the required setpoint. 这是所需设定点的一种补偿值，控制模块通道（伺服电机/VSD）保持在烟气再循环启动位置直至实际值达到低于所需设定点的补偿值。 Disabled 禁用。 °C, °F, PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) 低压传感器为 °C, °F, PSI 或 0.1 bar 或 0.01 bar（取决于选项 1 中设置的负载检测器和参数 40 中设置的公制/英制单位）。
50	0		Flue Gas Recirculation – Temperature Threshold 烟气再循环-温度阈值
		0 1	The MM channels (servomotors/ VSDs) are held at the FGR start positions until the flue gas temperature has reached 120°C (248°F). This option can only be used if an EGA is optioned and operational. 控制模块通道（伺服电机/VSD）保持在烟气再循环启动位置直至烟气温度达到 120°C (248°F)，当选择并运行尾气分析仪才可使用本选项。 FGR temperature threshold disabled 烟气再循环温度阈值禁用。 FGR temperature threshold enabled 烟气再循环温度阈值启用。
51	-		Multi-Burner Highest Slave ID 多燃烧器最大从属标识
52	-	2 – 10	This should be set to the highest slave ID set in option 44 for the MMs in the multi-burner loop. 在多燃烧器循环的控制模块中，最大从属标识应在选项 44 中设置。 Multi-burner slave ID 多燃烧器从属标识。 Unused 未使用。
53	0		Steam Sequencing Burner Off Time 蒸汽排序燃烧器停止时间
		0 1 – 200	When the MM is in warming mode, it will warm to the standby setpoint according to the on and off times set in options 53 and 54. 当控制模块处于警告模式时，将根据选项 53 和 54 设置的启动和停止时间预热至待机设定点。 Disabled 禁用 Minutes 分钟

Option 选项	Default 默认值	Range 范围	Description 说明
54	5		Steam Sequencing Burner On Time 蒸汽排序燃烧器启动时间
		1 – 30	When the MM is in warming mode, it will warm to the standby setpoint according to the on and off times set in options 53 and 54. 当控制模块处于警告模式时，将根据选项 53 和 54 设置的启动和停止时间预热至待机设定点。 Minutes 分钟
55	0		Terminal T88 Function 终端 T88 的功能
		0 1	This options selects the function of terminal 88, see options16 and 45. For setting 0, a line voltage input on terminal 88 is used to select the lead boiler in sequencing, and overrides the DTI lead boiler select. For setting 1, a line voltage input on terminal 88 is used to select the external modulation signal and 0V for internal PID. 本选项用于选择终端 88 的功能，见选项 16 和 45。当设定值为 0 时，可以使用终端 88 上的线压输入选择排序的主锅炉并覆盖数据传输接口主锅炉。当设定值为 1 时，可以使用终端 88 上的线压输入选择外部调节信号和内部 PID 的 0V 电源。 T88 selects lead boiler T88 选择主锅炉。 T88 selects external modulation T88 选择外部调节。
56	0		Alarm Output Operation (Terminal T79) 报警输出操作（终端 T79）
		0 1	This is a switched neutral output to select how the alarm function operates. 这是一种切换中性输出，用于选择报警功能如何运行。 Relay normally off, on during alarm 报警时继电器正常停止和启动。 Relay normally on, off during alarm 报警时继电器正常启动和停止。
57	0		Fuel Flow Metering 燃料流量计量
		0 1 2	Fuel flow metering determines the firing rate. If no fuel flow meter is available, a 'dummy curve' should be entered using the burner turndown ratio from the burner rating to determine the low fire point, and the burner rating for the high fire point. If enabled, fuel flow metering is initiated once the burner has been commissioned and is firing. The MM will drive up to the high fire point first, and then go down the curve. For setting 2, see options 59 and 60. If using setting 2 for fuel flow feedback, then 4-20mA signal is required on terminals EX- and EX+ on the expansion board (this cannot be used with external level sensor, see expansion option 4). 燃料流量计量确定了燃烧率。如果没有燃料流量计量，则需要根据燃烧器等级用燃烧器排污率输入一个"仿真曲线"，以确定低火焰点和燃烧器高火焰点。如果启用燃料流量计量，则燃烧器经过调试和燃烧后将启动。控制模块将首先驱动至高火焰点，然后沿着曲线运行。当设定值为 2 时，见选项 59 和 60。燃料流量反馈如果使用设定值 2，则需要在扩展板终端 EX-和 EX+（扩展板不得与外部水位传感器一起使用，见扩展选项 4）上输入 4-20mA 电流。 Disabled 禁用 Enabled 启用 Enabled with 4-20mA feedback 与 4-20mA 反馈一起启用。
58	-		Unused 未使用。
59	100		Fuel Flow at Maximum Feedback 最大反馈时的燃料流量
		1 – 10000	This will set the fuel flow value at 20mA feedback, see option 57. 在 20mA 反馈时设置燃料流量值，见选项 57。 0.01MW – 100.0 MW
60	0		Fuel Flow Feedback Fault Tolerance 燃料流量反馈故障公差

		0 1 – 500	The fuel flow feedback fault tolerance allows an upper limit to be set on the fuel flow when option 57 is set to 2. If the fuel flow exceeds this limit for 5 seconds, then a warning will appear. 当选项 57 设为 2 时，燃料流量反馈故障公差允许在燃料流量中设置上限值。如果燃料流量超出限值 5 秒，则会出现警告信息。 Disabled 禁用。 0.1% - 50.0% of high-fire fuel flow 高火焰燃料流量的 0.1% - 50.0% 。
61	3725		Fuel 1 Calorific Value 燃料 1 热值
		100 – 65000	To set either metric or imperial units, see parameter 40. If the units are changed, then this option must be changed accordingly. 设置公制或英制单位时请见参数 40。如果单位改变，则本选项必须随之更改。 100 = 1.00MJ/m^3 or 100 Btu/ft^3 100 = 1.00MJ/m^3 或 100 Btu/ft^3
62	2068		Fuel 2 Calorific Value 燃料 2 热值
		100 – 65000	To set either metric or imperial units, see parameter 40. If the units are changed, then this option must be changed accordingly. 设置公制或英制单位时请见参数 40。如果单位改变，则本选项必须随之更改。 100 – 1.00 MJ/kg or 100 BTU/lb 100 – 1.00 MJ/kg 或 100 BTU/lb

Option 选项	Default 默认值	Range 范围	Description 说明
63	2068		Fuel 3 Calorific Value 燃料 3 热值
		100 – 65000	To set either metric or imperial units, see parameter 40. If the units are changed, then this option must be changed accordingly. 设置公制或英制单位时请见参数 40。如果单位改变，则本选项必须随之更改。 100 – 1.00 MJ/kg or 100 BTU/lb 100 – 1.00 MJ/kg 或 100 BTU/lb
64	3725		Fuel 4 Calorific Value 燃料 4 热值
		100 – 65000	To set either metric or imperial units, see parameter 40. If the units are changed, then this option must be changed accordingly. 设置公制或英制单位时请见参数 40。如果单位改变，则本选项必须随之更改。 100 = 1.00MJ/m^3 or 100 Btu/ft^3 100 = 1.00MJ/m^3 或 100 Btu/ft^3
65	-		Unused 未使用。
66	0		Firing Rate Limit 燃烧率限值
		0 1 – 100	This is the maximum firing rate that can be obtained by the system, imposed in auto and hand modes. Firing rate limit is should not be used with DTI load index control or sequencing. 燃烧率限值是从自动后手动模式系统中可以获得的最大燃料率，燃烧率限值不应与数据传输接口负载指数控制或排序一起使用。 Disabled 禁用。 %
67	1		Channel 1 Purge Position 通道 1 吹扫位置
		0 1	Channel 1 to purge position 通道 1 至吹扫位置。 Channel 1 to remain closed for purge 通道 1 至吹扫保持关闭。
68	0		Channel 2 Purge Position 通道 2 吹扫位置
		0 1	Channel 2 to purge position 通道 2 至吹扫位置。 Channel 2 to remain closed for purge 通道 2 至吹扫保持关闭。
69	0		Channel 3 Purge Position 通道 3 吹扫位置
		0 1	Channel 3 to purge position 通道 3 至吹扫位置。 Channel 3 to remain closed for purge 通道 3 至吹扫保持关闭。
70	0		Channel 4 Purge Position 通道 4 吹扫位置
		0 1	Channel 4 to purge position 通道 4 至吹扫位置。 Channel 4 to remain closed for purge 通道 4 至吹扫保持关闭
71	0		Continuous Pilot Shut Off Timer 连续试验关闭计时器

			If continuous pilot is enabled (see option/ parameter 111), then after this timer has elapsed when in continuous pilot firing, the burner will go off. 如果启用持续实验（见选项/参数 111），则在持续实验燃烧中如果实际值高于所需设定点的补偿值，则燃烧器将关闭。
		0	Disabled 禁用
		1 – 1440	Minutes 分钟
72	0		Continuous Pilot Shut Off Threshold 持续实验关闭阈值
			If continuous pilot is enabled (see option/ parameter 111), then if the actual value is higher than this offset above the required setpoint in continuous pilot firing, the burner will go off. 如果启用持续实验（见选项/参数 111），则在持续实验燃烧中如果实际值高于所需设定点的补偿值，则燃烧器将关闭。
		0	Disabled 禁用
		1 – 1000	°C, °F, PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) 低压传感器为 °C, °F, PSI 或 0.1 bar 或 0.01 bar（取决于选项 1 中设置的负载检测器和参数 40 中设置的公制/英制单位）。
73	-		Unused 未使用
74	-		Unused 未使用
75	100		Purge Motor Travel Speed 吹扫电机运行速度
			If the speed of the motor is too fast, then decrease the value. 如果电机速度过快，则需要降低该值。
		10 – 100	0.1 – 10.0

Option 选项	Default 默认值	Range 范围	Description 说明
76	0		Trim Channel 微调通道
			If an EGA is optioned, then trim can be applied to either channel 2 servomotor or channel 5 VSD. For setting 1, options 91 to 98 must be set. 如果选择尾气分析仪，则在通道 2 伺服电机或通道 5VSD 上应用微调。当设定值为 1 时，则必须设置选项 91 至 98。
		0	Trim on Channel 2 通道 2 上微调。
		1	Trim on Channel 5 通道 5 上微调。
77	-		Unused 未使用。
78	-		Unused 未使用。
79	0		Terminal T93 Function 终端 T93 功能
		0	Warming Stat 加热状态。
		1	Night setback 夜晚延迟。
80	0		Outside Temperature Compensation 外部温度补偿
		0	Disabled 启用
		1	Enabled 禁用
81	90		Setpoint at Minimum Outside Temperature 最低外部温度设定点
		50 – 999	This setpoint is limited by the load detector set in option 1. 本设定点受选项 1 中设置的负载检测器限制。 °C, °F, PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) 低压传感器为 °C, °F, PSI 或 0.1 bar 或 0.01 bar（取决于选项 1 中设置的负载检测器和参数 40 中设置的公制/英制单位）。
82	30		Minimum Outside Temperature 最低外部温度
		0 – 145	Value 30 = -10°C or -10°F (see parameter 40) 数值 30 = -10°C 或 -10°F（见参数 40）
83	80		Setpoint at Maximum Outside Temperature 最高外部温度设定点
		50 – 999	This setpoint is limited by the load detector set in option 1. 本设定点受选项 1 中设置的负载检测器限制。 °C, °F, PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) 低压传感器为 °C, °F, PSI 或 0.1 bar 或 0.01 bar（取决于选项 1 中设置的负载检测器和参数 40 中设置的公制/英制单位）。
84	80		Maximum Outside Temperature 最高外部温度
		0 – 145	Value 80 = 40°C or 40°F (see parameter 40) 数值 80 = 40°C 或 40°F (见参数 40)
85	0		Night Setback Offset 夜晚延迟补偿
			This offset value is subtracted from the required setpoint. An input is required on terminal 93, see option 79. 本补偿值来自所需设定点。终端 93 上需要输入，见选项 79。
		0	Disabled 禁用
		1 – 100	°C, °F, PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) 低压传感器为 °C, °F, PSI 或 0.1 bar 或 0.01 bar（取决于选项 1 中设置的负载检测器和参数 40 中设置的公制/英制单位）。
86	0		Channel 1 Servo Control Method 通道 1 伺服电机控制方法

		0	Autoflame servomotor, 0.1 degree control Autoflame 伺服电机，0.1 度控制。
		1	Autoflame servomotor, 0.5 degree control Autoflame 伺服电机，0.5 度控制。
		2	Industrial servomotor, 0.1 degree control 工业伺服电机，0.1 度控制。
		3	Industrial servomotor, 0.5 degree control 工业伺服电机，0.5 度控制。
87	0		Channel 2 Servo Control Method 通道 2 伺服电机控制方法
		0	Autoflame servomotor, 0.1 degree control Autoflame 伺服电机，0.1 度控制。
		1	Autoflame servomotor, 0.5 degree control Autoflame 伺服电机，0.5 度控制。
		2	Industrial servomotor, 0.1 degree control 工业伺服电机，0.1 度控制。
		3	Industrial servomotor, 0.5 degree control 工业伺服电机，0.5 度控制。

Option 选项	Default 默认值	Range 范围	Description 说明
88	0		Channel 3 Servo Control Method 通道 3 伺服电机控制方法
		0	Autoflame servomotor, 0.1 degree control Autoflame 伺服电机，0.1 度控制。
		1	Autoflame servomotor, 0.5 degree control Autoflame 伺服电机，0.5 度控制。
		2	Industrial servomotor, 0.1 degree control 工业伺服电机，0.1 度控制。
		3	Industrial servomotor, 0.5 degree control 工业伺服电机，0.5 度控制。
89	0		Channel 4 Servo Control Method 通道 4 伺服电机控制方法
		0	Autoflame servomotor, 0.1 degree control Autoflame 伺服电机，0.1 度控制。
		1	Autoflame servomotor, 0.5 degree control Autoflame 伺服电机，0.5 度控制。
		2	Industrial servomotor, 0.1 degree control 工业伺服电机，0.1 度控制。
		3	Industrial servomotor, 0.5 degree control 工业伺服电机，0.5 度控制。
90	0		VSD Operation Channel 5 VSD 运行通道 5
		0	Disabled 禁用
		1	Enabled 启用
91	0		Output from MM to VSD Channel 5 控制模块至 VSD 通道 5 的输出
		0	Output range 4 to 20mA 输出范围 4 至 20mA。
		1	Output range 0 to 20mA 输出范围 0 至 20mA。
		2	Output range 0 to 10V 输出范围 0 至 10V。
92	0		Output Units Displayed, VSD Channel 5 显示输出单位，VSD 通道 5
		0	Selected output signal 已选择输出信号。
		1	Hertz
93	25		Output Low Speed from MM to VSD Channel 5 从控制模块至 VSD 通道输出低速
		1 – 200	Hertz
94	50		Output High Speed from MM to VSD Channel 5 从控制模块至 VSD 通道输出高速
		1 – 200	Hertz
95	0		Input Signal to MM from VSD Channel 5 从 VSD 通道 5 向控制模块输入信号
		0	Input range 4 to 20mA 输入范围 4 至 20mA
		1	Input range 0 to 20mA 输入范围 0 至 20mA
		2	Input range 0 to 10V 输入范围 0 至 10V
96	0		Input Units Displayed, VSD Channel 5 显示输入单位，VSD 通道 5
		0	Selected input signal 选择输入信号
		1	Hertz
97	0		Input Low Speed to MM from VSD Channel 5 从 VSD 通道 5 向控制模块输入低速

		0 – 200	Hertz
98	50		Input High Speed to MM from VSD Channel 5 从 VSD 通道 5 向控制模块输入高速
		0 – 200	Hertz
99			VSD Channel 5 Feedback Fault Tolerance VSD 通道 5 反馈故障公差
		5 – 40	The feedback fault tolerance should be set according to the variation in the VSD signal. If a flat curve is to be entered with little movement on the VSD channel, then this option should be set for that small variation. If this tolerance is not set according to the variation, then an error will occur. 反馈故障公差应根据 VSD 信号的变量而进行设置。如果在 VSD 通道上与少量移动一起输入平曲线，则本选项应设为小变量。如果本公差未根据变量设置，则会出现错误消息。 0.5% – 4.0%
100	0		VSD Operation Channel 6 VSD 运行通道 6
		0 1	Disabled 禁用 Enabled 启用

Option 选项	Default 默认值	Range 范围	Description 说明
101	0		Output from MM to VSD Channel 6 控制模块至 VSD 通道 6 的输出
		0	Output range 4 to 20mA 输出范围 4 至 20mA。
		1	Output range 0 to 20mA 输出范围 0 至 20mA。
		2	Output range 0 to 10V 输出范围 0 至 10V。
102	0		Output Units Displayed, VSD Channel 6 显示输出设备，VSD 通道 6
		0	Selected output signal 已选择输出信号。
		1	Hertz
103	25		Output Low Speed from MM to VSD Channel 6 从控制模块向 VSD 通道 6 输出低速
		1 – 200	Hertz
104	50		Output High Speed from MM to VSD Channel 6 从控制模块向 VSD 通道 6 输出高速
		1 – 200	Hertz
105	0		Input Signal to MM from VSD Channel 6 从 VSD 通道 6 向控制模块输入信号
		0	Input range 4 to 20mA 输入范围 4 至 20mA。
		1	Input range 0 to 20mA 输入范围 0 至 20mA。
		2	Input range 0 to10V 输入范围 0 至 10V。
106	0		Input Units Displayed, VSD Channel 6 显示输入设备，VSD 通道 6
		0	Selected input signal 已选择输入信号。
		1	Hertz
107	0		Input Low Speed to MM from VSD Channel 6 从 VSD 通道 6 向控制模块输入低速
		0 – 200	Hertz
108	50		Input High Speed to MM from VSD Channel 6 从 VSD 通道 6 向控制模块输入高速
		0 – 200	Hertz
109	-		VSD Channel 6 Feedback Fault Tolerance VSD 通道 6 反馈故障公差
		5 – 40	The feedback fault tolerance should be set according to the variation in the VSD signal. If a flat curve is to be entered with little movement on the VSD channel, then this option should be set for that small variation. If this tolerance is not set according to the variation, then an error will occur. 反馈故障公差应根据 VSD 信号的变量而进行设置。如果在 VSD 通道上与少量移动一起输入平曲线，则本选项应设为小变量。如果本公差未根据变量设置，则会出现错误消息。 0.5% – 4.0%

For safety reasons, options 110 – 160 also have to be entered in as Parameters. It is the responsibility of the commissioning engineer to ensure that all settings are set in accordance with the appropriate standards, local codes and practices. If options 110 – 160 are not identical with the parameters 110 – 160, then the MM will go straight to Commissioning Mode and an option/ parameter conflict message will appear.

为安全起见，选项 110-160 页必须作为参数输入。调试工程师有责任确保所有设置都根据适用的标准、当地法规和做法进行设置。如果选项 110-160 与参数 110-160 不同，则控制模块将直接进入调试模式并出现选项/参数冲突消息。

Option 选项	Default 默认值	Range 范围	Description 说明
110	1		UV Flame Scanner Type 紫外火焰探测器类型
		1 2	See option/ parameter 120 for the UV threshold and 122 for the flame sensor operation. For setting 2, the self-check UV scanner opens and closes a shutter to check that the UV scanner is not given a false flame signal. 关于紫外线阈值见选项/参数 120，火焰传感器的运行见参数 122。当设定值为 2 时，自检紫外扫描仪将打开或关闭阀门检查紫外扫描仪没有发出故障火焰信号。 Standard scanner 标准扫描仪。 Self-check scanner 自检扫描仪。
111	0		Pilot Type 实验类型
		0 1 2 3 4	For interrupted pilot, when lighting off, the pilot valve will close at the point the main flame proving phase begins. For intermittent pilot, when lighting off, the pilot valve will remain open during firing. For continuous pilot, when the burner goes above its off differential of the required setpoint, the burner will continue to fire with the pilot valves energised for the set time period. See options 71 and 72. 关于中断实验，当灯光熄灭时，实验阀门将关闭，主火焰检验阶段将启动。至于中期实验，当灯光熄灭时，实验阀门将在燃烧时保持打开。至于连续实验，当燃烧器高于所需设定点时，燃烧器将继续和实验阀门一起在设定时间段燃烧，见选项 71 和 72。 Interrupted pilot 中断实验 Intermittent pilot 中期实验 No pilot 无实验 Continuous interrupted pilot 连续中断实验 Continuous intermittent pilot 连续中期实验 *Note: Setting 2 no pilot cannot be used with single valve pilot (option/ parameter 130).* *注：当设定值为 2 时，没有实验可以与单阀实验一起使用（选项/参数 130）。*
112	40		Pre-Purge Time 预吹扫时间
		5 – 240	Purging the burner before burner start-up will air will force any combustion remnants out of the stack. Purge time should be set according to boiler manufacturing guide and local codes and regulations. 燃烧器启动前吹扫燃烧器时空气将迫使燃烧在堆栈外残留。吹扫时间应根据锅炉制造商指南和当地法律法规进行设置。 Seconds 秒
113	3		Pre-Ignition Time 预点火时间
		3 – 5	This is the time period when the ignition transformer is on before the pilot valves opens. 预点火时间是点火变压器在实验阀打开前启动的时间。 Seconds 秒
114	3		First Safety Time 第一安全时间
		3 – 10	This is the time period when the pilot valve is open, before the flame is checked. The time range of this option depends on whether its gas or oil. 第一安全时间是当使用阀门打开检查火焰前的时间。该选项的时间范围取决于是使用燃气还是燃油。 Seconds (for option/ parameter 150 set to 0) 秒（选项/参数 150 设为 0）。
115	3		Pilot Prove Time - Pilot Trial for Ignition (PTFI) 实验检验时间-点火实验

		3 – 5	This is the time period for when the flame is checked after the first safety time, to prove the pilot flame. 点火检验时间是第一安全时间后检查火焰以检验实验火焰的时间。 Seconds 秒
116	3		Gas Second Safety Time – Main Trial for Ignition (MTFI) 燃气第二安全时间-主点火实验（MTFI）
		3 – 10	This is the time period when the main valves are open and the pilot valve is maintained open, before the flame is checked, for firing on gas. See option/ parameters 150 and 151. This does not apply for intermittent pilot, see option/ parameter 111. 燃气第二安全时间是当检查火焰前阀门打开以及实验阀保持打开的时间。见选项/参数 150 和 151。该时间不适用中期实验。见选项/参数 111。 Seconds 秒

Option 选项	Default 默认值	Range 范围	Description 说明
117	5		Main Flame Proving Time 主火焰检验时间
		5 – 20	This is the time period after the second safety phase for interrupted pilot or after the pilot proving phase for intermittent pilot, where the flame is checked, before going to normal firing/modulation. 主火焰检验时间是第二安全阶段用于中断实验或在实验检验阶段后用于中期实验的视觉，此时在进入正常燃烧和调试前要检查火焰。 Seconds 秒
118	0		Post-Purge Time 后吹扫时间
		0 – 100 0 – 100	If set, a post-purge will occur after a normal burner shutdown. This time set should allow for the servomotors to travel from low fire to purge position. The flame is not checked during post-purge. See option/ parameter 135 for NFPA post-purge. 设置该时间后，在燃烧器正常关闭后见进行后吹扫。设置该时间应允许伺服电机从低火焰位置向吹扫位置移动。在后吹扫时间期间不会检查火焰。关于 NFPA 后吹扫见选项/参数 135。 Seconds (for option/ parameter 135 set to 0 or 2) 秒（选项/参数 135 设为 0 或 2）。 Minutes (for option/ parameter 135 set to 1 or 3) 分钟（选项/参数 135 设为 1 或 3）。
119	10		Control Box Recycle Time 控制箱再循环时间
		3 – 120	This is the time delay between the burner shutting down, and going through post-purge if optioned, and the burner starting up again. 控制箱再循环时间是燃烧器关闭间的时间延迟，如选择后吹扫，则燃烧器将再次启动。 Seconds 秒
120	5		UV Threshold 紫外线阈值
		1 – 50	This is the minimum flame signal strength, if the flame strength is lower than a lockout will occur. 这是最小火焰信号强度，火焰强度较低时将进行锁定。 UV counts 紫外线计数
121	5		Delay from Start of Pre-Purge until Air Switch Checked 前吹扫至检查空气开关的延迟
		5 – 10	This time delay where the air switch is not checked is included within the total pre-purge time set in option/ parameter 112. 当不检查空气开完时该时间延迟将纳入在选项/参数 112 中设置的总预吹扫时间内。 Seconds 秒
122	0		Flame Sensor Selection 火焰传感器的选择
		0 1 2 3 4	UV 紫外线 Flame switch 火焰开关 IR 红外线 IR and UV 红外线和紫外线 IR or UV 红外线或紫外线
123	3		Oil Second Safety Time – Main Trial For Ignition (MTFI) 燃油第二安全时间-点火主实验（MTFI）

		3 – 15	This is the time period when the main valves are open and the pilot valve is maintained open, before the flame is checked, for firing on oil. See option/ parameters 150 and 151. This does not apply for intermittent pilot, see option/ parameter 111. 该时间是在检查火焰前用燃油燃烧时当主阀门打开以及实验阀保持打开时的一个时间段。见选项/参数 150 和 151。该时间不适用中期实验，见选项/参数 111。 Seconds 秒
124	0		Timeout on Reaching Purge 吹扫时超时
		0 1 – 3600	If the MM is stuck in Run to Purge or Run to Post Purge because the servomotors and VSDs are moving to the purge position, then a lockout will occur this timeout set in this option has elapsed. This does not apply to any requirements on purge timing such as any additional proving inputs. 如果控制模块在运行或吹扫或运行至后吹扫时因伺服电机和 VSD 移动至吹扫位置而堵塞，则会出现锁定，超时将在本选项中设置。该选项不适用任何吹扫时间要求，如额外检验输入。 Disabled 禁用 Seconds 秒

Option 选项	Default 默认值	Range 范围	Description 说明
125	0		Fuel Pressure Sensor Mode – Fuel 1 燃料压力传感器模式-燃料 1
			Gas: For setting 1, valve proving and pressure limits are checked by an Autoflame gas sensor. For setting 2, low pressure limit can be checked by external pressure switch. For setting 3, the system will wait for a mains voltage input on terminal 55 to confirm that the VPS test is completed. If a voltage is not detected on terminal 55 within 10 minutes, a lockout will occur. Please see MM Application Possibilities manual for option/ parameters and wiring guides on VPS and pressure limits setups. 燃气：设定值为 1 时，Autoflame 燃气传感器将检查阀门检验和压力限值。设定值为 2 时，可以通过外部压力开关检查低压限值。设定值为 3 时，系统将等待终端 55 的主电源电压输入以确定完成阀门检验系统测试。在 10 分钟内如果终端 55 上没有检测到电压，则系统会锁定。关于选项/参数，请参考控制模块应用程序指南，关于阀门检验系统和压力限值设置，请见接线指南。 Oil: For setting 2, pressure limits are checked by an Autoflame oil sensor. 燃油：设定值为 2 时，通过 Autoflame 燃油传感器检查压力限值。 0 Not checked 未检查。 1 Pressure limits, valve proving 压力限值，阀门检验。 2 Pressure limits 压力限值。 3 External VPS 外部阀门检验系统。
126	0		Fuel Pressure Sensor Mode – Fuel 2 燃料压力传感器模式-燃料 2
			Gas: For setting 1, valve proving and pressure limits are checked by an Autoflame gas sensor. For setting 2, low pressure limit can be checked by external pressure switch. For setting 3, the system will wait for a mains voltage input on terminal 55 to confirm that the VPS test is completed. If a voltage is not detected on terminal 55 within 10 minutes, a lockout will occur. Please see MM Application Possibilities manual for option/ parameters and wiring guides on VPS and pressure limits setups. 燃气：设定值为 1 时，Autoflame 燃气传感器将检查阀门检验和压力限值。设定值为 2 时，可以通过外部压力开关检查低压限值。设定值为 3 时，系统将等待终端 55 的主电源电压输入以确定完成阀门检验系统测试。在 10 分钟内如果终端 55 上没有检测到电压，则系统会锁定。关于选项/参数，请参考控制模块应用程序指南，关于阀门检验系统和压力限值设置，请见接线指南。 Oil: For setting 2, pressure limits are checked by an Autoflame oil sensor. 燃油：设定值为 2 时，通过 Autoflame 燃油传感器检查压力限值。 0 Not checked 未检查。 1 Pressure limits, valve proving 压力限值，阀门检验。 2 Pressure limits 压力限值。 3 External VPS 外部阀门检验系统。
127	0		Fuel Pressure Sensor Mode – Fuel 3 燃料压力传感器模式-燃料 2

			Gas: For setting 1, valve proving and pressure limits are checked by an Autoflame gas sensor. For setting 2, low pressure limit can be checked by external pressure switch. For setting 3, the system will wait for a mains voltage input on terminal 55 to confirm that the VPS test is completed. If a voltage is not detected on terminal 55 within 10 minutes, a lockout will occur. Please see MM Application Possibilities manual for option/ parameters and wiring guides on VPS and pressure limits setups. 燃气：设定值为 1 时，Autoflame 燃气传感器将检查阀门检验和压力限值。设定值为 2 时，可以通过外部压力开关检查低压限值。设定值为 3 时，系统将等待终端 55 的主电源电压输入以确定完成阀门检验系统测试。在 10 分钟内如果终端 55 上没有检测到电压，则系统会锁定。关于选项/参数，请参考控制模块应用程序指南，关于阀门检验系统和压力限值设置，请见接线指南。 Oil: For setting 2, pressure limits are checked by an Autoflame oil sensor. 燃油：设定值为 2 时，通过 Autoflame 燃油传感器检查压力限值。
		0 1 2 3	Not checked 未检查。 Pressure limits, valve proving 压力限值，阀门检验。 Pressure limits 压力限值。 External VPS 外部阀门检验系统。
128	0		Fuel Pressure Sensor Mode – Fuel 4
			Gas: For setting 1, valve proving and pressure limits are checked by an Autoflame gas sensor. For setting 2, low pressure limit can be checked by external pressure switch. For setting 3, the system will wait for a mains voltage input on terminal 55 to confirm that the VPS test is completed. If a voltage is not detected on terminal 55 within 10 minutes, a lockout will occur. Please see MM Application Possibilities manual for option/ parameters and wiring guides on VPS and pressure limits setups. 燃气：设定值为 1 时，Autoflame 燃气传感器将检查阀门检验和压力限值。设定值为 2 时，可以通过外部压力开关检查低压限值。设定值为 3 时，系统将等待终端 55 的主电源电压输入以确定完成阀门检验系统测试。在 10 分钟内如果终端 55 上没有检测到电压，则系统会锁定。关于选项/参数，请参考控制模块应用程序指南，关于阀门检验系统和压力限值设置，请见接线指南。 Oil: For setting 2, pressure limits are checked by an Autoflame oil sensor. 燃油：设定值为 2 时，通过 Autoflame 燃油传感器检查压力限值。
		0 1 2 3	Not checked 未检查。 Pressure limits, valve proving 压力限值，阀门检验。 Pressure limits 压力限值。 External VPS 外部阀门检验系统。

Option 选项	Default 默认值	Range 范围	Description 说明
129	0		VPS Operation VPS 运行
		0 1 2	VPS operates before start-up 启动前阀门检验系统运行。 VPS operates after shutdown 关闭后阀门检验系统运行。 VPS operates before and after 阀门检验系统运行前后。
130	2		Gas Valve Configuration 燃气阀设置
		0 1 2 3 4 5	No vent valve 无排气阀。 Vent normally closed 排气阀正常关闭。 Vent normally open 排气阀正常打开。 No vent valve. Single valve pilot 无排气阀。单阀实验。 Vent normally closed. Single valve pilot 排气阀正常关闭。单阀实验。 Vent normally open. Single valve pilot 排气阀正常打开。单阀实验。
131	-		Unused 未使用。
132	20		Gas Valve Proving Time 燃气阀检验时间
		10 – 300	This is the time period for when both gas valves are closed to detect a change in air pressure for the 'VPS air proving' phase, or change in gas pressure for 'VPS gas proving' phase. 该时间是燃气阀关闭至阀门检验系统空气检验阶段检测出空气压力改变或阀门检验系统燃气检验阶段燃气压力改变的时间。 Seconds 秒
133	25		Maximum Pressure Change Allowed During VPS 阀门检验系统运行期间允许的最大压力改变
		0 – 13400	If MM detects a pressure change greater than this value, a lockout will occur. See parameter 41 for gas pressure display units. 控制模块检测出压力改变大于该值时，将会出现锁定。见参数 41 关于燃气压力显示设备。 0 mbar – 1340 mbar (value 25 = 2.5 mbar) 0" WG – 537.777" WG (value 25 = (1.003 "WG) 0 PSI – 19.435 PSI (value 25 = 0.036 PSI) 0 mbar – 1340 mbar (数值 25 = 2.5 mbar) 0" WG – 537.777" WG (数值 25 = (1.003 "WG) 0 PSI – 19.435 PSI (数值 25 = 0.036 PSI)
134	3		VPS Valve Opening Time 阀门检验系统阀打开时间
		3 – 20	This is the time period for when the phases when a gas valve is opened – 'VPS Venting' for the void to vent to atmosphere and 'VPS Void to Gas' for the void to fill with gas. 该时间是当燃气阀打开-阀门检验系统排气至大气以及阀门检验系统充满燃气的时间。 Seconds 秒
135	0		Purge Time Units/ NFPA Post-Purge 吹扫时间单位/NFPA 后吹扫
		0 1 2 3	See option/ parameter 118 for the purge timing. For setting 2, option/parameter 118 must be set to 15 seconds or higher. During the NFPA post-purge, all the servomotors will remain in the position they were in before normal shutdown or lockout. The NFPA post-purge will occur under any normal shutdown or lockout at any point in firing. 见选项/参数 118 关于吹扫定时。当设定值为 2 时，选项/参数 118 必须设为 15 秒或更高。在 NFPA 后吹扫期间，所有伺服电机都必须保持在正常关闭或锁定之前的位置。燃烧的任何时间段 NFPA 后吹扫都将在正常关闭或锁定状态下进行。 Purge time in seconds 吹扫时间（秒） Purge time in minutes 吹扫时间（分钟） NFPA post purge in secondsNFPA 后吹扫（秒） NFPA post purge in minutesNFPA 后吹扫（分钟）

136	25		Gas Pressure Switch – Offset Lower Limit 燃气压力开关-补偿下限值
		0 – 13400	This is an offset lower limit from the commissioned gas pressure, see parameter 41 for the gas pressure display units. See option/ parameter 125, 126, 127 and 128 to enable the pressure limits. 该值是调试燃气压力的补偿下限值，见参数 41 关于燃气压力显示单位。见选项/参数 125, 126, 127 和 128，可以用于启用压力限值。 0 mbar – 1340 mbar (value 25 = 2.5 mbar) 0" WG – 537.777" WG (value 25 = (1.003 "WG) 0 PSI – 19.435 PSI (value 25 = 0.036 PSI) 0 mbar – 1340 mbar (数值 25 = 2.5 mbar) 0" WG – 537.777" WG (数值 25 = (1.003 "WG) 0 PSI – 19.435 PSI (数值 25 = 0.036 PSI)

Option 选项	Default 默认值	Range 范围	Description 说明
137	25		Gas Pressure Switch – Offset Upper Limit 燃气压力开关-补偿上限值
		0 – 13400	This is an offset upper limit from the commissioned gas pressure, see parameter 41 for the gas pressure display units. See option/ parameter 125, 126, 127 and 128 to enable the pressure limits. 该值是调试燃气压力的补偿上限值，见参数 41 关于燃气压力显示单位。见选项/参数 125, 126, 127 和 128，可以用于启用压力限值。 0 mbar – 1340 mbar (value 25 = 2.5 mbar) 0" WG – 537.777" WG (value 25 = (1.003 "WG) 0 PSI – 19.435 PSI (value 25 = 0.036 PSI) 0 mbar – 1340 mbar (数值 25 = 2.5 mbar) 0" WG – 537.777" WG (数值 25 = (1.003 "WG) 0 PSI – 19.435 PSI (数值 25 = 0.036 PSI)
138	-		Unused 未使用
139	-		Oil Pressure Switch – Offset Lower Limit 燃油压力开关-补偿下限值
		0 1 – 4000	The MM will check the oil pressure is not below this offset lower limit from the commissioned oil pressure, during firing. 控制模块将检查燃油压力是否在燃烧阶段低于调试燃油压力的补偿下限值。 Disabled 禁用 0.01 Bar – 4.000 Bar (0.015 PSI – 58.015 PSI)
140	0		Oil Pressure Switch – Offset Upper Limit 燃油压力开关-补偿上限值
		0 1 – 4000	The MM will check the oil pressure is not below this offset lower limit from the commissioned oil pressure, during firing. 控制模块将检查燃油压力是否在燃烧阶段低于调试燃油压力的补偿上限值。 Disabled 禁用 0.001 Bar – 4.000 Bar (0.015 PSI – 58.015 PSI)
141	0		Air Proving Pressure Threshold for Purge 吹扫空气检验压力阈值
		0 – 300	This is the minimum air pressure that must be detected by the MM during purge, when using an Autoflame air pressure sensor. If this is set to 0, then MM will look for the minimum air pressure set in option/ parameter 149. See option/ parameter 146 for air pressure display units. 该值时最小空气压力，当使用 Autoflame 空气压力传感器时必须在吹扫期间由控制模块检测。如果该值设为 0，则控制模块将寻找在选项/参数 149 中设置最小空气压力，见选项/参数 146 关于空气压力显示单位。 0 mbar – 30.0 mbar (0" WG – 12.040" WG)
142	60		Shutter Test Interval 遮板测试间隔
		4 – 240	This is the time interval between shutter tests on the self-check UV scanner. See options/ parameter 110 and 122. 该时间是在自检紫外线扫描仪上进行遮板测试的时间间隔。 Seconds 秒
143	0		No Pre-Purge 无预吹扫

			For setting 1, there will only be no pre-purge if the burner has recycled due to meeting operational temperature/ pressure, and the system has gone through VPS checks successfully. If the burner has a lockout, or is restarting after a lockout has been cleared, then the MM will force a pre-purge. No pre-purge is only available when the fuel is set to gas. 设定值为 1 时，如果燃烧器因满足运行温度/压力已经再循环且系统已经成功的完成阀门检验系统检查时则没有预吹扫。如果燃烧器锁定或在锁定清除后重启，则控制模块将强制进行预吹扫。当燃料设为燃气时没有预吹扫。
		0 1	Enabled 启用 Disabled 禁用
144	4		Maximum Allowed UV Self-Check Errors 最大允许紫外线自检错误
		1 – 12	The MM will test the flame detection of self-check UV scanner at a time interval, set in option/ parameter 142, and will generate a lockout if it has more errors than set in this option. See options/ parameters 110 and 122. 控制模块在时间间隔时将测试自检紫外线扫描仪的火焰检测，时间间隔在选项/参数 142 中设置，如果出现比选项设置中更多的错误，则会出现锁定，见选项/参数 110 和 122。 Errors 错误
145			First Out Interlock 先出联锁
		0 1	This expansion feature will need to be unlocked to enable first out interlock. For setting 1, all of the first outs will be tied to burner safety stat circuit. They will be automatically set for active low, and then can be selected for non-recycle or recycle. Please see expansion option 110. 该扩展功能需要先解锁后进行先出联锁。当设定值为 1 时，所有先出功能将于燃烧器安全线路相关。先出功能将自动设为激活，然后进行不循环或再循环。请见扩展选项 110。 Disabled 禁用 Enabled 启用

Option 选项	Default 默认值	Range 范围	Description 说明
146	-		Unused 未使用
147	0		Air Pressure Error Window 空气压力错误窗口
		0 – 300	This air pressure error window is only active during modulation; the burner will lockout if the air pressure is outside of this window. 空气压力错误窗口只有在调试时才激活，如果空气压力超出窗口范围，则燃烧器将锁定。 0 mbar – 30.0 mbar (0" WG – 12.040" WG)
148	0		Air Pressure Sensor Type 空气压力传感器类型
		0 1 2	For setting 0, and external air pressure switch must be wired to terminal 54.If a reset of voltage is not detected within 2 minutes on terminal 54 during the 'Wait for Air Switch' phase before running to purge, a lockout will occur. For setting 1, the air pressure sensor will look for zero air pressure in the 'Zero Air Sensor' phase before running to purge. Setting 2 includes the checks made for settings 0 and 1. 设定值为 0 时，外部空气压力开关必须与终端 54 相连。运行吹扫前的等待空气开关阶段，如果在终端 54 上未检测出电压重置，则会出现锁定。当设定值为 1 时，空气压力传感器将在运行吹扫前在零空气传感器阶段检测零空气电压。当设定值为 2 时，设置为 0 和 1。 Air switch on T54 T54 上空气开关 Autoflame air pressure sensor Autoflame 空气压力传感器 Autoflame air pressure sensor and air switch on T54 Autoflame 空气压力传感器和 T54 上的空气开关
149	10		Air Proving Pressure Threshold 空气检验压力阈值
		7 – 300	This is the minimum air pressure that must be detected by the MM during normal firing, and during purge when option/ parameter 141 is set to 0, when using an Autoflame air pressure sensor. See option/ parameter 146 for air pressure display units. 该值时最小空气压力值，在正常燃烧阶段，当选项/参数 141 设为 0 时以及使用 Autoflame 空气压力传感器时必须由控制模块检测，见选项/参数 146 关于空气压力显示单位。 0.7 mbar – 30.0 mbar (0.281" WG – 12.040 "WG) Value 10 = 0.401 "WG (1.0 mbar) 0.7 mbar – 30.0 mbar (0.281" WG – 12.040 "WG) 数值 10 = 0.401 "WG (1.0 mbar)
150	0		Fuel 1 Type 燃料 1 类型
		0 1	Gas 燃气 Oil 燃油
151	1		Fuel 2 Type 燃料 2 类型
		0 1	Gas 燃气 Oil 燃油
152	1		Fuel 3 Type 燃料 3 类型
		0 1	Gas 燃气 Oil 燃油
153	0		Fuel 4 Type 燃料 4 类型
		0 1	Gas 燃气 Oil 燃油
154	0		Terminal T80 Function 终端 T80 的功能

			Setting 1 allows an additional safety check on the valves and damper to ensure that they are in the correct position for start/low fire. See Valves and Servomotors manual for information on setup and wiring. 设置 1 允许在阀门和阻尼器上进行额外的安全检查，以便确保它们在正确的启动位置和低火焰位置。关于设置和接线的更多信息请见阀门与伺服电机手册。 0 Not used 未使用 1 Start Position Interlock 启动位置联锁

Option 选项	Default 默认值	Range 范围	Description 说明
155	0		Terminal T81 Function 终端 T81 的功能
			For setting 1, terminal 81 acts as an input for a mechanical end stop. It must be made for the whole of the timed purge phase otherwise a lockout is generated. This is input must also be not made while not at purge. For setting 2, terminal 81 acts as purge pressure switch input. It must be made continuously for the full purge time before proceeding from purge. If it drops out during purge the purge timer restarts. It must also be not made before the blower motor starts to confirm the input is working correctly. If this input comes on during the relay tests a lockout is generated. Option 158 adds an optional time limit to this phase. 设定值为 1 时，终端 81 作为输入用于机械停止，该终端必须用于定时的吹扫阶段，否则系统将会锁定。不在吹扫阶段也无法用于输入。当设定值为 2 时，终端 81 将作为吹扫压力开关输入，其必须在吹扫定时器重新启动阶段运行，且不能在鼓风机电机启动确认输入是否正常工作前运行。如果在继电器测试阶段输入，则会出现锁定。选项 158 可以用于添加可选时间限值。
		0 1 2	Not used 未使用 Purge position interlock 吹扫位置联锁 Purge pressure proving 吹扫压力检验
156	-		Unused 未使用
157	0		Delay to Purge (T52) Timeout 吹扫（T52）延迟超时
			An input on terminal 52 is required to indicate the system is ready to move toward the purge phase. If the MM does not see this input for 1 second within this time set, then a lockout will occur. Setting 0 will disable this timeout, so the MM would sit indefinitely in delay to purge. 终端 52 的输入需要指示系统已准备就绪可以移动至吹扫阶段。如果控制模块在 1 秒内没有检测出该输入，则会出现锁定。设定值 0 将禁用该超时，因此控制模块将处于延迟吹扫阶段。
		0 1 – 3600	Disabled 禁用 Seconds 秒
158	0		Purge Pressure Proving (T81) Timeout 吹扫压力检验（T81）延迟
			If option/parameter 155 is set to 2, then the system will lockout if this purge interlock timer has elapsed. Setting 0 will disable this timeout, so the MM will be in the purge phase indefinitely. 如果选项/参数 155 设为 2，当吹扫联锁定时器到时间时系统将锁定。设定值 0 将禁用该超时，因此控制模块将处于吹扫阶段。
		0 1 – 3600	Disabled 禁用 Seconds 秒
159	-		Unused 未使用
160	0		Clear Commissioning Data 清除调试数据
		5	Clear all commissioning data, options and parameters 清除所有调试数据、选项和参数。
		10	Reset all options to default values 重置所有选项值默认值。
		15	Reset all parameters to default values 重置所有参数至默认值。
		20	Reset all safety options and parameters to default values 重置所有安全选项和参数至默认值。
		25	Reset all expansion options to default values 重置所有扩展选项值默认值。

2.2 Parameters 参数

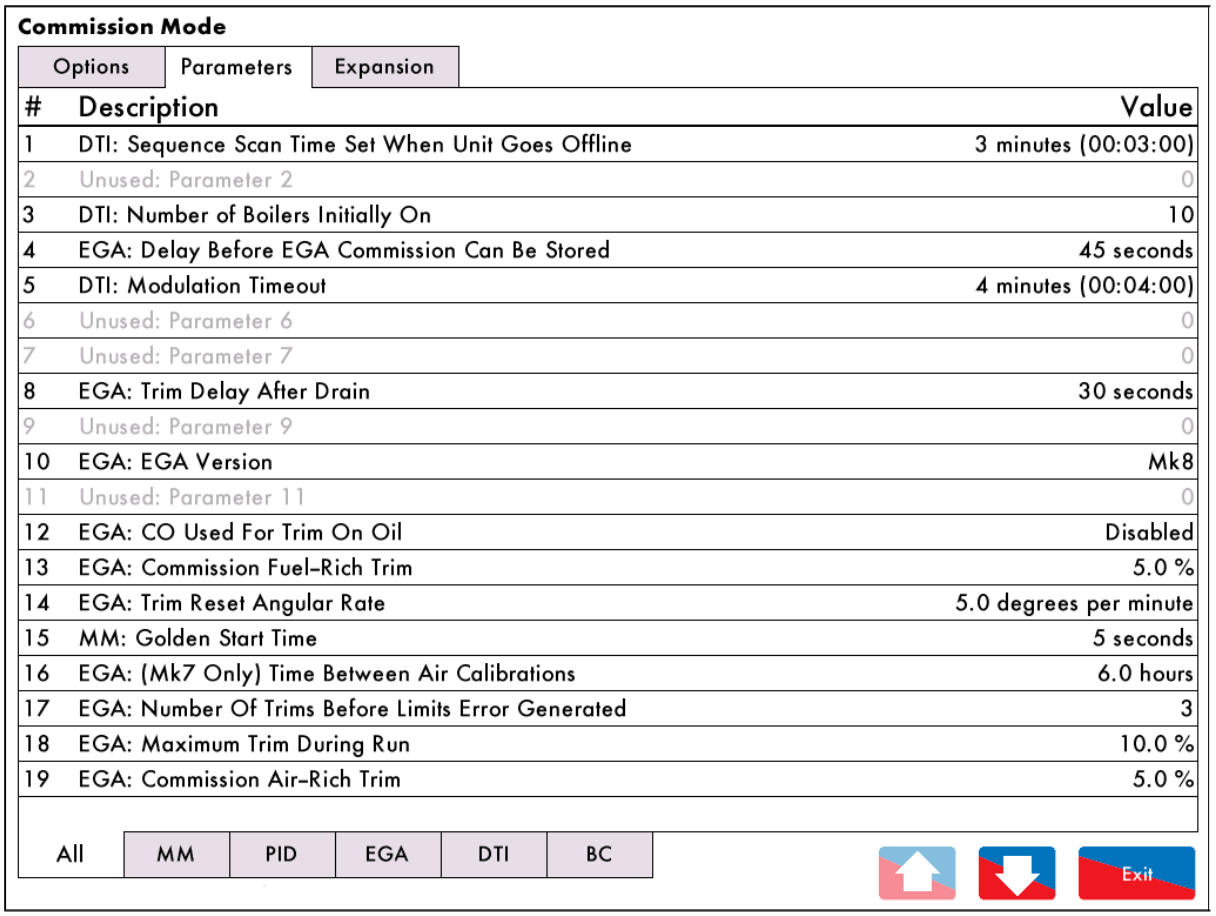


Figure 2.2.i Commission Mode – Parameters
图2.2.i 调试模式-参数

Press 

in the Commission Mode screen to access the Parameters. Any number of options/ parameters can be changed at one time. By pressing MM, PID, EGA, DTI or BC at the bottom of the screen, the options/ parameters can be grouped together by feature.

在调试模式屏幕上按下 

按钮可以访问各项参数。一次可以更改任意数量的选项和参数。按下屏幕下部的控制模块、PID、尾气分析仪、数据传输接口或 BC 按钮后，可以按功能将选项/参数组织在一起。

When the changes have been made to suit the application's needs, press Exit to go back to the Commission Mode screen.
当更改了适合应用程序需要的选项后请按下推出按钮返回调试模式屏幕。

Options/ parameters 110 – 160 are the burner control settings and are safety critical; these must be entered the same for both the option and parameter value. If these BC options and parameters do not match, there will be an option/parameter conflict.
选项/参数 110-160 用于燃烧器控制设置，对安全性极为重要。选项和参数值必须输入相同的值，如果 BC 选项和参数不匹配，则将存在选项/参数冲突。

To set all the options, parameters and expansion options to the default values and erase the commissioning data, set option/ parameter 160 to 5. The MM will then automatically restart.
要将所有选项、参数和扩展选项设为默认值并删除调试数据时，请将选项/参数 160 设为 5，控制模块将自动重新启动。

Para-Meter 参数	Default 默认值	Range 范围	Description 说明
1	3		Sequence Scan Time Set When Units Goes Offline 设备脱机时设置排序扫描时间
2	·	0 – 20	If a sequenced MM drops out of the sequence loop, there is a time delay before the next scan time. 如果已排序的控制模块超出排序循环，则下次扫描时间将会延迟。 Minutes 分钟 Unused 未使用
3	10		Number of Boilers Initially On 锅炉启动数
		1 – 10	This sets the number of boilers which when powered on after a shutdown, are in the On state in the sequence loop. This set should be set to the highest MM ID number (see parameter 57) if the application requires all the MMs to be On in the sequence loop when powered back on. 该数值用于在排序循环中关闭后启动时设置锅炉的数量，如果应用程序需要所有控制模块都处于排序循环中，则该设置应设为最大的控制模块标识号（见参数 57）。
4	45		Delay Before EGA Commission Can be Stored 尾气分析仪调试保存前延迟
		10 – 120	During commission and single point change, there is a delay before the EGA values are stored. This value should be set in proportion to how long it takes for the gases to reach the EGA 在调试和单点更改阶段，尾气分析仪在保存前将延迟。该值应按比例设置以确定燃气到达尾气分析仪时需要多长时间。 Seconds 秒
5	4		Modulation Timeout 调试超时
6	·	1 – 50	If a sequenced MM does not start modulating after being asked to by the lead MM, it is ignored in the sequencing loop. Upon the next scan time, if the MM modulates as required, it will be included in the sequencing loop. 如果排序控制模块在主控制模块请求下没有启动调试，则在排序循环中可以忽略。在下次扫描时，如果需要控制模块调试，则应将其纳入排序循环中。 Minutes 分钟 Unused 未使用
7	·		Unused 未使用
8	30		Trim Delay After Drain 排水后微调延迟
9	·	5 – 240	This is the delay after draining the sample, before the trim cycle start. Within this delay, the trim correction on the air damper or VSD is maintained while the EGA drains and the cells are purged with air. 微调循环启动前在排出样本后延迟。在延迟时间内，将在空气阻尼器或 VSD 上进行微调校正，同时进行并尾气分析仪排水以及空气吹扫。 Seconds 秒 Unused 未使用
10	2		EGA Version 尾气分析仪版本

		0 1 2	Mk7 Mk8 Rev.3 Mk8 修订版 3 Mk8
11	-		Unused 未使用
12	0		CO Used for Trim on Oil 燃油微调使用的一氧化碳
		0 1	If the fuel has been set as oil (see options/ parameters 150 to 153), then the trim function can include CO to calculate the required trim correction. 如果燃料设为燃油（见选项/参数 150 至 153），则微调功能包括一氧化碳，以便计算所需的微调量。 Disabled 禁用 Enabled 启用
13	50		Commission Fuel-Rich Trim 调试富燃料微调
		20 – 75	The % of air damper movement when commissioning fuel-rich trim. 调试富燃料微调时，空气阻尼器移动的百分比。 2.0% - 7.5%

Para-Meter 参数	Default 默认值	Range 范围	Description 说明
14	50		Trim Reset Angular Rate 微调重置角度范围
		0 – 900	This is the change time in the fuel valve angle per minute that will reset the trim correction. 该值时每分钟燃料阀角度发生改变的世界，将用于重置微调量。 0.0 – 90.0 degrees per minute 每分钟 0.0– 90.0 度。
15	5		Golden Start Time 黄金启动时间
		2 – 100	This is the time period for how long the servomotors and VSDs are held at the golden start position, see option 29. 该时间用于伺服电机和 VSD 保持在黄金启动位置的时间，见选项 29。 Seconds 秒
16	12		(Mk7 E.G.A only) Time Between Air Calibrations （仅用于 Mk7 尾气分析仪）空气校准时间
		1 – 50	This is the time period between air calibrations if the burner does not go off. 该时间是燃烧器不熄灭时的空气校准时间。 0.5 hours – 25.0 hours 0.5 小时 – 25.0 小时
17	3		Number of Trims Before Limits Errors Generated 限值错误前的微调数
			When the combustion limits have been exceeded, the MM will make trim corrections on the air damper. If the number of these trims reach the value set in this parameter an error will be generated. See options 19, 20, 21, 22, 23, 25, 26, 27 and parameters 94, 96 97 for limits. 超出燃烧器限值时，控制模块将对空气阻尼器进行微调校正。如果微调次数超出本参数设置的数值，则会出现错误。关于限值请见选项 19, 20, 21,22, 23, 25, 26, 27 和参数 94, 96 97。
18	100		Maximum Trim During Run 运行时最大微调
		20 – 100	This is the maximum trim % of air damper movement during firing. 燃烧时空气阻尼器移动的最大微调百分比。 2.0% - 10.0%
19	50		Commission Air-Rich Trim 调试富空气微调
		20 – 75	This is the % air damper movement when commissioning the air rich trim. 调试富空气微调时空气阻尼器移动的百分比。 2.0% - 7.5%
20	-		Unused 未使用
21	-		Unused 未使用
22	-		Unused 未使用
23	1		Add Air When CO Present 出现一氧化碳时添加空气
		0 1	This sets whether the trim function adds when CO is present. If the O_2 and CO_2 appear air rich but CO appears fuel rich, then the air damper will open further to remove CO. 该值时确定出现一氧化碳时的微调功能。如果氧气和二氧化碳出现富空气，一氧化碳出现富燃料，则空气阻尼器将打开排出一氧化碳。 Disabled 禁用 Enabled 启用

24	120		(Mk7 EGA only) Air Calibration Time （仅用于 Mk7 尾气分析仪）空气校准时间
		20 – 300	For the Mk8 EGA, this is set as default 6 minutes 至于 Mk8 尾气分析仪，该值设为默认的 6 分钟。 Seconds 秒
25	-		Unused 未使用
26	8		Trim Samples per Cycle 每次循环的微调样本
		1 – 50	A cycle is the period between when does the EGA carries out a drain to get rid of excess moisture in the exhaust gas sample. This parameter sets the number of trim corrections in between drains. 循环时尾气分析仪进行排水至获得额外水分的时间段，该参数用于设置排水期间微调的次数。
27	-		Unused 未使用
28	-		Unused 未使用

Para-Meter 参数	Default 默认值	Range 范围	Description 说明
29	1000		Load Sensor Adjustment 负载传感器的调节
		800 – 1200	This adjusts the load sensor (voltage) reading, as a percentage of the reading. 用于调整负载传感器（电压）的读数，作为读数的百分比。 Value 1000 = 100.0% of actual reading 数值 1000 = 实际读数的 100.0%
30	10		Load Sensor Filter Time 负载传感器过滤时间
		1 – 40	Seconds 秒
31	0		(Mk7 EGA only) Efficiency Calculation Method （仅用于 Mk7 尾气分析仪）效率计算方法
			For the Mk8 EGA, efficiency calculation method is set on the EGA 用于 Mk8 尾气分析仪，效率计算方法在尾气分析仪上设置。
		0	English
		1	英国 European 欧洲
32	-		Unused 未使用
33	-		Unused 未使用
34	-		Unused 未使用
35	-		Unused 未使用
36	-		Unused 未使用
37	-		Unused 未使用
38	***		Commissioning Password Code 1 调试密码代码 1
		0 – 255	Code 1 代码 1
39	***		Commissioning Password Code 2 调试密码代码 2
		0 – 255	Code 2 代码 2
40	0		Display Units 显示单位
		0	Metric units 公制单位
		1	Imperial units 英制单位
41	0		Gas Pressure Units 燃气压力单位
			This will set the units displayed for the Autoflame gas pressure sensor optioned. Note, PSI units are not available for sensor MM80006. 用于设置 Autoflame 燃气压力传感器的显示单位。传感器 MM80006 使用 PSI 单位。
		0	mbar
		1	“WG
		2	PSI
42	0		Oil Pressure Units 燃油压力单位
			This will set the units displayed for the Autoflame oil pressure sensor optioned. 用于设置 Autoflame 燃油压力传感器显示的单位。
		0	Bar
		1	PSI
43	-		Air Pressure Sensor Units 空气压力传感器单位

			This will set the units displayed for the Autoflame air pressure sensor. 用于设置 Autoflame 空气压力传感器显示的单位。
		0	mbar
		1	“WG
44	-		Unused 未使用
45	-		Unused 未使用

Para-Meter 参数	Default 默认值	Range 范围	Description 说明
46	-		Unused 未使用
47	-		Unused 未使用
48	80		Integral Band 比例范围
		0 – 100	This is the percentage of the proportional band over which the integral control is active. 用于设置内部控制时的比例范围。 0% - 100%
49	-		Unused 未使用
50	-		Unused 未使用
51	-		Unused 未使用
52	0		External Load Detector – Number of Decimal Places 外部负载检测器-小数点位数
		0 1 2	This affects parameter the external load detector maximum and minimum values set in parameters 53 and 55. See option 1 and parameter 40. 这将影响在参数 53 和 55 设置的外部负载检测器最大值和最小值，见选项 1 和参数 40。 0 decimal place 0 个小数位 1 decimal place 1 个小数位 2 decimal places 2 个小数位
53	20		External Load Detector – Maximum Value 外部负载检测器-最大值
		0 – 9990	The scale will depend on how parameter 52 is set. See option 1 and parameter 40. 该值取决于参数 52 如何设置。见选项 1 和参数 40。 Bar (PSI) or °C (°F) Bar (PSI) 或 °C (°F) 20 = 20 Bar (PSI) or °C (°F) if parameter 52 is set to 0 参数 52 设为 0 时 20 = 20 Bar (PSI) 或 °C (°F) 20 = 2.0 Bar (PSI) or °C (°F) if parameter 52 is set to 1 参数 52 设为 1 时 20 = 2.0 Bar (PSI) 或 °C (°F) 20 = 0.2 Bar (PSI) or °C (°F) if parameter 52 is set to 2 参数 52 设为 2 时 20 = 0.2 Bar (PSI) 或 °C (°F)
54	0		External Load Detector – Maximum Voltage 外部负载检测器-最大电压
		0 – 100	0.0V – 10.0V
55	20		External Load Detector – Maximum Voltage 外部负载检测器-最大电压
		0 – 9990	The scale will depend on how parameter 52 is set. See option 1 and parameter 40. 该值取决于参数 52 如何设置。见选项 1 和参数 40。 Bar (PSI) or °C (°F) Bar (PSI) 或 °C (°F) 20 = 20 Bar (PSI) or °C (°F) if parameter 52 is set to 0 参数 52 设为 0 时 20 = 20 Bar (PSI) 或 °C (°F) 20 = 2.0 Bar (PSI) or °C (°F) if parameter 52 is set to 1 参数 52 设为 1 时 20 = 2.0 Bar (PSI) 或 °C (°F) 20 = 0.2 Bar (PSI) or °C (°F) if parameter 52 is set to 2 参数 52 设为 2 时 20 = 0.2 Bar (PSI) 或 °C (°F)
56	0		External Load Detector – Minimum Voltage 外部负载检测器-最小电压
		0 – 100	0.0V – 10.0V

57	10		Highest MM ID 控制模块标识最大数
		1 –10	This sets the highest MM ID number for that sequence or DTI loop. 在排序或数据传输接口循环中用于设置控制模块标识的最大数。 Sequence ID 排序标识
58	1		(Mk7 EGA only) – Air Calibration on Start-up （仅用于 Mk7 尾气分析仪）-启动时空气校准
		0 1	For the Mk8 EGA, the air calibration schedule is set on the EGA itself. 至于 Mk8 尾气分析仪，空气校准计划在尾气分析仪上设置。 Disabled 禁用 Enabled 启用
59	-		Unused 未使用

Para-Meter 参数	Default 默认值	Range 范围	Description 说明
60	60		Logo Display Timer (Standby) 标志显示计时器（待机）
			If a custom logo is stored on the data micro-SD card in the MM, then after this timer in standby mode, the custom logo will appear on the screen. 如果在控制模块的 SD 数据卡上保存定制标志，则在定时器处于待机模式后，定制标志将在屏幕上显示。
		0 1 – 3600	Disabled 禁用 Seconds 秒
61	900		Backlight On Time 背光时间
			If the screen is not pressed and this timer elapses, the backlight will dim. 如果未按下屏幕或定时器到时，则会出现背光。
		0 1 – 1800	Disabled 禁用 Seconds 秒
62	0		Hot Water Sequencing 热水排序
			For setting 0 the boilers, the lag boilers will be off. For setting 1, the lag boiler will operate as steam sequencing, as set in option 41. 当设定值为 0 时，锅炉和滞后锅炉将关闭，设定值为 1 时，滞后锅炉将作为蒸汽排序运行，在选项 41 中设置。
		0	Hot water sequencing operates normally 热水排序正常运行。
		1	Hot water sequencing operates as steam sequencing 热水排序作为蒸汽排序运行。
63	-		Unused 未使用
64	-		Unused 未使用
65	-		Unused 未使用
66	-		Unused 未使用
67	-		Unused 未使用
68	1		External Modulation Control Range 外部调节控制范围
			The range is set for either low fire to high fire in setting 0, or zero to high fire in setting 1. See options 45 and 55. 低火焰至高火焰时设为 0，零至高火焰时设为 1，见选项 45 和 55。
		0 1	Low to high 低至高 Zero to high 零至高
69	0		Auxiliary Channel Input Range 辅助通道输入范围
			This sets the range for external modulation input on terminals 7, 8, and 9. 在终端 7,8 和 9 上设置外部调节输入的范围。
		0 1 2	4 to 20mA input 4 至 20mA 输入 0 to 20mA input 0 至 20mA 输入 0 to 10V input 0 至 10V 输入
70	10		Auxiliary Channel Filter Time 辅助通道过滤时间
			This sets the time allowed for a reading to be taken on terminals 7, 8 and 9. 在终端 7,8 和 9 上设置允许读取的时间。
		0 1 – 30	Disabled 禁用 Seconds 秒
71	1		Firing Rate Output Control Range 燃烧率输出控制范围

			This sets the range for firing rate output on terminals 16, 17, and 18. 在终端 16,17 和 18 上设置燃烧率输出范围。
		0	4-20mA, 2-10V, Low to high 4-20mA, 2-10V,低至高
		1	4-20mA, 2-10V, Zero to high 4-20mA, 2-10V,零至高
		2	0-20mA, 0-10V, Low to high 0-20mA, 0-10V,低至高
		3	0-20mA, 0-10V, Zero to high 0-20mA, 0-10V,零至高
72	0		External Setpoint Input 外部设定点输入
			If enabled, terminals 7, 8, and 9 are used for external required setpoint. The range and filtering of the input is set in parameters 69 and 70. The required setpoint range is set in options 30 and 31. 如启用，则终端 7,8 和 9 将永不外部所需的设定点。输入范围和过滤范围在参数 69 和 70 上设置。所需设定点范围在选项 30 和 31 中设置。
		0	Disabled 禁用
		1	Enabled 启用

Para-Meter 参数	Default 默认值	Range 范围	Description 说明
73	-		Unused 未使用
74	-		Unused 未使用
75	-		Unused 未使用
76	-		Unused 未使用
77	-		Unused 未使用
78	-		Unused 未使用
79	-		Unused 未使用
80	-		Unused 未使用
81	-		Unused 未使用
82	-		Unused 未使用
83	-		Display Diagnostic Values 显示诊断值
		0 1	Disabled 禁用 Enabled 启用
84	-		Unused 未使用
85	0		Modulation Exerciser Period 调节程序范围
		0 1 – 3600	If the modulation exerciser period is enabled, then the MM will repeatedly run between high fire and low fire. This value sets how long the MM will remain at the high fire and low fire positions. This should be only be used in test/inspection conditions. 如果启用调节程序，则控制模块将反复在高火焰和低火焰间运行。该值用于设置控制模块在高火焰和低火焰位置保持的时间。仅可以用于测试和检查。 Disabled 禁用 Seconds 秒
86	85		IBS Change Down Threshold IBS 向下更改阈值
		0 – 99	IF the combined firing rate of the last 2 MMs in the sequence loop is below this value, then the last lag MM will go from 'on' to the next phase ('standby', 'warming' or 'off') depending on how option 41 is set. 在排序循环中如果最后两个控制模块的综合燃烧了小于该值，则最后的滞后控制模块将从起点运行至下一阶段（待机、加热或关闭），这取决于选项 41 的设置。 0% - 99%
87	95		IBS Change Up Threshold IBS 向上更改阈值
		0 – 100	If the firing rate of the last MM in the sequence loop in the 'On' phase is above this value, then the next MM will go to the 'On' phase upon the next sequence scan time, to meet the load demand. 在排序循环中如果最后两个控制模块的综合燃烧了大于该值，则下一个控制模块将从起点运行至下一排序扫描时间，以满足负载要求。 0% - 100%
88	1000		Outside Temperature Sensor Adjustment 外部温度传感器调节

		500 – 2000	If the outside temperature reading is too high, then decrease this value. If the outside temperature reading is too low, then increase this value. 如果外部温度读数过高，则降低该值，如果外部温度读数过低，则增加该值。 50.0% - 200.0%
89			Stat Exerciser Period 状态程序范围
		0 1 – 3600	If the stat exerciser period is enabled, then T53 will be turned off for this timer set, and then turned off for this timer set, repeatedly. This should be used in test/inspection conditions. 如果启用状态程序范围，则在设置内 T53 将被关闭，然后关闭，如此反复进行。该值将用于测试和检查。 Disabled 禁用 Seconds 秒

Para-Meter 参数	Default 默认值	Range 范围	Description 说明
90	-		Unused 未使用
91	-		Unused 未使用
92	-		Unused 未使用
93	-		Unused 未使用
94	0		NO Upper Limit Offset 一氧化氮上限值补偿
		0 1 – 200	If the current NO value is above this offset limit from the commissioned value, an alarm/ warning (see option 13) will occur, for option 12 set to 3 如果当前的一氧化氮值大于从调试值获得的补偿限值，则出现报警/警告（见选项 13），选项 12 设为 3。 . Disabled 禁用 1 – 200 ppm NO
95	-		Unused 未使用
96	0		Exhaust Temperature Upper Limit Offset 排气温度上限值补偿
		0 1 – 999	If the current exhaust temperature value is above this offset limit from the commissioned value, an alarm/ warning (see option 13) will occur, for option 12 set to 3. See parameter 40. 如果当前的排气温度值大于从调试阀获得的补偿限值，则出现报警/警告（见选项 13），选项 12 设为 3，见参数 40。 Disabled 禁用 1 – 999 deg°C or deg°F
97	0		Exhaust Temperature Absolute Limit 排气温度绝对限值
		0 1 – 999	If the current exhaust temperature value is above this absolute limit, an alarm/ warning (see option 13) will occur, for option 12 set to 3. See parameter 40. 如果当前的排气温度值大于该绝对限值，则出现报警/警告（见选项 13），选项 12 设为 3，见参数 40。 Disabled 禁用 1 – 999 deg°C or deg°F
98	-		Unused 未使用
99	1		Graceful Shutdown 正常关机
		0 1	If enabled, the MM will modulate to low fire, shut down and recycle the system before changing/ deselecting the fuel. This must not be used if changeover relays are used on the system. Graceful shutdown cannot be used with assured low fire shut off in parameter 100. 启用时，控制模块将在更改/不选择燃料前调节至低火焰，关闭和再循环，如果在系统中使用更改继电器，则无需使用该设置。正常关机不能用于参数 100 中设置的低火焰关机。 Disabled 禁用 Enabled 启用
100	0		Assured Low Fire Shut Off 保证低火焰关机
		0 1	If enabled, the MM will modulate to low fire, shut down and recycle the system before turning off. Assured low fire shut off cannot be used with graceful shutdown in parameter 100. 启用后，控制模块将在系统关闭前调节至低火焰，关闭和再循环，参数 100 使用正常关机后不能使用低火焰关机。 Disabled 禁用 Enabled 启用

101	0		Shuffle Sequencing 混合排序
			This allows the sequence order to be changed remotely through the DTI or Modbus. See option 16 and expansion option 100. 这允许通过数据传输接口或 Modbus 远程更改排序顺序，见选项 16 和扩展选项 100。
		0	Disabled 禁用
		1	Enabled 启用
102	-		Unused 未使用
103	-		Unused 未使用

Para-Meter 参数	Default 默认值	Range 范围	Description 说明
104	-		Unused 未使用
105	-		Unused 未使用
106	-		Unused 未使用
107	***		Online Changes Password Code 1 在线更改密码代码 1
		0 – 255	Code 1 代码 1
108	***		Online Changes Password Code 2 在线更改密码代码 2
		0 – 255	Code 2 代码 2
109	-		Unused 未使用

Parameters 110 – 160 are a repeat of their corresponding options, and will need to be entered the same.
参数 110-160 是对应选项的重复值，必须输入的相同。

It is the responsibility of the commissioning engineer to ensure that all settings are set in accordance with the appropriate standards, local codes and practices. If options 110 – 160 are not identical with the parameters 110 – 160, then the MM will go straight to Commissioning Mode and an option/ parameter conflict message will appear.
为安全起见，选项 110-160 页必须作为参数输入。调试工程师有责任确保所有设置都根据适用的标准、当地法规和做法进行设置。如果选项 110-160 与参数 110-160 不同，则控制模块将直接进入调试模式并出现选项/参数冲突消息。

2.3 Expansion Options 扩展选项

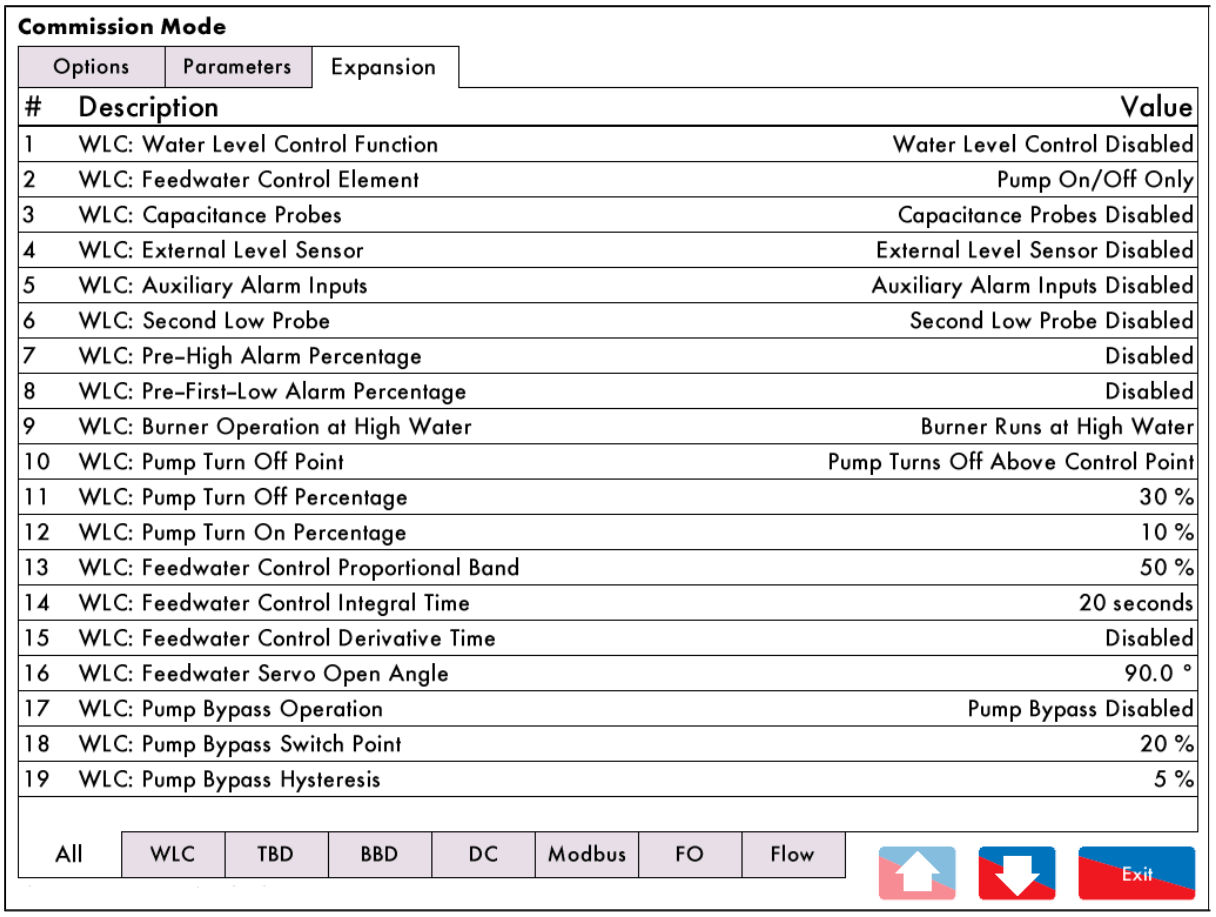


Figure 2.3.i Commission Mode – Expansion Options
图2.3.i 调试模式-扩展选项

Press 

in the Commission Mode screen to access the Expansion Options. Any number of expansion options can be changed at on time. By pressing WLC, TBD, BBD, DC, Modbus FO and Flow at the bottom of the screen, the expansion options can be grouped together by feature.

在调试模式屏幕上按下 

按钮可以访问扩展选项。操作员可以随时更改这些扩展选项。按下屏幕底部的 WLC、TBD、BBD、DC、Modbus FO 和 Flow 按钮可以按功能分组更改扩展选项。

When the changes have been made to suit the application's needs, press Exit to go back to the Commission Mode screen.
当更改了适合应用程序需要的选项后请按下推出按钮返回调试模式屏幕。

To set all the options, parameters and expansion options to the default values and erase the commissioning data, set option/ parameter 160 to 5. The MM will then automatically restart.
要将所有选项、参数和扩展选项设为默认值并删除调试数据时，请将选项/参数 160 设为 5，控制模块将自动重新启动。

Note: The Expansion Feature must be unlocked by sending the code for that MM via Download Manager. Please see PC Software Guide on unlocking Expansion Features.
注：扩展功能必须通过下载管理器向控制模块发送代码后解锁。解锁扩展功能请见计算机软件指南。

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
1	0		Water Level Control Function 水位控制功能
			Expansion feature 1 must be unlocked on the MM For setting 1, there must be a minimum of two level sensing elements or a conflict will appear. If using two capacitance probes, then expansion option 1 should be set to 1 and expansion option 3 to 2. If using one capacitance probe and an external level sensor, both expansion options 3 and 4 should be set to 1. The capacitance probes with/without external level sensor will be commissioned at end of probe, second low, first low, control point and high water. 扩展功能 1 必须在控制模块上解锁用于设置 1，至少要有两个水位传感元件，否则将会出现冲突。如果使用两个电容探针，则扩展选项 1 必须设为 1，扩展选项 3 设为 2。如果使用一个电容探针和一个外部水位传感器，则扩展选项 3 和 4 都必须设为 1。带有或不带外部水位传感器的电容探针应在探针端部、第二个低水位、第一个低水位、控制点和高水位调试。
		0	Water level control disabled 水位控制禁用
		1	Water level control enabled 水位控制启用
2	0		Feedwater Control Element 供水控制元件
			Tthe feedwater pump will turn on and off at the according to the levels set relative to the control point, through expansion options 10, 11 and 12. For setting 0, water going to the boiler is only controlled by the feedwater pump output terminal BFW. For settings 1 and 2 the MM controls the feedwater via a PID loop, see expansion options 13, 14, 15, and 16. For setting 1 the MM uses the servomotor on terminals P-, FW, P+, MVI and MVD. For setting 2 the MM uses the VSD on terminals I+, V+ and IV-. 供水泵通过扩展选项 10、11 和 12 根据相对控制点设置的水位变化而启停。设定值为 0 时，进入锅炉的水将通过供水泵输出终端 BFW 进行控制。设定值为 1 和 2 时，控制模块将通过 PID 循环控制进水，详情见扩展选项 13、14、15 和 16。设定值为 1 时，控制模块将使用终端 P-、FW、 P+、和 MVI 上的伺服电机。设定值为 2 时，控制模块将使用终端 I+、V+和 IV-上的 VSD。
		0	Pump on/off only 仅用于泵启动/停止
		1	Pump on/off and servomotor control 泵启动/停止和伺服电机控制
		2	Pump on/off and VSD control 泵启动/停止和 VSD 控制
3	0		Capacitance Probes 电容探针
			If water level control is enabled, the MM will require a minimum of two level sensing elements. If using only one capacitance probe, then an external level sensor must be enabled in expansion option 5. 如果水位控制被启用，控制模块将需要至少两个水位传感元件。如果仅使用一个电容探针，则外部水位传感器必须在扩展选项 5 中启用。
		0	Capacitance probes disabled 电容探针禁用
		1	One capacitance probe 一个电容探针
		2	Two capacitance probes 两个电容探针
4	0		External Level Sensor 外部水位传感器

			If using an external level sensor, then one capacitance must also be used, see expansion option 4. The external level sensor is wired to terminals EX- and EX+ and will give a 4-20mA signal. The readings can be scaled in expansion options 30 and 31. If an external level sensor is used, then a 4-20mA signal for fuel flow feedback cannot be used, see option 57. 如果使用外部水位传感器，则必须使用一个电容，详情见扩展选项 4。外部水位传感器必须连接到终端 EX-和 EX+上并提供 4-20mA 信号。读数可以在扩展选项 30 和 31 中测量。如果使用一个外部水位传感器，则燃料流量反馈不能使用 4-20mA 信号，详情见选项 57。
		0	Disabled 禁用
		1	Enabled 启用
5	0		Auxiliary Alarm Inputs 辅助报警输入
			For setting 0, an alarm will be generated if the capacitances and/or external level sensor detects that the water level is at first low, second low or high water, see expansion option 9. For setting 1, the auxiliary alarm mains inputs terminals HAI, 1AI and 2AI are used in addition to the capacitance probes with/without external level sensor readings. 设定值为 0 时，如果电容和/或外部水位传感器检测到水位处于第一低、第二低或高水位时将会激活报警，详情见扩展选项 9。设定值为 1 时，除带有或不带有外部水位传感器的电容探针外，将使用辅助报警电源输入终端 HAI、1AI 和 2AI。
		0	Auxiliary alarm inputs disabled 辅助报警输入禁用
		1	Auxiliary alarm inputs enabled 辅助报警输入启用
6	0		Second Low Probe 第二低水位探针
			For setting 0, it is recommended that an auxiliary second low mains input is wired to terminals 2AI. For setting 1, the Autoflame conductive second low probe is wired to terminals 4P-, 4P+, 6T- and 6T-. Please see local codes/ regulations for second low probe and auxiliary second low alarm setup. 建议将辅助第二低电源输入连接至终端 2AL。设定值为 1 时，Autoflame 导电第二低水位探针应连接至终端 4P-、4P+、6T- 和 6T-，第二低水位探针和辅助第二低水位报警设置请见当地规范/规定。
		0	Second low probe disabled 第二低水位探针禁用
		1	Second low probe enabled 第二低水位探针启用

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
7	0		Pre-High Alarm Percentage 预先高水位报警比例
			The pre-high alarm level is at percentage between the control point and high water, with the control point being referring to 0% and the high water referring to 100%. For setting 0 there is no pre-high alarm and for settings higher than 1, the MM will generate an alarm if the water level reaches this % value between the commissioned control point and high water. For example, if this is set to 45%, then a pre-high alarm will occur if the water level rises to 45% between the control point and high water level. 预先高水位报警水位百分比应设在控制点和高水位之间的一个比例，控制点在 0%，高水位在 100%。当设定值为 0 时，没有预先高水位报警，设定值大于 1 时，如果水位达到调试控制点和高水位间的%时，控制模块将激活报警。如果百分比设为 45%，如果水位高于控制点和高水位的 45%，则会激活预先高水位报警。
		0 1 – 99	Disabled 禁用 1% - 99%
8	0		Pre-First-Low Alarm Percentage 预先第一低水位报警比例
			The pre-first-low alarm level is at percentage between the control point and first low, with the control point being referring to 0% and the first low referring to 100%. For setting 0 there is no pre-first-low alarm and for settings higher than 1, the MM will generate an alarm if the water level reaches this % value between the commissioned control point and first low. For example, if this is set to 45%, then a pre-first-low alarm will occur if the water level drops to 45% between the control point and first low level. 预先第一低水位报警水位百分比应设在控制点和第一低水位之间的一个比例，控制点在 0%，第一低水位在 100%。当设定值为 0 时，没有预先第一低水位报警，设定值大于 1 时，如果水位达到调试控制点和第一低水位间的%时，控制模块将激活报警。如果百分比设为 45%，如果水位低于控制点和高水位的 45%，则会激活预先第一低水位报警。
		0 1 – 99	Disabled 禁用 1% - 99%
9	0		Burner Operation at High Water 高水位时燃烧器的运行
			For setting 0, the burner will continue to fire at high water. For setting 1 the burner will stop firing at high water. Expansion option 10 sets whether the pump turns off above the control point or high water. 设定值为 0 时，燃烧器将继续在高水位时燃烧。设定值为 1 时，燃烧器将在高水位时停止燃烧。扩展选项 10 用于设定泵是否在高于控制点或高水位时停止运行。
		0 1	Burner runs at high water 燃烧器在高水位时运行。 Burner stops at high water 燃烧器在高水位时停止。
10	0		Pump Turn Off Point 泵停止点
			The water level at which the pump turns off is set as a percentage above the control point for setting 0, or above the high water for setting 1, see expansion option 11. 设定值为 0 时，当水位高于控制点时泵关闭，设定值为 1 时，当水位高于高水位时泵关闭，详情见扩展选项 11。
		0 1	Pump turns off above control point 高于控制点时泵停止。 Pump turns off above high water 高于高水位时泵停止。
11	30		Pump Turn Off Percentage 泵停止百分比

		0 – 100	When the water level reaches this percentage of the control point or high water, depending on how expansion option 11 is set, the pump will turn off. If expansion option 11 is set to 0, then this percentage will be between the control point and high water. If expansion option 11 is set to 1, then then this percentage is above high water, and should not be set more than a safe top of the probe level. 当水位达到控制点或高水位的以下百分比时，泵将关闭，这取决于如何设置扩展选项 11。如果扩展选项 11 设为 0，则该百分比在控制点和高水位之间，如果扩展选项 11 设为 1，则该百分比大于高水位，但该值不应设为超过探针水位的安全线。 0% - 100%
12	10		Pump Turn On Percentage 泵启动百分比
		0 – 100	When the water level drops the control point, the pump will turn on at this percentage in between the control point and first low. 0% - 100% 当水位低于控制点时，泵将在控制点和第一低水位间启动，百分比如下。 0% - 100%

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
13	50		Feedwater Control Proportional Band 供水控制比例范围
			The proportional band is set as a percentage between the control point and first low where the PID control will make corrections to the feedwater going to the boiler to maintain the control point. The feedwater control will act on servomotor or VSD depending on how expansion option 2. The control point represents 0% and first low represents 100%, so it is possible to set the feedwater control proportional band to a water level below the first low. If the water level is outside of the proportional band, then the feedwater servomotor will remain fully open. 比例范围应设在控制点和第一低水位之间的一个比例，此时 PID 控件将纠正锅炉供水，以便保持在控制点内。供水控制将根据扩展选项 2 作用于伺服电机或 VSD。控制点代表 0%，第一低水位代表 100%，因此有可能将供水控制比例范围的水位设为低于第一低水位。如果水位超出比例范围，则供水伺服电机将保持完全运行。
		0 1 – 200	Disabled 禁用 1% - 200%
14	20		Feedwater Control Integral Time 供水控制整体时间
			The integral element in the feedwater control will make corrections to the feedwater via the servomotor or VSD, depending on expansion option 2. For a slower response, increase the integral time. For a quicker response in critical steam applications to avoid the water level reaching first low, decrease the integral time. However if overshoot occurs and the water level rises to above the control point and this is not desired, then the derivative element will need to be enabled, see expansion option 15. 供水控制元件将通过伺服电机或 VSD 纠正供水，这取决于扩展选项 2 的设定。如果需要较慢的反应，则应增加整体时间，如果在主要蒸汽应用程序中需要较快的反应以避免水位达到第一低水位，则应减少整体时间。如果出现过度反应或水位高于控制点，则需要启用派生元件，详情见扩展选项 15。
		0 1 – 1000	Disabled 禁用 Seconds 秒
15	0		Feedwater Control Derivative Time 供水控制微分时间
			The derivative element in the feedwater control is suitable for applications requiring a quick response but the water level should not rise too high above the control point. For example, if the burner is set to stop firing at high water in expansion option 9 and high water is commissioned not too far above from control point, then overshoot is undesirable in a critical steam application, as the burner would stop firing. 供水控制中的微控制元件适用于需要快速反应的应用程序，但水位不应高于控制点很多。例如，如果在扩展选项 9 中燃烧器设为在高水位停止燃烧以及高水位不高于控制点，则在主蒸汽应用程序中不会出现过度反应，燃烧器将停止燃烧。
		0 1 – 1000	Disabled 禁用 Seconds 秒
16	900		Feedwater Servo Open Angle 供水伺服电机打开角度

			The feedwater servomotor closed position is set by zeroing the potentiometer in commissioning mode. As default the servomotor is set as fully open, however this setting can be decreased to shorten the operational movement range of the servomotor. 在调试模式中将电位计归零可以设置供水伺服电机关闭位置。由于默认伺服电机是设为完全打开，因此减少该设定值将降低伺服电机的运行移动范围。
		100 – 900	10.0° – 90.0°
17	0		Pump Bypass Operation 泵旁路运行
			The pump bypass (terminal TB) will turn on at the switch point set as a % of the open range of the valve, and will turn off at an offset from the switch point, set as the bypass hysteresis, see expansion options 18 and 19. However if the pump is turned off, then the pump bypass will also be turned off. For setting 1, the pump bypass hysteresis is below the switch point, so the pump bypass will turn off at an offset below the switch point. For setting 2, the pump bypass hysteresis is above the switch point, so the pump bypass will turn off at an offset above the switch point. 泵旁路（终端 TB）在开关点设定为阀门打开范围的一个百分比时将启动，在开关点抵消和旁路滞后时将关闭，详情见扩展选项 18 和 19。如果泵被关闭，则泵旁路也将关闭。设定值为 1 时，泵旁路滞后低于开关点，此时泵旁路将在开关点下关闭。设定值为 2 时，泵旁路滞后高于开关点，此时泵旁路将在开关点上关闭。
		0	Pump bypass disabled 泵旁路禁用。
		1	Pump bypass on above switch point 泵旁路在开关点上。
		2	Pump bypass on below switch point 泵旁路在开关点下。
18	20		Pump Bypass Switch Point 泵旁路开关点
			The bump bypass switch point is set as a percentage of the valve open range set in expansion option 16. 泵旁路开关点应设为阀打开位置的一个百分比，详情见扩展选项 16。
		5 – 95	5% - 95%

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
19	5		Pump Bypass Hysteresis 泵旁路滞后
			The pump bypass hysteresis is set at percentage from the pump bypass switch point set in expansion option 18, and this will below the switch point for expansion option set to 1 (pump bypass on above switch point) and above the switch point for expansion option set to 2 (pump bypass on below switch point). 泵旁路滞后应设为泵旁路开关点的一个百分比，详情见扩展选项 18，扩展选项设为 1（泵旁路高于开关点）时泵旁路将低于开关点，扩展选项设为 2 时（泵旁路在开关点下）泵旁路高于开关点。
		0 1 – 50	Disabled 禁用 1% - 50%
20	0		Burner Operation on Feedwater Control Fault 供水控制故障时的燃烧器运行
			For setting 0, the burner will continue to fire if there is a feedwater fault. For setting 1 the burner will stop firing if there is a feedwater fault. If the burner continues to fire and the water level drops below the control point to first low, an alarm will occur and the burner will stop firing. 当设定值为 1 时，如果供水出现故障，则燃烧器继续燃烧。当设定值为 1 时，如果供水出现故障，则燃烧器将停止燃烧。如果燃烧器继续燃烧且水位下降低于控制点至第一低水位，则会出现报警，燃烧器将停止燃烧。
		0	Burner runs on feedwater control fault 燃烧器在供水控制故障时运行。
		1	Burner stops on feedwater control fault 燃烧器在供水控制故障时停止。
21	1		Function of Test Input 测试输入功能
			The test input terminal TST can be set for checking the auxiliary alarm outputs or shunt switch. For setting 0, hold the test input continuously to cycle through alarm outputs every two seconds. For setting 1, hold the test input for three seconds to trigger the shunt switch operation, and to cancel the shunt switch operation, hold the test input for a further three seconds. See expansion options 22 and 23 for the shunt switch timings. 测试输入终端 TST 可以设为检查辅助报警输出或并列开关。当设定值为 0 时，测试输入与报警输出将每隔两秒循环一次，当设定值为 1 时，测试输入每隔三秒将激活并联开关运行并取消并联开关运行，测试输入将再次持续三秒。关于并联开关定时请见扩展选项 22 和 23。
		0	Test input operates alarm outputs test 测试输入运行报警输出测试。
		1	Test input operates shunt switch 测试输入运行并联开关。
22	300		Shunt Switch – Time to 1st Low 并联开关-至第一低水位的时间

			When the shunt switch test is activated in expansion option 21, there is time delay for the water to reach the first low level, allowing the operator to decrease the water level. This test checks the first low alarm while the burner continues to operate. If water does not drop to the first low level in this time period, then MM will revert back to normal run mode and cancel the shunt switch test. 当并联开关测试在扩展选项 21 中被激活时，水到达第一低水位将有时间延迟，因此允许操作员自行降低水位。当燃烧器持续运行时本测试将检查第一低水位报警。如果在这一时间段内水没有降低低于第一低水位，则控制模块将返回至正常运行模式并取消并联开关测试。
		30 – 600	Seconds 秒
23	300		Shunt Switch – Time to 2nd Low 并联开关-至第二低水位的时间
			After the shunt switch has been tested for first low, there is further time delay for the water to reach the second low level, allowing the operator to further decrease the water level. This test checks the second low alarm while the burner continues to operate. If water does not drop to the second low level in this time period, the burner will turn off. 并联开关用于第一低水位测试后，水到达第二低水位将有时间延迟。因此允许操作员自行降低水位。当燃烧器持续运行时本测试将检查第二低水位报警。如果在这一时间段内水没有降低低于第二低水位，则燃烧器将停止。
		30 – 600	Seconds 秒
24	5		Sudden Pressure Drop Trigger Rate 突然压降触发率
			If the pressure drops by this value set over 3 seconds to a pressure below the reset offset from the required pressure setpoint set in expansion option 26, then a sudden pressure drop condition is detected and the control point will increase by a percentage set in expansion option 25. 如果压力下降至低于所需压力设定点重置补偿值时大于扩展选项 26 设定值三秒，则会检测出突然压降条件，控制点将根据扩展选项 25 按比例增加。
		1 – 100	PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) 低压传感器设为 PSI 或 0.1bar 或 0.01bar（取决于选项 1 中负载探测器的设置和参数 40 中公制/英制单位的设置）。

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
25	25		Sudden Pressure Drop Control Point Increase 突然压降控制点的增加
			If a sudden pressure drop is detected, the water level control point will increase to the percentage of the control point set. Once the steam pressure increases to the reset offset value from the required pressure setpoint, the control point will return to the commissioned value. See expansion options 24 and 26. 如果检测到突然压降，则水位控制点将增加至控制点的一个百分比。当蒸汽压力增加至所需压力设定点的重置补偿值时，控制点将返回值调试值。详情见扩展选项 24 和 26。
		0 1 – 75	Disabled 禁用 1% - 75%
26	10		Sudden Pressure Drop Reset Offset 突然压降重置补偿
			If the pressure drops by the value set in expansion option 24 over 3 seconds to a pressure below this reset offset from the required pressure setpoint, then a sudden pressure drop condition is detected and the control point will increase by a percentage set in expansion option 25. 如果压力下降至低于所需压力设定点重置补偿值时大于扩展选项 24 设定值三秒，则会检测到突然压降条件，控制点将根据扩展选项 25 按比例增加。
		0	Disabled 禁用
		1 – 100	PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) 低压传感器设为 PSI 或 0.1bar 或 0.01bar（取决于选项 1 中负载探测器的设置和参数 40 中公制/英制单位的设置）。
27	20		Probe Mismatch Threshold 探针不匹配阈值
			The probe mismatch threshold is a percentage of the first low. If the probes and/or external level sensors read a difference in the level less than this value set for 30 seconds while the burner is firing, then a probe mismatch alarm will occur. 探针不匹配阈值是第一低水位的一个百分比。当燃烧器燃烧时如果探针和/或外部水位传感器读取的数值低于该值 30 秒，则会出现探针不匹配报警。
		5 – 100	5% - 100%
28	3		Capacitance Probe Still Water Threshold 电容探针静水阈值
			This threshold set is the distance between the high peak and low peak of the water wave signature. If the capacitance probes detect a reading between the high peak and low peak which is less than this value for 30 seconds while the burner is firing, a capacitance probe still water alarm will occur. 该阈值设定值代表了水波信号高峰和低峰间的距离。当燃烧器燃烧时如果电容探针检测到高峰和低峰的读数小于 30 秒，则会出现电容探针静水报警。
		0	Disabled 禁用
		1 – 100	1 – 100mm or 0.0 – 3.9” (see parameter 40) 1 – 100mm 或 0.0 – 3.9”（见参数 40）
29	10		Capacitance Probe Filter Time 电容探针过滤时间

		1 – 30	The filter time is the rolling time period over which the capacitance probes take the water level reading. When a moving water level is detected this time period reduces in proportion linearly to the movement. 过滤时间是电容探针获得水位读数的滚动时间，当检测到移动水位时，该时间将根据线性运动按比例降低。 Seconds 秒
30	0		External Level Sensor Scaling 外部水位传感器计数
		0 1 – 20000	If an external level sensor is set in expansion option 4, then the 4-20mA signal will need be scaled for the length of the sensor. 如果在扩展参数 4 中设定外部水位传感器，则根据传感器长度需要测量 4-20mA 信号。 Disabled 禁用 0.01 – 200.00mm/mA or 0.01 – 200.00"/mA (see parameter 40) 0.01– 200.00mm/mA 或 0.01 – 200.00"/mA（见参数 40）
31	10		External Level Sensor Filter Time 外部水位传感器过滤时间
		1 – 30	The filter time is the rolling time period over which the external level sensor takes the water level reading. When a moving water level is detected this time period reduces in proportion linearly to the movement. 过滤时间是外部水位传感器获得水位读数的滚动时间，当检测到移动水位时，该时间将根据线性运动按比例降低。 Seconds 秒
32	3		Wave Signature Average Level 水波信号平均水平
		0 – 10	The wave signature average level is set as percentage of the wave signature height of the water level. 水波信号平均水平设为水位水波信号高度的一个百分比。 0 – 100% (value 3 = 30%) 0 – 100% (数值 3 = 30%)

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
33	-		Unused 未使用
34	-		Unused 未使用
35	-		Unused 未使用
36	-		Unused 未使用
37	-		Unused 未使用
38	-		Unused 未使用
39	-		Unused 未使用
40	0		Top Blowdown Function 顶部排污功能
			To enable top blowdown, the top blowdown expansion feature must be unlocked. The TDS value in the water, measured by the TDS probe on terminals 3P+, 3P-, 3T+ and 3T-, is maintained by a PID loop, see expansion options 52, 53 and 54. For setting 1, the terminal TB output will open and close an external solenoid valve. For setting 2, the top blowdown valve is open and closed via a top blowdown servomotor on terminals P-, FW, P+, TBI and TBD. For setting 3, continuous top blowdown management is enabled for the top blowdown. 要启用顶部排污功能，则必须解锁顶部排污扩展功能。终端 3P+、3P-、3T+ 和 3T-上的 TDS 探针将测量水中的 TDS 值并保持 PID 循环，见扩展参数 52、53 和 54。当设定值为 1 时，终端 TB 输出将打开并关闭外部电磁阀。当设定值为 2 时，顶部排污阀将通过终端 P-, FW, P+, TBI 和 TBD 上的顶部排污伺服电机打开或关闭。当设定值为 3 时顶部排污功能将启用持续顶部排污管理。
		0	Top blowdown disabled 顶部排污禁用。
		1	Top blowdown using solenoid 顶部排污使用电磁阀。
		2	Top blowdown using servo (2-state) 顶部排污使用伺服电机（2 种状态）
		3	Top blowdown using servo (continuous) 顶部排污使用伺服电机（持续）
41	0		TDS Units 总溶解固体单位
			The TDS units can be displayed in ppm or µS/cm. 总溶解固体单位可以按 ppm 或 µS/cm 显示。
		0	Concentration in ppm 浓度显示为 ppm。
		1	Conductivity in µS/cm 导电率显示为 µS/cm
42	2500		TDS Target 总溶解固体目标
			This is the set TDS target value which the TDS control will try to maintain by open and closing the solenoid or top blowdown valve, see expansion option 40. The target TDS value should be set according to the boiler manufacturer's guidelines. 是设定的总溶解固体目标值，总溶解固体控制将尝试通过打开或关闭电磁阀或顶部排污阀保持运行，见扩展选项 40。总溶解固体目标值应根据锅炉制造商指南来设定。
		50 – 9999	ppm or µS/cm (see expansion option 41) ppm 或 µS/cm (见扩展选项 41)
43	180		TDS Temperature Compensation 总溶解固体温度补偿

		20 – 1000	The steam temperature is calculated from the steam pressure sensor reading. The TDS value read will be corrected by the % per °C set, for the difference between the steam temperature and 25 degrees °C, so the TDS measured value displayed is shown corrected to 25 degrees °C. This temperature compensation coefficient will depend on the contaminants in the water and should be set accurately for the contaminants that make up the TDS in the water. 蒸汽温度可以通过蒸汽压力传感器读数来计算。总溶解固体值读数将按每摄氏度设定值来纠正百分比，当蒸汽温度和 25 度之间出现不同时，将显示总溶解固体测量值并纠正至 25 度。该温度补偿系数将取决于水污染程度，因此应根据水中的 TDS 组成准确的设定污染值。 0.20 – 10.00% per °C 每摄氏度 0.20 – 10.00%
44	65		TDS PPM Conversion 总溶解固体 PPM 的转换
		20 – 100	The ppm to µS/cm conversion coefficient will depend on the contaminants in the water and should be set accurately for the contaminants that make up the TDS in the water. Ppm 至 µS/cm 的转换系数将取决于水中的污染程度，因此应根据水中的总溶解固体组成准确的设定污染值。 0.20 – 1.00ppm / (µS/cm)

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
45	1000		TDS Adjustment 总溶解固体的调节
		10 – 999	This value will automatically display the adjustment factor when the TDS probe is recalibrated during running. 当运行时重新校准总溶解固体探针该时将自动显示调节因数。 0.010 – 9.999
46	0		TDS Warning Level 总溶解固体报警级别
		0 1 – 5000	The TDS warning level is an absolute limit; if the average TDS reading taken from the measurement time is higher than this TDS limit, a warning will be generated. This limit should not be set lower than the target TDS value set in expansion option 42. 总溶解固体报警级别是一个绝对限值。如果在测量时间内测得的总溶解固体平均读数高于总溶解固体限值，则会激活报警。该限值不能设为低于在扩展选项 42 中设定的目标总溶解固体值。 Disabled 禁用 ppm or µS/cm (see expansion option 41) ppm 或 µS/cm (见扩展选项 41)
47	10		Pressure Threshold 压力阈值
		0 1 – 100	This pressure threshold is an offset below the required pressure setpoint. If the actual pressure is below this offset pressure, then TDS control will not operate. 压力阈值是低于所需压力设定点时的一种补偿值。如果实际压力低于该补偿压力，则总溶解固体控件将不会运行。 Disabled 禁用 PSI or 0.1 bar or 0.01 bar for low pressure sensor (depends on load detector set in option 1 and metric/imperial units set in parameter 40) 低压传感器设为 PSI 或 0.1bar 或 0.01bar（取决于选项 1 中负载探测器的设置和参数 40 中公制/英制单位的设置）。
48	25		Sample Time 采样时间
		2 – 60	The first stage of the TDS control cycle is the sample time, where the solenoid valve or top blowdown servomotor is fully opened to take a sample. 总溶解固体控制循环的第一阶段是采样时间，此时电磁阀或顶部排污伺服电机将全部打开进行采样。 Seconds 秒
49	25		Settle Time 沉淀时间
		2 – 60	The second stage of the TDS control cycle is the settle time. Following taking a sample time in expansion option 48, the solenoid valve or top blowdown servomotor goes fully closed to allow the sample to stabilise for this settle time. 总溶解固体控制循环的第二阶段是沉淀时间，在扩展选项 48 中的采样时间后，电磁阀或顶部排污伺服电机将全部关闭，使样本稳定，该时间为沉淀时间。 Seconds 秒
50	10		Measurement Time 测量时间

			The third stage of the TDS control cycle is the measurement time. Following the settle time in expansion option 49, TDS probe will a measure the TDS in the sample every second set in the measurement time. The average across these measurements is taken as the TDS reading for that cycle. A longer measurement time will allow an average to be taken over more TDS probe measurements, and so the TDS readings will be smooth. 溶解固体控制循环的第三阶段是测量时间，在扩展选项 49 中的沉淀时间后，总溶解固体探头将每隔一秒在样本中测量总溶解固体，该时间为测量时间。测量的平均值将作为本次循环的总溶解固体读数。测量时间越长，则需要多次进行总溶解固体探头测量以获得平均值，这样总溶解固体读数将保持均匀。
		2 – 30	Seconds 秒
51	600		Blowdown Time 排污时间
			The final stage of the TDS control cycle is the blowdown time. Following the measurement time in expansion option 50, if the measured reading is less than 100ppm below the target value, the solenoid valve or top blowdown servomotor will remain closed for the duration of the blowdown time. If the measure reading is higher than the target TDS value, the PID control will operate. 总溶解固体控制循环的最后一个阶段是排污时间，在扩展选项 50 中的测量时间后，如果测量的读数小于目标值 100ppm，则电磁阀或顶部排污伺服电机将保存关闭，该时间为排污时间。如果测量的读数大于总溶解固体目标值，则 PID 控件将运行。
		10 – 1200	Seconds 秒

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
52	1800		Proportional Band 比例范围
			The proportional band is set as an offset of above the set TDS target value, within the proportional band, the PID control will make corrections during the blowdown time to maintain the TDS target value. If using a solenoid valve or servomotor (2-state) TDS control, then the P element will determine how long the valve is fully open for before it goes to fully closed, during the blowdown time. If using servomotor continuous TDS control, then the P element will determine what angle the valve is opened to during the blowdown time. If the measured is above this proportional band, then the solenoid valve or top blowdown servomotor will remain fully open. 比例范围应设为总溶解固体目标值的一种补偿值，在比例范围内 PID 控件将在排污时间进行纠正，以便保持在总溶解固体目标值内。如果使用电磁阀或伺服电机（2 种状态）TDS 控件，则 P 元件在排污时间内将决定电磁阀在完全关闭前的完全打开时间。如果使用伺服电机持续 TDS 控件，则 P 元件将决定排污时间内电磁阀打开的角度。如果测量值大于该比例范围，则电磁阀或顶部排污伺服电机将保持完全打开。
		10 – 10000	ppm or µS/cm (see expansion option 41) ppm 或 µS/cm (见扩展选项 41)
53	600		Integral Time 整体时间
			For a slower response, increase the integral time. For a quicker response with fast changing TDS values, decrease the integral time. 需要较慢反应时可以增加整体时间。需要较快反应时改变总溶解固体值时可以减少整体时间。
		0	Disabled 禁用
		1 – 1000	Seconds 秒
54	5		Derivative Time 微分时间
			For water level with a quickly changing TDS value in the water, a derivative time can be added to prevent overshoot. 水中的总溶解固体值发生快速改变时可以增加微分时间以防止过度反应。
		0	Disabled 禁用
		1 – 1000	Seconds 秒
55	900		Servo Open Angle 伺服电机打开角度
			The TDS servomotor closed position is set by zeroing the potentiometer in commissioning mode. As default the servomotor is set as fully open, however this setting can be decreased to shorten the operational movement range of the servomotor. 总溶解固体伺服电机关闭位置可以在调试模式中将电位计归零进行设置。由于伺服电机默认是设为全开，因此可以减少该设定值以减少伺服电机的运行范围。
		100 – 900	10.0° – 90.0°
56	-		Unused 未使用
57	-		Unused 未使用
58	-		Unused 未使用
59	-		Unused 未使用

60	0		Bottom Blowdown Function 底部排污功能
			To enable bottom blowdown, the bottom blowdown expansion feature must be unlocked. The bottom blowdown function can be set for up to 4 timed blowdowns over 24 hours. For setting 1, the timed blowdown output terminal BB is used with an external solenoid valve. For setting 2, the bottom blowdown control module is used on terminals 5T+ and 5T-, which is connected to the bottom blowdown servomotor. 要启用底部排污功能，则必须解锁底部排污扩展功能。底部排污功能在 24 小时内最多可以设为 4 次。当设定值为 1 时将使用带有外部电磁阀的排污输出终端 BB。当设定值为 2 时，在终端 5T+ 和 5T-上将使用底部排污控制模块，该终端连接底部排污伺服电机。
		0	Bottom blowdown disabled 底部排污禁用
		1	Bottom blowdown using solenoid 底部排污使用电磁阀
		2	Bottom blowdown using Autoflame controller 底部排污使用 Autoflame 控制器
61	0		Bottom Blowdown Triggering 底部排污的触发
			For setting 0, when the MM does not need a manual trigger for a blowdown to start when the configured blowdown timing is reached. For setting 1, a manual trigger is required to start the blowdown when the configured blowdown timing is reached. 设定值为 0 时，当达到设定的排污时间时，控制模块不需要手动触发排污。设定值为 1 时，当达到设定的排污时间时，需要手动启动排污。
		0	Automatic triggering 自动触发
		1	Manual triggering 手动触发

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
62	0		Bottom Blowdown Reduction 底部排污的减少
			If bottom blowdown reduction is enabled, then the timing of the blowdown will reduce in proportion to the steam production. If there is no steam production and the configured blowdown timing is reached, then the minimum time for that blowdown can be set in expansion option 63. 如果启用了底部排污减少功能，则排污时间将根据蒸汽产生量按比例减少。如果没有蒸汽产生并达到设定的排污时间，则可以在扩展选项 63 中设置最少排污时间。
		0	Bottom blowdown reduction disabled 底部排污减少禁用。
		1	Bottom blowdown reduction enabled 底部排污减少启用。
63	0		Minimum Blowdown Duration 最少排污持续时间
			This is the minimum duration for which blowdown will occur, if bottom blowdown reduction is enabled in expansion option 62. For setting 0, if there is no steam production, no blowdown will occur, however if a time is set, then the minimum blowdown duration will be used when there is no steam production. 如果在扩展选项 62 中启用底部排污减少，则在排污发生时需要设定最少持续时间。当设定值为 0 时，如果没有蒸汽产生，则不会发生排污，如果已经设定了一个时间，则当没有蒸汽产生时可以使用最少排污持续时间。
		0	Disabled 禁用
		1 – 60	Seconds 秒
64	0		Boiler Steam Production Rating 锅炉蒸汽的产生率

		0 – 5000	If bottom blowdown reduction is enabled in expansion option 62, then the maximum steam production rating for that boiler should be set. The bottom blowdown time is reduced according to the current steam production and maximum steam production ratio. This will mean that the blowdown occurs for a shorter time when there is low steam production. 如果在选项 62 中启用底部排污减少，则应设置锅炉的最大蒸汽产生率。底部排污时间应根据当前蒸汽产生率和最大蒸汽产生率来减少。这意味着当产生较少蒸汽时在短时间内会发生排污。 0 – 500000 kg/hour or 0 – 1102310l lb/hr (see parameter 40)、 0 – 500000 kg/小时或 0 – 1102310l lb/小时 (see parameter 40 见参数 40)。
65	-		Unused 未使用
66	-		Unused 未使用
67	-		Unused 未使用
68	-		Unused 未使用
69	-		Unused 未使用
70	-		Unused 未使用
71	-		Unused 未使用
72	-		Unused 未使用
73	-		Unused 未使用
74	-		Unused 未使用
75	-		Unused 未使用
76	-		Unused 未使用
77	-		Unused 未使用
78	-		Unused 未使用
79	-		Unused 未使用

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
80	0		Draught Control Servo Channel 通风控制伺服电机通道
			To use a draught servomotor on channel 7 with or without the draught control function, the draught control expansion feature must be unlocked. The servomotor is wired to terminals DP-, DP+, DPW, DCI and DCD. For setting 0 there draught servomotor is optioned off. For setting 1, the draught servomotor can be set for draught control or just servomotor operation in expansion option 82. 在带有或不带有通风控制功能的通道 7 上使用通风伺服电机时必须解锁通风控制扩展功能，同时伺服电机与终端 DP-, DP+, DPW, DCI 和 DCD 相连。当设定值为 0 时，通风伺服电机为关闭，当设定值为 1 时，可以设置通风伺服电机进行通风控制或仅在扩展选项 82 中运行伺服电机。
		0	Draught servo disabled 通风伺服电机禁用。
		1	Draught servo enabled 通风伺服电机启用。
81	0		Draught Servo Control Method 通风伺服电机控制方法
		0	Autoflame servomotor, 0.1 degree control Autoflame 伺服电机，0.1 度控制
		1	Autoflame servomotor, 0.5 degree control Autoflame 伺服电机，0.5 度控制
		2	Industrial servomotor, 0.1 degree control 工业伺服电机，0.1 度控制
		3	Industrial servomotor, 0.5 degree control 工业伺服电机，0.5 度控制
82	0		Draught Control Function 通风控制功能
			For setting, if the draught servomotor channel is enabled in expansion option 80, but the draught control is disabled, the servomotor will open and close according to its commissioned curve, without any corrections to maintain stack pressure. For setting 2, the MM will make corrections to the stack damper as the measured stack pressures varies from the commissioned stack pressure. The draft air pressure sensor is wired to terminals DT+, DT-, DP- and DP+.设置时，如果在扩展选项 80 中启用通风伺服电机通道，但禁用通风控制，则伺服电机将根据其调试曲线打开或关闭，而不会进行纠正以保持通风管压力。当设定值为 2 时，控制模块将按测得的通风管压力纠正通风管阻尼器，测得的通风管压力将不同于调试的通风管压力。通风空气压力传感器连接于终端 DT+, DT-, DP- 和 DP+。
		0	Draught control disabled 通风控制禁用
		1	Draught control enabled 通风控制启用
83	15		Draught Servo Minimum Angle 通风伺服电机的最小角度
			A minimum angle for the draught servomotor is set so that the stack damper cannot be drive closed beyond this position, at all other times other than the closed position. During commissioning, the servomotor position cannot be set low than this minimum angle value, except for the closed position. 可以设置通风伺服电机的最小角度，这样通风管阻尼器不会在超过该角度时关闭或在关闭位置的其他时间关闭。在调试期间，伺服电机的位置不得设为低于最小角度值，但关闭位置除外。
		0 – 90	0° – 90°
84	1		Maximum Compensation 最大补偿

			The maximum compensation angle is the percentage of the commissioned draught servomotor angle. This is the maximum correction on the stack damper either forwards or backwards, during draught control. 最大补偿角度是调试的通风伺服电机角度百分比。在通风控制期间，通风管阻尼器将向前或向后做最大调节。
		0 1 2	10% 15% 20%
85	5		Delay Before Compensation 补偿前延迟
			This time delay is used for two stages in the burner cycle; once main flame has been established, the draught control operation will only begin after this time delay. During firing, correction on the stack damper will only be made the servomotor is outside of the angle variation tolerance for that commissioned point, for this time period, see expansion option 86. 在燃烧器循环中有两阶段使用时间延迟，当确定主火焰后，通风控制将在时间延迟后运行。在燃烧期间，当伺服电机超出调试点角度公差变化后，通风管阻尼器将进行纠正，详情见扩展选项 86。
		1 – 30	Seconds 秒
86	10		Commissioned Angle Variation Tolerance 调试角度公差变化
			During firing, if the draught servomotor angle is outside of the commissioned variation tolerance for the time period set in expansion option 85, corrections will be made on the stack damper. 在燃烧期间，如果通风伺服电机角度超出在扩展选项 85 中设定的调试角度公差变化，通风管阻尼器将进行纠正。
		0 – 60	0° – 60°

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
87	0		Pressure Tolerance Before Fault 故障前的压力公差
			This is the maximum variation from the commissioned draught air pressure. If the pressure is at this maximum variation or higher for 2 minutes, then an alarm/warning is generated, see expansion option 88. 调试的通风空气压力有最大变化。如果压力在最大变量中或大于最大变量 2 分钟，则会激活报警或警告，详情见扩展选项 88。
		0	Disabled 禁用
		1 – 500	0.1 – 50.0 mbar or 0.1 – 50.0 ”WG (see parameter 43) 0.2 0.1-50.0 mbar 或 0.1 – 50.0 ”WG (见参数 43)
88	0		Action on Pressure Sensor Fault 压力传感器故障
			For setting 0, an alarm will occur and the burner will stop firing. For setting 1, a warning will occur and the burner will continue firing, with the draught servomotor will move to the commissioned angle throughout the firing curve, without any draught control compensation. 当设定值为 0 时，将会出现报警，燃烧器将停止燃烧。当设定值为 1 时，将出现报警，燃烧器将继续燃烧，通风伺服电机将通过燃烧曲线移动至调试角度，而没有通风控制补偿。
		0	Draught pressure sensor fault generates alarm 风压力传感器故障产生报警。
		1	Draught pressure sensor fault generates warning 通风压力传感器故障产生警告。
89	15		Pressure Sensor Filter Time 压力传感器过滤时间
			This is the time period over which the draught air pressure sensor readings are filtered over time. If there is excess fluctuation in the pressure readings, increase the filter time. To improve the system’s response to changes in pressure, decrease the filter time. 这是一个通风空气压力传感器读数随时间推移被过滤的时间段。如果压力读数中出现多余的波动，则可以增加过滤时间。要改善系统对压力变化的反应时间，则可以减少过滤时间。
		1 – 60	Seconds 秒
90	200		Proportional Band 比例范围
			The proportional band is an offset from the commissioned draught air pressure, where the PI control will make corrections to maintain the commissioned air pressure. 比例范围是一种调试通风空气压力的补偿值，此时 PI 控件将进行纠正以保持调试空气压力。
		1 – 10000	2.00 – 100.00 mbar or 2.00 – 100.00 ”WG (see parameter 43) 2.00 – 100.00 mbar 或 2.00 – 100.00 ”WG (见参数 43)
91	5		Integral Time 整体时间

			For a slower response to the changes in draught air pressure, increase the integral time. For a quicker response, decrease the integral time. 要降低对通风空气压力改变的反应时可以增加整体时间，要快速反应时可以减少整体时间。
		1 – 1000	Seconds 秒
92	.		Unused 未使用
93	.		Unused 未使用
94	.		Unused 未使用
95	.		Unused 未使用
96	.		Unused 未使用
97	.		Unused 未使用
98	.		Unused 未使用
99	.		Unused 未使用
			Unused 未使用
100	0		Sequencing/DTI or Modbus Function 排序/数据传输接口或 Modbus 功能
			To enable direct Modbus, the Modbus expansion feature must be unlocked. If direct Modbus is enabled, then option 16 must be set to 0, as Intelligent Boiler Sequencing cannot be used with direct Modbus. Please see section 4.2 for the available Modbus addresses. 要启用直接 Modbus 协议时必须解锁 Modbus 扩展功能。如果启用了直接 Modbus 协议，则选项 16 必须设为 0，因为智能锅炉排序无法与直接 Modbus 协议一起使用。关于现有的 Modbus 地址请见第 4.2 节。
		0	MM/DTI Sequencing 控制模块/数据传输接口排序
		1	Modbus

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
101	0		Modbus Baud Rate Modbus 波特率
			The baud rate on the MM should be set the same as the baud rate used on the external Modbus communication program. 控制模块的波特率应与外部 Modbus 通信程序使用的波特率设的相同。
		0	9600 Baud 波特率 9600
		1	19200 Baud 波特率 19200
102	0		Modbus Parity Setting Modbus 奇偶校验设置
			The parity on the MM should be set the same as the baud rate used on the external Modbus communication program. 控制模块奇偶校验值应与外部 Modbus 通信程序使用的波特率设的相同。
		0	No parity 无奇偶校验
		1	Odd parity 奇校验
		2	Even parity 偶校验
103	1		Modbus Stop Bits Setting Modbus 停止位设置
			The stop bits on the MM should be set the same as the baud rate used on the external Modbus communication program. 控制模块的停止位应与外部 Modbus 通信程序使用的波特率设的相同。
		1	1 stop bit 1 个停止位
		2	2 stop bits2 个停止位
104	1		Modbus Device ID Modbus 设备标识
			This ID is used to recognise the device on the external Modbus communication program. 本标识用于识别外部 Modbus 通信程序上的设备。
		1 – 247	
105	0		Binary Format 二进制格式
			The binary format on the MM should be set the same as the baud rate used on the external Modbus communication program. 该标识用于识别外部 Modbus 通信程序上的设备。
		0	Binary format 二进制格式
		1	ASCII format ASCII 格式
106	.		Unused 未使用
107	.		Unused 未使用
108	.		Unused 未使用
109	.		Unused 未使用
110	0		First Outs Function 先出功能

			If first outs are enabled, they will can be configured and labelled in Commission mode and Online Changes. To tie the first outs interlock to the MM's safety stat, set option/ parameter 145. 如果启用先出功能，则可以在调试模式中对其进行配置和标记，并且在线进行更改。要将先出联锁与控制模块安全功能连接时，请设置选项/参数 145。
		0	Disabled 禁用
		1	Enabled 启用
111	-		Unused 未使用
112	-		Unused 未使用
113	-		Unused 未使用
114	-		Unused 未使用
115	-		Unused 未使用
116	-		Unused 未使用
			Unused 未使用

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
117	-		Unused 未使用
118	-		Unused 未使用
119	-		Unused 未使用
120	0		Heat Flow Function 热流量功能
			To determine the steam or hot water flow, the heat flow expansion feature must be unlocked. Up to 3 temperature sensors (T1, T2 and T3) are used for steam or hot water flow metering depending on what heat flow function is set. T1 is wired to terminals T1 and -, T2 to terminals T2 and -, and T3 and -. See Expansion Features Installation and Commissioning Guide. 要确定蒸汽或热水流量，则应解锁热流扩展功能。蒸汽或热水流量计量使用最多三个温度传感器（T1、T2 和 T3），这取决于热流功能的设置。T1 连接与终端 T1，T2 连接于终端 T2,T3 连接于终端 T3，见扩展功能安装与调试指南。
		0	Disabled 禁用
		1	Steam flow with default values 蒸汽流量，带默认值
		2	Steam flow 蒸汽流量
		3	Steam flow with economiser 蒸汽流量，带节热器
		4	Steam flow with deaerator 蒸汽流量，带除气器
		6	Steam flow with deaerator and feed sensor 蒸汽流量，带除气器和供水传感器
		7	Hot water flow with default values 热水流量，带默认值
		8	Hot water flow 热水流量
		9	Hot water flow with economiser 热水流量，带节热器
121	100		Boiler Standing Losses 锅炉蒸发损失
			The boiler standing losses are known as the heat lost from the boiler surfaces and pipework through radiation, and is set as a percentage of the maximum continuous rating of the boiler. 锅炉的蒸发损失被视为锅炉表面和管道通过辐射的热损失，蒸发损失应设为锅炉最大持续率的百分比。
		0 – 200	0.00 – 2.00%
122	100		Blow Down Losses 排污损失
			This is the typical losses resulting from top blowdown and bottom blowdown. 这是一种顶部排污和底部排污时常见的损失。
		0 – 100	0.00 – 10.0%
123	0		Blow Down Loss Calculation Method 排污损失计算方法
			For setting 0, a fixed blow down loss is used in the steam or hot water flow metering, set in expansion option 122. For setting 1, the blow down loss will change according to the current firing rate in the metering calculation. 当设定值为 0 时，蒸汽或热水流量计量中使用固定的排污损失，在扩展选项 122 中设置。当设定值为 1 时，排污损失将根据计量计算的当前燃烧率发生改变。
		0	Fixed loss 固定损失
		1	Loss proportional to firing rate 损失与燃烧率成正比。

124	100		Make Up Flowmeter Range 流量计补偿范围
		0 – 9999	The make-up flowmeter range is only relevant if the steam flow metering function has been set with deaerator in expansion option 120. 只有当蒸汽流量计量功能在扩展选项 120 中设为带有除气器时才与流量计补偿范围有关。 0.0 – 999.9 litres/s or gallon/s (see parameter 40) 0.0 0.0 – 999.9 litres/s 或 gallon/s (见参数 40)
125	100		Condensate Flowmeter Range 冷凝水流量计范围
		0 – 9999	The condensate flowmeter range is only relevant if the steam flow metering function has been set with deaerator in expansion option 120. 只有当蒸汽流量计量功能在扩展选项 120 中设为带有除气器时才与流量计冷凝范围有关。 0.0 – 999.9 litres/s or gallon/s (see parameter 40) 0.0 – 999.9 litres/s 或 gallon/s (见参数 40)
126	80		Default Feedwater Temperature 默认供水温度
		0 – 300	If the heat flow function is set for steam or hot water flow metering using default values, then this default feedwater temperature is used for the steam or hot water flow metering calculations. 如果热流功能设为蒸汽或热水计量使用默认值，则在蒸汽或热水流量计算中使用默认供水温度。 °C or °F (see parameter 40) °C 或 °F (见参数 40)

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
127	10		Steam Flow Start Pressure Offset 蒸汽流量起始压力补偿
			The steam flow start pressure is an offset of the required pressure. Steam flow metering will begin when the actual pressure is within this offset from the required pressure, as the system would be generating useful steam. 蒸汽流量起始压力是所需压力的一种补偿值。当实际压力处于所需压力补偿值范围内时开始进行蒸汽流量计量，此时系统将产生有用的蒸汽。
		0	Disabled 禁用
		1 – 100	0.1– 10.0 bar or 1 – 100 PSI (see parameter 40) 0.1 – 10.0 bar 或 1 – 100 PSI (见参数 40)
128	10		Steam Flow Stop Pressure Offset 蒸汽流量停止压力补偿
			The steam flow stop pressure is an offset below the required pressure. if the actual steam pressure below this value, then steam flow metering will stop. 蒸汽流量停止压力是所需压力的一种补偿值。当实际压力低于补偿值时将停止蒸汽流量计量。
		0	Disabled 禁用
		1 – 100	0.1 – 10.0 bar or 1 – 100 PSI (see parameter 40) 0.1 – 10.0 bar 或 1 – 100 PSI (见参数 40)
129	0		Heat Flow Data Source 热流量数据源

			For setting 0, the T1, T2 and T3 temperature sensor are wired to the MM, and the heat flow function is set via expansion option 120. For setting 1, the same temperature information is fed back up to the MM via connections to the IO module connected to the DTI. The ID number of the IO module must be set in expansion option 129. 当设定值为 0 时，T1、T2 和 T3 的温度传感器连接于控制模块，热流功能可以通过扩展选项 120 进行设置。当设定值为 1 时，相同的温度信息将通过连接与数据传输接口的输入输出模块传递该控制模块。输入输出模块的标识号必须在扩展选项 129 中设置。
		0	Sensors connected to MM 传感器连接于控制模块
		1 – 10	Sensors connected to IO Unit 1 – 10 传感器连接与输入输出单元 1-10。
130	-		Unused 未使用
131	-		Unused 未使用
132	-		Unused 未使用
133	-		Unused 未使用
134	-		Unused 未使用
135	-		Unused 未使用
136	-		Unused 未使用
137	-		Unused 未使用
138	-		Unused 未使用
139	-		Unused 未使用
140	-		Unused 未使用
141	-		Unused 未使用
142	-		Unused 未使用
143	-		Unused 未使用
144	-		Unused 未使用

Exp Option 扩展选项	Default 默认值	Range 范围	Description 说明
148	-		Unused 未使用
149	-		Unused 未使用
150	-		Unused 未使用
151	-		Unused 未使用
152	-		Unused 未使用
153	-		Unused 未使用
154	-		Unused 未使用
155	-		Unused 未使用
156	-		Unused 未使用
157	-		Unused 未使用
158	-		Unused 未使用
160	-		Unused 未使用

3 COMMISSIONING FUEL-AIR CURVE 调试燃料-空气曲线

3.1 Overview 概述

Important Note: Prior to commissioning, the fuel and air servomotors must be calibrated to ensure that the position of the valves and damper correspond to the potentiometer feedback signal as displayed on the MM. When the valve is fully closed, the MM should display zero degrees. If it does not, please adjust the servomotor potentiometer.
重要提示：调试前必须校准燃料和空气伺服电机，确保阀门和阻尼器位置与控制模块上显示的电位器反馈信号一致。当阀门完全关闭时，控制模块应显示零度角，否则请调节伺服电机电位器。

The commissioning procedure as described must be strictly adhered to. Anybody commissioning an MM must be trained in operating combustion equipment safely. The Autoflame products must only be installed, set up, commissioned and adjusted by an Autoflame certified technical engineer.
必须严格遵守所述的调试流程，任何调试控制模块的人员都必须接受安全运行燃烧设备的培训。Autoflame 产品必须由 Autoflame 持证技术工程师进行安装、设置、调试和调节。

The fundamental idea of the system is to set a fuel valve position and then set a corresponding air damper position. Care must be taken when adjusting the fuel and air positions so as not to create any unstable or hazardous combustion conditions, e.g. moving the fuel valve to the open position without increasing the air damper position. Improper use may result in property damage, serious physical injury or death.
系统的基本理念时设置燃料阀位置，然后设置对应的空气阻尼器位置。调节燃料和空气位置时必须特别小心，防止出现不稳定或有害的燃烧状况，例如将燃料阀移动至打开位置而不增加空气阻尼器位置。不正确的使用方式可能会导致财产损失、严重的身体伤害或死亡。

If the MM is commissioned without an EGA then a combustion analyser is required to check the exhaust gases. If the system does have an EGA, then a combustion analyser is not necessary as the EGA performs all normal exhaust gas measurements. When burning oil a smoke detection device is also necessary to check that the smoke generated is within safe limits.
如果控制模块没有与尾气分析仪一起调试，则需要燃烧分析仪检查废气。如果系统没有安装尾气分析仪，则不需要燃烧分析仪，因为尾气分析仪将进行所有正常的废气测量。当燃烧燃油时，则需要烟气检测设备以检查产生的烟气是否在安全范围内。

To implement commissioning efficiently, arrange for a substantial load on the boiler. The commissioning procedure can be interrupted due to excess temperature or pressure, causing the burner to turn off; the commissioning data entered so far is not lost, provided power is not lost to the MM. When the burner is called back on, the system starts automatically and commissioning can proceed from where it was left.
为了有效的进行调试，需要对锅炉施加负载。调试流程可能会因为过高的温度或压力而中断，从而导致燃烧器关闭、失去输入的调试日期，但不会失去为控制模块提供的电量。当燃烧器启用时，系统将自动启动，调试经继续进行。

Once a start position has been entered, the high fire position is entered next, then descending fuel/air positions are entered consecutively until finally the low fire position is entered. CH1 and CH2 positions must always be less than the ones previously entered; however CH3 to CH7 can be set lower or higher than the previous position. CH7 is used for the draught servomotor (unlockable expansion feature).
输入起始位置后是输入高火焰位置，然后按次序输入降低燃料/空气位置，直至输入低火焰位置。CH1 和 CH2 位置必须小于之前输入的数值，但 CH3 和 CH7 可以设置的小于或高于之前的位置。CH7 用于通风伺服电机（可解锁扩展选项）。

CH1 Fuel valve 燃料阀
CH2 Air damper 空气阻尼器
CH3 Auxiliary Servomotor 辅助伺服电机
CH4 Auxiliary Servomotor 辅助伺服电机
CH5 VSD 1
CH6 VSD 2
CH7 Draught servomotor (unlockable expansion feature)
通风伺服电机（可解锁扩展选项）

On a newly installed system the following procedures should be carried out as listed:
新安装的系统必须遵守以下流程：

1. Check all interconnecting wiring between the MM and external components is correct.
1. 检查控制模块和外部组件的所有连接线路是否正确。
2. Set options, parameters and expansion options required (refer to section 2).
2. 设置所需的选项、参数和扩展选项（见第 2 部分）。
3. Commission bottom blowdown module if optioned.
3. 调试底部排污模块（可选）。
4. Commission water level probes and external level sensor if optioned (refer to Expansion Features Installation and Commissioning Guide).
4. 调试水位探针和外部水位传感器（可选）（参考扩展功能安装与调试指南）
5. Set up servomotors.
5. 设置伺服电机。
6. Program fuel/air positions.
6. 设置燃料/空气位置。

On a previously commissioned system is it possible to omit steps 1 to 5.
之前调试过的系统可以忽略步骤 1 至 5。

3.2 Installation Checks 安装检查

3.2.1 Commissioning Checks 调试检查

When all the installation and burner adjustments are completed, the entire burner control system should be tested in accordance with the manufacturer's instructions. The procedure should verify the correct operation of:
完成所有安装设备和燃烧器调节后，需要根据制造商的指导手册对整个燃烧器控制系统进行测试。测试流程可以检验以下运行是否正确：

1. Each operating control (temperature, pressure etc.)
1. 单个运行控制（温度、压力等）。
2. Each limit switch (temperature, pressure, low water cut-off, etc.)
2. 单个限位开关（温度、压力、低水位切断等）。
3. Each interlock switch (airflow switch, high and low fuel pressure or temperature switches, purge and low fire switches, fuel valve proof of closure interlock etc.)
3. 单个联锁开关（气流开关、高低燃料压力或稳定开关、吹扫开关和低火开关、燃料阀封闭检验等）。
4. Pilot flame failure response and lockout.
4. 火焰故障响应和锁定。
5. Main flame failure response and lockout.
5. 主火焰故障响应和锁定。
6. Tight shut-off for all valves.
6. 阀门的密封关闭。

3.2.2 Operational Checks 运行检查

1. Close manual main shut-off valve.
1. 关闭手动主节流阀。
2. Check all limit circuit wiring for proper operation and correct connection.
2. 检查所有限制电路接线是否正常运行，正确连接。
3. Confirm that the automatic main fuel valves are wired correctly.
3. 确定自动主燃料阀接线是否正确。
4. Power the control and electronically check the proper sequence of operation.
4. 为控制器加电并检查运行顺序是否正常。
5. After assuring yourself that all the interlocks and valves are properly wired and that the sequence of operation is correct, open the manual main shut-off fuel valve and proceed cautiously through the boiler light off process. Check all safety interlocks for proper shutdown of the boiler.
5. 确保所有联锁和阀门都正确接线、运行顺序正常后打开手动主节流阀，通过锅炉点火关闭过程小心运行，检查锅炉的所有安全联锁是否能正确关闭。

WARNING: COMMISSIONING OR BURNER START-UP MUST ONLY BE CARRIED OUT BY A FACTORY TRAINED TECHNICIAN.
警告：燃烧器启动的调试必须由工厂经过培训的技术人员进行。

3.2.3 Installation Precautions 安装注意事项

The reliability of the equipment may be impaired if used in environments where strong electromagnetic fields exist e.g. if the equipment is installed in a boiler house where radio systems exist then additional EMC (Electro Magnetic Compatibility) measures may have to be considered. Please contact Autoflame for more information.

将设备用于强磁场时可能会影响设备的可靠性，如果设备安装于锅炉内部且锅炉内部存在无线电系统，则需要考虑额外的电磁兼容性问题。更多信息请联系 Autoflame。

3.2.4 Maintenance and Servicing 维护保养

The Micro-Modulation unit uses solid state technology. It requires no routine maintenance.
多调节设备使用了固态技术，因此无需定期维护。

The servomotors/gas/oil/FGR valves do require routine maintenance. Any fault associated with these parts is usually diagnosed by the MM Contact Autoflame for preventative maintenance procedures, please refer to the Valves and Servomotors manual for general checks.
伺服电机/燃气/燃油/烟气再循环值需要定期维护，应使用控制模块诊断任何与这些部件相关的故障，关于预防性维护流程请联系 Autoflame，关于部件检查请参考阀门与伺服电机手册。

3.3 Servomotors 伺服电机

Autoflame supply three standard sizes of servomotors – small, large and industrial, which can be used for all channels. Autoflame fuel valves require small or large servomotors only. Both small and large servomotors can be configured to drive clockwise or counter clockwise to open a valve or damper. Servomotors can be installed in any orientation; 2 fixed rotation positions if using Autoflame valves. For layout of the small, large and industrial servomotors please refer to the Valves and Servomotors manual.
Autoflame 提供三种标准尺寸的伺服电机，小型、大型和工业型，可以用于所有通道。Autoflame 燃料阀需要小型或大型伺服电机。小型和大型伺服电机可以设置用于顺时针或逆时针驱动打开阀门或阻尼器。伺服电机可以安装在任何方位，如果使用 Autoflame 阀门，则需要两个固定旋转位置。关于小型、大型和工业型伺服电机的结构，请参考阀门与伺服电机手册。

Viewing the shaft end-on, from the potentiometer end, all servomotors drive in a clockwise direction if power is applied between the LIVE and CW terminals, and counter clockwise if the power is applied between the LIVE and CCW terminal.
可以从电位计端部查看轴端点，如果在 LIVE 和 CW 终端间加电，则所有伺服电机都顺时针方向旋转，如在 LIVE 和 CCW 终端间加电，则所有伺服电机都按逆时针方向旋转。

The operation of fuel valves and air dampers is often such that they open in a clockwise direction. If the operation needs to be reversed, it is necessary to swap various wiring connections between the MM and the servomotor(s). An example of reversing the operation of a servomotor is shown in Figure 3.3.3.
燃料阀和空气阻尼器的运行通常在顺时针方向打开，如果需要逆向运行，则必须在控制模块和伺服电机之间交换各种布线。图 3.3.3 显示了反向运行伺服电机的示例。

Note: Servomotors are supplied by the factory set at 0.0 position. Remember that this position may not necessarily automatically position the damper at 0.0 or a closed position. This must be physically checked. Failure to do so can result in serious injury or death.
注：伺服电机由工厂提供，处于 0.0 位置。请牢记该位置并非会自动将阻尼器调整 0.0 位置或关闭位置，这必须进行手动检查，否则可能会导致严重伤害或死亡。

3.3.1 Adjusting the Servomotor Potentiometer 调节伺服电机电位计

Before a burner is fired it is essential to set up each Micro-Modulation servomotor. A tamper proof screwdriver is required (please contact Autoflame).
燃烧器在燃烧前必须设置多调节伺服电机，需要使用防篡改螺丝刀（请联系 Autoflame）。

Usually control valves/air dampers that the servomotors drive, move through up to 90 angular degrees. The MM system has the ability to drive valves through 360 degrees, but the MM will only display from -6 to 96 degrees.
通常需要控制伺服电机驱动的阀门和空气阻尼器并将其移动至 90 度角。控制模块系统能驱动阀门旋转 360 度，但仅能显示-6 至 96 度角。

All Channel 1 to 4 and 7 readings displayed on the MM are in angular degrees. It is necessary to adjust the potentiometer in the servomotor assembly so that the MM reads 0.0 when the relevant valve/damper is at its fully closed position. The technician must physically check the mechanical position of the dampers and valves, whilst all servomotors are set to 0.0 before leaving the factory this may have changed during shipping. DO NOT ASSUME THEY HAVE BEEN PREVIOUSLY SET CORRECTLY.
在控制模块上显示的所有通道 1 至 7 的读数都是角度，因此有必要调节伺服电机的电位计，以便当相关阀门/阻尼器处于完全关闭的位置时控制模块可以读取 0.0。技术人人员必须手动检查

阻尼器和阀门的机械位置，同时所有阀门都应在离厂前设置为 0.0，该角度可能会在运输中发生改变。请不要认为它们之前已正确设置。

To set up a servomotor, first ensure option 12 is set to 0, (this prevents EGA errors from allowing continuation). Put the MM into the commissioning mode and press CLOSE to position the valve/damper mechanically by using the appropriate up and down buttons (see section 3.4.2).
设置伺服电机时，首先请确保选项 12 设为 0（防止尾气分析仪持续出现错误）。将控制模块设为调试模式，按下关闭按钮，利用合适的上下按钮将阀门和阻尼器定位（见 3.4.2 节）。

****WARNING****
警告

ELECTRICAL CONNECTIONS ARE LIVE/HOT AND INCORRECT APPLICATION MAY RESULT IN SERIOUS PHYSICAL INJURY OR DEATH.
电气连接带电，错误使用可能会导致严重的伤害或死亡。

Remove the servomotor cover.
取下伺服电机盖板。

- For air servomotors carry out the following procedure:
  空气伺服电机执行以下流程：

Use the channel 2 up/down buttons on the MM to position the air damper to its physically closed position. Loosen the two tamper proof screws just enough to enable the potentiometer to rotate. Rotate the potentiometer clockwise or counter clockwise until the relevant channel reads 0.0. Tighten the two tamper proof screws gently until the potentiometer is secure. Do not over tighten the screws. Check that the display still reads 0.0. If incorrect repeat the adjustment process.
使用控制模块上通道 2 的上下按钮手动定位空气阻尼器至关闭位置，松开两个防篡改螺丝，使电位计可以旋转。顺时针或逆时针旋转电位计直至相关通道读数为 0.0。轻轻拧紧两个防篡改螺丝，直至电位计固定。请勿过度拧紧所有螺丝。检查是否仍显示 0.0，否则重新调节。

- For fuel servomotors carry out the following procedure:
  燃料伺服电机执行以下流程。

On Autoflame gas, oil and gas/oil piggy-back valves it is necessary to remove the servomotor. Manually position the oil/gas valve slot to its closed position. Observe the position of the drive pin on the servomotor. Use the relevant channel up/down buttons to position the pin so that when the servomotor is reassembled to the valve it is in line with the slot. Reassemble the servomotor to the valve, loosen the two tamper proof screws and proceed to adjust the potentiometer position until 0.0 is displayed. Use the external position indicator to ensure the valve is in the fully closed position.
在 Autoflame 燃气、燃油和燃气/燃油背驮式阀上取下伺服电机。手动将燃油/燃气阀口定位至关闭位置，观测伺服电机上的驱动销位置，使用相关的通道上下按钮定位驱动销，这样当伺服电机重新装入阀门时可以与阀门口对应。将伺服电机重新安装至阀门时，应松开两个防篡改螺丝，然后继续调节电位计位置，直至显示 0.0。使用外部定位指示器，确保阀门处于完全关闭的位置。

3.3.2 Servomotor Feedback Voltage 伺服电机反馈电压

In applications where the servomotor is not positioned close to the display then it is possible to measure the feedback voltage from the servomotor in order to ensure that 0.0 degrees is displayed. By testing the DC voltage between the blue and green wires (wiper and 0V) on the servomotor low voltage terminals this will read 0.21V DC when the reading on the display is 0°. The same can be done for when the servomotor is at 96.0° where the voltage will be 3.6V.
在实际应用中，当伺服电机位置不靠近显示器时可以测量伺服电机的反馈电压，从而确保显示 0.0 度角。通过测试伺服电机低压终端蓝线和绿线（擦拭器和 0V）间的直流电压，当显示的读数为 0°时，直流电压读数为 0.21V。当伺服电机处于 96.0° 时，电压将为 3.6V。

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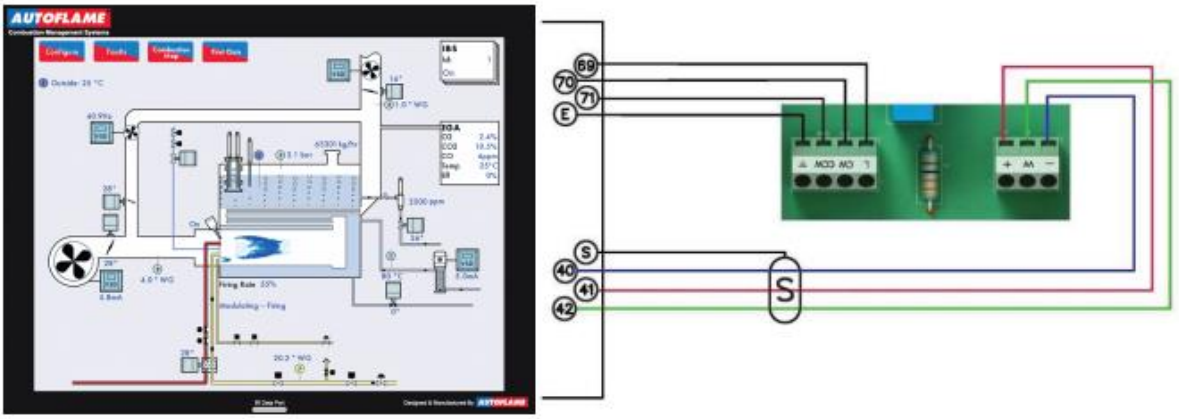
3.3.3 Servomotors – Direction Change 伺服电机-方向的改变

MOTOR CLOCKWISE ROTATION

FIG. A

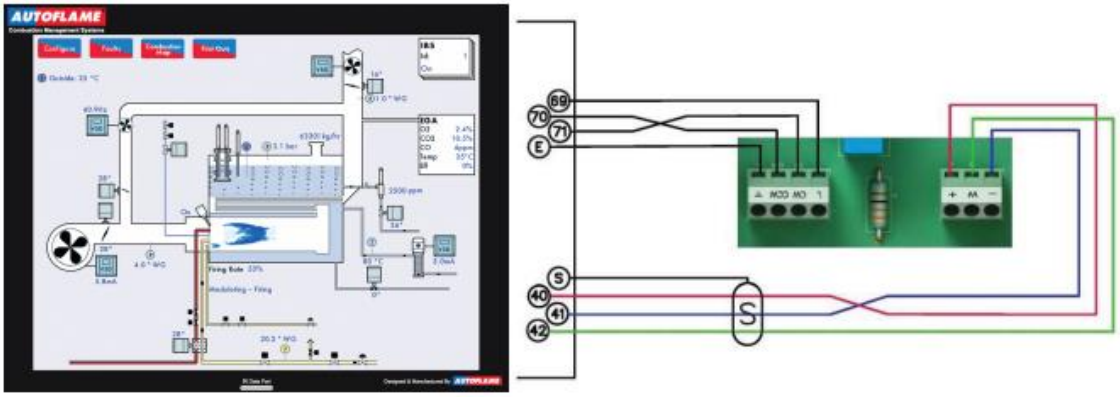
M.M. MODULE



MOTOR ANTICLOCKWISE ROTATION

FIG. B

M.M. MODULE



FOR ILLUSTRATION PURPOSES FUEL MOTOR CONNECTIONS ARE SHOWN.

3.3.4 Servomotors with Autoflame Valves 带 Autoflame 阀门的伺服电机

On threaded valves, the pin on the top of the valve is 90 degrees opposite from the position of the butterfly valve.
在螺纹阀上，阀门顶部的销钉为 90 度，与蝴蝶阀的位置相对。

On flanged valves, the pin on the top of the valve is in line with the position of the butterfly valve.
在法兰阀上，阀门顶部的销钉与蝴蝶阀的位置一致。

For both valves the external visual position indicator is in line with the position of the butterfly valve. Regardless of the type of valve being used, the servomotor is dispatched from the factory with the potentiometer in the zero position. The same servomotor will be correct for both types of valve, as the servomotor for the threaded valve is mounted at 90 degrees different from the flanged valve.
在这两个阀中，外部视觉位置指示器与蝴蝶阀的位置一致。无论使用了什么类型的阀门，出厂的伺服电机都在零度位置安装了电位计。相同的伺服电机可以用于这两种不同的阀门，因为螺纹阀的伺服电机安装与 90 度，与法兰阀不同。

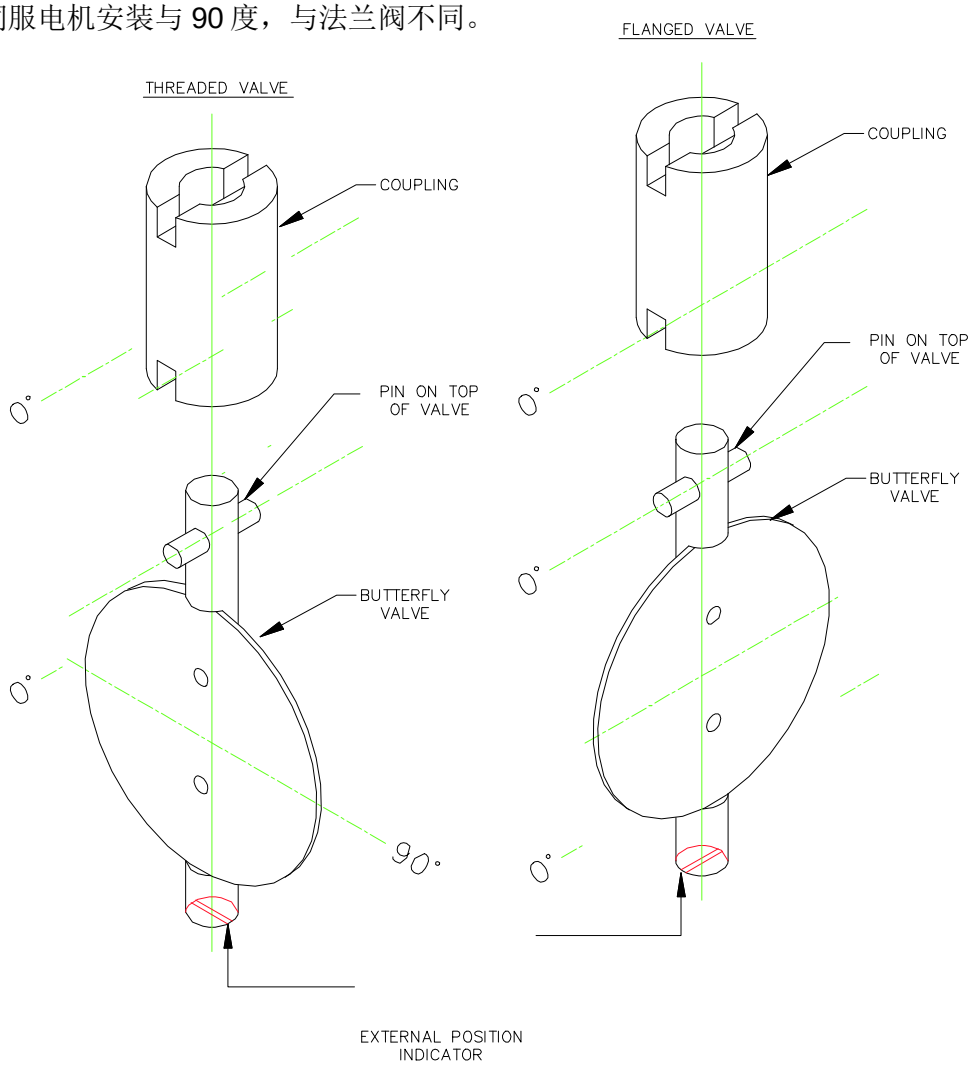


Figure 3.3.4.i Valve Pin Positions
图3.3.4.i 阀销位置

3.4 Commissioning Fuel and Air Positions 调试燃料和空气位置

The following procedure is shown for commissioning the EGA with option 12 set to 0 (Not Optioned), or 1 (Monitoring only). Trim can be added later by setting option 12 to 2 (Applies trim) or 3 (Applies trim, combustion limits tested). Please see section 3.7 for adding/adjusting the trim data later during Single Point Change.
以下显示了尾气分析仪的调试流程，此时选项 12 应设为 0（必选）或 1（用于监控）。设置选项 12 至 2（应用微调）或 3（应用微调，测试燃烧限值）可以随后添加微调。关于单点改变时添加/调节微调数据请见 3.7 节。

Note: For option 12 set to 0 or 1 during commissioning, omit section 3.4.6. For option 12 set to 2 or 3 during commissioning, please include section 3.4.6.
注：调试期间当选项 12 设为 0 或 1 时，请忽略第 3.4.6 节。调试期间选项 12 设为 2 或 3 时，请参考第 3.4.6 节。

The fuel and air positions need to be programmed for the following points: CLOSED, OPEN, GOLDEN START (if optioned), FGR START (if optioned), LOW FIRE (START), INTER POINTS, and HIGH FIRE.
燃料和空气位置需要以下点设置：关闭点、打开点、黄金启动点（如选择）、烟气再循环启动点（如选择）、低火焰点（启动）、内部点和高火焰点。

There must be a minimum of 3 INTER points entered on the fuel-air curve, and a maximum of 18. Points can be added in Single Point Change mode (see section 3.7).
至少有三个内部点需要输入燃料-空气曲线，最多有 18 个。在单点更改模式中可以添加各点（见第 3.7 节）。

During commissioning the required setpoint is not active; the internal stat remains made at all times regardless of the actual value. Ensure that the high limit stat is set correctly and wired into the recycling interlock (T53), as this will turn the burner off in the event that the safe working maximum temperature or pressure of the system is exceeded.
调试期间无需激活各所需设定点，无论实际值是多少，都可以始终保持内部状态。确保正确地设置上限值状态，并与再循环联锁终端（T53）连接，因为这样可以在超出安全工作最高温度或压力时关闭燃烧器。

The OPEN and CLOSE positions are stored during commissioning, so if a lockout occurs during the initial burner light-off, there is no need to re-enter the OPEN and CLOSE positions. The burner will restart once the lockout has been reset and go straight to purge. Once purge is completed, you will be prompted again to set the START POSITION. However, if power is completely removed from the system then these positions are not retained in the memory, and the OPEN and CLOSE positions will need to be re-entered.
调试期间可以保存打开和关闭位置，因此如果在燃烧器熄灭时锁定，则无需重新输入打开和关闭位置。燃烧器在重置锁定后将重启并直接进入吹扫状态。当吹扫完成时，系统将再次提醒您设置启动位置。如果系统完全没电，则上述位置不会保存在内存中，打开和关闭位置则需要重新输入。

Note: The high limit stat should be set below the rating of the safety valve.
注：上限值状态应设为低于安全阀额定值。

3.4.1 Starting Commissioning 启动调试

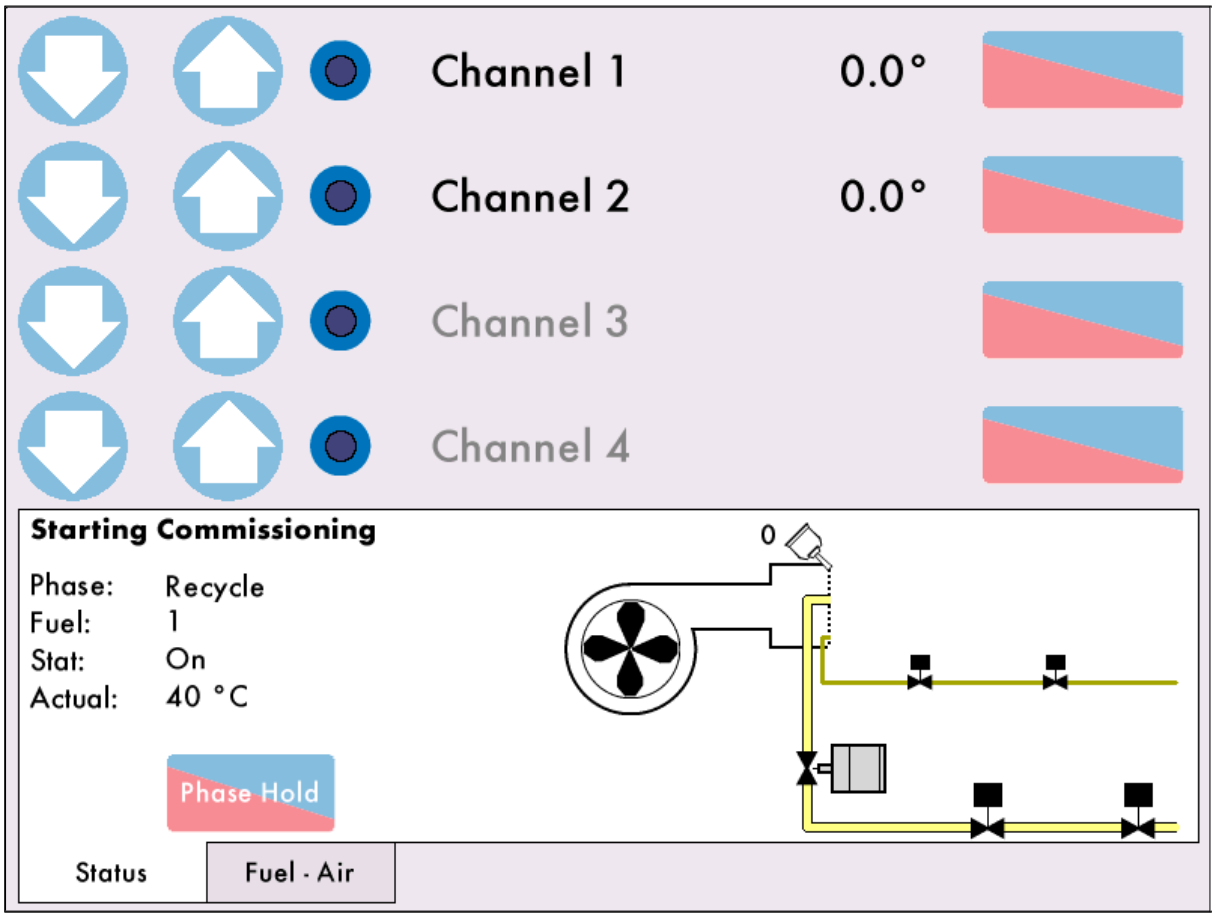


Figure 3.4.1.i Starting Commissioning
图3.4.1.i 启动调试

Once the options and parameters have been set, press Commission on the Commission Mode screen in Figure 2.1.ii. If the MM has already been commissioned, then press Commission on the Home Display.

设置选项和参数后，在图 2.1.ii 所示的调试模式屏幕上按下 Commission 按钮。如果控制模块已经过调试，则在主页显示中按下 Commission 按钮。

Figure 3.4.1.i shows the Commissioning screen. In the Commissioning screen, the 4 channel positions will be shown, with the unused channels greyed out.
图 3.4.1.i 显示了调试屏幕，在调试屏幕中显示了 4 个通道位置，未使用的通道用灰色显示。

Once the MM goes through its internal relay checks and VPS (if optioned), the message 'Select Commissioning' will display.
当控制模块经过内部继电器检查和阀门检验系统（如选择），则经将显示"选择调试"信息。

3.4.2 Enter CLOSED Position 进入关闭位置

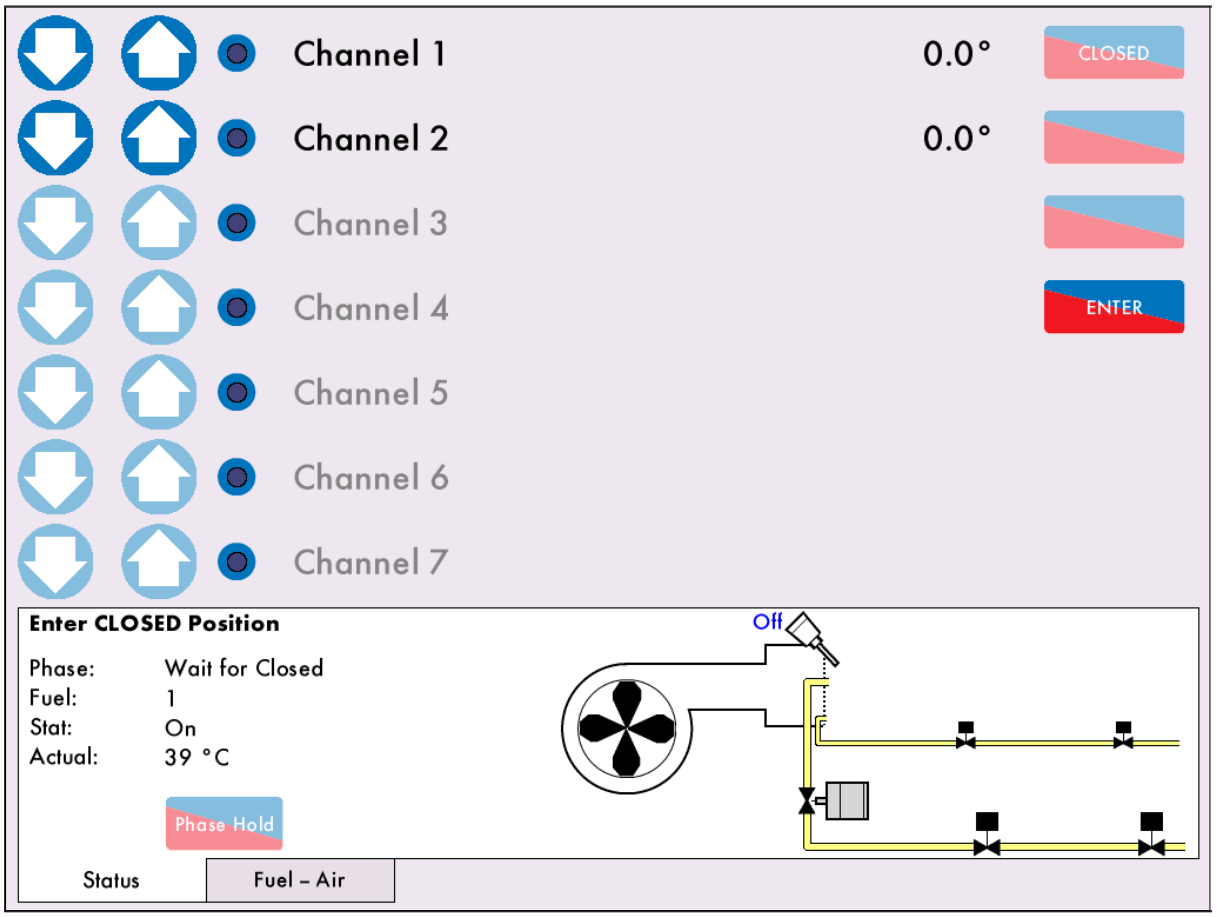


Figure 3.4.2.i Enter CLOSED Position
图3.4.2.i 进入关闭位置

The MM is now waiting for the CLOSED position to be entered. Press 

to enter this position.

控制模块现在正等待输入关闭位置，按下 

按钮可以进入该位置。

Note: No error checking of the servomotors is enabled at this stage, therefore, do not to drive the servomotors/ dampers beyond any mechanical limitations that may be present on the damper/valve. This may cause damage to the servomotor and/or the damper/valve.
注：此时伺服电机不会进行错误检查，因此不要驱动伺服电机/阻尼器超出其机械限制，该限制可能在阻尼器/阀门上出现，否则可能导致伺服电机和/或阻尼器/阀门损坏。

Use the  buttons to set the positions to 0.0°.

使用  按钮可以将位置设为 0.0°.

Note: Double check the damper/valve is physically at the 0.0 (closed) position. This can be achieved by checking for external indications on the damper assembly or the fuel valve. It is the engineer's responsibility to ensure that the servomotors are correctly calibrated. Incorrect calibration can cause serious injury or death.

注：再次检查阻尼器/阀门是否处于 0.0（关闭）位置，这可以通过检查阻尼器总成或燃料阀门上的外部指示器实现。工程师有责任确保伺服电机经过正确校准，否则可能导致严重的伤害或死亡。

Press 

to store the CLOSED position. The burner motor output T58 will energise at this point. A message will then be displayed 'Enter OPEN Position.'

按下按钮可以保存关闭位置，燃烧器电机输入 T58 将在该点加电，然后将显示"输入打开位置"消息。

3.4.3 Enter OPEN Position 输入打开位置

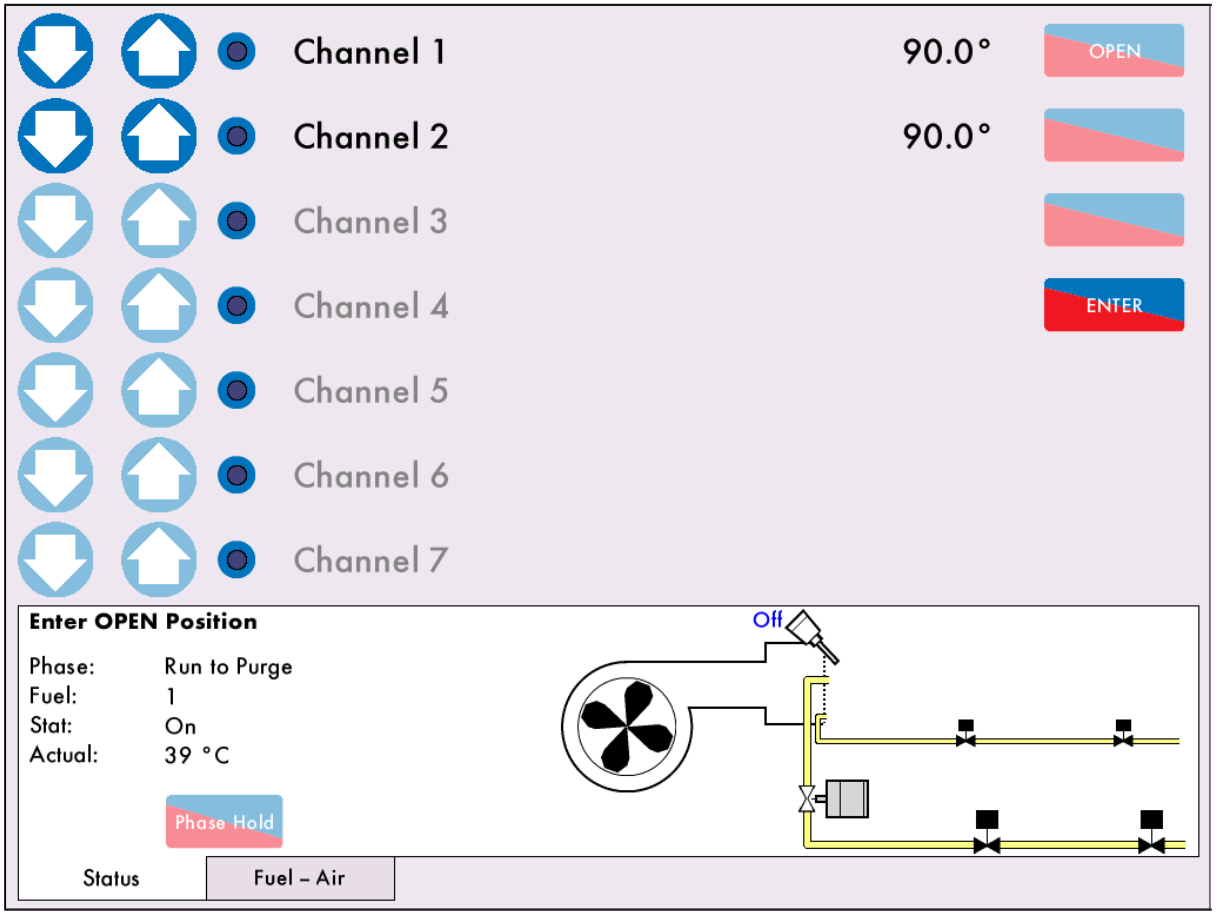
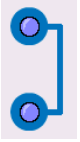


Figure 3.4.3.i Enter OPEN Position
图3.4.3.i 输入打开位置

Press 

and then drive the fuel and air servomotors to their OPEN position. The button hold facility allows multiple channels to be driven up or down at the same time. Press on the blue circles  next to the channels; once selected they will appear as  to indicate the channels are selected.

按下 

按钮，然后驱动燃料和空气伺服电机至其打开位置。按住按钮可以允许同时上下驱动多个通道，按下通道附近的蓝色圆圈  ，选择后它们将显示为  以指示已选择的通道。

Use the  buttons to drive both servomotors to the OPEN position simultaneously. This is normally 90.0 ° for gas butterfly valves and burner air dampers, but may be set to less than 90.0 ° if there are mechanical stops/limits. Channel 4 cannot be adjusted at this stage, its calibration is dictated by the drive set-up and relevant options.
使用按钮可以同时驱动两个伺服电机至打开位置，燃气蝴蝶阀和燃烧器空气阻尼器通常为 90.0 °， 当有

机械限制时也可以设置的小于 90.0 。此时不能调节通道 4，通道 4 的校准在驱动设置和相关选项中指示。

Press 

to save the OPEN positions.

按下 

按钮可以保存打开位置。

Pressing on the Fuel-Air tab at any time will give you a graph showing the fuel and air servomotor angles.
随时都可以按下燃料-空气选项卡，将为您形象化的显示燃料和空气伺服电机角度。

3.4.4 Set up START Position 设置启动位置

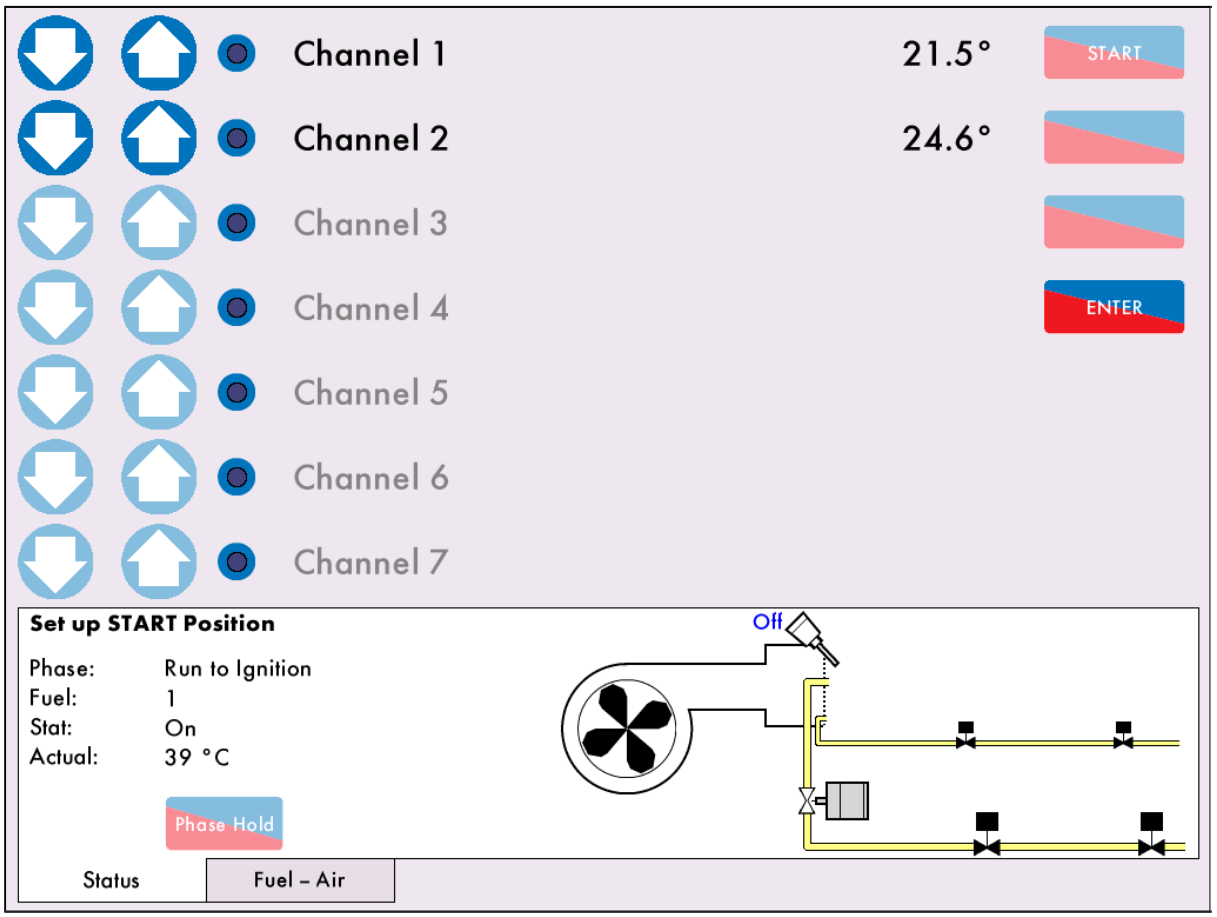


Figure 3.4.4.i Set up START Position
图3.4.4.i 设置启动位置

Once the system has purged (see options/ parameters 75 and 112), the message 'Set up START Position' will display on the MM.
系统完成吹扫后（见选项/参数 75 和 112），控制模块将显示"设置启动位置"消息。

Press START and drive the servomotors to their START position. To enter a fuel START position which is less than 10 degrees below the OPEN position, you must drive the servomotor below this band, and then back open. For example, if the CH1 OPEN position is set at 90.0°, to set a CH1 START position of 83.0°, you must drive the CH1 servomotor to below 80.0° and then to 83.0°.
按下按钮并取代伺服电机至其启动位置，输入一个低于打开位置且小于 10 度的燃料启动位置，您必须驱动小于该范围的伺服电机，然后重新打开。例如，如果 CH1 打开位置设为 90.0 度，设置 CH1 启动位置为 83.0 度时，您必须驱动 CH1 伺服电机至低于 80.0 度，然后至 83.0 度。

****WARNING** ENTERING THE START POSITION BEFORE REDUCING FUEL INPUT APPROPRIATELY COULD RESULT IN SERIOUS PHYSICAL DAMAGE OR DEATH.**
警告：降低燃料输入前输入启动位置可能会导致严重的伤害或死亡。

Press ENTER to enter the START position, where ignition can take place; these fuel and air positions are not stored permanently as it is just a light-off position to put a flame in the boiler and begin the commissioning process.

按下 ENTER 按钮输入启动位置，在启动位置将开始点火，燃料和空气位置不会被永久保存，因为这只是个点火位置，使锅炉燃烧并开始调试的过程。

3.4.5 Phase Hold 相位保持

When the system is in commissioning mode only, the Phase Hold feature enables the commissioning engineer to pause the ignition sequence of the burner to make adjustments to the start gas flame if needed.
当系统处于调试模式时，相位保持功能将使调试工程师能暂停燃烧器的点火顺序以进行调整并启动燃气燃烧。

If the flame goes out during this time a lockout is set after 20 seconds. If the flame is present and the 'phase hold' condition is left indefinitely the 'Freeze Timeout' lockout will occur after 10 minutes. The 'phase hold' feature can also be activated during the pilot prove and main flame prove phases.
如果在此期间火焰熄灭，则系统将在 20 秒后锁定。如果火焰继续燃烧，则会保持相位，"凝固超时"锁定经在 10 分钟后发生。保持相位功能也可以在实验检验和主火焰检验阶段激活。

When the system is in a run mode the facility is disabled.
当系统处于运行模式时，禁用该设备。

To make adjustments with the gas manually, press 

to keep the system at its current phase positions, a little blue dot on this 'button' will appear to indicate that the phase is held. Ensure that the main fuel valve is manually isolated until the pilot flame has been successfully established. Once this has been successfully established, gradually introduce the main fuel supply to the burner while observing the flame stability. Continue to introduce fuel until the manual operated main fuel isolation valve is fully open providing safe and stable combustion that can be maintained. If the combustion is not safe and stable, then adjust the fuel/air ratio accordingly. Once the adjustments have been made, press 

to continue with the commissioning process.

要用燃气手动进行调整时，按下 

按钮使系统保持在当前相位位置，按钮上的蓝色小点将出现，指示正保持相位。确保主燃气阀被手动隔离，直至实验火焰被成功燃起。火焰燃起后，逐步将主燃料送入燃烧器，同时观测火焰是否稳定。继续添加燃料直至手动运行的主燃料隔离阀完全打开，可以提供安全和稳定的燃烧。如果燃烧不安全或不稳定，则需要调整燃料/空气比。

调整完毕后，按下 

按钮继续调试流程。

****WARNING****
警告

IT IS THE RESPONSIBILITY OF THE FACTORY TRAINED TECHNICIAN TO ENSURE THAT USE OF THE PHASE HOLD FACILITY DOES NOT LEAD TO A HAZADOUS SITUATION. FAILURE TO DO SO WILL RESULT IN SERIOUS EQUIPMENT DAMAGE, CRITICAL INJURY OR DEATH.
工厂培训的技术人员有责任确保使用相位保持设备不会导致危险发生，否则将使设备严重损坏、人员伤亡。

3.4.6 Add Trim Data During Commissioning 调试时添加微调数据

If the option 12 is set to 2 or 3 during commissioning, then when setting the servomotors for the HIGH, INTER, GOLDEN START, FGR START and START positions, the trim data will also need to be saved for the fuel rich and air rich trim conditions. The message 'Waiting for EGA readings' will display.
调试期间如果将选项 12 设为 2 或 3，然后将伺服电机视为高位置、中位置、黄金启动位置、烟气再循环启动位置和启动位置时，需要为富燃料和富空气条件保存微调数据，此时将显示"等待尾气分析仪读数"的消息。

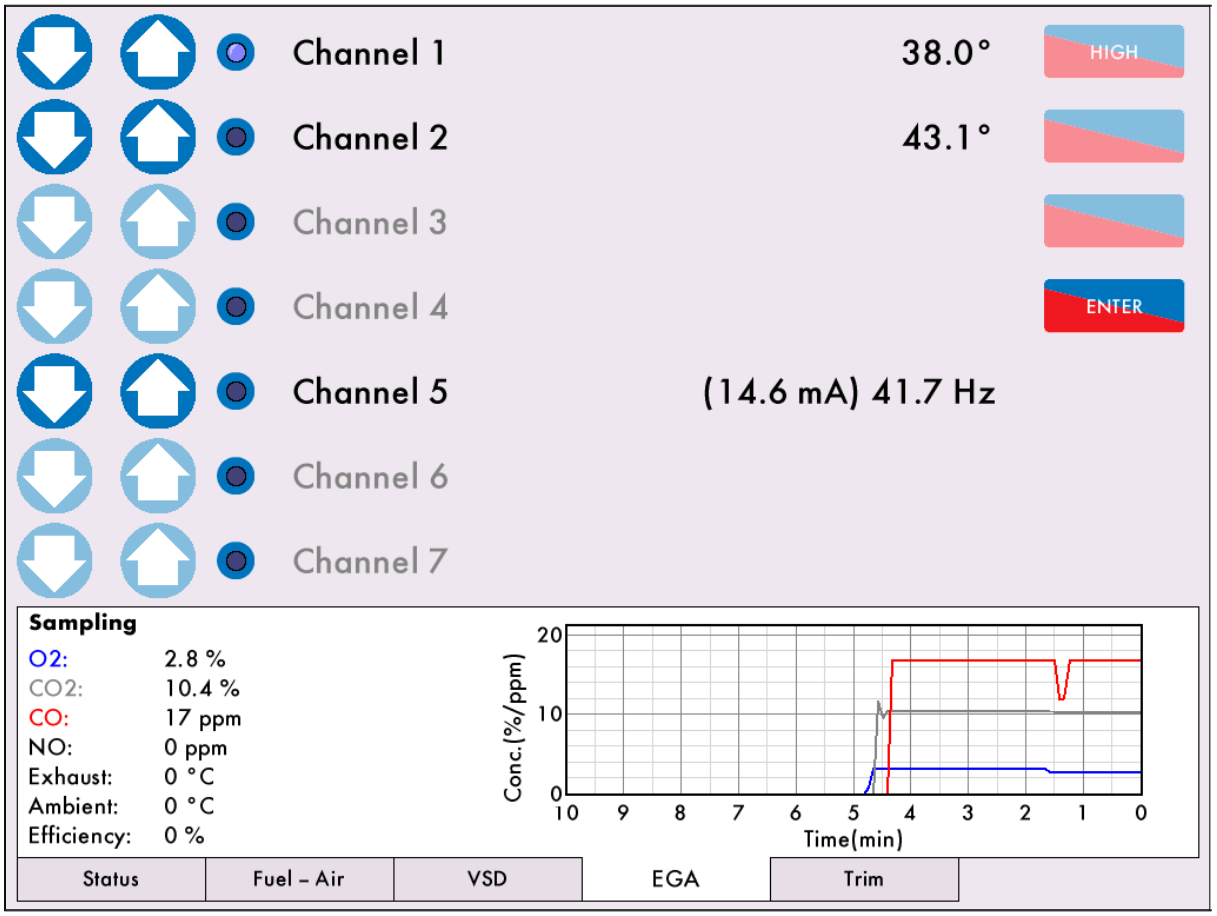


Figure 3.4.6.i Sampling
图 3.4.6.i 采样

Press on the EGA tab to display the EGA readings.
按下尾气分析仪选项卡将显示尾气分析仪读数。

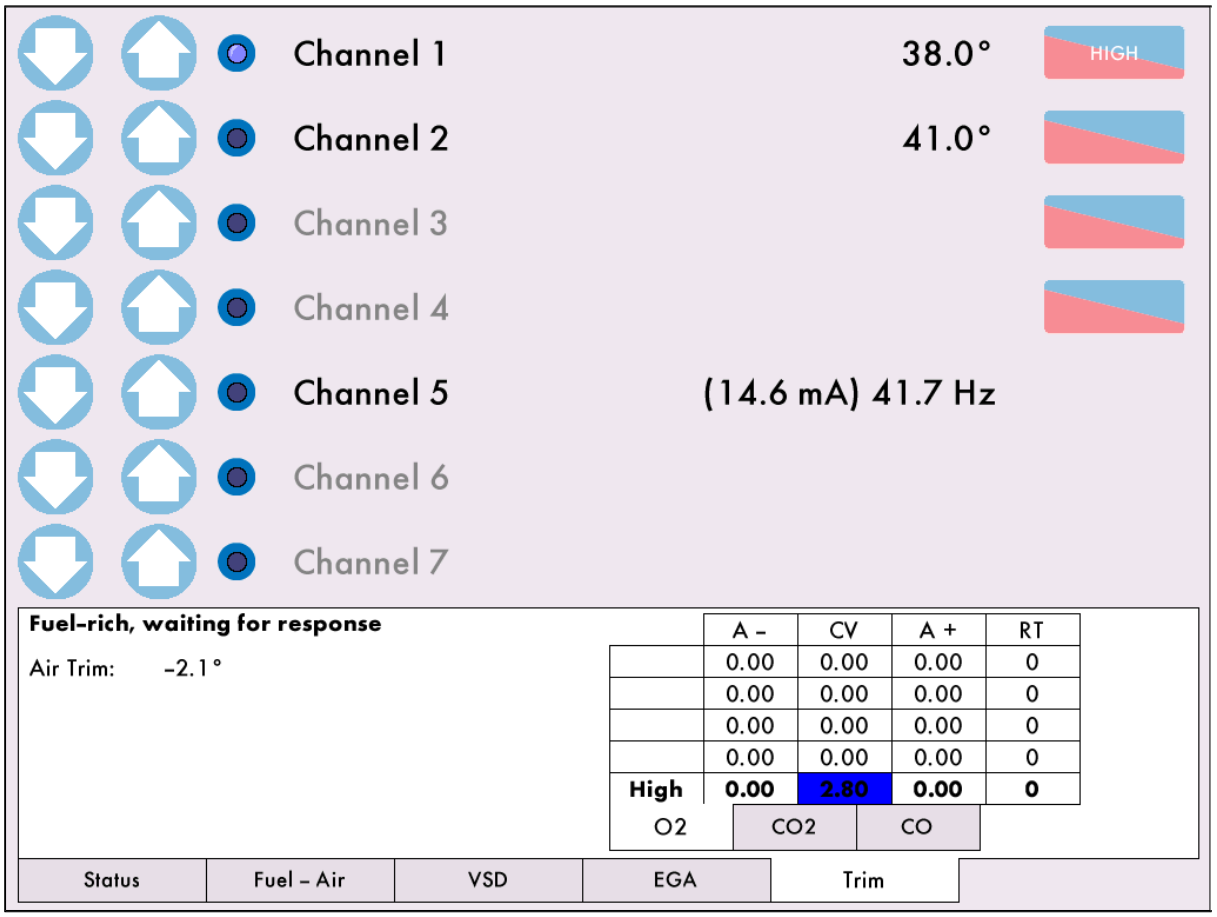


Figure 3.4.6.ii Commissioning with Trim
图3.4.6.ii 微调调试

After you press ENTER to save those servomotor positions, the EGA will carry out its fuel rich and air rich trim.

按下 ENTER 按钮保存伺服电机位置后，尾气分析仪将执行富燃料和富空气微调。

Once these trim values have been saved, the system will continue with the commissioning process.
保存微调数据后，系统将继续进行调试流程。

Note: If the MM has not been enabled for trim during commissioning, this can be added later by setting optio12 for trim, and going into Single Point Change to add trim to each point, see section 3.7.
注：调试期间如果控制模块被启用进行微调，可以通过设置选项 12 添加微调，然后进入单点改变为各点添加微调命令，见 3.7 节。

3.4.7 Commissioning VSD 调试 VSD

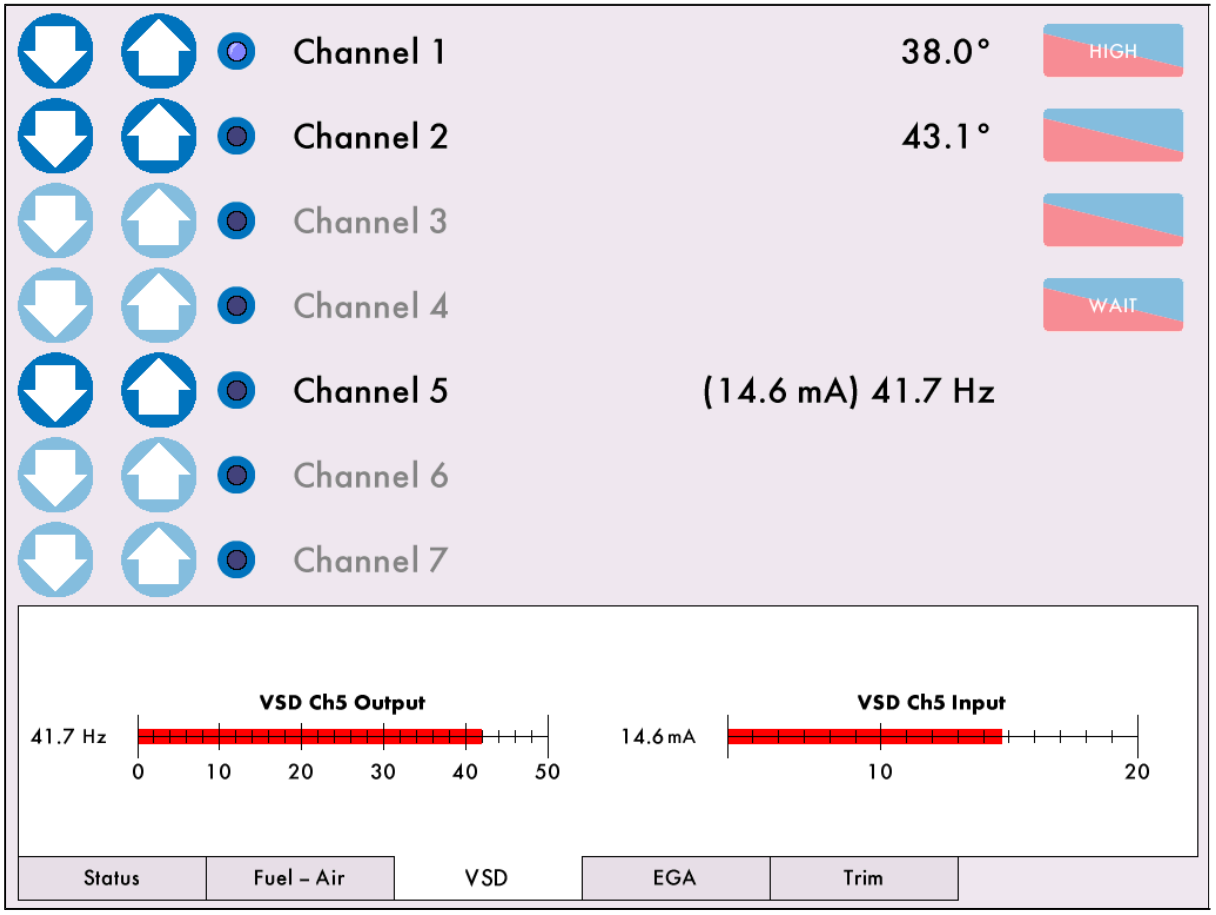


Figure 3.4.7.i Commissioning VSD
图 3.4.7.i 调试 VSD

Press on the VSD tab to view the VSD output and input signal during commissioning
调试期间按下 VSD 选项可以查看 VSD 输出和输入信号。

If the MM has been enabled with VSD for commissioning and then disabled, and vice versa, a conflict message will appear 'VSD configuration does not match commissioning.'
如果控制模块与 VSD 一起启用，用于调试，然后禁用，则会出现"VSD 设置与调试值不匹配"的冲突消息。

If there is little movement required with the VSD signal, the feedback fault tolerance should be set accordingly. If the tolerance is not set according to the variation, a VSD error will occur.
如果要求 VSD 信号移动，则需要设置反馈故障公差。如果公差未根据变量设置，则会出现 VSD 故障。

3.4.8 Set GOLDEN START Position 设置黄金启动位置

If Golden Start has been enabled in option 29 on a new system which has not been commissioned, the message 'Set Golden Start Position' will display after the START position has been entered.
如果黄金启动在新系统选项 29 中被启用且该系统已经过调试，则在输入启动位置后将会显示"设置黄金启动位置"消息。

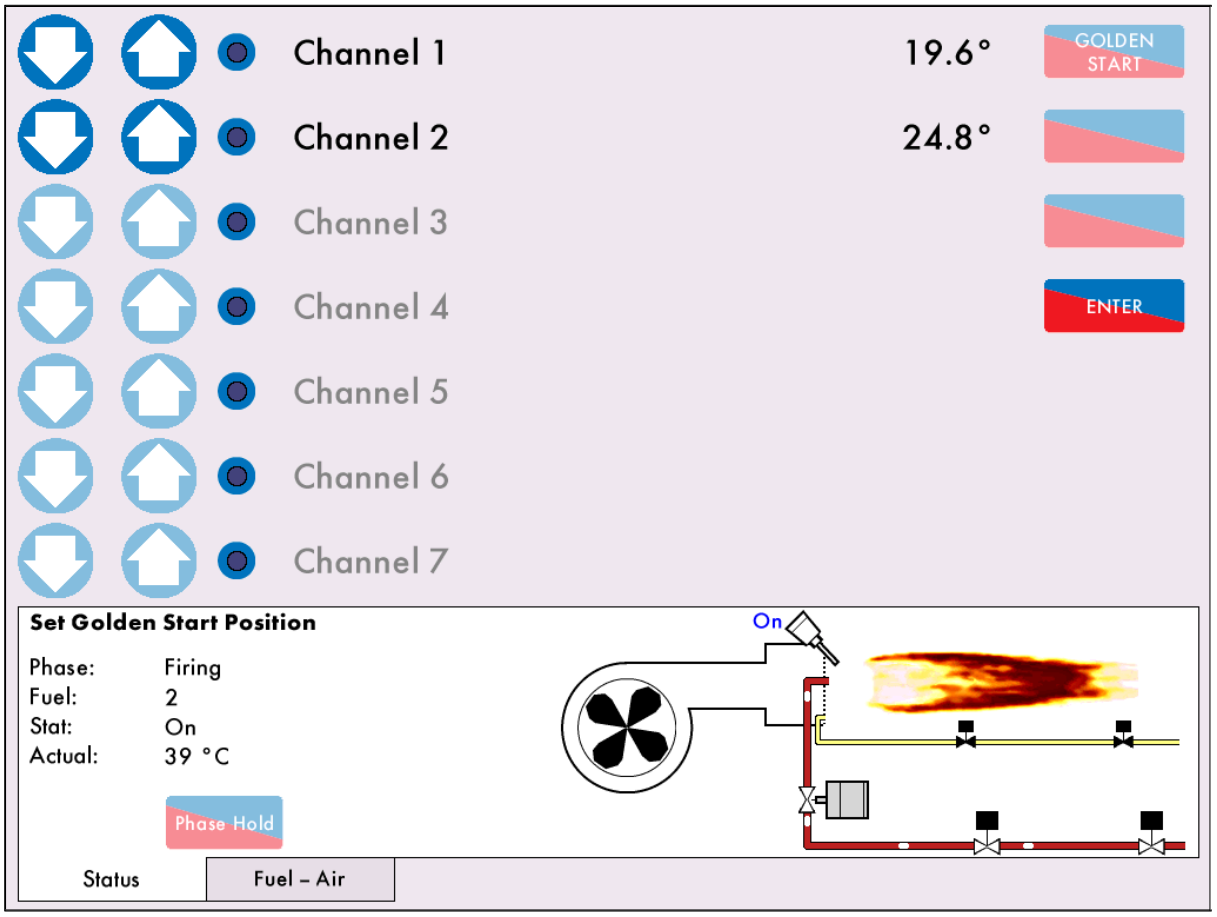


Figure 3.4.8.i Set GOLDEN START Position
图3.4.8.i 设置黄金启动位置

Press GOLDEN START to enter the GOLDEN START position. After entering the GOLDEN START position, proceed to the commissioning steps in section 3.4.9 if FGR START has been enabled, or 3.4.10 if no FGR START is enabled.

按下 GOLDEN START 按钮可以输入黄金启动位置，输入黄金启动位置后，如果启用了烟气再循环启动，则继续 3.4.9 节所述的调试流程，如果未启用烟气再循环启动，则继续 3.4.10 所述的调试流程。

Enabling Golden Start on a Commissioned System
在调试系统中启用黄金启动

If the system has already been commissioned without Golden Start enabled, go into Commission mode and set option 29 to enable Golden Start. The forced commission message will appear as 'Golden Start optioned but not commissioned.'
如果系统已经在未启用黄金启动的前提下被调试，则进入调试模式并设置选项 29 启用黄金启动，此时将出现强制性调试消息，因为"已选择黄金启动点，但未调试"。

Press Commission on the home screen and once the system goes through its internal relay tests, the message 'Select Commissioning' will appear.

按下主屏幕上的 Commission 按钮，当系统进行内部继电器测试时，将显示"选择调试"消息。

Press CLOSED to go through the commissioning process and enter the CLOSED, OPEN and light-off START positions. After the entering the light-off START position, the message 'Set Golden Start Position' will appear; press GOLDEN START to enter the stored GOLDEN START position and continue with the full commissioning procedure. in section 3.4.9 if FGR START has been enabled, or 3.4.10 if no FGR START is enabled.

按下 CLOSED 按钮可以执行调试流程并进入关闭、打开和熄灯启动位置。进入熄灯启动位置后，将会显示"设置黄金启动位置"的消息；按下 GOLDEN START 按钮进入已保存的黄金启动位置并继续完成调试流程；如果烟气再循环启动已经启用，请参考 3.4.9 节，如未启用烟气再循环启动，请参考 3.4.10 节。

Alternatively, to just add the Golden Start position and not go through the whole commissioning procedure, press Commission on the home screen, and once the system has gone through its internal relay tests the message 'Select Commissioning' will appear. Press GOLDEN START and the MM will go through purge. The message 'Set up START position' will appear to ignite a flame in the burner, see section 3.4.4. Once the burner is firing, the message 'Set Golden Start Position' will appear. Press GOLDEN START to enter the GOLDEN START position. The message 'Save Commission' will appear, press SAVE to save the GOLDEN START position and then press EXIT to return to run mode.

同样，添加黄金启动位置但不执行整个调试流程时可以按下主屏幕上的 Commission 按钮，当系统执行内部继电器测试时，则会出现"选择调试"的消息。按下 GOLDEN START 按钮后控制模块将执行吹扫流程，此时将会出现"设置启动位置"的消息，以便点燃燃烧器中的火焰，见 3.4.4 节。当燃烧器燃烧时，将出现"设置黄金启动位置"的消息，按下 GOLDEN START 按钮进入黄金启动位置。当出现"保存调试"的消息时按下按钮 SAVE 保存黄金启动位置，然后按下 EXIT 按钮返回运行模式。

Note: If FGR START has also been enabled, this positon must be entered after the GOLDEN START position.
注：如果启用了烟气再循环启动，则必须在黄金启动位置后输入该位置。

The Golden Start position of the fuel and air servomotors is completely independent from the modulating load index and commissioned value data.
燃料和空气伺服电机的黄金启动位置与调节负载指数和调试数据保持完全独立。

The facility is particularly useful on combustion systems with large turndowns and when firing heavy oil, as it enables the burner to start/ignite at a fuel rich position and then, after a stable flame is established, return to the commissioned combustion curve.
燃烧系统使用大型排污设备非常有用，因为当燃烧重油时，设备可以使燃烧器在富燃料位置启动/点火当火焰稳定后，返回调试燃烧曲线。

The Golden Start position needs to be entered for each required fuel.
需要为每个所需的燃料输入黄金启动位置。

The MM holds the Golden Start position for a time set in Parameter 15; this time starts from the ignition point. After this time, if the Golden Start fuel position is between Low Fire and High Fire, the air damper will open and the fuel valve will stay in the same position, until fuel/air ratio is on the commissioned combustion curve. If the Golden Start fuel position is outside of the main curve, then both the air damper and fuel will go to the Low Fire position. Once on the commission curve, the MM will modulate as per load requirement.
控制模块保持黄金启动位置的时间可以在参数 15 中设置，该时间是从点火点算起。如果黄金启动燃料位置是在低火焰和高火焰之间，则空气阻尼器将打开，燃料阀将保持在相同的位置，直至燃料/空气比在调试燃烧曲线上。如果黄金启动燃料位置在主曲线外，则空气阻尼器和燃料都将进入低火焰位置。一旦位于调试曲线上时，控制模块将根据负载需要进行调节。

3.4.9 Set FGR Position 设置烟气再循环位置

If FGR Start has been enabled in options 48, 49 or 50 on a system which not been commissioned, the message 'Set FGR Position' will display after entering the light-off START position. If Golden Start has been enabled in option 29, this message will appear after entering the GOLDEN START position.
如果在选项 48，49 或 50 中启用了烟气再循环启动且系统没有进行调试，则在输入熄灯启动位置后会出现"设置烟气再循环位置"的消息。如果黄金启动已经在选项 29 中启用，则在输入黄金启动位置后出现该消息。

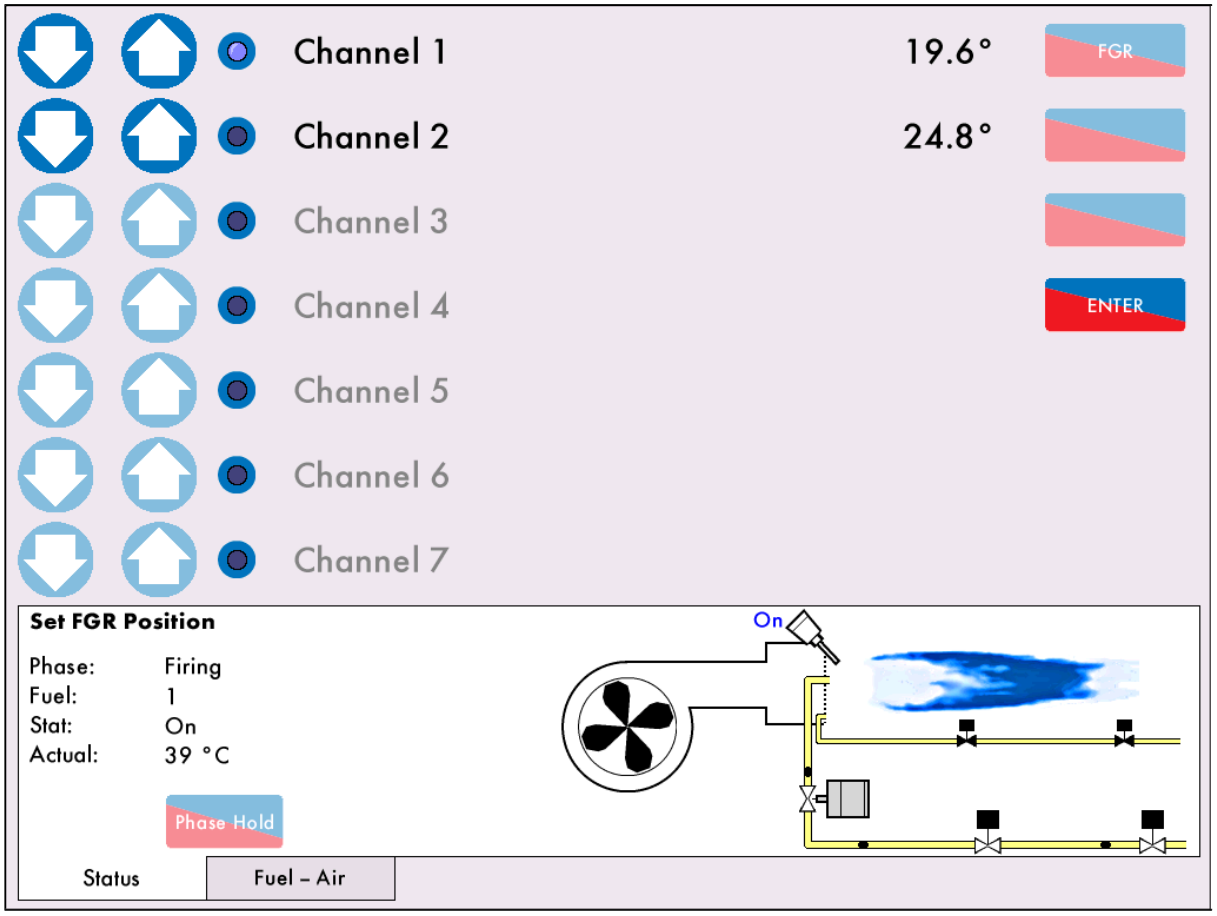


Figure 3.4.9.i Set FGR Position
图 3.4.9.i 设置 FGR 位置

Press FGR to enter the FGR START position. After entering the FGR START position, proceed to the commissioning steps in section 3.4.10.

按下 FGR 按钮可以进入 FGR 启动位置。输入 FGR 启动位置后继续 3.4.10 节所述的调试步骤。

Enabling FGR Start on a Commissioned System
在调试系统上启用烟气再循环启动

If the system has already been commissioned without FGR Start enabled, go into Commission mode and set option 48, 49 or 50 to enable FGR Start. The forced commission message will appear as 'FGR optioned but not commissioned.'
如果系统已经在没有启用烟气再循环启动前经过调试，则进入调试模式，然后设置选项 48,49 或 50 启用烟气再循环启动。此时将会出现"已选择烟气再循环，但未调试"的强制调试消息。

Press Commission on the home screen and once the system goes through its internal relay tests, the message 'Select Commissioning' will appear.

在主屏幕上按下 Commission 按钮，当系统进行内部继电器测试时，则会出现"选择调试"的消息。

Press CLOSED to go through the commissioning process and enter the CLOSED, OPEN, light-off START and GOLDEN START (if enabled) positions. After the entering the light-off START or GOLDEN START (if enabled) position, the message 'Set FGR Position' will appear; press FGR to enter the stored FGR START position and continue with the full commissioning procedure in section 3.4.10.

按下 CLOSED 按钮执行调试流程并进入关闭、打开、熄灯启动和黄金启动（如已启用）位置。在输入熄灯启动或黄金启动（如已启用）位置后，将会出现"设置烟气再循环位置"的消息。按下 FGR 按钮进入保存的烟气再循环启动位置并继续完成 3.4.10 节所述的调试流程。

Alternatively, to just add the FGR Start position and not go through the whole commissioning procedure, press Commission on the home screen, and once the system has gone through its internal relay tests the message 'Select Commissioning' will appear. Press FGR and the MM will go through purge. The message 'Set up START position' will appear to ignite a flame in the burner, see section 3.4.4. Once the burner is firing, the message 'Set FGR Position' will appear. Press FGR to enter the FGR START position. The message 'Save Commission' will appear, press SAVE to save the FGR START position and then press EXIT to return to run mode.

同样，添加烟气再循环启动位置但不执行整个调试流程时可以按下主屏幕上的 Commission 按钮，当系统执行内部继电器测试时，则会出现"选择调试"的消息。按下 FGR 按钮后控制模块将执行吹扫流程，此时将会出现"设置启动位置"的消息，以便点燃燃烧器中的火焰，见 3.4.4 节。当燃烧器燃烧时，将出现"设置黄金启动位置"的消息，按下 FGR 按钮进入黄金启动位置。当出现"保存调试"的消息时按下按钮 SAVE 保存黄金启动位置，然后按下 EXIT 按钮返回运行模式。

Note: If both Golden Start and FGR are optioned then the GOLDEN START position is entered before the FGR START position.
注：如果选择了黄金启动和烟气再循环启动，则在烟气再循环位置前输入黄金启动位置。

Flue Gas Recirculation (FGR) is a method whereby a quantity (approximately 15%) of the boiler flue gases are fed back to the burner and mixed with the combustion air. The virtue of FGR is the reduction of NOx gases. With the FGR facility, servomotor channel 3 can be used to control the amount of flue gas fed back. It is not good practice to feed back the gases when the flue gas is cold, so all the elements (i.e. servomotors and VSD) can be set at 'FGR' positions until the gases are hot. During this time the CH3 would normally be set closed. Once the FGR holding conditions are met, modulation takes place in the normal way using the curve entered during commissioning.
烟气再循环是一种使锅炉烟气重新进入燃烧器并与燃烧空气混合的方法。烟气再循环的优点是减少氮氧化物气体。装配烟气再循环设备后，伺服电机通道 3 可以用于控制烟气进入量。当烟气为冷气体时不建议将烟气加入，这样所有组件（如：伺服电机和 VSD）都可以在烟气再循环位置设置，直

至气体变热。在此期间，CH3 可以正常的设为关闭。当满足烟气再循环保持条件时，使用在调试阶段输入的曲线可以按正常方式进行调节。

FGR can be set as a Timer, Offset or Temperature Threshold (see options 48, 49 and 50).
烟气再循环可以设为定时器、补偿或稳定阈值（见 48, 49 和 50）。

Note: Golden start takes priority over FGR. Once the golden start timer has finished, the servomotors will go straight to the FGR start position.
注：黄金启动优先于烟气再循环，当黄金启动定时器结束时，伺服电机将直接进入烟气再循环启动位置。

3.4.10 Set HIGH Position 设置高位置

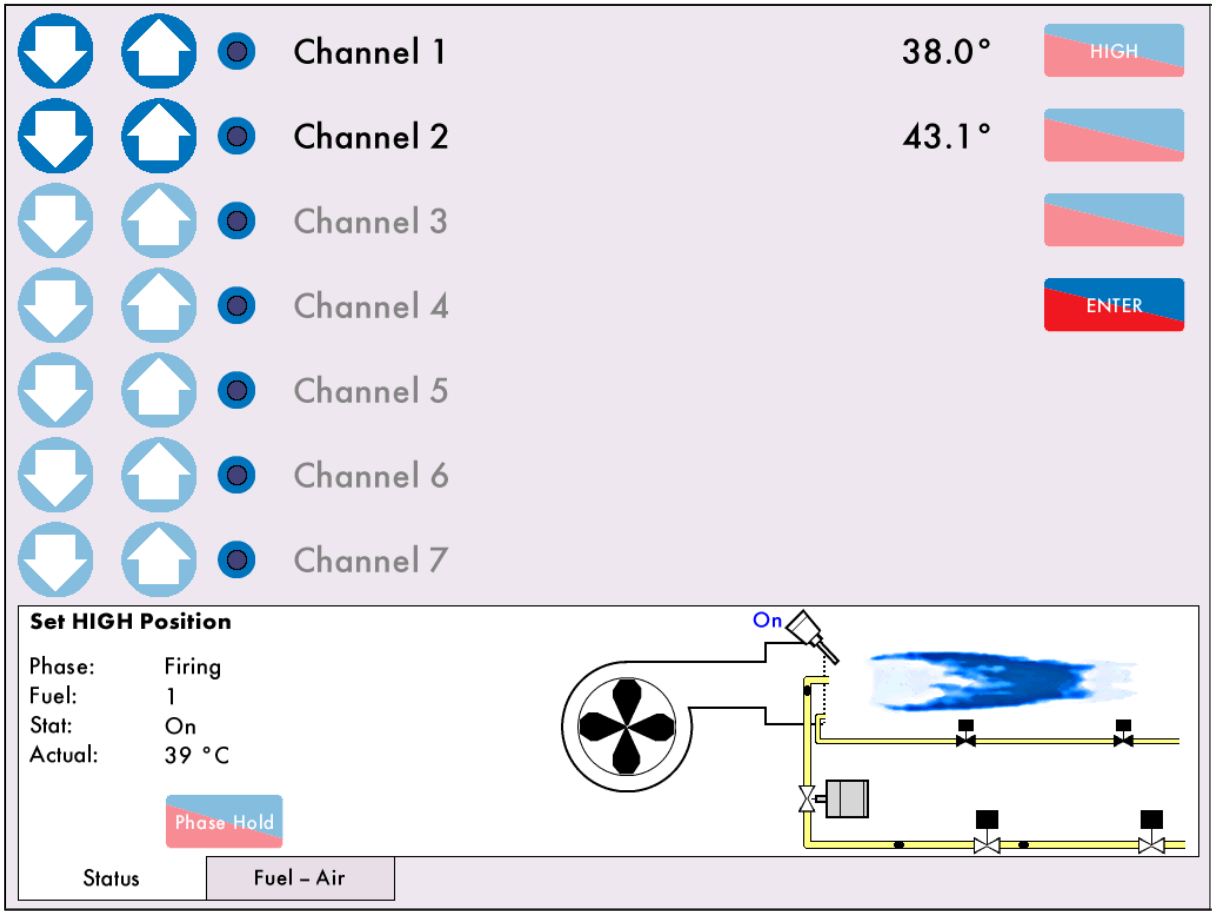


Figure 3.4.10.i Set HIGH Position
图3.4.10.i 设置高位置

Once all the START, GOLDEN START and FGR START positions have been entered, the message 'Set HIGH Position' will appear. Press HIGH and drive the servomotors (and VSD if optioned) to the HIGH position by opening the air damper and fuel valve some degrees alternatively, so that more fuel is added gradually.
的启动、黄金启动和烟气再循环启动位置后，将出现"设置高位置"消息。按下 HIGH 按钮并通过空气阻尼器和燃料阀驱动伺服电机（和 VSD）至高位置，这样可以逐渐添加更多的燃料。

**** WARNING** IT IS THE RESPONSIBILITY OF THE COMMISSIONING ENGINEER TO ENSURE THAT THE FLAME IS SAFE AND THERE IS A GOOD COMBUSTION AT ALL TIMES DURING COMMISSIONING.**

警告：调试工程师有责任确保燃烧安全，确保在调试期间始终保持良好的燃烧。

It is not possible to enter the HIGH position higher than the OPEN position. The servomotors must be driven 0.5° up/down from the previous point initially, before entering the next point, the fuel. Press ENTER to store this HIGH position.

输入的高位置不可能高于打开位置，在输入下一个点前伺服电机必须从原先点上下驱动至 0.5°，按下 ENTER 按钮保存该高位置。

3.4.11 Set INTER Position 设置内部位置

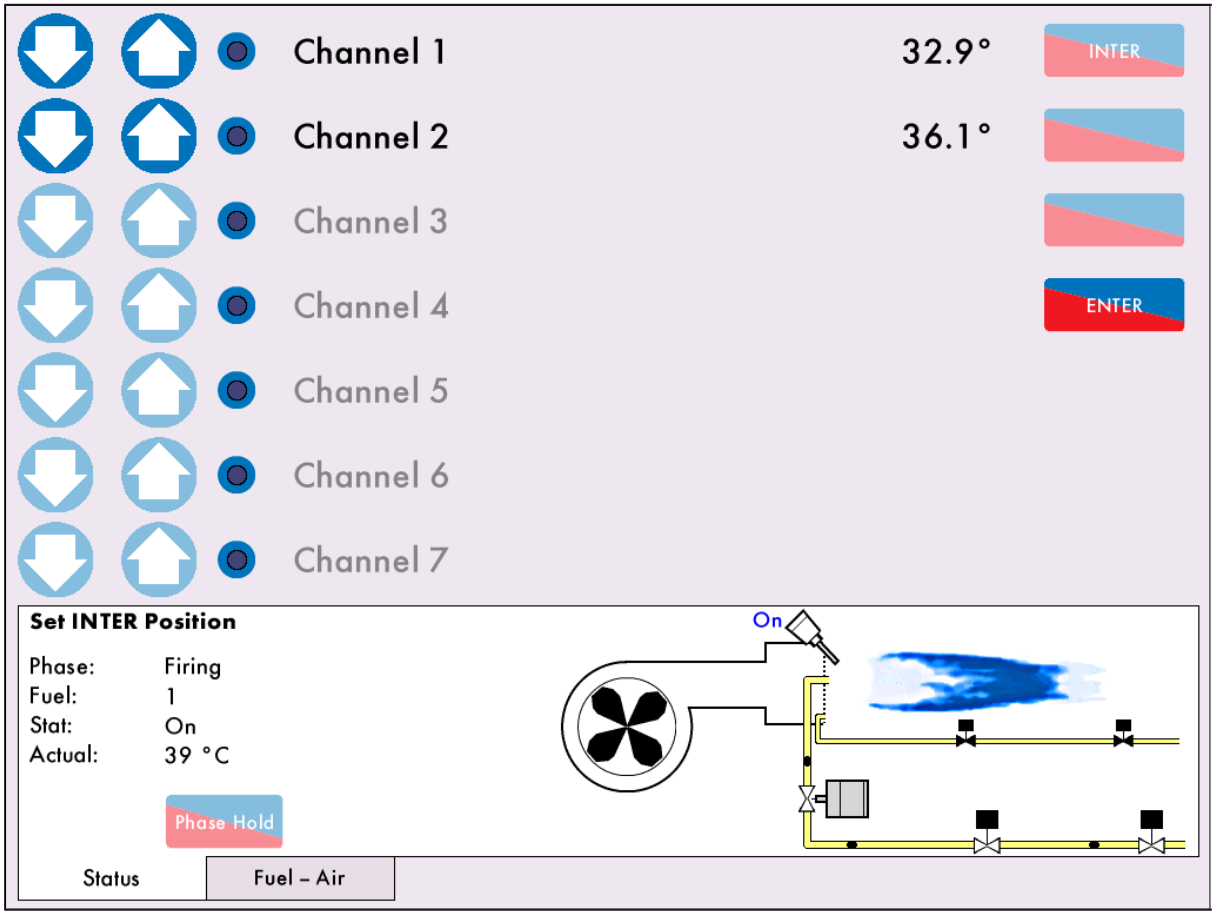


Figure 3.4.11.i Set INTER Position
图3.4.11.i 设置内部位置

Once the HIGH position has been entered, the message 'Set INTER Position' will appear. Press INTER to drive the servomotors (and VSD) to the first INTER positon. The message 'Move fuel and air positions' will appear at first, as the system must detected a 0.5° movement on CH1 and CH2 before an INTER position can be entered. Press ENTER to store this INTER position.

输入高位置后，将会出现"设置内部位置"的消息，按下 INTER 按钮将伺服电机（和 VSD）驱动至第一内部位置。最初将出现"移动燃料和空气位置"的消息，在输入内部位置前系统必须检测到 CH1 和 CH2 上移动 0.5°了。按下 ENTER 按钮保存该内部位置。

There must be a minimum of 3 INTER points entered on the fuel-air curve, and a maximum of 18. Points can be added in Single Point Change mode (see section 3.6).
至少在燃料-空气曲线上输入 3 个内部点，最多可以在单点更改模式中输入 18 个点。

Continue this process until all the required INTER points have been entered.
继续本步骤直至输入所有的所需内部点。

3.4.12 Set INTER or START Position 设置内部或启动位置

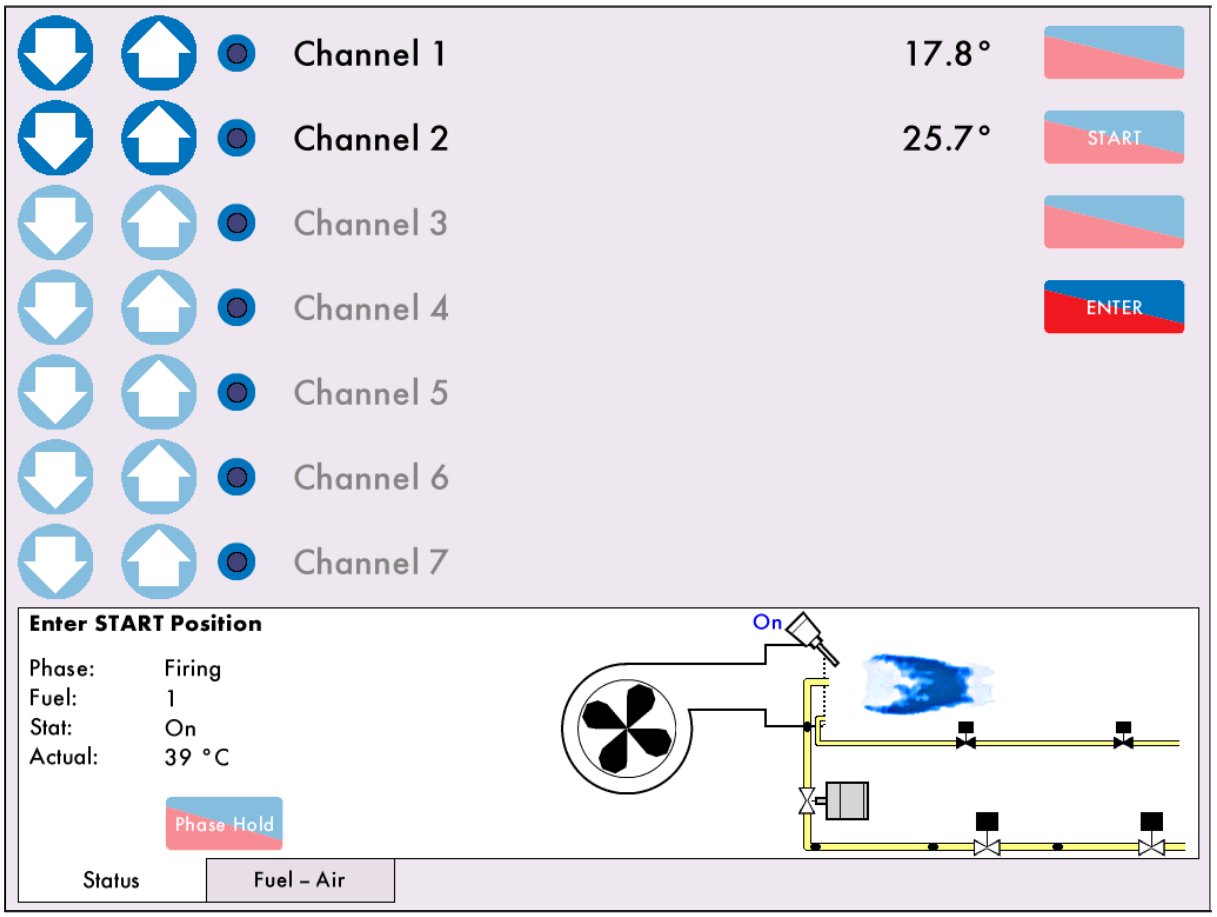


Figure 3.4.12.i Set INTER or START Position
图3.4.12.i 设置内部或启动位置

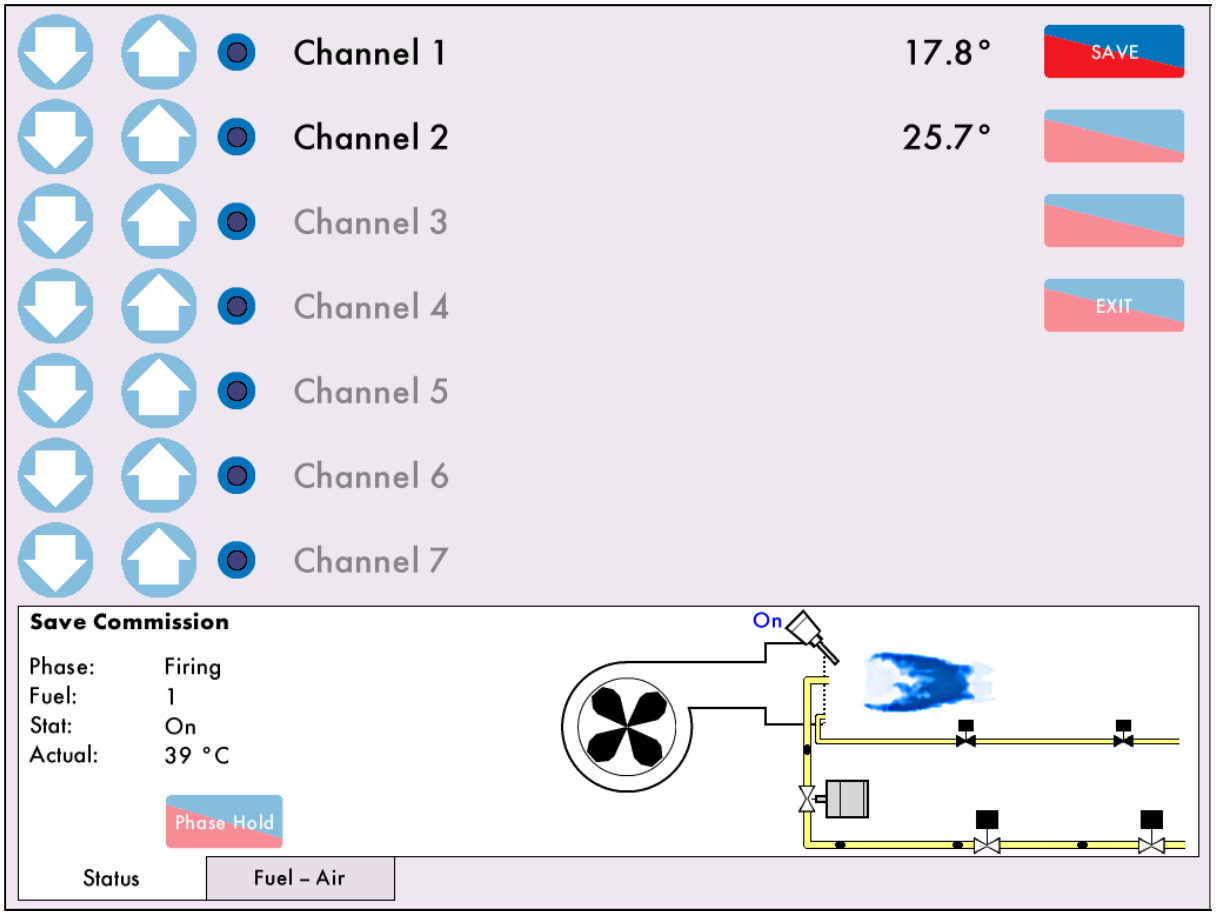
Once the minimum 3 INTER points have been added, you will be prompted to either enter another INTER point or the START/LOW FIRE position.
添加至少三个内部点后，系统将提醒您输入其他内部点或启动位置/低火焰位置。

Press START to drive the servomotors (and VSD) to the START/ LOW FIRE position, and then press ENTER to store this.

按下按钮将伺服电机（和 VSD）驱动至启动位置/低火焰位置，然后按下按钮保存。

Note: If Golden Start or FGR Start are in use, the Start position is only used for Low Fire.
注：如果使用了黄金启动或 FGR 启动，则低火焰仅能使用启动位置。

3.4.13 Save Commission 保存调试值



3.4.13.i Save Commission
3.4.13.i 保存调试值

Once the START position has been entered, press SAVE to store this commission curve. The message 'Commission Complete' will appear and press EXIT to go normal firing mode.
输入启动位置后，按下 SAVE 按钮保存调试曲线，此时将出现"调试完成"的消息，然后按下 EXIT 按钮进入正常燃烧模式。

If the burner has been previously commissioned then the new saved curve will overwrite the previous data for the fuel selected. Failure to save the curve will result in the commissioning data not being stored within the unit and a power loss to the unit will result in a loss of data for the fuel selected.
如果燃烧器之前已经进行调试，则新保存的曲线将覆盖先前的数据。未能保存曲线将导致调试数据无法在设备内保存，设备没电将导致已选择燃料的数据丢失。

If during commissioning the burner turns off, due to the 'running interlock' opening or a lockout, it is possible to carry on commissioning from the last entered position, as long as the HIGH position has been entered, and the fuel selected is not changed. When the 'running interlock' is closed again, or the lockout is cleared, the system will purge automatically. Commissioning will then be resumed at the START position (section 3.4.4). The system automatically bypasses the HIGH position entry and resumes the commissioning procedure from the last entered INTER position.
在调试期间如果燃烧器因"运行联锁"打开或锁定而关闭，则可以从最新输入的位置进行调试，只要输入高位置且选择的燃料没有改变。当"运行联锁"关闭后或锁定被清除后，系统将自动进行吹扫。调试将在启动位置（见 3.4.4 节）重新开始。系统将自动通过高位置并从最新输入的内部位置重新开始调试流程。

Once the burner has been commissioned, the fuel flow metering will need to be entered, please go to section 3.5 Fuel Flow Commissioning. If there is EGA trim data to be added then continue to section 3.7 Single Point Change before section 3.5 Fuel Flow Commissioning.
燃烧器调试后则需要输入燃料流量计量，请见第 3.5 节关于燃料流量的调试。如果已经添加了尾气分析仪微调数据，则在第 3.5 节燃料流量调试前继续第 3.7 节单点更改。

Note: If commissioning a fuel for the first time the default required setpoint will usually be lower than the actual temperature/ pressure causing the burner to shut down at commission completion.
注：如果是第一次调节燃料，则默认的所需设定点通常低于实际温度/压力，从而导致燃烧器在调试完成后关闭。

3.5 Fuel Flow Metering 燃料流量计量

If fuel flow metering has been enabled in option 57, the message 'No Fuel Flow Data' will display on the Home screen once the burner has been commissioned. Fuel flow metering is used to rate the size or burner and calculate the firing rate.
如果燃料流量计量已经在选项 57 中启用，当燃烧器调试后则会在主屏幕上出现"无燃料流量数据"的消息。燃料流量计量通常用于计量尺寸或燃烧器，计算燃烧率。

If fuel flow metering is not commissioned and sequencing is optioned, then MM will assume a default burner rating which is based on the fractional fuel valve angle.
如果燃料流量计量没有被调试且没有选择排序，则控制模块将根据部分燃料阀角度确定默认燃烧器值。

The fuel flow is commissioned from the high fire point down to low fire.
燃料流量从高火焰点到低火焰点进行调试。

On the Mk8 MM, fuel flow metering can be taken as the values entered in the fuel flow commissioning screen from the fuel flow meter or through a 4-20mA signal on terminals EX- and EX+.
在 Mk8 控制模块上，用燃料流量计或通过终端 EX-和 EX+上的 4-20mA 信号在燃料流量调试屏幕上输入数值后开始燃料流量计量。

3.5.1 Commissioning Fuel Flow Through MM 通过控制模块调试燃料流量

If a fuel flow meter is not being used and only arbitrary values are being used then make sure a good range of values are being used (e.g. 100 to 10) with equal spaces between the values. Not doing this could lead to problems when using IBS and the flame graphic.
如果没有使用燃料流量计且仅使用了任意值，则确保使用正确的数值范围(例如：100 至 10)并在数值间保持等距，否则当使用 IBS 和火焰图形时可能会出现问题。

When using arbitrary values it is good practice to use the following calculation to determine the heat value for each of the 10 points.
使用任意值是使用以下公式确定 10 个点热值的好方法：

$$Value\ Between\ Points = \frac{Burner\ Rating - \left(\frac{Burner\ Rating}{Turndown}\right)}{9}$$

各点间数值=燃烧器额定值-（燃烧器额定值/排污率）/9

For example: Burner Rating: 5.4MW; Turndown Ratio: 5:1.
例如：燃烧器额定值：5.4MW; 排污率: 5:1

$$\frac{5.4 - \left(\frac{5.4}{5}\right)}{9} = 0.48$$

Giving the range (5.40, 4.92, 4.44, 3.96, 3.48, 3.00, 2.52, 2.04, 1.56, 1.08)
给定范围(5.40, 4.92, 4.44, 3.96, 3.48, 3.00, 2.52, 2.04, 1.56, 1.08)

Fuel flow metering serves to totalise the amount of fuel being used at each position. If any changes are made to the curve through Single Point Change, then fuel flow will need to be re-commissioned.
燃料流量计量可以总结各位置使用的燃料量，如果通过单点更改改变曲线，则燃料流量将需要重新调试。

Fuel flow commissioning set by option 57, and is carried out in Run mode. The burner must be firing.
燃料流量调试在选项 57 中设置，在运行模式中执行，且燃烧器必须燃烧。

On the Home Screen, press 

to access the System Configuration screen.

在主屏幕上按下 

按钮可以访问系统设置屏幕。

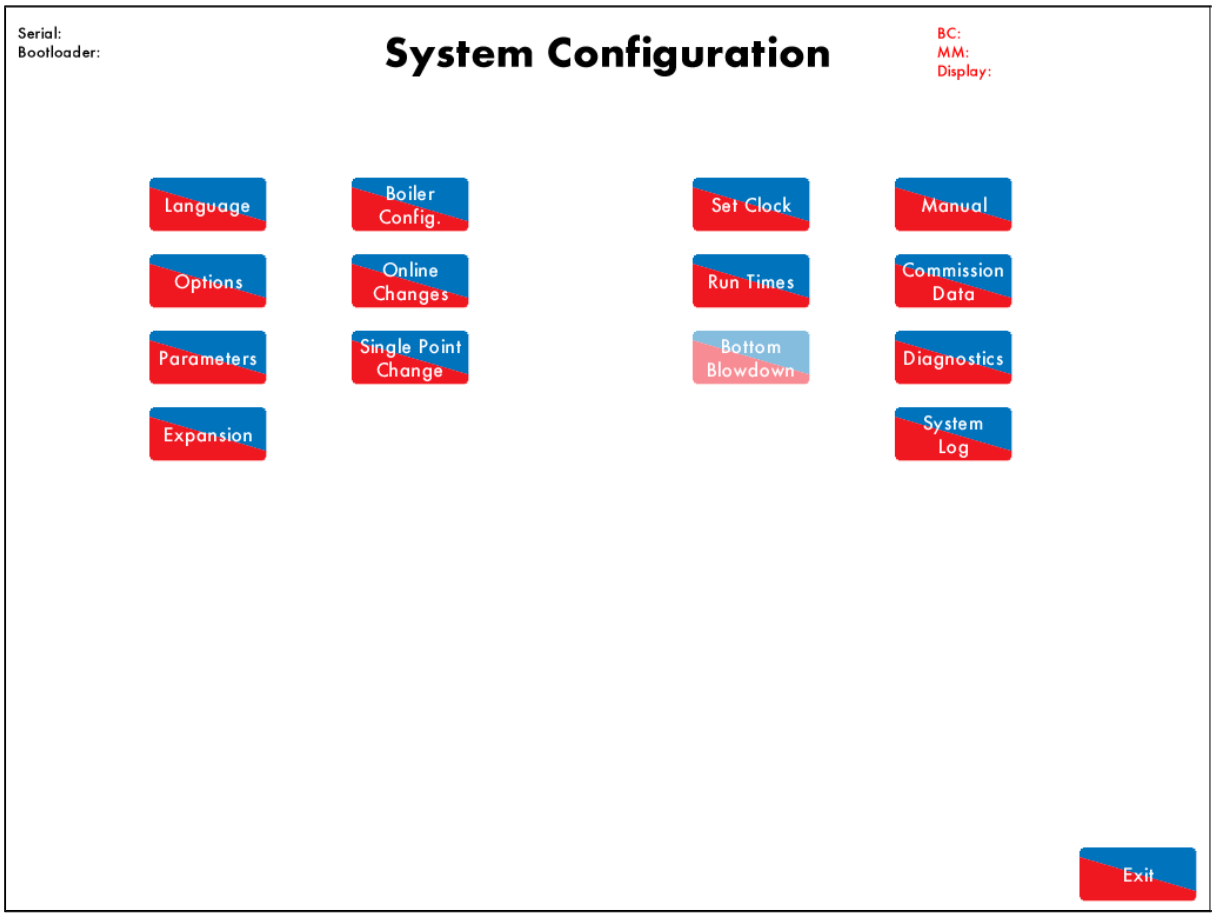


Figure 3.5.1.i System Configuration Screen
图3.5.1.i 系统设置屏幕

On the System Configuration screen press Online Changes. You will be prompted to enter the Online Change passwords. Press Continue to access the Online Changes screen.

在系统设置屏幕上按下 Online Changes 按钮，系统将提示您输入在线更改密码，按下 Continue 按钮可以访问在线更改屏幕。

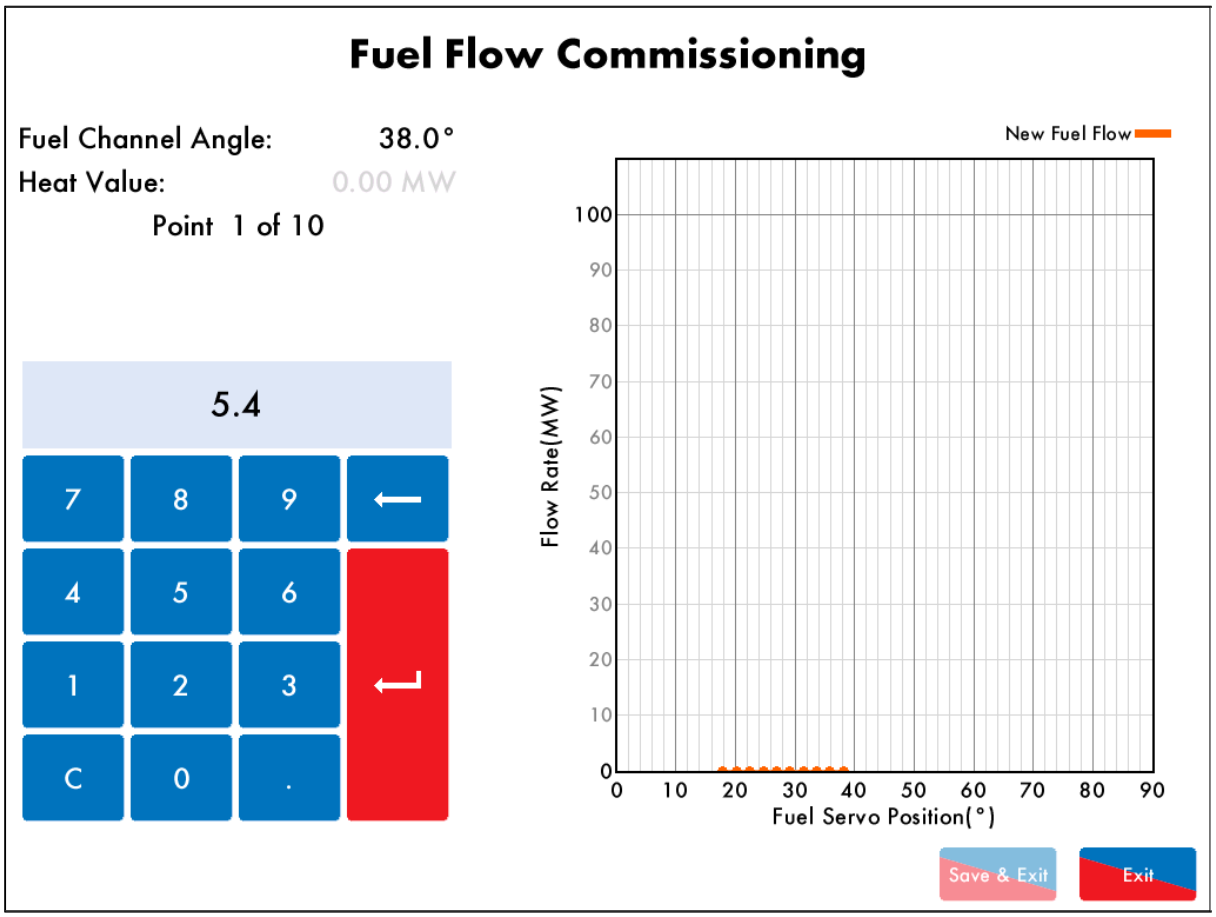


Figure 3.5.iii Fuel Flow Commissioning
图3.5.iii 燃料流量调试

Press Fuel-flow Commission to access the fuel flow commissioning screen. There are 10 points which need to be entered across the commission curve from low fire to high fire, with high fire being point 1, and low fire point 10. Type in the heat value or 'dummy value' using the keypad and press the return key to save that point.

按下 Fuel-flow Commission 按钮可以访问燃料流量调试屏幕。从低火焰点到高火焰点总共有 10 个点需要在调试曲线中输入，高火焰点为 1 点，低火焰点为 10 点。用键盘输入热值或虚拟值比按下返回键保持该点。

Note: The servomotors will drive up to the high fire position, and then drive down as the fuel flow commissioning points are entered. Precautions must be taken to ensure that the boiler is warm enough for all 10 points to be entered.
注：输入燃料流量调试点后伺服电机将驱动至高火焰位置，然后向下驱动，此时必须特别小心，确保锅炉足够热，可以输入所有 10 个点。

As you enter the heat values for the 10 points, these will become marked on the graph to the right of the screen. Once the fuel flow commissioning is complete, press Save & Exit to return to modulation in normal firing mode.

If you press Exit at any time during fuel flow commission, this will not store the points.

输入 10 个点的热值后，屏幕的右侧将出现一个图形，完成燃料流量调试后，按下 Save & Exit 按钮返回正常燃烧模式。

3.5.2 Commissioning Fuel Flow Through 4-20mA Feedback
通过 4-20mA 反馈调试燃料流量

If fuel flow metering is enabled through using 4-20mA feedback on terminals EX- and EX+, the heat value will automatically get populated according to the analogue signal at that fuel valve position. After each heat value is displayed, press entered to go to the next fuel flow point.
如果通过使用终端 EX- 和 EX+上的 4-20mA 反馈启用燃料流量计量，则热值将自动根据各燃料阀位置的模拟信号获得数值，在显示各热值后，按下输入可以进入下一个燃料流量点。

3.5.3 Calorific Fuel Data 低热值燃料数据

Stats 状态	Kerosene SG 煤油	Gas Oil CI/SH 汽油	Light fuel Oil SG 轻燃油	Medium fuel Oil SG 中燃油	Heavy Fuel Oil SG 重燃油
Relative density 15.6°C (60°F) approx. / = litres x = kg 相对密度 约 15.6°C (60°F) / = litres x = kg	0.79	0.835	0.93	0.94	0.96
Flash point (closed) min °C (°F) 最低°C(°F)闪点（接近）	37.8 (100)	65.6 (150)	65.6 (150)	65.6 (150)	65.6 (150)
Viscosity kinematic (cSt) at 15.6°C (60°F) approx. 37.8°C (100°F) approx. 82.2°C (180°F) approx. 以下温度时运动粘度(cSt) 约 15.6°C (60°F) 约 37.8°C (100°F) 约 82.2°C (180°F)	 2.0 - -	 - 3.0 -	 - - 12.5	 - - 30	 - - 70
Equivalent Redwood No.1 Viscosity at 37.8°C (100°F) 37.8°C (100°F)时相当于红木的粘度	-	33 approx 约 33	250 max 最大 250	1000 max 最大 1000	3500 max 最大 3500
Freezing point °C / °F 冰点°C / °F	Below -40 低于-40	Below -40 低于-40	Below -40 低于-40	Below -40 低于-40	Below -40 低于-40
Cloud point °C max 浊点°C 最大	-	-2.2	-	-	-
Gross calorific values KJ/kg approx. Btu/lb approx. KWh/litre approx. Therms/gallon approx. kW/kg 总热量值 KJ/kg 约 Btu/lb 约 KWh/litre 约 Therms/gallon 约 kW/kg	 46,520 20,000 10.18 1.58 -	 45,590 19,600 10.57 1.64 12.66	 43,496 18,700 11.28 1.75 12.08	 43,030 18,500 11.22 1.74 -	 42,800 18,400 11.42 1.77 11.89
Sulphur content % wt. 硫磺含量% wt.	0.2	0.6	2.3	2.4	2.5
Water content % vol. 水含量% vol.	Negligible 可忽略	0.05	0.10	0.20	0.30
Sediment content % wt 沙含量 wt %	-	Negligible 可忽略	0.20	0.03	0.04

Ash content % wt 灰含量% wt	-	Negligible 可忽略	0.02	0.03	0.04
Mean specific heat between 0°C - 100°C approx. 0°C - 100°C 间平均比热	0.50	0.49	0.46	0.45	0.45
Volume correction factor per 1°C 每 1°C 时体积校正因数	0.00083	0.00083	0.0007	0.0007	0.00068
Volume correction factor per 1°F 每 1°F 时体积校正因数	0.00046	0.00046	0.00039	0.00039	0.00038
Btu/U.S. gallon (US standard) Btu/U.S. gallon (美国标准)	-	140,000	-	150,000	160,000
Lb/U.S. gallon (US standard) Lb/U.S. gallon(美国标准)	-	7.01	-	-	7.01
% lighter than water 比水轻%		20%			4%
1 u.s. Gallon of oil / ft of air 燃油（加仑）/空气（英尺）		1402			

3.5.4 Conversion Factor for Imperial Gas Flow Meters
英制燃气流量计量计的转换因子

Required Data: Pressure of gas at meter in "wg
Required gas flow in ft³/min
所需数据：计量计燃气压力"wg
所需燃气流量 ft³/min

Calculations: Correction factor = (pressure of gas at meter x 0.00228) + 0.948
Reading on gas meter = required gas flow / correction factor
计算方法：校正因子=（计量计燃气压力 x 0.00228) + 0.948
燃气计量计读数=所需燃气流量/校正因子

Example: Pressure of gas at meter = 58" wg
Required gas flow = 95 ft³/min
Conversion factor = (58 x 0.00228) + 0.948 = 1.08
Reading on Meter = 95 / 1.08 = 88 ft³/min
示例：剂量计燃气压力=58" wg
所需燃气流量=95 ft³/min
转换因子=(58 x 0.00228) + 0.948 = 1.08
计量计读数=95 / 1.08 = 88 ft³/min

3.5.5 Correction Factor for Burners Significantly Above Sea Level
高于海平面时燃烧器校正因子

Note: Above sea level i.e. >200m (1ft = 0.3048m)
注：高于海平面>200m (1ft = 0.3048m)

Height above sea level in meters, Calculation for correction factor: =

(Pressure of gas at meter x 0.00228) + (0.948 – (height above sea level x 0.0001075))

高于海平面高度，校正因子计算方法=

(计量计燃气压力 x 0.00228) + (0.948 – (高于海平面高度 x 0.0001075))

Example: As above but 250 m above sea level:
Correction factor = (58x0.00228) + (0.948 – (250 x 0.0001075)) = 1.05

示例：高于海平面 250m:
校正因子= (58x0.00228) + (0.948 – (250 x 0.0001075)) = 1.05

3.5.6 Gas Volume Conversion Factors
燃气量转换因子

Assumed gas temperature 假设燃气温度	10 °C	50 °F
Standard pressure 标准压力	e 760 mmHg	101.3612 Kpa
Standard temperature 标准温度	15.56 °C	
Ambient pressure 环境压力	101.325 Kpa	

Wg "	PSI	mmH2O	mmHg	Kpa	mBar	Conversion factor 转换因子
1	0.036	25.4	1.867	0.249	2.49	1.0218
2	0.072	50.8	3.734	0.498	4.98	1.0243
3	0.108	76.2	5.601	0.747	7.47	1.0268
4	0.144	101.6	7.468	0.996	9.96	1.0293
5	0.181	127	9.335	1.245	12.451	1.0318
6	0.217	152.4	11.202	1.494	14.941	1.0343
7	0.253	177.8	13.069	1.743	17.431	1.0368
8	0.289	203.2	14.936	1.993	19.921	1.0393
9	0.325	228.6	16.804	2.242	22.411	1.0418
10	0.361	254	18.671	2.491	24.901	1.0443
15	0.542	381	28.006	3.736	37.352	1.0569
20	0.722	508	37.341	4.981	49.802	1.0694
25	0.903	635	46.677	6.227	62.253	1.0819
30	1.083	762	56.012	7.472	74.703	1.0944
35	1.264	889	65.347	8.717	87.154	1.107
40	1.444	1016	74.682	9.963	99.604	1.1195
45	1.625	1143	84.018	11.208	112.055	1.132
50	1.805	1270	93.353	12.453	124.505	1.1445
55	1.986	1397	102.688	13.699	136.956	1.1571
60	2.166	1524	112.024	14.944	149.406	1.1696
65	2.347	1651	121.359	16.189	161.857	1.1821
70	2.527	1778	130.694	17.435	174.307	1.1947
75	2.708	1905	140.03	18.68	186.758	1.2072
80	2.889	2032	149.365	19.925	199.208	1.2197
85	3.069	2159	158.7	21.171	211.659	1.2322
90	3.25	2286	168.035	22.416	224.109	1.2448
95	3.43	2413	177.371	23.661	236.56	1.2573
100	3.611	2540	186.706	24.907	249.01	1.2698
110	3.972	2794	205.377	27.397	273.911	1.2949
120	4.333	3048	224.047	29.888	298.812	1.3199
130	4.694	3302	242.718	32.379	323.713	1.345
140	5.055	3556	261.388	34.869	348.614	1.37
150	5.416	3810	280.059	37.36	373.515	1.3951
160	5.777	4064	298.73	39.851	398.416	1.4201
170	6.138	4318	317.4	42.341	423.317	1.4452
180	6.499	4572	336.071	44.832	448.218	1.4703
190	6.86	4826	354.741	47.323	473.119	1.4953
200	7.221	5080	373.412	49.813	498.02	1.5204

How to use this information:-
如何使用以下信息：

1. Measure Volumetric flow of gas for 1min in ft3 (i.e. ft3/min). Note 1m3 = 35.31ft3
   测量燃气 1 分钟的体积流量，单位：ft3 (例如 ft3/min). Note 1m3 = 35.31ft3。

2. Multiply this volume flow by 60 to give volumetric flow per hour (i.e. ft3/hr).
   用 60 乘以该流量值给出每小时的体积流量（例如 ft3/hr）。

3. Measure the pressure of the gas supply.
   测量供应燃气的压力。

4. Use the table above to obtain a conversion factor.
   使用上表计算转换因子。

5. Multiply the volume flow per hour by the conversion factor to obtain a volume at reference conditions.
   用转换因子乘以每小时流量，获得参照条件下的流量。

6. For natural gas, the calorific value is typically 1000 Btu/ft3. To obtain the firing rate of the boiler at standard reference conditions multiply the volume at reference conditions by 1000.
至于天然气，热值通常为 1000 Btu/ft3，要获得标准参考条件下锅炉的燃烧率，应用 1000 乘以参考条件下的流量。

Represented as an equation:-
等式为：
Firing rate = (Measured Volumetric flow per minute x 60 x Conversion factor x 1000) Btu/hr
燃烧率=（测量的每分钟体积流量 x 60 x 转换因子 x 1000）Btu/hr

3.6 Gas/ Air Pressure Commission
燃气/空气压力调试

To re-commission the gas pressure sensor, go to Commission Mode and press Gas Pressure Commission. The MM will then run through the points to store the gas pressure values.
重新调试燃气压力传感器时，进入调试模式然后按下 Commission 按钮。控制模块将通过该点保存燃气压力值。

If the VPS is optioned on, the unit will run through this process. The M.M will go from Low Fire to High Fire and store the gas pressure values along the curve. Once these values are stored, the upper and lower offset limits will be adjusted to the new commissioned gas pressure values.
如果选择了阀门检验系统，设备将运行本流程，控制模块将从低火焰点到高火焰点运行并保存曲线的燃气压力值。当这些值保存后需要调整新调试额燃气压力值的上下补偿限值。

If the burner turns off during the gas/air pressure commission, the gas/air pressure commission process with be restarted. This ensures that the MM does not run with an incomplete set of gas/air pressure readings.
如果在燃气/空气压力调试期间燃烧器关闭，则燃气/空气压力调试流程将重新启动。这可以确保控制模块不会在没有完整的燃气/空气压力读数时运行。

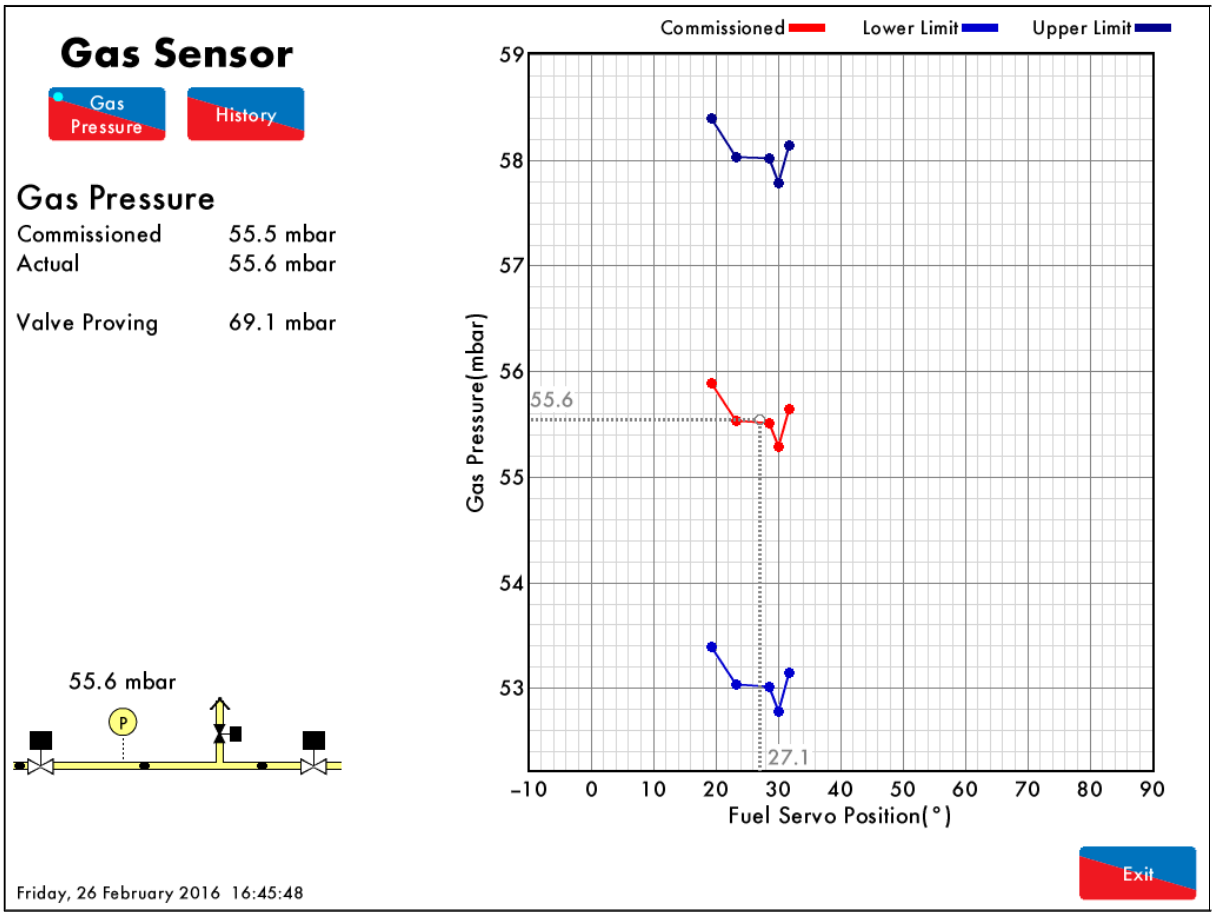


Figure 3.6.i Gas Sensor
图3.6.i 燃气传感器

To commission the air pressure sensor, in Commission Mode screen press Air Pressure Commission to commission the air pressure sensor, in the same way as the gas pressure sensor.

调试空气压力传感器时，在调试模式屏幕上按下 Air Pressure Commission 按钮可以调试空气压力传感器，按同样方式还可以调试燃气压力传感器。

3.7 Single Point Change 单点更改

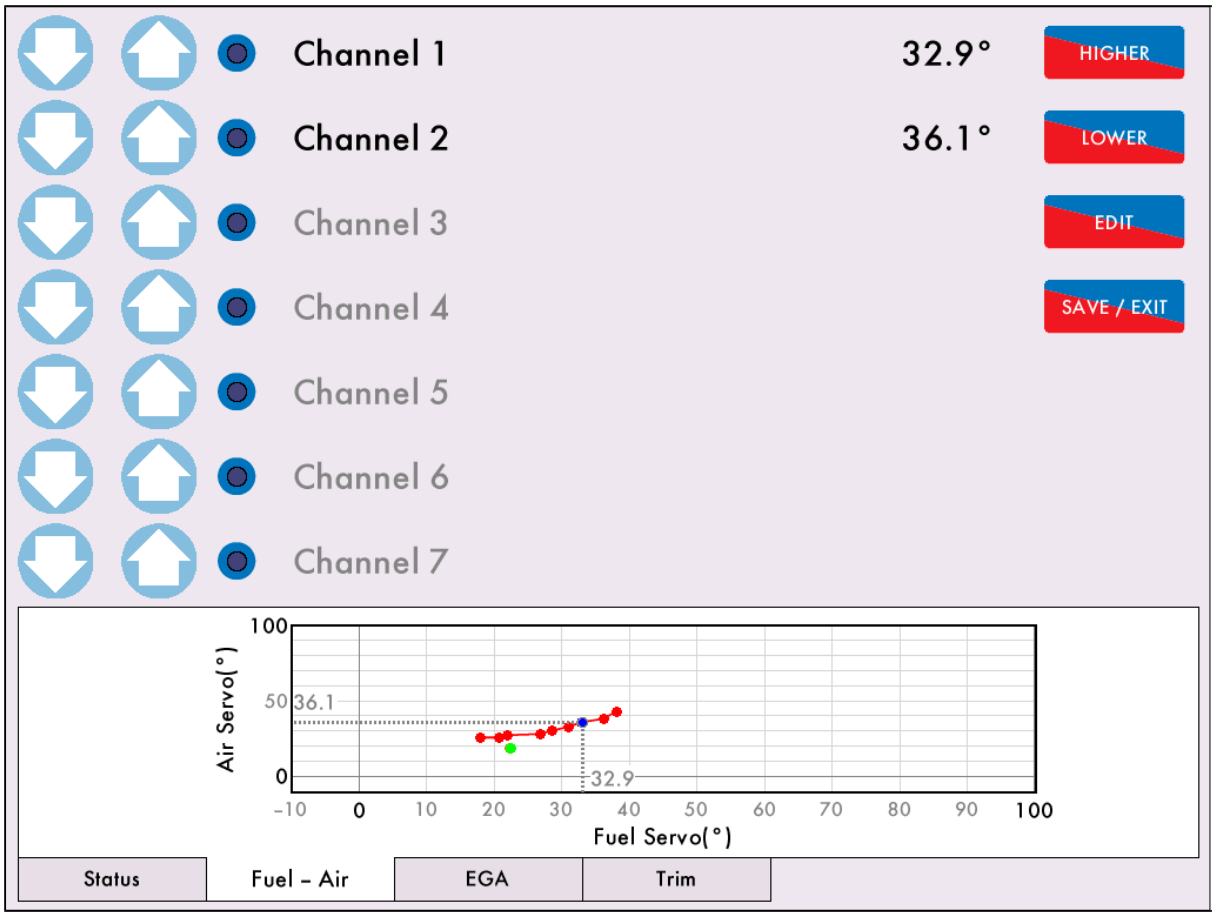


Figure 3.7.i Single Point Change
图3.7.i 单点更改

Single Point Change can only be accessed when the burner is firing. Press Single Point Change in the system configuration screen and enter the password to access Single Point Change mode.

只有当燃烧器燃烧时才能进入单点更改，在系统设置屏幕上按下 Change 按钮并输入密码可以进入单点更改模式。

Select the point to be edited or added trim to by pressing HIGHER or LOWER to go up and down the fuel curve, then press EDIT.

按下 HIGHER 按钮或 LOWER 按钮向上或向下运行燃料曲线可以选择需要编辑或需要微调的点，然后按下 EDIT 按钮。

The Status screen will display the message 'Select change to make.'
状态屏幕将显示"选择更改"的消息。

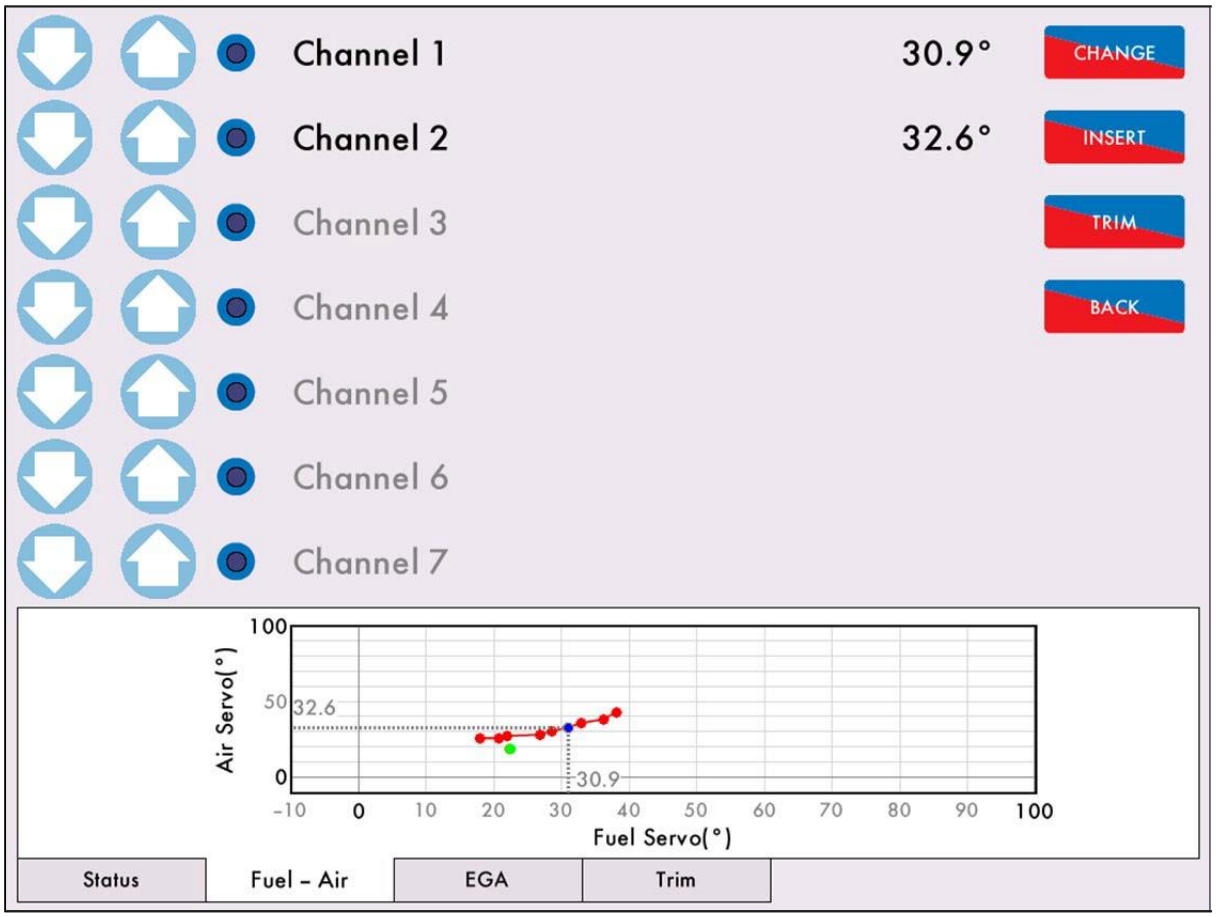


Figure 3.7.ii Changes
图3.7.ii 更改

To edit a previously entered point press CHANGE and make adjustments to the positions as needed (see Figure 3.7.iiii).
编辑以前输入的点时可以按下 CHANGE 按钮并对所需位置进行调整（见图 3.7.iii）。

To enter a new point press INSERT.
按下 INSERT 按钮可以输入一个新点。

To add trim data to a point press TRIM, see section 3.4.6 and Figure 3.7.iv.
按下 TRIM 按钮可以为单点添加微调数据，见第 3.4.6 节和图 3.7.iv。

Note: It is not possible to delete LOW or HIGH FIRE positions or have less than 3 INTER points.
注：无法删除低火焰位置或高火焰位置或至少有 3 个内部点。

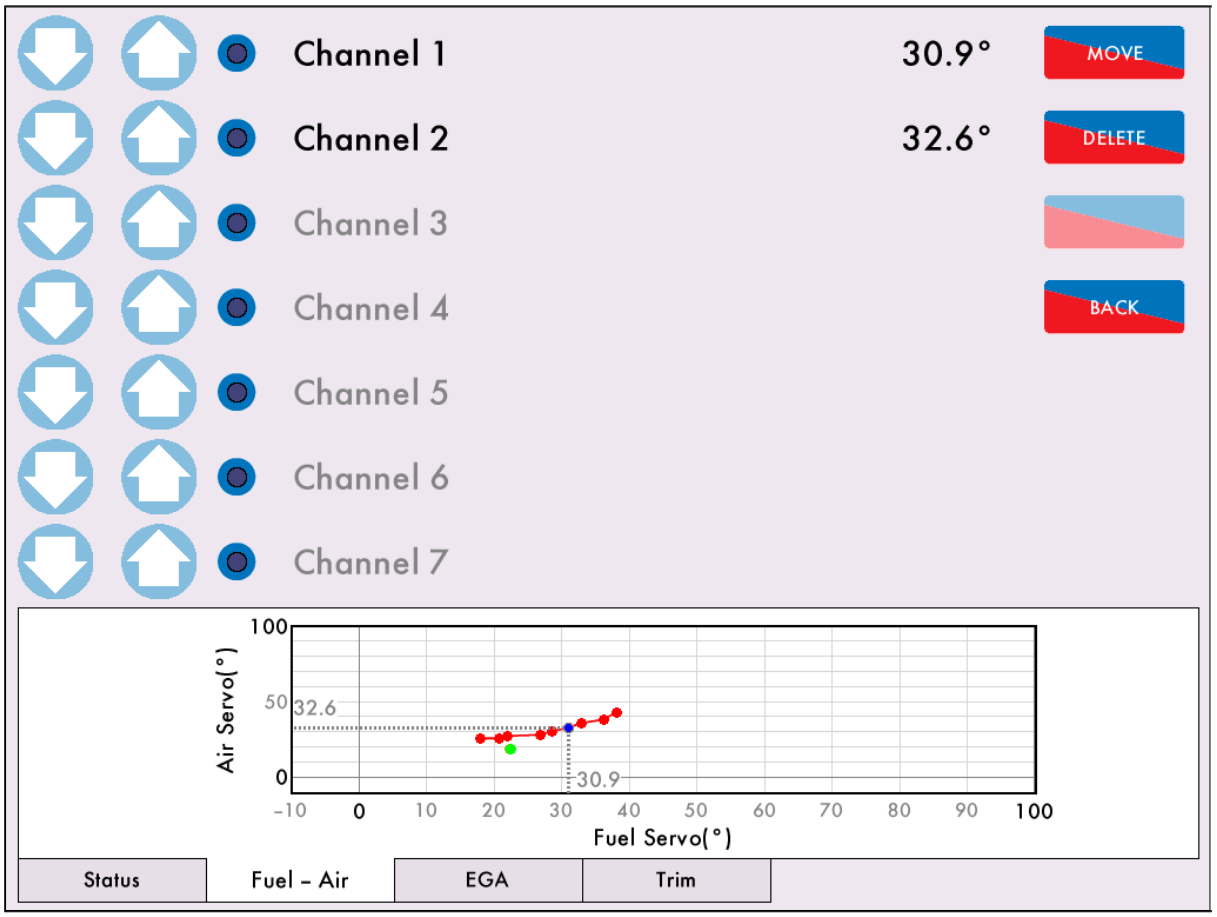


Figure 3.7.iii Changing a Point
图3.7.iii 更改点

Press MOVE to the fuel, air and/or VSD commissioned value of that point. Once the changes have been made, press ENTER to save this position. If a point is overwritten, the trim data is cleared.

按下 MOVE 按钮可以更改该点的燃料、空气和/或 VSD 调试值。更改完成后，按下 ENTER 按钮保存该位置，如果某个点被覆盖，则微调数据会清除。

Press DELETE to remove the point; there must be a minimum of 3 INTER points.

按下 DELETE 按钮可以清除某点，至少有 3 个内部点。

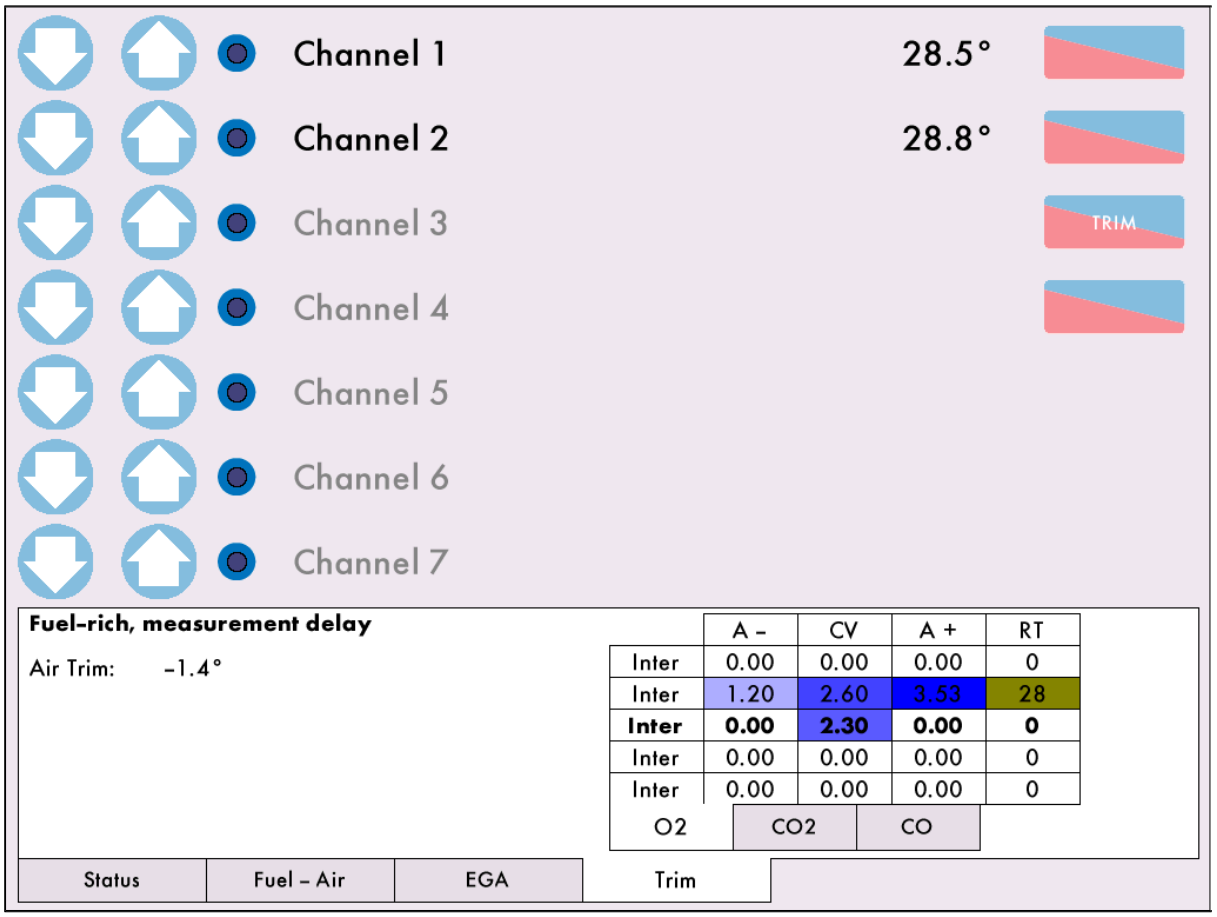


Figure 3.7.iv Single Point Change – Trim
图3.7.iv 单点更改-微调

The MM will store the trim values for this position.
控制模块将保存给位置的微调数据。

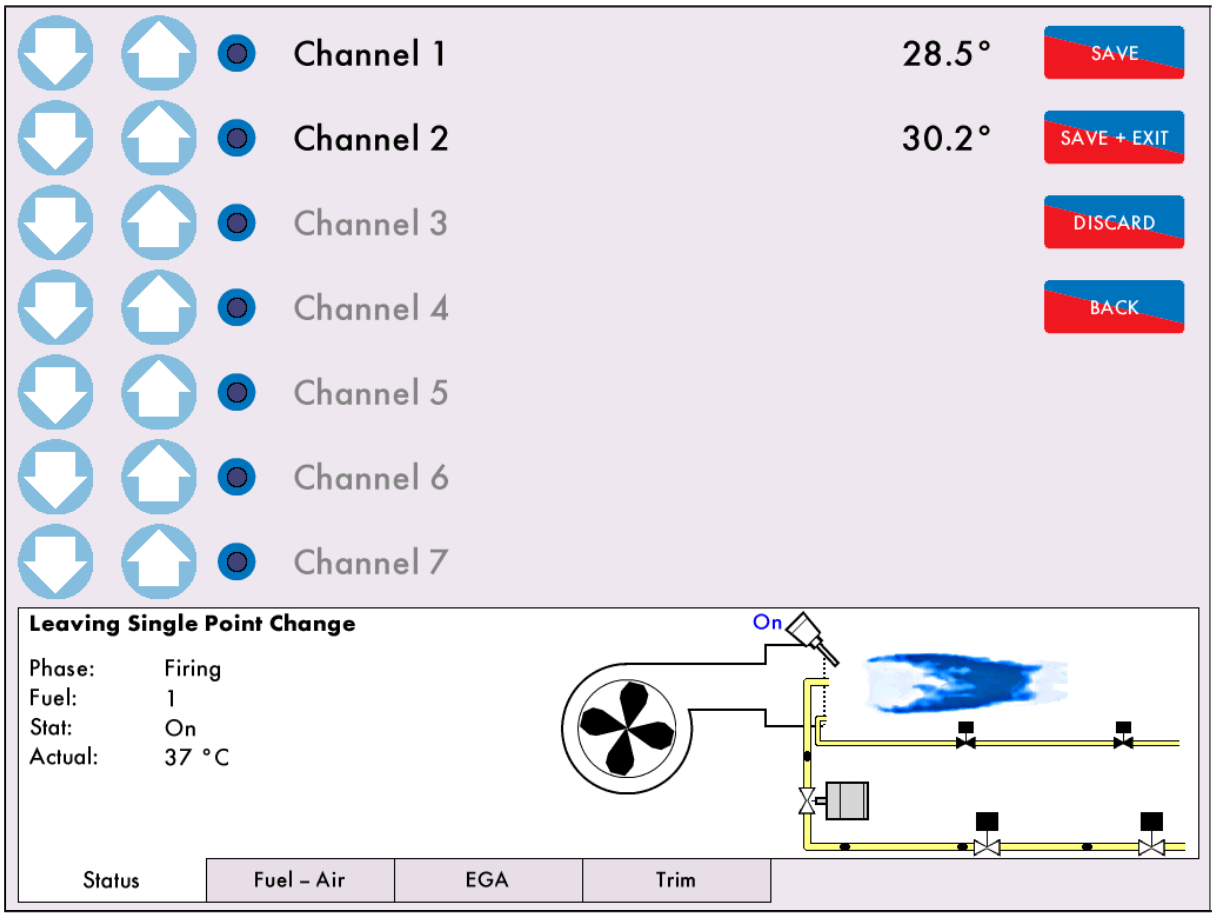


Figure 3.7.v Exit Single Point Change
图3.7.v 退出单点更改

Press SAVE to store the changes made. Press SAVE / EXIT to store these changes and leave Single Point Change mode.
按下 SAVE 按钮可以保存更改，按下 SAVE / EXIT 按钮可以保存更改并退出单点更改模式。

The fuel flow commissioning must be entered (again) if the following changes are made in single point change
如果在单点更改中进行以下更改，则需要输入燃料流量调试：

- HIGH or START position is changed.
  更改了高位置或启动位置。
- EGA trim data has been added.
  添加了尾气分析仪微调数据。
- Points have been added.
  添加了点。

Please go to section 3.5 Fuel Flow Commissioning.
请进入第 3.5 节燃料流量调试。

3.8 Online Changes 在线更改

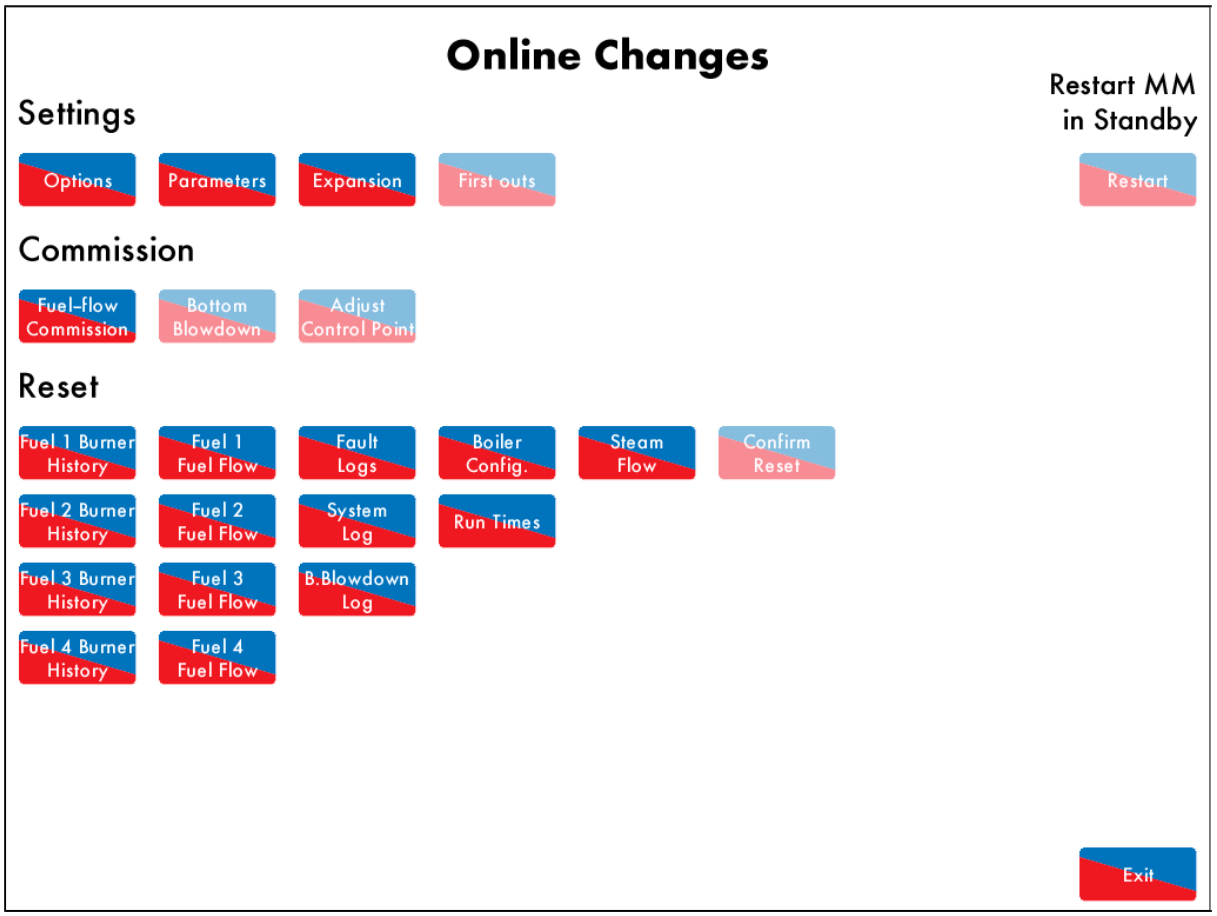


Figure 3.8.i Online Changes Screen
图3.8.i 在线更改屏幕

The Online Changes is accessed by pressing Online Changes on the system configuration screen, and then entering the password. The Online Changes feature allows the following:

在系统设置屏幕上按下 Online Changes 按钮可以访问在线更改，然后输入密码。在线更改功能允许进行以下内容：

- Change non-safety critical options, parameters and expansion options
  更改了非安全关键选项、参数和扩展选项。
- Configure settings and labels for first outs
  设置了先出功能和标签。
- Fuel flow commissioning (section 3.5)
  燃料流量调试（见 3.5 节）。
- Set bottom blowdown schedule
  设置底部排污计划。
- Adjust water level control point
  调节水位控制点。
- Reset burner history
  重置燃烧器历史数据。
- Reset fuel flow data
  重置燃料流量数据。
- Reset fault logs
  重置故障日志。
- Reset system log

重置系统日志。

- Reset bottom blowdown log
  重置底部排污日志。
- Reset boiler configuration
  重置锅炉设置。
- Reset run times
  重置运行时间。
- Reset steam flow metering
  重置蒸汽流量计量。
- Restart MM if the burner is in standby
  燃烧器处于待机状态时重启控制模块。

4 ERRORS AND LOCKOUTS 错误和锁定

4.1 Errors 错误

Errors occur when the MM detects an internal fault, component out of range, internal check failure or power supply issue. To clear an error, the MM must be restarted.
当控制模块检测到内部故障、组件超出范围、内部检查失败或电源问题时会出现错误，清除错误消息是必须重启控制模块。

Error 错误	Message 消息	Description 说明
1	Channel 1 Positioning Error 通道 1 定位错误	Servomotor is outside of the commissioned range 伺服电机在调试范围外。
□ Check wiring on terminals 40 – 47 检查终端 40-47 的接线。 □ Check signal cable from the MM to the servomotor is screened at one end 检查从控制模块至伺服电机的信号线是否在一端屏蔽。 □ Check potentiometer is zeroed correctly 检查电位计是否正确归零。 □ Go into Commissioning mode, check the servomotor position and ensure that closed is at 0.0 进入调试模式，检查伺服电机位置并确保在 0.0 度关闭。		
2	Channel 2 Positioning Error 通道 2 定位错误	Servomotor is outside of the commissioned range 伺服电机在调试范围外
□ Check wiring on terminals 40 – 47 检查终端 40-47 的接线。 □ Check signal cable from the MM to the servomotor is screened at one end 检查从控制模块至伺服电机的信号线是否在一端屏蔽。 □ Check potentiometer is zeroed correctly 检查电位计是否正确归零。 □ Go into Commissioning mode, check the servomotor position and ensure that closed is at 0.0 进入调试模式，检查伺服电机位置并确保在 0.0 度关闭。		
3	Channel 3 Positioning Error 通道 3 定位错误	Servomotor is outside of the commissioned range 伺服电机在调试范围外
□ Check wiring on terminals 40 – 47 检查终端 40-47 的接线。 □ Check signal cable from the MM to the servomotor is screened at one end 检查从控制模块至伺服电机的信号线是否在一端屏蔽。 □ Check potentiometer is zeroed correctly 检查电位计是否正确归零。 □ Go into Commissioning mode, check the servomotor position and ensure that closed is at 0.0 进入调试模式，检查伺服电机位置并确保在 0.0 度关闭。		
4	Channel 4 Positioning Error 通道 4 定位错误	Servomotor is outside of the commissioned range 伺服电机在调试范围外

- Check wiring on terminals 40 – 47
  检查终端 40-47 的接线。
- Check signal cable from the MM to the servomotor is screened at one end
  检查从控制模块至伺服电机的信号线是否在一端屏蔽。
- Check potentiometer is zeroed correctly
  检查电位计是否正确归零。
- Go into Commissioning mode, check the servomotor position and ensure that closed is at 0.0
  进入调试模式，检查伺服电机位置并确保在 0.0 度关闭。

5	Channel 7 Positioning Error 通道 7 定位错误	Servomotor is outside of the commissioned range 伺服电机在调试范围外

- Check wiring on terminals DP-, DP+, DPW
  检查终端 DP-, DP+, DPW 的接线。
- Check signal cable from the MM to the servomotor is screened at one end
  检查从控制模块至伺服电机的信号线是否在一端屏蔽。
- Check potentiometer is zeroed correctly
  检查电位计是否正确归零。
- Go into Commissioning mode, check the servomotor position and ensure that closed is at 0.0
  进入调试模式，检查伺服电机位置并确保在 0.0 度关闭。

6	Channel 1 Gain Error 通道 1 增益错误	Servomotor position measurement hardware error 伺服电机测量硬件错误

- Check wiring and voltages on terminals 40 – 47 and if no fault found, contact Autoflame
  检查终端 40-47 的接线和电压，如未发现故障，请联系 Autoflame。

7	Channel 2 Gain Error 通道 2 增益错误	Servomotor position measurement hardware error 伺服电机测量硬件错误

- Check wiring and voltages on terminals 40 – 47 and if no fault found, contact Autoflame
  检查终端 40-47 的接线和电压，如未发现故障，请联系 Autoflame。

8	Channel 3 Gain Error 通道 3 增益错误	Servomotor position measurement hardware error 伺服电机测量硬件错误

- Check wiring and voltages on terminals 40 – 47 and if no fault found, contact Autoflame
  检查终端 40-47 的接线和电压，如未发现故障，请联系 Autoflame。

9	Channel 4 Gain Error 通道 4 增益错误	Servomotor position measurement hardware error 伺服电机测量硬件错误

- Check wiring and voltages on terminals 40 – 47 and if no fault found, contact Autoflame
  检查终端 40-47 的接线和电压，如未发现故障，请联系 Autoflame。

10	Channel 7 Gain Error 通道 7 增益错误	Servomotor position measurement hardware error 伺服电机测量硬件错误

- Check wiring and voltages on terminals DP-, DP+, DPW and if no fault found, contact Autoflame
  检查终端 DP-, DP+, DPW 的接线和电压，如未发现故障，请联系 Autoflame。

11	Channel 1 Movement Error 通道 1 移动错误	Servomotor moves when not expected and vice versa 伺服电机未按预期目的运行

- Check wiring and voltages on terminals 40 – 47 and 70 – 77
  检查终端 40 – 47 和 70 – 77 的接线和电压 。
- Check servomotors drive in correct direction
  检查伺服电机驱动位置是否正确。
- Check valve is not stuck
  检查阀门是否堵塞。

Error 错误	Message 消息	Description 说明
12	Channel 2 Movement Error 通道 2 移动错误	Servomotor moves when not expected and vice versa 伺服电机未按预期目的移动
□ Check wiring and voltages on terminals 40 – 47 and 70 – 77 检查终端 40 – 47 和 70 – 77 的接线和电压 。 □ Check servomotors drive in correct direction 检查伺服电机驱动位置是否正确。 □ Check damper is not stuck 检查阻尼器是否堵塞。		
13	Channel 3 Movement Error 通道 3 移动错误	Servomotor moves when not expected and vice versa 伺服电机未按预期目的运行
□ Check wiring and voltages on terminals 40 – 47 and 70 – 77 检查终端 40 – 47 和 70 – 77 的接线和电压 。 □ Check servomotors drive in correct direction 检查伺服电机驱动位置是否正确。 □ Check valve is not stuck 检查阀门是否堵塞。		
14	Channel 4 Movement Error 通道 4 移动错误	Servomotor moves when not expected and vice versa 伺服电机未按预期目的运行
□ Check wiring and voltages on terminals 40 – 47 and 70 – 77 检查终端 40 – 47 和 70 – 77 的接线和电压 。 □ Check servomotors drive in correct direction 检查伺服电机驱动位置是否正确。 □ Check valve is not stuck 检查阀门是否堵塞。		
15	Channel 7 Movement Error 通道 7 移动错误	Servomotor moves when not expected and vice versa 伺服电机未按预期目的运行
□ Check wiring and voltages on terminals DP-, DP+, DPW and DCI, DCD 检查终端 DP-, DP+, DPW 和 DCI, DCD 的接线和电压。 □ Check servomotor drives in correct direction 检查伺服电机驱动位置是否正确。 □ Check damper is not stuck 检查阻尼器是否堵塞。		
16	Analogue Power Supply Error 模拟电源错误	ADC measured 12V supply out of range ADC 测量的 12V 电源超出范围
□ Check wiring for shorts on terminals 41, 47 and 39 检查终端 41, 47 和 39 的接线是否短路。 □ Contact Autoflame 联系 Autoflame		
17	Digital Power Supply Error 数字电源错误	ADC measured 3.3V supply out of range ADC 测量的 3.3V 电源超出范围
□ Check wiring and voltages on all terminals and if no fault found, contact Autoflame 检查所有终端的接线和电压，如未发现故障，请联系 Autoflame。		
18	EEPROM Error EEPROM 错误	Fault communicating with the on board EEPROM EEPROM 故障通信
□ Check wiring and voltages on all terminals, and if no fault found, contact Autoflame 检查所有终端的接线和电压，如未发现故障，请联系 Autoflame。		
19	ADC ErrorADC 错误	Internal fault 内部故障

	Check wiring and voltages on all terminals, and if no fault found, contact Autoflame 检查所有终端的接线和电压，如未发现故障，请联系 Autoflame。
20	Watchdog Timeout 看门狗超时 Internal fault 内部故障
	Check wiring and voltages on all terminals, and if no fault found, contact Autoflame 检查所有终端的接线和电压，如未发现故障，请联系 Autoflame。
21	Processor Clock Error 处理器时钟错误 Internal fault 内部故障
	Check wiring and voltages on all terminals, and if no fault found, contact Autoflame 检查所有终端的接线和电压，如未发现故障，请联系 Autoflame。
22	System Error 系统错误 Internal fault 内部故障
	Check wiring and voltages on all terminals, and if no fault found, contact Autoflame 检查所有终端的接线和电压，如未发现故障，请联系 Autoflame。
23	Flash Data Error 闪存数据错误 Internal fault 内部故障
	Re-install software SD card and contact Autoflame 重装软件的 SD 卡并联系 Autoflame
24	Processor Temperature Error 处理器温度错误 Internal fault 内部故障
	Check wiring and voltages on all terminals and contact Autoflame 检查所有终端的接线和电压并请联系 Autoflame。 Check ambient temperature of unit does not exceed maximum recommend temperature 检查设备的环境温度是否未超出最大建议温度。
25	Burner Control Comms Error 燃烧器控制通信错误 Internal fault 内部故障
	Contact Autoflame 联系 Autoflame
26	Burner Control Reset 燃烧器控制重置 Internal fault 内部故障
	Contact Autoflame 联系 Autoflame
27	Software Error 软件错误 Internal fault 内部故障
	Contact Autoflame 联系 Autoflame
28	Zero-Crossing Detection Error 过零点检测错误 Internal fault 内部故障
	Check mains supply going to unit is within acceptable voltage range 检查连接设备的主电源是否在可接受的电压范围内。
29	Mains Input Detection Error 主电源输入检测错误 Mains input stuck on 主电源输入卡塞
	Check wiring and voltages on terminals 89 – 90, and if no fault found, contact Autoflame 检查终端 89-90 的接线和电压，如未发现错误，请联系 Autoflame。

Error 错误	Message 消息	Description 说明
30	Channel 5 VSD Error 通道 5VSD 错误	Feedback incorrect 反馈值不正确
□	Check VSD feedback against commissioned VSD and ensure the feedback is stable 再次检查已调试 VSD 的反馈值并确保反馈稳定。	
31	Channel 6 VSD Error 通道 6VSD 错误	Feedback incorrect 反馈值不正确
□	Check VSD feedback against commissioned VSD and ensure the feedback is stable 再次检查已调试 VSD 的反馈并确保反馈值稳定。	
32	VSD Feedback Change Too Small VSD 反馈值变化过小	Feedback change detected during commissioning is too small 调试期间检测到的反馈值变化过小
□	Check VSD feedback during commissioning	
□	Check option 99 for VSD on channel 5 and option 109 for VSD on channel 6	
□	Check wiring on terminals 1 – 3 and 4 – 6 调试期间检查 VSD 反馈值。 检查通道 5 上 VSD 的选项 99 和通道 6 上 VSD 的选项 109。 检查终端 1-3 和 4-6 的接线。	
33	Missing Commissioning Data 调试数据遗失	Internal fault 内部故障
□	Check there is commissioning data for all options servomotors/VSD 检查伺服电机/VSD 所有选项是否有调试数据。	
34	FAR Execution Speed FAR 执行速度	Internal fault 内部故障
□	Contact Autoflame 联系 Autoflame	
35	Software Error 软件错误	Internal fault 内部故障
□	Contact Autoflame 联系 Autoflame	
36	Software Error 软件错误	Internal fault 内部故障
□	Contact Autoflame 联系 Autoflame	
37	Software Error 软件错误	Internal fault 内部故障
□	Contact Autoflame 联系 Autoflame	
38	Software Error 软件错误	Internal fault 内部故障
□	Contact Autoflame 联系 Autoflame	
39	VSD Sampling Error VSD 采样错误	VSD feedback current/ voltage too high on channel 5/6 通道 5/6 上 VSD 的反馈电流/电压过高
□	Check wiring on terminals 1 – 3 and 4 – 6 检查终端 1-3 和 4-6 的接线。	
40	VSD Feedback Too Low VSD 反馈值过小	VSD feedback value is too low during commissioning on channel 5/6 调试期间通道 5/6 上的 VSD 反馈值过小
□	Check wiring on terminals 1 – 3 and 4 – 6 检查终端 1-3 和 4-6 的接线。	
□	Check VSD feedback while commissioning 调试期间检查 VSD 反馈值。	
41	APS Commission Data Fault APS 调试数据故障	Internal fault with air pressure sensor 空气压力传感器内部故障
□	Check wiring on terminals 31 – 34 检查终端 31-34 的接线。	

42	Comm VPS Gas Pressure Low 阀门检验系统燃气压力低	Commissioned gas pressure during VPS below option/ parameter 133 阀门检验系统低于选项/参数 133 时调试的燃气压力
□ Check option/ parameter 133 and check gas pressure 检查选项/参数 133 和燃气压力。 □ Check wiring on terminals 31 – 34 检查终端 31-34 的接线。 □ Re-commission gas pressure sensor 重新调试燃烧器压力传感器。		
43	Comm Running Gas Pressure Low 运行燃气压力低	Commissioned gas pressure during running below option/ parameter 136 运行低于选项/参数 136 时的调试燃气压力
□ Check option/ parameter 136 and check gas pressure 检查选项/参数 136 和燃气压力。 □ Check wiring on terminals 31 – 34 检查终端 31-34 的接线。 □ Re-commission gas pressure sensor 重新调试燃烧器压力传感器。		
44	Comm Air Pressure Low 空气压力低	Commissioned air pressure during running below option/ parameter s 147 and 149 运行小于选项/参数 147 和 149 时的调试燃气压力
□ Check option/parameters 147 and 149 检查选项 147 和 149。 □ Check wiring on terminals 31 – 34 检查终端 31-34。 □ Re-commission air pressure sensor 重新调试空气压力传感器。		
45	Software Error 软件错误	Internal fault 内部故障
□ Contact Autoflame 联系 Autoflame		

Error 错误	Message 消息	Description 说明
46	Software Error 软件错误	Internal fault 内部故障
	□ Contact Autoflame 联系 Autoflame	
47	Expansion PF Output (Check F5) 扩展 PF 输出（检查 F5）	Internal fault 内部故障
	□ Check wiring on terminal PF 检查终端 Pf 的接线。 □ Check fuse 5 (2A) on expansion board 检查扩展板上的保险丝 5（2A）。	
48	WL Alarm Output Internal Fault 水位报警输出内部故障	Internal fault 内部故障
	□ Check expansion option 5 检查扩展选项 5。 □ Check wiring and voltages on terminals HAI, 1AI, 2AI 检查终端 HAI, 1AI, 2AI 的接线和电压。	
49	Expansion Servo Hardware Fault 扩展伺服电机硬件故障	Internal fault 内部故障
	□ Contact Autoflame 联系 Autoflame	
50	Triac Power Supply Error (Check Triac 电源错误（检查 F2）	Internal fault 内部故障
	□ Check wiring on terminal 69 检查终端 69 的接线。 □ Check fuse 2 (2A T) 检查保险丝 2（2AT）。	
51	Fused 12V Supply Error (Check F4) 保险丝 12V 电源错误（检查 F4）	Internal fault 内部故障
	□ Check gas/air pressure sensor wiring on terminals 31 – 34, and load detector on 37 – 39 检查终端 31-34 的燃气/空气压力传感器接线和终端 37-39 的负载检测器。 □ Check fuse 4 (500mA) 检查保险丝 4（500mA）	
52	Fused 13.5V Supply Error (Check F3) 保险丝 13.5V 电源错误（检查 F3）	Internal fault 内部故障
	□ Check IR scanner wiring on terminals 29, 30, 48, 49 and oil pressure sensor on 48, 49 检查终端 29, 30, 48, 49 的红外扫描仪接线和终端 48,49 的燃油压力传感器。 □ Check fuse 3 (500mA) 检查保险丝 3（500mA）。	
53	Air Pressure Zeroing Fault 空气压力归零故障	Internal fault 内部故障
	□ Contact Autoflame 联系 Autoflame	
54	Software error 软件错误	Internal fault 内部故障
	□ Contact Autoflame 联系 Autoflame	
55	Software error 软件错误	Internal fault 内部故障
	□ Contact Autoflame 联系 Autoflame	
56	Software error 软件错误	Internal fault 内部故障

	Contact Autoflame 联系 Autoflame	
57	Software error 软件错误	Internal fault 内部故障
	Contact Autoflame 联系 Autoflame	
58	Software error 软件错误	Internal fault 内部故障
	Contact Autoflame 联系 Autoflame	
59	Software error 软件错误	Internal fault 内部故障
	Contact Autoflame 联系 Autoflame	
60	Software error 软件错误	Internal fault 内部故障
	Contact Autoflame 联系 Autoflame	
61	Software error 软件错误	Internal fault 内部故障
	Contact Autoflame 联系 Autoflame	
62	Software error 软件错误	Internal fault 内部故障
	Contact Autoflame 联系 Autoflame	
63	Software error 软件错误	Internal fault 内部故障
	Contact Autoflame 联系 Autoflame	
64	ADC Reference Voltage Error ADC 参考电压错误	Hardware fault 硬件故障
	Contact Autoflame 联系 Autoflame	

4.2 Lockouts 锁定

Lockouts occur when the MM detects a fault with the burner operation such as VPS, gas/air pressure sensor and flame scanners. The lockout must be cleared and investigated on the MM.
当控制模块检测到燃烧器运行故障如阀门检验系统、燃气/空气压力传感器和火焰扫描仪时将会锁定。在控制模块上必须清除锁定信息并进行检查。

Lockout 锁定	Message 消息	Description 说明
1	CPI Input Wrong State CPI 输入错误状态	Proof of closure switch opened during ignition sequence 点火期间打开关闭开关检验
□ Check wiring on terminal 55 检查终端 55 的接线。 □ Check proof of closure switches 检查关闭开关检验。		
2	No Air Proving 无空气检验	No air pressure during start/ firing 启动/燃烧期间无空气压力
□ Check wiring on terminal 54 检查终端 54 的接线。 □ Check air pressure switch 检查空气压力开关。 □ Check air pressure sensor 检查空气压力传感器。 □ Check air pressures during running 运行期间检查空气压力。		
3	Ignition Output Fault 点火输出故障	Voltage detected when output is off (and vice versa) 输出关闭（反之亦然）时检测到电压
□ Check wiring and voltage on terminal 63 检查终端 63 的接线和电压。		
4	Motor Output Fault 电机输出故障	Voltage detected when output is off (and vice versa) 输出关闭（反之亦然）时检测到电压
□ Check wiring and voltage on terminal 58 检查终端 58 的接线和电压。		
5	Start Gas Output Fault 启动燃气输出故障	Voltage detected when output is off (and vice versa) 输出关闭（反之亦然）时检测到电压
□ Check wiring and voltage on terminal 59 检查终端 59 的接线和电压。		
6	Main Gas 1 Output Fault 主燃气 1 输出故障	Voltage detected when output is off (and vice versa) 输出关闭（反之亦然）时检测到电压
□ Check wiring and voltage on terminal 60 检查终端 60 的接线和电压。		
7	Main Gas 2 Output Fault 主燃气 2 输出故障	Voltage detected when output is off (and vice versa) 输出关闭（反之亦然）时检测到电压
□ Check wiring and voltage on terminal 61 检查终端 61 的接线和电压。		
8	Vent Valve Output Fault 排气阀输出故障	Voltage detected when output is off (and vice versa) 输出关闭（反之亦然）时检测到电压
□ Check wiring and voltage on terminal 62 检查终端 62 的接线和电压。		
9	Failsafe Relay (Check F1) 失效保护继电器（检查 F1）	Voltage detected when output is off (and vice versa) 输出关闭（反之亦然）时检测到电压

- Check wiring and voltage on terminal 57
  检查终端 57 的接线和电压。
- Check fuse 1 (6.3A T) and wiring on terminals 50 – 64
  检查终端 50-64 上的保险丝 1（6.3A T）和接线。

10	Simulated Flame 模拟火焰	Flame is present when it not should be 火焰在不应出现时出现

- Isolate gas/ oil immediately
  立即隔离燃气/燃油。
- Call a certified Commissioning Engineer to investigate
  联系有资质的调试工程师进行检查。
- If during shutdown a post-purge maybe required for after burn
  燃烧后关闭时可能需要后期吹扫。

11	VPS Air Proving Fail 阀门检验系统空气检验失败	Leak detected during 'air proving' part of VPS 阀门检验系统空气检验时检测到泄漏

- Check 1st main valve
  检查第一主阀门。
- Call a certified Commissioning Engineer to investigate
  联系有资质的调试工程师进行检查。

12	VPS Gas Proving Fail 阀门检验系统燃气检验失败	Leak detected during 'gas proving' part of VPS 阀门检验系统燃气检验时检测到泄漏

- Isolate gas
  隔离燃气。
- Check 2nd main valve and vent valve
  检查第二主阀门和排气阀。
- Check pilot valve if using single valve pilot
  使用阀门实验时检测实验阀。
- Call a certified Commissioning Engineer to investigate
  联系有资质的调试工程师进行检查。

13	No Flame Signal 无火焰信号	No flame detected during ignition/ firing 点火/燃烧时未检测到火焰

- Visually check flame
  目视检查火焰。
- Check the flame scanner
  检查火焰扫描仪。
- Call a certified Commissioning Engineer to investigate
  联系有资质的调试工程师进行检查。

14	Shutter Fault 遮板故障	UV signal detected during shutter operation on self-check 遮板运行自检时检测到紫外线信号

- Check wiring on terminals 21 and 22
  检查终端 21 和 22 的接线。
- Check UV scanner type and check option/ parameter 110 is set accordingly
  检查紫外线扫描仪类型和选项/参数 110 是否设置一致。

Lockout 锁定	Message 消息	Description 说明
15	NO CPI Reset 无 CPI 重置	Proof of closure switch not made after valves closed 阀门关闭时没有关闭开关检验
□ Check wiring on terminal 55 检查终端 55 的接线。 □ Check proof of closure switches 检查关闭开关检验。		
16	Prolonged Lockout Reset 延长锁定重置	Prolonged voltage detected on terminal 56/ lockout reset button permanently pressed 在终端 56/按下锁定终止按钮时检测到延长电压
□ Check lockout reset button is not pressed 未按下锁定重置按钮。 □ Check wiring on terminal 56 检查终端 56 的接线		
17	Gas Pressure Low 燃气压力低	Gas pressure low limit exceeded while firing(gas sensor) 燃烧时（燃气传感器）超出燃气压力下限值
□ Check gas pressure 检查燃气压力。 □ Check option/ parameter 136 检查选项/参数 136。		
18	Gas Pressure High 燃气压力高	Gas pressure high limit exceeded while firing (gas sensor) 燃烧时（燃气传感器）超出燃气压力上限值
□ Check gas pressure 检查燃气压力。 □ Check option/ parameter 137 检查选项/参数 137。		
19	RAM Test Failed 内存测试失败	Hardware fault 硬件故障
□ Contact Autoflame 联系 Autoflame		
20	PROM Test Failed PROM 测试失败	Hardware fault 硬件故障
□ Contact Autoflame 联系 Autoflame		
21	FSR Test 1A 反馈移位寄存器测试 1A	Internal relay test failed 内部继电器测试失败
□ Check wiring and voltages on terminals 50 – 64, and contact Autoflame 检查终端 50-64 的接线和电压并联系 Autoflame。		
22	FSR Test 2A 反馈移位寄存器测试 2A	Internal relay test failed 内部继电器测试失败
□ Check wiring and voltages on terminals 50 – 64, and contact Autoflame 检查终端 50-64 的接线和电压并联系 Autoflame。		
23	FSR Test 1B 反馈移位寄存器测试 1B	Internal relay test failed 内部继电器测试失败
□ Check wiring and voltages on terminals 50 – 64, and contact Autoflame 检查终端 50-64 的接线和电压并联系 Autoflame。		
24	FSR Test 2B 反馈移位寄存器测试 2B	Internal relay test failed 内部继电器测试失败
□ Check wiring and voltages on terminals 50 – 64, and contact Autoflame 检查终端 50-64 的接线和电压并联系 Autoflame。		

25	Watchdog Fail 2A 看门狗失效 2A	Internal check failed 内部检查失败
□	Contact Autoflame 联系 Autoflame	
26	Watchdog Fail 2B 看门狗失效 2B	Internal check failed 内部检查失败
□	Contact Autoflame 联系 Autoflame	
27	Watchdog Fail 2C 看门狗失效 2C	Internal check failed 内部检查失败
□	Contact Autoflame 联系 Autoflame	
28	Watchdog Fail 2D 看门狗失效 2D	Internal check failed 内部检查失败
□	Contact Autoflame 联系 Autoflame	
29	Input Fault 输入故障	Power supply fault 电源故障
□	Check mains voltage to the MM 检查提供控制模块的主电源电源	
30	Gas Sensor Fault 燃气传感器故障	Internal fault 内部故障
□	Check wiring and voltages on terminals 31 – 34 and contact Autoflame 检查终端 31-34 的接线和电压并联系 Autoflame。	
31	Air Sensor Fault 空气传感器故障	Internal fault 内部故障
□	Check wiring and voltages on terminals 31 – 34 and contact Autoflame 检查终端 31-34 的接线和电压并联系 Autoflame。	
32	Gas Pressure Low Limit 燃气压力下限值	Gas pressure lower than commissioned VPS value 燃气压力小于调试的阀门检验系统值
□	Check gas pressure sensor value 检查燃气压力传感器值。	
□	Check option/parameter 133 检查选项/参数 133。	
33	VPS Air Zeroing 阀门检验系统空气归零	Gas pressure sensor cannot be zeroed at VPS venting 燃气压力传感器无法在阀门检验系统排气时归零
□	Check gas pressure is within zero range (see MM Application Possibilities) 检查燃气压力是否在零范围内（见控制模块的应用）。	
□	Check vent valve 检查排气阀。	

Lockout 锁定	Message 消息	Description 说明
34	Gas Pressure Too Low 燃气压力过低	Gas pressure is below offset lower limit during running 运行时燃气压力低于补偿下限值
□ Check option/parameter 136 检查选项/参数 136。 □ Check gas pressure sensor 检查燃气压力传感器。		
35	UV Short Circuit 紫外线短路	Short circuit on UV scanner connections 紫外线扫描仪连接短路
□ Check wiring and voltages on terminals 21, 22, 50 and 51 检查终端 21, 22, 50 和 51 的接线和电压。		
36	Oil Pressure Too Low 燃气压力过低	Oil pressure below offset lower limit during running 运行时燃油压力低于补偿下限值
□ Check option/parameter 139 检查选项/参数 139。 □ Check oil pressure sensor 检查燃油压力传感器。		
37	Oil Pressure Too High 燃油压力过高	Oil pressure above offset upper limit during running 运行时燃油压力高于补偿上限值
□ Check option/parameter 140 检查选项/参数 140。 □ Check oil pressure sensor 检查燃油压力传感器。		
38	CPU Test Failed CPU 测试失败	Internal fault 内部故障
□ Contact Autoflame 联系 Autoflame		
39	Freeze Timeout 冷冻超时	MM kept in Phase Hold for more than 10minutes 控制模块在调整阶段超过 10 分钟
□ Keep MM in Phase Hold during commissioning for less than 10 minutes 调试时将控制模块保持在少于 10 分钟。		
40	Purge Air Pressure Low 吹扫空气压力低	Insufficient air pressure during purge 吹扫时无足够的空气压力
□ Check option/parameter 141 检查选项/参数 141。 □ Check air pressure sensor/ air pressure switch 检查空气压力传感器/空气压力开关。		
42	Terminal 86 Inverse 终端 86 反向	Input detected on both terminals 85,86 where there should not be, and vice versa 在终端 85 和 86 上检测到本不应有的输入
□ Check option/parameter 122 检查选项/参数 122。 □ Check wiring and voltages on terminals 85, 86 检查终端 85 和 86 的接线和电压。		
43	Terminal 85/86 Fault 终端 85/86 故障	Hardware fault on terminals 85/86 终端 85/86 硬件故障
□ Check wiring and voltages on terminals 85, 86 and contact Autoflame 检查终端 85 和 86 的接线和电压并联系 Autoflame。		

44	Proving Circuit Fail T52 检验线路故障 T52	Loss of input on terminal 52; MM must see input at all times from position to purge to post purge 终端 52 输入意识，控制模块必须在吹扫至后吹扫时有输入。
□ Check wiring on terminal 52 检查终端 52 的接线。		
45	No Proving Circuit Set 无检验线路设置	Secondary proving timeout elapsed 二级检验超时
□ Check option/parameter 157 检查选项/参数 157。 □ Check wiring on terminal 52 检查终端 52 的接线。		
46	Proving Interlock Timeout 检验联锁超时	Purge interlock timeout elapsed 吹扫联锁超时
□ Check option/ parameters 155 and 158 检查选项/参数 155 和 158。 □ Check wiring on terminal 81 检查终端 81 的接线。		
50	Simulated Flame 模拟火焰	Flame detected when there should not be 在不应检测到火焰时检测到火焰
□ Check wiring on terminal 85, 86 检查终端 85 和 86 的接线。		
51	No Flame Signal 无火焰信号	Flame detected when there should be 在不应检测到火焰时检测到火焰
□ Check wiring on terminal 85, 86 检查终端 85 和 86 的接线。		
52	High IR Ambient 高红外环境	Flame detected when there should not be 在不应检测到火焰时检测到火焰
□ Visually check flame 目视检查火焰。 □ Check IR scanner 检查红外扫描仪。 □ Call a certified Commissioning Engineer to investigate 联系有资质的调试工程师进行检查。		
53	IR Comms Lost 红外通讯丢失	Loss of comms with IR scanner 红外扫描仪红外通讯丢失
□ Check wiring and screen on terminals 29, 30, 48 and 49 检查终端 29, 30, 48 和 49 的接线和屏幕。		
54	Watchdog Long X A 看门狗长 X A	Internal check failed 内部检查失败
□ Contact Autoflame 联系 Autoflame		
55	Watchdog Long Y A 看门狗长 Y A	Internal check failed 内部检查失败
□ Contact Autoflame 联系 Autoflame		

Lockout 锁定	Message 消息	Description 说明
56	Watchdog Off A 看门狗关闭 A	Internal check failed 内部检查失败
	□ Contact Autoflame 联系 Autoflame	
57	Watchdog Short X B 看门狗短 X B	Internal check failed 内部检查失败
	□ Contact Autoflame 联系 Autoflame	
58	Watchdog Short Y B 看门狗短 Y B	Internal check failed 内部检查失败
	□ Contact Autoflame 联系 Autoflame	
59	Watchdog Long X B 看门狗长 X B	Internal check failed 内部检查失败
	□ Contact Autoflame 联系 Autoflame	
60	Watchdog Long Y B 看门狗长 Y B	Internal check failed 内部检查失败
	□ Contact Autoflame 联系 Autoflame	
61	Watchdog Off B 看门狗关不 B	Internal check failed 内部检查失败
	□ Contact Autoflame 联系 Autoflame	
62	UV Signal Too High 紫外信号过高	Internal check failed for UV 紫外内部检查失败
	□ Check wiring on terminals 21, 22, 50 and 51 检查终端 21, 22, 50 和 51 的接线。	
63	Purge Limit Switch 吹扫限制开关	Interlock not made on terminal 81 终端 81 上未联锁
	□ Check option/ parameter 155 检查选项/参数 155。 □ Check wiring on terminal 81 检查终端 81 的接线。	
64	Start Limit Switch 启动限制开关	Interlock not made on terminal 80 终端 80 上未联锁
	□ Check option/ parameter 154 检查选项/参数 154。 □ Check wiring on terminal 80 检查终端 80 的接线。	
65	FSR A 反馈移位寄存器 A	Internal check failed 内部检查失败
	□ Check wiring and voltages on terminals 50 – 64, and contact Autoflame 检查终端 50-64 的接线和电压并联系 Autoflame。	
66	FSR B反馈移位寄存器 B	Internal check failed 内部检查失败
	□ Check wiring and voltages on terminals 50 – 64, and contact Autoflame 检查终端 50-64 的接线和电压并联系 Autoflame。	
67	Gas Sensor Comms 燃气传感器通信	Signal lost from gas pressure sensor 燃气压力传感器信号丢失
	□ Check wiring and screen on terminals 31 – 34 检查终端 31-34 的接线和屏幕。	
68	Gas Sensor Type 燃气传感器类型	Internal fault 内部故障
	□ Contact Autoflame 联系 Autoflame	
69	Gas Sensor Fault 燃气传感器故障	Internal pressure sensor fault 内部压力传感器故障
	□ Contact Autoflame 联系 Autoflame	
70	UV Pot Fault 紫外线设备故障	Internal UV scanner fault 内部紫外线扫描仪故障
	□ Contact Autoflame 联系 Autoflame	
71	Air Sensor Comms 空气传感器通信	Signal lost from air pressure sensor 空气压力传感器信号丢失
	□ Check wiring and screen on terminals 31 – 34 检查终端 31-34 的接线和屏幕。	

72	Air Sensor Type 空气传感器类型	Internal fault 内部故障
□	Contact Autoflame 联系 Autoflame	
73	Air Sensor Fault 空气传感器故障	Internal pressure sensor fault 内部压力传感器故障
□	Contact Autoflame 联系 Autoflame	
74	Air Sensor Zero 空气传感器归零	Air pressure is more than 5mbar from sensor's zero value 传感器归零值的空气压力大于 5mbar
□	Check air pressure sensor value during VPS 阀门检验系统运行时检查空气压力传感器值。	
75	Air Sensor Signal High 空气传感器信号高	Incorrect air pressure value 不正确的空气压力值
□	Check air pressure sensor value during VPS 阀门检验系统运行期间检查空气压力传感器数值。	
□	Check wiring on terminals 31 – 34 检查终端 31-34 的接线。	
76	Air Sensor Error Window 空气传感器错误窗口	Incorrect air pressure value 不正确的空气压力值
□	Check air pressure sensor value during VPS 阀门检验系统运行期间检查空气压力传感器数值。	

Lockout 锁定	Message 消息	Description 说明
77	Wait Air Switch Timeout 等待空气开关超时	Voltage has not been reset for 2minutes 电压在 2 分钟内没有重置
□ Check air pressure sensor value during VPS 阀门检验系统运行期间检查空气压力传感器数值。 □ Check voltage has been resets on terminal 54 within 2minutes 检查终端 54 的电压是否在 2 分钟内重置。 □ Check wiring and voltage on terminal 54 检查终端 54 的接线和电压。		
78	Gas Proving Fail High 燃气检验失败高	Gas pressure too high during VPS VPS 期间燃气压力过高
□ Isolate gas 隔离燃气。 □ Check 1st main valve and vent valve 检查第一主阀和排气阀。 □ Check option/ parameters 133 and 134 检查选项/参数 133 和 134。 □ Call a certified Commissioning Engineer to investigate 联系有资质的调试工程师进行检查。		
79	FSR Test 1C 反馈移位寄存器测试 1C	Internal check failed 内部检查失败
□ Check wiring and voltages on terminals 50 – 64, and contact Autoflame 检查终端 50-64 的接线和电压并联系 Autoflame。		
80	Timeout on Reaching Purge 到达吹扫超时	Time set in option/parameter 124 has elapsed 时间在选项/参数 124 设置
□ Check option/parameter 124 检查选项/参数 124。		
81	Oil Pressure Sensor Fault 燃油压力传感器故障	Internal pressure sensor fault 内部压力传感器故障
□ Contact Autoflame 联系 Autoflame		
198	BC Input Short BC 输入短路	Internal fault 内部故障
□ Contact Autoflame 联系 Autoflame		
199	Lockout 199锁定 199	Internal fault 内部故障
□ Contact Autoflame 联系 Autoflame		
200	Lockout Cleared 清除锁定	Lockout has been cleared 锁定已被清除
□ MM status after lockout has been reset (Modbus) 锁定后控制模块已被重置（Modbus）		
201	Powerup CPU Test Fail CPU 加电测试失败	Internal check failed 内部检查失败
□ Contact Autoflame 联系 Autoflame		
202	Powerup EEPROM Test Fail EEPROM 加电测试失败	Internal check failed 内部检查失败
□ Contact Autoflame 联系 Autoflame		

4.3 Alarms and Warnings 报警和警告

Alarms and warnings are faults detected with the system operation. If an alarm occurs, the burner will stop running, and if a warning occurs, the burner will continue to run. The following options/parameters set whether system operation faults are set as alarms or warnings:
系统在运行时可以检测报警和警告的故障。如果出现报警，燃烧器将停止运行，如果出现警告，燃烧器将继续运行。以下选项/参数可以设置系统运行故障是否设置成报警或警告：

Option 13	EGA Fault Response
选项 13	尾气分析仪故障响应。
Option 14	Warning Response
选项 14	警告响应。
Expansion Option 9	Burner Operation at High Water
扩展选项 9	燃烧器在高水位运行。
Expansion Option 20	Burner Operation on Feedwater Control Fault
扩展选项 20	燃烧器在供水控制故障下运行。
Expansion Option 88	Action On Pressure Sensor Fault
扩展选项 88	在压力传感器故障下运行

Fault 故障	Message 消息	Description 说明	Type 类型
1	EGA Internal Error 尾气分析仪内部错误	Fault on EGA 尾气分析仪故障	Alarm/Warning – option 13 报警/警告-选项 13
□ Check EGA for fault description 检查尾气分析仪的故障描述。			
2	No EGA Communications 尾气分析仪无通信	MM has lost communications with EGA 控制模块失去与尾气分析仪的通信	Alarm/Warning – options 12, 13 报警/警告-选项 12,13
□ Check wiring on terminals 25, 26 检查终端 25 和 26 的接线。 □ Check wiring on EGA terminals 13, 14 (Mk8 EGA) 检查尾气分析仪终端 13 和 14（Mk8 尾气分析仪）的接线。 □ Warning if EGA is set to Monitoring only in option 12 尾气分析仪在选项 12 设为监控时发出警告。			
3	O_2 Upper Limit 氧气上限值	O_2 value measured above upper limit offset 测量的氧气值超出上限补偿值	Alarm/Warning – option 13 报警/警告-选项 13
□ Check option19 检查选项 19。			
4	O_2 Absolute Limit 氧气绝对值	O_2 value measured below absolute limit 测量的氧气值低于绝对限值	Alarm/Warning – option 13 报警/警告-选项 13
□ Check option 25 检查选项 25。			
5	O_2 Lower Limit 氧气下限值	O_2 value measured below lower limit offset 测量的氧气下限值小于限值补偿值	Alarm/Warning – option 13 报警/警告-选项 13
□ Check option 22 检查选项 22。			
6	CO_2 Upper Limit 二氧化碳上限值	CO_2 value measured above upper limit offset 测量的二氧化碳上限值大于上限补偿值	Alarm/Warning – option 13 报警/警告-选项 13
□ Check option 20 检查选项 20。			

7	CO_2 Absolute Limit 二氧化碳绝对值	CO_2 value measured above absolute limit 测量的二氧化碳绝对值大于绝对限值	Alarm/Warning – option 13 报警/警告-选项 13
□	Check option 26 检查选项 26。		
8	CO_2 Lower Limit 二氧化碳下限值	CO_2 value measured below lower limit offset 测量的二氧化碳下限值小于下限补偿值	Alarm/Warning – option 13 报警/警告-选项 13
□	Check option 23 检查选项 23。		
9	CO Upper Limit 一氧化碳上限值	CO value measured above upper limit offset 测量的一氧化碳上限值大于限值补偿值	Alarm/Warning – option 13 报警/警告-选项 13
□	Check option 21 检查选项 21。		
10	CO Absolute Limit 一氧化碳绝对值	CO value measured above absolute limit 测量的一氧化碳绝对值大于绝对限值	Alarm/Warning – option 13 报警/警告-选项 13
□	Check option 27 检查选项 27。		
11	NO Upper Limit 一氧化氮上限值	NO value measured above upper limit offset 测量的一氧化氮上限值大于上限补偿值	Alarm/Warning – option 13 报警/警告-选项 13
□	Check parameter 94 检查参数 94。		
12	Exhaust Temperature Upper Limit 废气温度上限值	Exhaust temperature measured above upper limit offset 测量的废气温度上限值大于上限补偿值	Alarm/Warning – option 13 报警/警告-选项 13
□	Check parameter 96 检查参数 96。		

Fault 故障	Message 消息	Description 说明	Type 类型
13	Exhaust Temperature Absolute Limit 废气温度绝对值	Exhaust temperature measured above absolute limit 测量的废气温度大于绝对限值	Alarm/Warning – option 13 报警/警告-选项 13
□ Check parameter 97 检查参数 97。			
50	Load Sensor Fault 负载传感器故障	Incorrect/no load sensor detected 未检测出错误/无负载传感器	Alarm 报警
□ Check option 1 检查选项 1。 □ Check wiring on terminals 37 – 39 检查终端 37-39 的接线。			
51	Auxiliary Input Low 辅助输入低	3mA or lower received from 4-20mA external modulation/ external setpoint 4-20mA 外部调节/外部设定点接收到 3mA 或更低	Alarm 报警
□ Check parameter 69 检查参数 69。 □ Check feedback from external modulation/ external setpoint controller 检查外部调节/外部设定点控制器的反馈。 □ Check wiring on terminals 7 – 9 检查终端 7-9 的接线。			
80	Oil Pressure Sensor Fault 燃油压力传感器故障	No comms received from oil pressure sensor 未从燃油压力传感器接收到通信	Warning/Lockout – options 139,140 警告/锁定-选项 139,140
□ Check oil pressure sensor 检查燃油压力传感器。 □ Check wiring and screen on terminals 48, 49 检查 48 和 49 的接线和屏幕。 □ Lockout if oil pressure limits are set in option/parameters 139 and 140 在选项/参数 139 和 140 中设置燃油压力限值时锁定。			
100	Cap Probe 1 Communications Fault 电容探针 1 通信故障	No comms with capacitance probe 1 电容探针 1 无通信	Alarm 报警
□ Check wiring and screen on terminals 1P+, 1P-, 1T+ and 1T- 检查终端 1P+, 1P-, 1T+ 和 1T-的接线和屏幕。 □ Check capacitance probe 1 检查电容探针 1。			
101	Cap Probe 2 Communications Fault 电容探针 2 通信故障	No comms with capacitance probe 2 电容探针 2 无通信	Alarm 报警
□ Check wiring and screen on terminals 2P+, 2P-, 2T+ and 2T- 检查终端 2P+, 2P-, 2T+ 和 2T-的接线和屏幕。 □ Check capacitance probe 2 检查电容探针 2。			
102	Cap Probe 1 Short Circuit 电容探针 1 短路	Hz reading is below 10kHz 赫兹读数小于 10kHz	Alarm 报警
□ Check water level Hz reading 检查水位赫兹读数。 □ Check wiring on terminals 1P+, 1P-, 1T+ and 1T- 检查终端 1P+, 1P-, 1T+和 1T-的接线。			
103	Cap Probe 2 Short Circuit 电容探针 2 短路	Hz reading is below 10kHz 赫兹读数小于 10kHz	Alarm 报警

	Check water level Hz reading 检查水位赫兹读数。 Check wiring on terminals 2P+, 2P-, 2T+ and 2T- 检查终端 2P+, 2P-, 2T+ 和 2T-的接线。		
104	Cap Probe 1 Temp Compensation Error 电容探针 1 温度补偿错误	Temperature corrected probe reference is not as expected 温度修正探针未按预期工作	Alarm 报警
	Re-commission capacitance probes 重新调试电容探针。		
105	Cap Probe 2 Temp Compensation Error 电容探针 2 温度补偿错误	Temperature corrected probe reference is not as expected 温度修正探针未按预期工作	Alarm 报警
	Re-commission capacitance probes 重新调试电容探针。		
106	Cap Probe 1 Still Water Detected 检测到电容探针 1 静水	Wave signature high to low peak distance is less than still water threshold 水波高峰至低谷距离小于静水阈值	Alarm 报警
	Check still water threshold in expansion option 28 检查扩展选项 28 的静水阈值。 Check capacitance probe 1 reading history 检查电容探针 1 的读数历史。		
107	Cap Probe 2 Still Water Detected 检测到电容探针 21 静水	Wave signature high to low peak distance is less than still water threshold 水波高峰至低谷距离小于静水阈值	Alarm 报警
	Check still water threshold in expansion option 28 检查扩展选项 28 的静水阈值。 Check capacitance probe 2 reading history 检查电容探针 2 的读数历史。		
108	Cap Probe 1 Serial Number Mismatch 电容探针 1 序列号不匹配	Probe serial number detected is not the commissioned probe serial number 检测到探针序列号不是调试探针序列号	Alarm 报警
	If changing capacitance probe 1, re-commission is required 更换电容探针 1 时需要重新调试。		
109	Cap Probe 2 Serial Number Mismatch 电容探针 2 序列号不匹配	Probe serial number detected is not the commissioned probe serial number 检测到探针序列号不是调试探针序列号	Alarm 报警
	If changing capacitance probe 2, re-commission is required 更换电容探针 2 时需要重新调试。		

Fault 故障	Message 消息	Description 说明	Type 类型
110	Cap Probe 1 Detected But Not Optioned 检测到电容探针 1 但未选择	Probe connected but not optioned 已连接探针探未选择	Alarm 报警
□ Check expansion options 1 and 3 检查扩展选项 1 和 3。 □ Check wiring on terminals 1P+, 1P-, 1T+ and 1T- 检查终端 1P+, 1P-, 1T+ 和 1T-的接线。 □ Probe may require commissioning 探针可能需要调试。			
111	Cap Probe 2 Detected But Not Optioned 检测到电容探针 2 但未选择	Probe connected but not optioned 已连接探针探未选择	Alarm 报警
□ Check expansion options 1 and 3 检查扩展选项 1 和 3。 □ Check wiring on terminals 2P+, 2P-, 2T+ and 2T- 检查终端 2P+, 2P-, 2T+ 和 2T-的接线。 □ Probe may require commissioning 探针可能需要调试。			
112	External Level Sensor Input Low 外部水位传感器输入低	3mA or lower received from 4-20mA external level sensor 从 4-20mA 外部水位传感器接收到 3mA 或更低	Alarm 报警
□ Check feedback from external level sensor 检查外部水位传感器的反馈。 □ Check wiring on terminals EX- and EX+ 检查终端 EX- 和 EX+的接线。			
113	Probe Reading Mismatch 探针读数不匹配	Difference between probes/sensor readings is below mismatch threshold 探针/传感器读数差距小于不匹配阈值	Alarm 报警
□ Check expansion option 27 检查扩展选项 27。 □ Check capacitance probes and sensor readings 检查电容探针和传感器读数。			
114	Probe Serial Numbers are the Same 探针序列号相同	One capacitance probe detected on both capacitance probe terminals 在两个电容探针终端上检测到一个电容探针	Alarm 报警
□ If using two capacitance probes, then two individual probes must be connected 使用两个电容探针时，必须连接两个单独的探针。 □ Check wiring on terminals 1P+, 1P-, 1T+, 1T-, 2P+, 2P-, 2T+ and 2T- 检查终端 1P+, 1P-, 1T+, 1T-, 2P+, 2P-, 2T+ 和 2T-的接线。			
120	Aux WL Inputs Mismatch 辅助水位输入不匹配	High water and 1st or 2nd low auxiliary level inputs detected simultaneously 同时检测到 高水位和第一或第二低辅助水位输入	Alarm 报警
□ Check wiring on terminals HAI, 1AI and 2AI 检查终端 HAI, 1AI 和 2AI 的接线。			
121	Water Levels Diverse 水位不同	Probes/ sensor detects 1st or 2nd low and high water simultaneously 探针/传感器同时检测到第一或第二低水位和高水位	Alarm 报警
□ Check water level readings for probes and sensor if optioned 检查已选择的探针和传感器的水位读数。 □ Re-commission probes with/without sensor 重新调试带有/不带传感器的探针。			
122	Permanent Alarm Reset Input 永久性报警重置输入	Input held on alarm reset terminal for more than 10 seconds 在报警重置终端上保持输入超过 10 秒	Alarm 报警
□ Check input on terminal M/R 检查终端 M/R 的输入。			

123	Second Low Probe Communications Fault 第二低水位探针通信故障	No comms with second low probe 第二低水位探针无通信	Alarm 报警
□ Check wiring and screen on terminals 5T+, 5T-, 4P- and 4P+ 检查终端 5T+, 5T-, 4P- 和 4P+的接线和屏幕。 □ Check second low probe 检查第二低水位探针。			
124	Second Low Probe Hardware Fault 第二低水位探针硬件故障	Internal check failed 内部检查失败	Alarm 报警
□ Contact Autoflame 联系 Autoflame			
125	Permanent Test Input 永久性测试输入	Input held on test terminal for more than 60 seconds 在测试终端保持输入超过 60 秒	Alarm 报警
□ Check input on terminal TST 检查终端 TST 的输入。			
126	Second Low Probe Detected But Not Optioned 检测到第二低水位探针但未选择	Second low probe connected but not optioned 已连接第二低水位探针但未选择	Alarm 报警
□ Check expansion option 6 检查扩展选项 6。 □ Check wiring on terminals 5T+, 5T-, 4P- and 4P+ 检查终端 5T+, 5T-, 4P- 和 4P+的接线。 □ Probe may require commissioning 探针可能需要调试。			
127	Aux WL Inputs Detect But Not Optioned 检测到辅助水位输入但未选择	Mains detected on auxiliary WL inputs but not optioned 在辅助水位输入中检测到主电源但未选择	Alarm 报警
□ Check expansion option 5 检查扩展选项 5。 □ Check wiring on terminals HAI, 1AI and 2AI 检查终端 HAI, 1AI 和 2AI 的接线。			

Fault 故障	Message 消息	Description 说明	Type 类型
130	Feed Water Servo Position Error 供水伺服电机位置错误	Servomotor is outside of the commissioned range 伺服电机超出调试范围	Alarm/Warning – exp. option 20 报警/警告-扩展选项 20
□ Check wiring on terminals P-, FW and P+ 检查终端 P-, FW 和 P+的接线。 □ Check signal cable form the MM to the servomotor is screened at one end 检查控制模块至伺服电机的信号线是否在一端屏蔽。 □ Check that the servomotor is zeroed correctly 检查伺服电机是否正确归零。 □ Alarm if expansion option 20 is set 设置扩展选项 20 时报警。			
131	Feed Water Servo Movement Error 供水伺服电机移动错误	Servomotor moves when not expected and vice versa 伺服电机未按预期工作	Alarm/Warning – exp. option 20 报警/警告-扩展选项 20
□ Check wiring and voltages on terminals P-, FW, P+ and MVI, MVD 检查终端 P-, FW, P+ 和 MVI, MVD 的接线和电压。 □ Check servomotor drives in correct direction 检查伺服电机驱动方向是否正确。 □ Check feed water valve is not stuck 检查供水阀是否堵塞。 □ Alarm if expansion option 20 is set to 1 扩展选项 20 设为 1 时报警。			
150	High Water 高水位	Probes/sensor detect water level above commissioned high water 探针/传感器检测到水位高于调试的高水 位	Alarm/Warning – exp. option 9 报警/警告-扩展选项 9
□ Check water level reading 检测水位读数。 □ Alarm if expansion option 9 is set to 1 扩展选项 9 设为 1 时报警。			
151	Pre-High Water 预设高水位	Probes/sensor detect water level above set pre-high water 探针/传感器检测到水位高于预设水位	Warning 警告
□ Check water level reading 检测水位读数。 □ Check expansion option 7 检测扩展选项 7。			
152	Pre-1st Low 预设第一低水位	Probes/sensor detect water level below set pre-1st low 探针/传感器检测到水位低于设置的预设低水位	Warning 警告
□ Check water level reading 检测水位读数。 □ Check expansion option 8 检测扩展选项 8。			
153	1st Low 第一低水位	Probes/sensor detect water level below commissioned 1st low 探针/传感器检测到水位低于调试的第一低水位	Alarm 警告
□ Check water level reading 检测水位读数。 □ 1st low alarm will automatically clear if water level increases above 1st low 水位增加高于第一低水位时第一低水位报警将自动清除。			
154	2nd Low 第二低水位	Probes/sensor detect water level below 2nd low 探针/传感器检测到水位低于第二低水位	Alarm 警告
□ Check water level reading 检测水位读数。 □ 2nd low alarm requires manual reset 第二低水位报警需要手动重置。			

155	Shunt Switch Time Expired 并联开关时间过期	Once shunt switch time expires, system goes to normally running 并联开关时间过期时系统进入正常运行	Warning 警告
□ If water drops after shunt switch time expires, system will generates 1st or 2nd low as relevant 并联开关时间过期后如果水位降低，则系统将生成第一或第二低水位。			
200	Top Blowdown Sensor Communications Fault 顶部排污传感器通信故障	No comms with the top blowdown sensor 顶部排污传感器无通信	Warning 警告
□ Check wiring and screen on terminals 3P+, 3P-, 3T+ and 3T- 检查终端 3P+, 3P-, 3T+ 和 3T-的接线和屏幕。 □ Check top blowdown sensor (TDS probe) 检查顶部排污传感器（总溶解固体探针）。			
201	Top Blowdown Servo Position Error 顶部伺服电机位置错误	Servomotor is outside of the commissioned range 伺服电机在调试范围外	Warning 警告
□ Check wiring on terminals P-, TW, P+ 检查终端 P-, TW, P+的接线。 □ Check signal cable form the MM to the servomotor is screened at one end 检查控制模块至伺服电机的信号线是否在一端屏蔽。 □ Check that the servomotor is zeroed correctly 检查伺服电机是否正确归零。			
202	Top Blowdown Servo Movement Error 顶部排污伺服电机移动错误	Servomotor moves when not expected and vice versa 伺服电机未按预期工作	Warning 警告
□ Check wiring on terminals P-, TW, P+ and TBI, TBD 检查终端 P-, TW, P+ and TBI, TBD 的接线。 □ Check servomotor drives in correct direction 检查伺服电机的驱动方向是否正确。 □ Check top blowdown valve is not stuck 检查顶部排污阀是否堵塞。			
250	Top Blowdown Reading High 顶部排污读数高	TDS value detected too high 检测到总溶解固体值过高	Warning 警告
□ Check expansion option 46 and TDS value 检查扩展选项 46 和总溶解固体值。			

Fault 故障	Message 消息	Description 说明	Type 类型
300	Bottom Blowdown Controller Comms 底部排污控制器通信	No comms with bottom blowdown controller 底部排污控制器无通信	Warning 警告
□ Check bottom blowdown controller is powered on 检查底部排污控制器是否上电。 □ Check wiring and screen on terminals 5T+ and 5T- 检查终端 5T+ 和 5T-的接线和屏幕。			
301	Bottom Blowdown Controller Software Fault 底部排污控制器软件故障	Internal check failed 内部检查失败	Warning 警告
□ Contact Autoflame 联系 Autoflame			
302	Bottom Blowdown Servo Closing Fault 底部排污伺服电机关闭故障	No movement detected when bottom blowdown valve goes to close 检测到移动但底部排污阀未关闭	Warning 警告
□ Check wiring on terminals 5T+ and 5T- 检查终端 5T+ 和 5T-的接线。 □ Check bottom blowdown valve is not stuck 检查底部排污阀是否堵塞。			
303	Bottom Blowdown Servo Opening Fault 底部排污伺服电机打开故障	No movement detected when bottom blowdown valve goes to open 检测到移动但底部排污阀未关闭	Warning 警告
□ Check wiring on terminals 5T+ and 5T- 检查终端 5T+ 和 5T-的接线。 □ Check bottom blowdown valve is not stuck 检查底部排污阀是否堵塞。			
304	Bottom Blowdown Servo Battery Drive Fault 底部排污伺服电机电池驱动故障	Battery has failed on bottom blowdown controller 底部排污控制器电池失效	Warning 警告
□ Contact Autoflame 联系 Autoflame			
305	Bottom Blowdown Controller Main Power Fault 底部排污控制器主电源故障	Main power has failed on bottom blowdown controller 底部排污控制器主电源失效	Warning 警告
□ Contact Autoflame 联系 Autoflame			
350	Bottom Blowdown Servo Not Commissioned 底部排污伺服电机未调试	Bottom blowdown controller has not been requested to drive servomotor to closed since it was powered on 底部排污控制器上电后未被请求驱动伺服电机关闭	Warning 警告
□ Commission bottom blowdown controller 调试底部排污控制。			
400	Draught Pressure Sensor Timeout 通风压力传感器超时	No comms within 2 seconds from draught pressure sensor 通风压力传感器在两秒内无通信	Alarm/Warning – option 88 报警/警告-选项 88
□ Check wiring and screen on terminals DT+, DT-, DP- and DP+ 检查终端 DT+, DT-, DP- 和 DP+的接线和屏幕。 □ Warning if expansion option 88 is set to 1 扩展选项 88 设为 1 时报警。			
410	Draught Pressure Outside Tolerance 通风压力超出公差	Pressure is outside of set tolerance 压力超出设定的公差	Alarm/Warning – option 88 报警/警告-选项 88

- Check expansion option 87
  检查扩展选项 87。
- Check draught air pressure sensor
  检查通风空气压力传感器。

420	Fuelflow Feedback Input Low 燃料流量反馈输入低	3mA or lower received from 4-20mA external fuel flow input 从 4-20mA 外部燃料流量输入中接收 3mA 或更低	Warning 警告

- Check feedback from external fuel flow input
  检查外部燃料流量输入反馈。
- Check wiring on terminals EX- and EX+
  检查终端 EX- 和 EX+的接线。

430	Fuelflow Feedback Below Tolerance 燃料流量反馈低于公差	Fuel flow signal below fuel flow feedback fault tolerance 燃料流量信号低于燃料流量反馈故障公差	Warning 警告

- Check feedback from external fuel flow input
  检查外部燃料流量输入反馈。
- Check option 60
  检查选项 60。

431	Fuelflow Feedback Above Tolerance 燃料流量反馈大于公差	Fuel flow signal above fuel flow feedback fault tolerance 燃料流量信号大于燃料流量反馈故障公差	Warning 警告

- Check feedback from external fuel flow input
  检查外部燃料流量输入反馈。
- Check option 60
  检查选项 60。

440	Temperature Sensor T1Fault 温度传感器 T1 故障	Fault or no comms with T1 sensor T1 传感器故障或无通信	Warning 警告

- Check wiring and screen on terminals –and T1
  检查终端–和 T1 的接线和屏幕。

441	Temperature Sensor T2 Fault 温度传感器 T2 故障	Fault or no comms with T2 sensor T2 传感器故障或无通信	Warning 警告

- Check wiring and screen on terminals – and T2
  检查终端–和 T2 的接线和屏幕。

Fault 故障	Message 消息	Description 说明	Type 类型
442	Temperature Sensor T3 Fault 温度传感器 T3 故障	Fault or no comms with T3 sensor T3 传感器故障或无通信	Warning 警告
□ Check wiring and screen on terminals – and T3 检查终端–和 T3 的接线和屏幕。			
443	Make Up Flow Meter Fault 补偿流量计量故障	Fault or no comms with make up flow Meter 补偿流量计量计故障或无通信	Warning 警告
□ Check wiring and screen on terminals F- and MF 检查终端 F-和 MF 的接线和屏幕。			
444	Condensate Flow Meter Fault 补偿流量计故障	Fault or no comms with condensate flow meter 冷凝水流量计故障或无通信	Warning 警告
□ Check wiring and screen on terminals F- and CF 检查终端 F-和 CF 的接线和屏幕。			
445	Deaerator IO Comms Fault 除气器输入输出通信故障	Fault or no comms with deaerator IO 除气器输入输出故障或无通信	Warning 警告
□ Check wiring and screen on terminals 6T+ and 6T- 检查终端 6T+ 和 6T-的接线和屏幕。			
500	Multi-Burner Communications Fault 多燃烧器通信故障	Loss of comms between MMs in multi-burner loop 多燃烧器循环中控制模块间通信丢失	Alarm 报警
□ Check wiring on terminals 23 and 34 检查终端 23 和 34 的接线。			
501	Multi-Burner Version Mismatch 多燃烧器版本不匹配	Software versions of MMs in multi-burner loop do not match 多燃烧器循环中各控制模块软件版本不匹配	Alarm 报警
□ Check that software versions of MMs in multi-bruner loop match 检查多燃烧器循环中各控制模块软件版本是否匹配。			
502	Multi-Burner Not Polled 多燃烧器未轮询	MM in multi-burner loop has not been Polled 多燃烧器循环中控制模块未轮询	Alarm 报警
□ Check options 43 and 44 检查选项 43 和 44。 □ Check wiring on terminals 23 and 24 检查终端 23 和 24 的接线。			
503	Multi-Burner Config (Multi-Burner Mode) 多燃烧器配置（多燃烧器模式）	Multi-burner mode is not the same for all MMs in loop 多燃烧器模式与各控制模块不同	Alarm 报警
□ Check option 43 检查选项 43。			
504	Multi-Burner Config (Fuel Index) 多燃烧器配置（燃料指数）	Same fuel number must be selected on all MMs in multi-burner loop 在多燃烧器循环中所有控制模块上必须选择相同的燃料号	Alarm 报警
□ Check wiring on terminals 89, 90, 91 and 92 检查终端 89, 90, 91 和 92 的接线。			
505	Multi-Burner Config (Fuel Type) 多燃烧器配置（燃料类型）	Fuel type is not the same for all MMs in multi-burner loop 在多燃烧器循环中所有控制模块上必须选择相同的燃料类型	Alarm 报警
□ Check option/parameters 150, 151, 152 and 154 检查选项/参数 150, 151, 152 和 154。			
506	Multi-Burner Config (Pilot Type) 多燃烧器配置（实验类型）	Pilot type not the same for all MMs multi-burner loop 在多燃烧器循环中所有控制模块上必须选择相同的实验类型	Alarm 报警
□ Check option/parameter 111 检查选项/参数 111。			

507	Multi-Burner Config (Load Sensor)	Load sensor not set the same for all MMs in multi-burner loop	Alarm 报警
多燃烧器配置（负载传感器）		在多燃烧器循环中所有控制模块上必须选择相同的负载传感器	
□ Check option 1 检查选项 1。			

4.4 Settings Conflicts 设置冲突

Some of the options, parameters and expansion options may require another option, parameter or expansion option to be set. Please see the below table for these settings conflicts. A setting conflict will result in the MM being forced in to Commission mode.
某些选项、参数和扩展选项可能需要设置其他选项、参数或扩展选项。关于设置冲突请见下表。设置冲突将导致控制模块强制进入调试模式。

Setting Conflict Message 设置冲突消息
(1) (P53, P54, P55, P56) External load sensor incorrectly configured （1）(P53, P54, P55, P56)外部负载传感器设置错误
□ The external load sensor must be set with the minimum and maximum values and voltages. 外部负载传感器必须与最小和最大值和电压一同设置。 □ Check option 1 and parameters 53 – 56. 检查选项 1 和参数 53-56。
(1) (81, 83) OTC setpoints too high for optioned load sensor （1）(81, 83)OTC 设定点大于选择的负载传感器
□ If minimum and maximum setpoints OTC setpoints must be set within the possible range of the optioned load detector. 最小和最大设定点 OTC 设定点必须在选择的负载检测器范围内设置。 □ Check option 1, 81 and 83. 检查选项 1，81 和 83。
(9) (45) Internal stat must be disabled if load sensor not present (9) (45)没有负载传感器时必须禁用内部状态
□ If external modulation is enabled without a load sensor, the internal stat must always be closed. 无负载传感器启用外部调试时，内部状态必须关闭。 □ Check options 9 and 45. 检查选项 9 和 45。
(30) (31) Invalid remote sepoint configuration (30) (31)无效的远程设定点设置
□ The Minimum Remote Setpoint (DTI/Modbus/External) cannot be set higher than the Maximum Remote Setpoint (DTI/Modbus/External) and vice versa. 最小远程设定点（DTI/Modbus/External）不能设的大于最大远程控制点（DTI/Modbus/External），反之亦然。 □ Check options 30 and 31. 检查选项 30 和 31。
(43) (44) (E1) Water level control only be on the multi-burner master (43) (44) (E1)水位控制只可在多燃烧器主机上进行
□ Water level control should only be enabled on the master (multi-burner ID 1 set in option 44), when using the multi-burner function. 使用多燃烧器功能时水位控制不能在主机上启用（多燃烧器标识 1 在选项 44 中设置）。 □ Check options 43 ,44 and expansion option 1. 检查选项 43,44 和扩展选项 1。
(43) (44) (16) Sequencing only be only the multi-burner master (43) (44) (16)排序只能在多燃烧器主机上进行
□ Only the master (multi-burner ID 1 set in option 44) can be set for sequencing. 只能在主机（多燃烧器标识 1 在选项 44 中设置）设置排序。 □ Check options 16, 43 and 44. 检查选项 16, 43 和 44。
(43) (44) (12) EGA and trim can only be on the multi-burner master (43) (44) (12)尾气分析仪和微调只能在多燃烧器主机上进行。

- Only the master (multi-burner ID 1 set in option 44) can be optioned with an EGA.
  主机只能与尾气分析仪一起选择（多燃烧器标识 1 在选项 44 中设置）。
- Check options 12, 43 and 44.
  检查选项 12, 43 和 44。

(43) (44) (E110) Firstouts can only be on the multi-burner master
(43) (44) (E110) 先出功能只能在多燃烧器主机上启用。

- Only the master (multi-burner ID 1 set in option 44) can have first outs enabled.
  只有在主机（多燃烧器标识 1 在选项 44 中设置）上才能启用先出功能。
- Check options 43, 44 and expansion option 110.
  检查选项 43,44 和扩展选项 110。

(43) (44) (E120) Heat-flow can only be on the multi-burner master
(43) (44) (E120)热流量只能在多燃烧器主机上启用。

- Only the master (multi-burner ID 1 set in option 44) can have heat flow function enabled.
  只有在主机（多燃烧器标识 1 在选项 44 中设置）上才能启用热流量功能。
- Check options 43, 44 and expansion option 120.
  检查选项 43,44 和扩展选项 120。

(43) (44) (45) External modulation can only be on the multi-burner master
(43) (44) (45)外部调节只能在多燃烧器主机上进行。

- Only the master (multi-burner ID 1 set in option4) can be set for external modulation.
  只能在主机（多燃烧器标识 1 在选项 4 中设置）上才能设置外部调节。
- Check options 43 – 45.
  检查选项 43-45。

(43) (57) Fuel flow metering must be enabled for multi-burner
(43) (57)燃料流量计量必须在多燃烧器中启用。

- The multi-burner function requires fuel flow metering.
  多燃烧器功能需要燃料流量计量。
- Check options 43 and 57.
  检查选项 43 和 57。

(43) (135) NFPA Post Purge cannot be optioned with multi-burner
(43) (135) NFPA 后吹扫不能与多燃烧器一起选择。

- The multi-burner function can only use standard, not NFA post purge.
  多燃烧器功能只能使用标准模式，不能用于 NFA 后吹扫。
- Check option 43 and option/parameter 135.
  检查选项 43 和选项/参数 135。

(45) (55) External modulation conflict
(45) (55)外部调节冲突。

- Switched T88 external modulation is not set with permanent external modulation.
  开关 T88 外部调节不能与永久性外部调节一起设置。
- Check options 45 and 55.
  检查选项 45 和 55。

Setting Conflict Message 设置冲突消息
(45/55) (16) External modulation conflict (45/55) (16)外部调节冲突
□ External modulation cannot be used on any MMs in sequencing. 外部调节不能与任何控制模块上使用排序。 □ Check options 16, 45 and 55 检查选项 16,45 和 55。
(45) (P72) External modulation and external setpoint both optioned (45) (P72)外部调节和外部设定点的选择
□ External modulation and external setpoint cannot be used simultaneously. 外部调节和外部设定点不同同时使用。 □ Check option 45 and parameter 72. 检查选项 45 和参数 72。
(81, 82, 83, 84) OTC Configuration invalid (81, 82, 83, 84) OTC 设置无效
□ Setpoints at minimum and maximum outside temperatures cannot be set the same. 最低和最高外部温度下设定点不能设为相同值。 □ Minimum and maximum outside temperatures cannot be set the same. 最低和最高外部温度不能设为相同值。 □ Check options 81, 82, 83 and 84 检查选项 81, 82, 83 和 84。
(111) (122) Flame scanner changeover cannot be optioned with no pilot. (111) (122)火焰扫描器不能在没有实验的情况下更换。
□ If no pilot is set, then flame scanner changeover cannot be used. 如果没有设置实验，则不能使用火焰扫描仪更换。 □ Check option/parameters 111 and 122. 检查选项/参数 111 和 122。
(111) (130) Single valve pilot cannot be optioned with no pilot. (111) (130)单阀实验不能在没有实验的情况下选择。
□ If no pilot is set, then gas valve configuration cannot be set for single valve pilot. 如果没有设置实验，则燃气阀不能设为单阀实验。 □ Check option/parameters 111 and 130. 检查选项/参数 111 和 139。
(112, 135) (158) Purge pressure proving timeout shorter than pre-purge time. (112, 135) (158)吹扫压力检验超时小于预设吹扫时间。
Purge pressure proving timeout must be longer than the pre-purge time 吹扫压力检验超时必须长于预设吹扫时间。 Check option/parameters 112, 135 and 158. 检查选项/参数 112, 135 和 158。
(118, 135) (158) Purge pressure proving timeout shorter than post-purge time. (118, 135) (158)吹扫压力检验超时小于后吹扫时间。
□ Purge pressure proving timeout must be longer than the post-purge time 吹扫压力检验超时必须长于后吹扫时间。 □ Check option/parameters 118, 135 and 158. 检查选项/参数 118, 135 和 158。
(118) (135) NFPA Post Purge must be at least 15 seconds. (118) (135) NFPA 后吹扫必须至少为 15 秒。
□ If NFPA Post Purge is enabled, then this time must be set to a minimum of 15 seconds. 如果启用 NFPA 后吹扫，则该时间必须至少设为 15 秒。 □ Check option/parameters 118 and 135 检查选项/参数 118 和 135 。

(125) (150) Valve proving cannot be optioned when fuel type is oil (fuel 1)
(125) (150)燃料类型为燃油时（燃料 1）不能选择阀门检验。

- Valve proving can only be used for gas
  阀门检验只能用于燃气。
- Check option/parameters 125 and 150
  检查选项/参数 125 和 150。

(126) (151) Valve proving cannot be optioned when fuel type is oil (fuel 2)
(126) (151)燃料类型为燃油时（燃料 2）不能选择阀门检验。

- Valve proving can only be used for gas
  阀门检验只能用于燃气。
- Check option/parameters 126 and 151
  检查选项/参数 126 和 151。

(127) (152) Valve proving cannot be optioned when fuel type is oil (fuel 3)
(127) (152)燃料类型为燃油时（燃料 3）不能选择阀门检验。

- Valve proving can only be used for gas
  阀门检验只能用于燃气。
- Check option/parameters 127 and 152
  检查选项/参数 127 和 152。

(128) (153) Valve proving cannot be optioned when fuel type is oil (fuel 4)
(128) (153)燃料类型为燃油时（燃料 3）不能选择阀门检验。

- Valve proving can only be used for gas
  阀门检验只能用于燃气。
- Check option/parameters 128 and 153
  检查选项/参数 128 和 153。

(125, 126, 127, 128) (129) (135) Post VPS cannot be optioned with NFPA Post Purge.
(125, 126, 127, 128) (129) (135)后阀门检验系统不能与 NFPA 后吹扫一起选择。

- If NFPA post purge is enabled for gas, VPS can only be set for operating before burner start-up.
  如果 NFPA 后吹扫启用用于燃气，则阀门检验系统只能设为在燃烧器启动前运行。
- Check option/parameters 125, 126, 127, 128, 129 and 135.
  检查选项/参数 125, 126, 127, 128, 129 和 135。

(P85) (16) Modulation exerciser cannot be used with sequencing.
(P85) (16) 调节试验程序不能用于排序。

- Modulation exerciser should be used for test purposes and cannot be used with sequencing.
  调节试验程序应用于测试，但不能用于排序。
- Check option 16 and parameter 85.
  检查选项 16 和参数 85。

(P89) (16) Stat exerciser cannot be used with sequencing.
(P89) (16) 状态试验程序不能用于排序。

- Stat exerciser should be used for test purposes and cannot be used with sequencing.
  状态试验程序应用于测试，但不能用于排序。
- Check option 16 and parameter 89.
  检查选项 16 和参数 89。

Setting Conflict Message 设置冲突消息
(P99) (P100) Graceful shutdown and assured low fire shut off not allowed. (P99) (P100) 正常关机，不允许低火焰关机。
□ If graceful shutdown is set, then assured low fire shut off cannot be used. 如设置正常关机，则不能使用低火焰关机。 □ Check parameters 99 and 100. 检查参数 99 和 100。
(E1) (1) Water level control requires a boiler pressure sensor. (E1) (1)水位控制需要锅炉压力传感器
□ Water level control cannot be used with a hot water boiler (load/external temperature detector). 水位控制不能与热水锅炉一起使用（负载/外部温度检测器）。 □ Check expansion option 1 and option 1. 检查扩展选项 1 和选项 1。
(E1) (E3, E4) At least one analogue level sensor required. (E1) (E3, E4)至少需要一个模拟水位传感器
□ If water level is enabled with one capacitance probe, then an external level sensor is required. 如果在使用电容探针时启用水位，则需要使用外部水位传感器。 □ Check expansion options 1, 3 and 4. 检查扩展选项 1,3 和 4。
(E1) (E3, E4, E5, E6) Sensor enabled but water level control disabled. (E1) (E3, E4, E5, E6)已启用传感器但禁用水位控制。
□ Water level control enabled must be enabled if capacitance probes, external level sensor, 2nd low probe or auxiliary water level alarm inputs are set. 如果设置了电容探针、外部水位传感器、第二低水位探针或辅助水位报警，则必须启用水位控制。 □ Check expansion options 1, 3, 4, 5 and 6. 检查扩展选项 1, 3, 4, 5 和 6。
(E3, E4, E5, E6) At least two level sensing elements are required. (E3, E4, E5, E6)至少需要两个水位传感设备。
□ A minimum of two of the following level sensing elements is required: capacitance probe, external level sensor, auxiliary water level alarm input or second low probe. 至少需要两个以下传感设备：电容探针、外部水传感器、辅助水位报警输入或第二低水位探针。 □ Check expansion options 3, 4, 5 and 6. 检查扩展选项 3, 4, 5 和 6。
(E4) (57) External level sensor cannot be optioned with fuel flow feedback (E4) (57)外部水位传感器不能与燃料流量反馈一起选择。
□ External level sensor cannot be used with fuel flow feedback, as they use same terminals. 外部水位传感器不能与燃料流量反馈一起使用，因为它们使用了相同的终端。 □ Check expansion option 4 and option 57. 检查扩展选项 4 和选项 57。
(E11) (E12) Pump turn off point must be above pump turn on point. (E11) (E12)泵关闭点必须大于泵启动点。
□ Pump turn off point cannot be set lower than pump turn on point. 泵关闭点不能设置小于泵启动点。 □ Check expansion options 11 and 12. 检查扩展选项 11 和 12。
(E17) (E40) Bypass valve cannot be optioned with solenoid top blowdown. (E17) (E40)旁通阀不能与电磁阀顶部排污一起选择。

- Bypass and solenoid top blowdown cannot be used together, as they use same terminals.
  旁通阀和电磁阀顶部排污不能一起使用，因为它们使用了相同的终端。
- Check expansion options 17 and 40.
  检查扩展选项 17 和 40。

(E28) (E3) External level sensor without scaling requires a capacitance probe.
(E28) (E3)无除垢功能的外部水位传感器需要电容探针。

- If external level sensor does not have a scale to indicate what level the 4-20mA signal represents, a capacitance probe is required.
  如果外部水位传感器没有刻度，则表明 4-20mA 信号代表的水位，此时需要电容探针。
- Check expansion options 3 and 38.
  检查扩展选项 3 和 38。

(E40) (1) Top blowdown requires a boiler pressure sensor.
(E40) (1)顶部排污需要锅炉压力传感器。

- Top blowdown cannot be used with a hot water boiler (load/external temperature detector).
  顶部排污不能与热水锅炉（负载探测器/外部温度探测器）一起使用。
- Check expansion option 40 and option 1.
  检查扩展选项 40 和选项 1。

(E42) (E46) TDS warning level less than TDS target.
(E42) (E46)总溶解固体警告位小于总溶解固体目标值。

- TDS warning level cannot be set lower than the TDS target value.
  总溶解固体警告位不能设置的小于总溶解固体目标值。
- Check expansion options 42 and 46.
  检查扩展选项 42 和 46。

(E60) (1) Bottom blowdown requires a boiler pressure sensor.
(E60) (1)底部排污需要锅炉压力传感器。

- Bottom blowdown cannot be used with a hot water boiler (load/external temperature detector).
  底部排污不能与热水锅炉（负载探测器/外部温度探测器）一起使用。

(E62) (E64) Bottom blowdown reduction boiler steam production rating not set.
(E62) (E64)底部排污减少且锅炉蒸汽产生量未设置。

- If bottom blowdown reduction is enabled, than steam production rating must be set.
  如果启用了底部排污时间减少，则必须设置蒸汽产生量。
- Check expansion options 62 and 64.
  检查扩展选项 62 和 64。

(E62) (E120) Bottom blowdown reduction requires steam flow to be enabled.
(E62) (E120)底部排污减少需要启用蒸汽流量。

- If bottom blowdown reduction is enabled, then steam flow metering must be enabled.
  如果启用了底部排污时间减少，则必须启用蒸汽流量计量。
- Check expansion options 62 and 120.
  检查扩展选项 62 和 120。

(E80) (E82) Draught control enabled but draught servo disabled.
(E80) (E82)通风控制已启用但通风伺服电机被禁用。

- Draught servomotor must be enabled for draught control.
  通风伺服电机必须启用，用于通风控制。
- Check expansion options 80 and 82.
  检查扩展选项 80 和 82。

Setting Conflict Message 设置冲突消息
(E120) (57) Heat flow requires fuel flow to be optioned and commissioned. (E120) (57)热流量需要选择并调试燃料流量。
□ If heat flow function is set, fuel flow metering must be optioned and commissioned. 如果设置了热流量功能，则必须选择并调试燃料流量计量。 □ Check expansion 120 and option 57. 检查扩展选项 120 和选项 57。
(E120) (1) Steam flow requires a boiler pressure sensor. (E120) (1)蒸汽流量需要锅炉压力传感器。
□ A boiler load/external pressure detector must be set for steam flow metering. 锅炉负载/外部压力探测器必须设置蒸汽流量计量。 □ Check expansion option 120 and option 1. 检查扩展选项 120 和选项 1。
(E120) (1) Water flow requires a boiler temperature sensor. (E120) (1)水流量需要锅炉温度传感器。
□ A boiler load/external temperature detector must be set for hot water flow metering. 锅炉负载/外部问题探测器必须设置热水流量计量。 □ Check expansion option 120 and 1. 检查扩展选项 120 和选项 1。

4.5 Forced Commission Reasons 强制调试原因

In addition to when there is a setting conflict, the MM will be forced into commission mode if any of the forced commission reason occurs.
除设置冲突外，如果出现强制调试，则控制模块将被强制进入调试模式。

Forced Commission Message 强制调试消息
Fuel not commissioned. 燃料未调试。
□ Selected fuel must be commissioned. 选择的燃料必须进行调试。
Servo configuration does not match commissioning. 伺服电机的设置与调试不匹配。
□ Option 8 and/or expansion option 80 do not match the last commission settings. 选项 8 和/或扩展选项 80 与最新的调试设置不匹配。
VSD configuration does not match commissioning. VSD 的设置与调试不匹配。
□ VSD settings for channels 5 and 6 must be the same as the last commission settings. VSD 在通道 5 和 6 的设置必须与最新的调试设置相同。
Golden start optioned but not commissioned. 已选择黄金启动，但未调试。
□ Commission golden start position (see section 3.4.8). 调试黄金启动位置（见 3.4.8 节）。
FGR optioned but not commissioned. 已选择 FGR，但未调试。
□ Commission FGR start position (see section 3.4.9). 调试烟气再循环启动位置（见 3.4.9 节）。
Trim channel does not match commissioning. 微调通道与调试不匹配。
□ Option 76 trim channel must be the same as the last commission settings. 选项 76 微调通道必须与最新的调试设置相同。
Fuel/air-rich trim ranges changed. 富燃料/富燃气范围已改变
□ Parameter 13 and/or parameter 19 do not match last commission settings. 参数 13 和/或参数 19 与最新的调试设置不匹配。
BC Option/parameter mismatch. BC 选项/参数不匹配。
□ BC options 110 – 160 must be set the same as their corresponding parameters. BC 选项 110-160 的设置必须与其对应的参数相同。
Invalid option value. 无效的选项值。
□ An option value is outside the allowed range. 选项值超出允许范围。
Invalid parameter value. 无效的参数值。
□ A parameter value is outside the allowed range. 参数值超出允许范围。
Invalid expansion option value. 无效的扩展选项值。
□ An expansion option value is outside the allowed range. 扩展选项值超出允许范围。
Options have been reset. 选项已被重置。
□ Option settings have been reset due to data lost in an EEPROM error. 选项设置因 EEPROM 错误导致的数据遗失而被重置。
Parameters have been reset. 参数已被重置。
□ Parameter settings have been reset due to data lost in an EEPROM error. 参数设置因 EEPROM 错误导致的数据遗失而被重置。
Expansion options have been reset. 扩展选项已被重置。
□ Expansion option settings have been reset due to data lost in an EEPROM error. 扩展选项设置因 EEPROM 错误导致的数据遗失而被重置。
VPS sensor not commissioned. 阀门检验系统传感器未调试。
□ Gas pressure sensor has been enabled but not commissioned. 燃气压力传感器已启用，但未调试。

Commissioned gas pressure during valve proving too low. 阀门检验期间调试的燃气压力过低。
□ Gas pressure stored during valve proving is less than option/parameters 133 and/or 136. 阀门检验期间的燃气压力小于选项/参数 133 和/或 136。
Commissioned running gas pressure too low. 调试的运行燃气压力过低。
□ Gas pressure at one or more commissioned points is less than option/parameter 136. 在一个或多个调试点的燃气压力都低于选项/参数 136。
APS sensor not commissioned. APS 传感器未调试。
□ Air pressure has been enabled but not commissioned. 空气压力已启用，但未调试。
Commissioned air pressure too low. 调试的空气压力过低。
□ Air pressure at one or more commissioned points is less than option/parameters 147 and/or 149. 在一个或多个调试点的空气压力都低于选项/参数 147 和/或 149。
IR Upload was completed successfully, check configuration then restart. 成功完成红外上传，检查设置后重启。
□ Check data has uploaded successfully before restarting in run mode. 重启进入运行模式前检查成功上传的数据。

Forced Commission Message 强制调试消息
Options and/or parameters reset to default values. Check configuration then restart. 选项和/或参数重置值默认值，然后检查设置后重启。
□ Reset of setting using option/parameter 160. Set/check settings and restart. 用选项/参数 160 重置设置，然后设置/检查设置后重启。
First outs are optioned but not configured. Check configuration then restart. 已选择先出功能，但未设置。检查设置后重启。
□ Configure first outs and restart. 设置先出功能并重启。
Too many sensors require commissioning. 过多的传感器需要调试。
□ Gas and air pressure sensors can be optioned on after fuel has been commissioned, but only one a time before completing commissioning process for each. 燃气和空气压力传感器可以在燃料调试后选择，但在完成调试前一次只能选择一个。
Draught servo minimum angle greater than a commissioned draught servo angle. 通风伺服电机最小角度大于调试的通风伺服电机角度。
□ One or more commissioned points for draught servomotor is lower than expansion option 83.c 通风伺服电机一个或多个调试角度都小于扩展选项 83。
Capacitance probe not commissioned. 电容探针未调试。
□ Capacitance probe has been enabled but not commissioned. 电容探针已启用，但未调试。
Capacitance probe serial number does not match commissioning. 电容探针序列号与调试不匹配。
□ Capacitance probes have changed, recommission water level. 电容探针已更换，重新调试水位。
External level sensor not commissioned. 外部水位传感器未调试。
□ External level sensor has been enabled but not commissioned. 外部水位传感已启用，但未调试。
VSD1 Feedback variation too small. Maximum VSD fault tolerance is --- VSD1 反馈变量过小，VSD 最大容错是---
□ Difference between smallest and largest channel 5 VSD feedback is less than option 99 (this message will display required value for option 99 to run). 最小和最大通道 5VSD 反馈间的差值小于选项 99（本信息将显示选项 99 运行的所需值）。
VSD 2 Feedback variation too small. Maximum VSD fault tolerance is --- VSD2 反馈变量过小，VSD 最大容错是---
□ Difference between smallest and largest channel 6 VSD feedback is less than option 109 (this message will display a required value for option 109 to run). 最小和最大通道 6VSD 反馈间的差值小于选项 109（本信息将显示选项 109 运行的所需值）
Draught control optioned but not commissioned. 已选择通风控制，但未调试。
□ Draught control has been enabled but not commissioned. 已启用通风控制，但未调试。

4.6 Troubleshooting and Further Information
故障排除和更多信息

4.6.1 UV Shutter Faults 紫外线遮板故障

UV shutter fault– there are two LED's on the back of the self-check UV. The red LED indicates the presence of a flame; the yellow LED indicates shutter operation. The red LED will flicker in the presence of UV light. Every 60 seconds the yellow LED will come on, indicating that the shutter is closing. The red LED should then extinguish briefly. If this is not happening check the wiring to self-check UV sensor:
紫外线遮板故障-自检紫外线遮板背部有两个发光二极管，红色用于指示出现的火焰，黄色用于指示遮板运行，红色发光二极管在出现紫外线时将闪烁。每隔 60 秒，黄色发光二极管将启动，指示遮板正在关闭，然后红色发光二极管将熄灭。如果未按上述顺序出现，请检查自检紫外线传感器的接线。

Green wire = Terminal 22
绿线=终端 22
Yellow wire = Terminal 21
黄线=终端 21
Blue wire = Terminal 50
蓝线=终端 50
Red wire = Terminal 51
红线=终端 51

4.6.2 UV Problems 紫外线问题

If the red LED's fail to illuminate but the burner operates, it is likely that the 2 wires are crossed. This must be corrected. Once corrected a full flame signal strength will be displayed/registered.
如果红色发光二极管未亮，但燃烧器开始运行，则有可能是两条线被交叉。该情况必须纠正，纠正后将显示/记录火焰信号强度。

The Autoflame UV software utilises early spark termination within the internal flame safeguard control. Therefore, detection of the ignition spark is allowed. During start-up the ignition is de-energised and the pilot flame must be proven without the spark before the main fuel valves are open (safety shut off). Due to the above statement it is not necessary to have a sight tube on the UV for pick-up. This, in fact, will drastically reduce the flame pick-up.
Autoflame 紫外线软件在内部火焰保护控制中使用了火花塞终止技术。因此，允许检查点火火花塞。在启动期间，点火被断开，主燃料阀打开（安全关闭）前对火焰进行检验。根据以上所述，没有必要在紫外线设备上安装观察管，事实上，这将大大降低火焰的获得。

If insufficient UV is detected, it is advised to use a swivel mount assembly (UVM60003/UVM60004) in order to obtain maximum pick-up. This will allow the commissioning engineer to reliably sight the UV for optimum performance and trouble free operation.
如果检测到紫外线不足，建议使用旋转安装组件（UVM60003/UVM60004）以便保持最大的获得率。这允许调试工程师查看紫外线，使其达到最优性能和无故障。

Note: Under no circumstances is a non-Autoflame UV scanner permitted to be used. This is in breach of all codes and approvals associated with the Autoflame combustion management system. This may lead to serious equipment damage, critical injury or death.

注：在任何情况下都不允许使用非 Autoflame 紫外扫描仪。这将违反与 Autoflame 燃烧管理系统相关的所有规定，可能导致设备损坏和伤亡。

If a non-Autoflame scanner is required then please contact Autoflame directly for technical support. For more information on UV scanners, please refer to MM Flame Safeguard and Operation.
如果要求使用非 Autoflame 扫描器，请直接联系 Autoflame 获取技术支持。关于紫外线扫描仪的更多信息，请参考控制模块火焰维护和操作。

4.6.3 Snubbers 缓冲电路

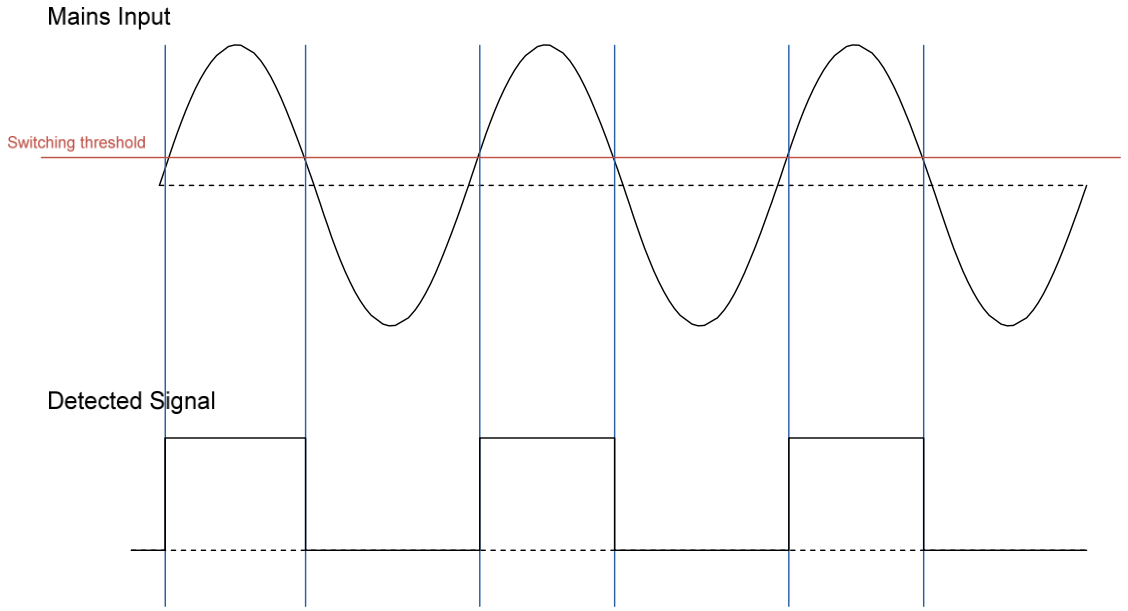
The Autoflame system has internal components which protects itself against voltage/current spikes and electrical interference. In some installations this internal protection is not enough, especially when the main fuel valve Terminals 60 and 61 have been connected to older gas valves and voltage/current spikes have occurred when the valves have been switched on or off. This can cause internal damage to the MM Snubbers can be used on these old gas valves to protect the MM from these spikes; they should be fitted across the power terminals of the gas valves. Please contact Autoflame Sales for more information.
Autoflame 系统安装了可以保护自身免受电压/电流干扰和电子干扰的内部组件。在某些设备中，这种内部保护是不够的，尤其是当主燃料阀终端 60 和 61 与老旧的燃气阀连接时，当阀门打开或关闭时将出现电压/电流干扰。这可能导致控制模块的损坏，因此可以在旧燃气阀上使用缓冲电路以保护控制模块。缓冲电流应通过燃气阀的电源终端固定。更多信息请联系 Autoflame 销售员。

4.6.4 Channel Positioning Error 通道定位错误

The 'Channel Positioning' MM Error is caused by incorrect wiring and incorrect servomotor position. In addition to checking the wiring, and zeroing the potentiometer, please also check that the correct voltage is supplied to the servomotors, which should be ±10% of the required voltage, and the unit is earthed properly. This can cause hunting issues if not at the required voltage or incorrect earthing.
通道定位控制模块错误是由错误接线和错误伺服电机位置所致，除检查线路外，还需要将电位计归零，同时检查伺服电机的电压是否正确，其大小应为所需电压的±10%，且该设备应正确接地。未处于所需电压范围或错误接地时将导致受伤。

4.6.5 Input Fault 输入故障

The 'Input Fault' MM Error relates to a fault with the power supply going to the MM The MM verifies the power supply going to the unit; the mains inputs are sampled to check the DC voltage. The diagram below illustrates the AC voltage that comes in through the power supply with the detected signal (digital input).
输入故障控制模块错误与进入控制模块的电源故障有关，控制模块将检验进入该设备的电源。主电源输入将被取样用于检查直流电压。下图显示了通过带有检测信号（数字输入）的电源进入的交流电。



The MM checks the ON state of the digital signal in the mains input; the ON state of the digital input should be 50%. This means that the digital input should be in the ON state for a half-wave of the AC signal. The OFF state is safe. If the MM sees the digital input being ON for more than 75% across a sample period, then it will get stuck in an unsafe state. This will cause an Input Fault lockout to occur.
控制模块检查主电源输入中的数字信号启动状态，数字输入的启动状态应为 50%，这意味着数字输入在交流信号半波时应处在启动状态。关闭状态非常安全。如果控制模块发现数字输入启动超出采样时间的 75%，则其将在非安全状态下停止。这将导致输入故障锁定。

If this lockout persists, the mains input should be checked. To troubleshoot this issue, please check for any DC voltage in the mains voltage and contact your local power supplier.
如果锁定状态持续，则应检查主电源输入。为解决该问题，请检查主电源的直流电压并联系当地供电部门。

5 STANDARDS 标准

The Mk8 MM has been tested and approved to the following standards:

Mk8 控制模块已按下列标准经过测试和审批：

UL 372, 5th Edition

C22.2 No. 199 – M89

BS EN 298:2012

BS EN 12067-2:2004

BS EN 1643:2014

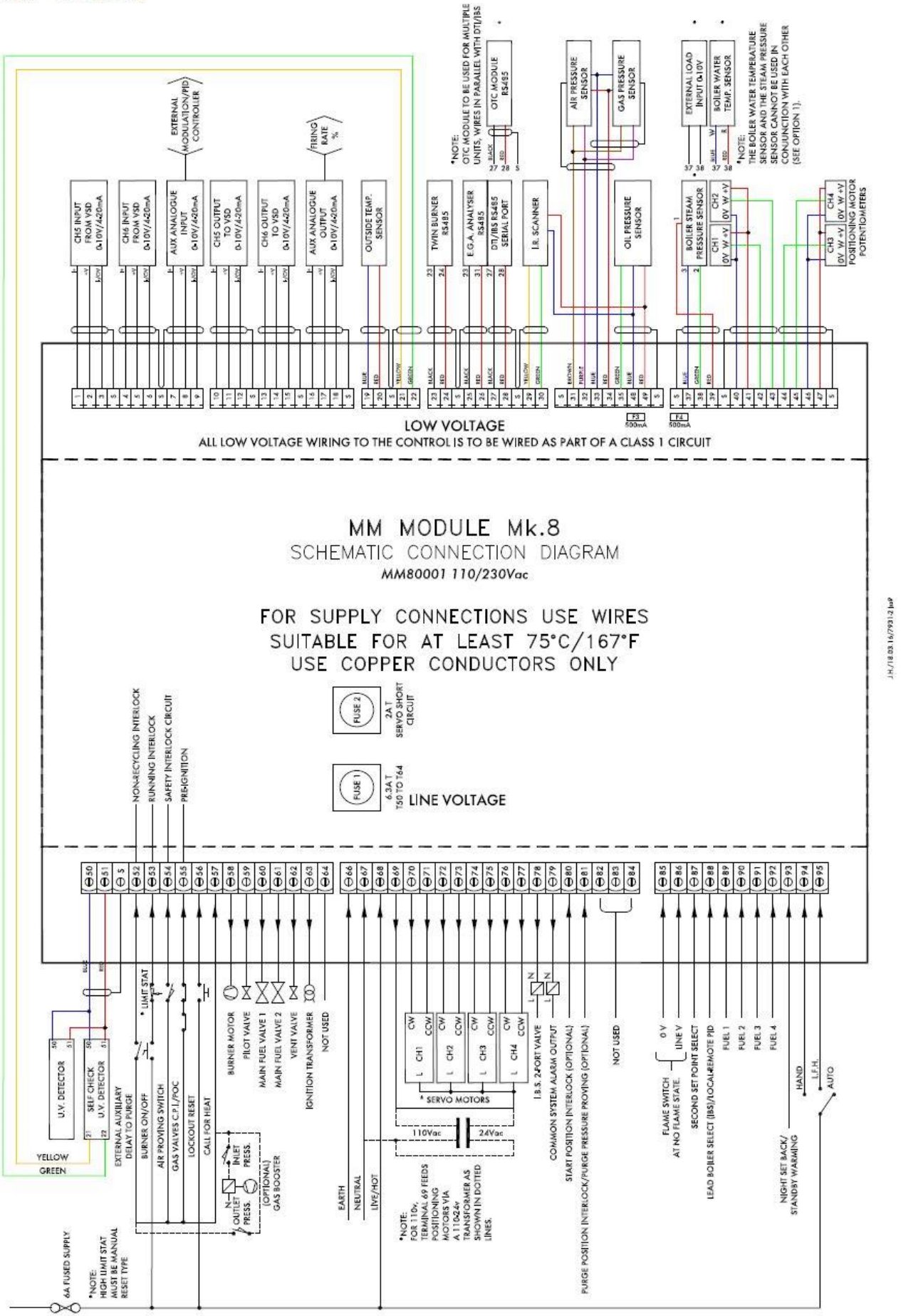
BS EN 1854

ISO 23522:2007

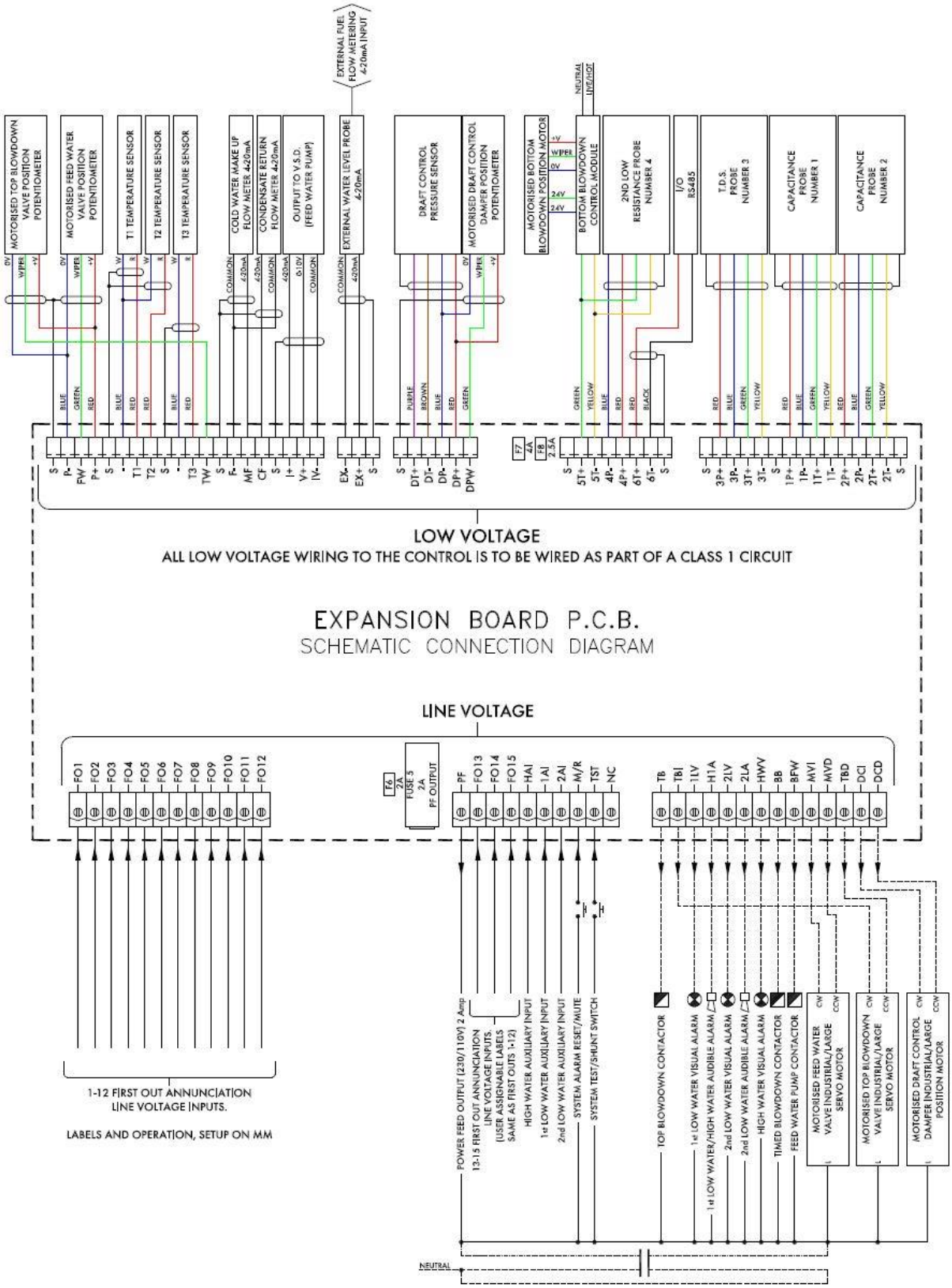
Notes

备注

1.2.1 Mk8 MM


MM MODULE Mk.8
SCHEMATIC CONNECTION DIAGRAM
MM80001 110/230Vac
FOR SUPPLY CONNECTIONS USE WIRES
SUITABLE FOR AT LEAST 75°C/167°F
USE COPPER CONDUCTORS ONLY
LOW VOLTAGE
ALL LOW VOLTAGE WIRING TO THE CONTROL IS TO BE WIRED AS PART OF A CLASS 1 CIRCUIT
LINE VOLTAGE
FUSE 2
2A T
SERVO SHORT CIRCUIT
FUSE 1
6.3A T
T50 TO T64
EXTERNAL MODULATION/PID CONTROLLER
FIRING RATE %
OTC MODULE RS485
AIR PRESSURE SENSOR
GAS PRESSURE SENSOR
EXTERNAL LOAD INPUT 0-10V
BOILER WATER TEMP. SENSOR
CH5 INPUT FROM VSD 0-10V/4-20mA
CH6 INPUT FROM VSD 0-10V/4-20mA
AUX ANALOGUE INPUT 0-10V/4-20mA
CH5 OUTPUT TO VSD 0-10V/4-20mA
CH6 OUTPUT TO VSD 0-10V/4-20mA
AUX ANALOGUE OUTPUT 0-10V/4-20mA
OUTSIDE TEMP. SENSOR
TWIN BURNER RS485
E.G.A. ANALYSER RS485
DTI/IBS RS485 SERIAL PORT
I.R. SCANNER
OIL PRESSURE SENSOR
BOILER STEAM PRESSURE SENSOR
POSITIONING MOTOR POTENTIOMETERS
NON-RECYCLING INTERLOCK
RUNNING INTERLOCK
SAFETY INTERLOCK CIRCUIT
PRE-IGNITION
U.V. DETECTOR
SELF CHECK U.V. DETECTOR
EXTERNAL AUXILIARY DELAY TO PURGE
BURNER ON/OFF
AIR PROVING SWITCH
GAS VALVES C.P.I./POC
LOCKOUT RESET
CALL FOR HEAT
LIMIT STAT
BURNER MOTOR
PILOT VALVE
MAIN FUEL VALVE 1
MAIN FUEL VALVE 2
VENT VALVE
IGNITION TRANSFORMER
NOT USED
SERVO MOTORS
110Vac
24Vac
I.B.S. 2-PORT VALVE
COMMON SYSTEM ALARM OUTPUT
START POSITION INTERLOCK (OPTIONAL)
PURGE POSITION INTERLOCK/PURGE PRESSURE PROVING (OPTIONAL)
NOT USED
FLAME SWITCH AT NO FLAME STATE
SECOND SET POINT SELECT
LEAD BOILER SELECT (IBS)/LOCAL/REMOTE PID
FUEL 1
FUEL 2
FUEL 3
FUEL 4
NIGHT SET BACK/ STANDBY WARMING
HAND
L.F.H.
AUTO
EARTH
NEUTRAL
LIVE/HOT
YELLOW
GREEN
6A FUSED SUPPLY
*NOTE: HIGH LIMIT STAT MUST BE MANUAL RESET TYPE
*NOTE: FOR 110v, TERMINAL 69 FEEDS POSITIONING MOTORS VIA A 110/24v TRANSFORMER AS SHOWN IN DOTTED LINES.
*NOTE: OTC MODULE TO BE USED FOR MULTIPLE UNITS, WIRES IN PARALLEL WITH DTI/IBS
*NOTE: THE BOILER WATER TEMPERATURE SENSOR AND THE STEAM PRESSURE SENSOR CANNOT BE USED IN CONJUNCTION WITH EACH OTHER (SEE OPTION 1).
OUTLET PRESS.
INLET PRESS.
(OPTIONAL) GAS BOOSTER

1.2.2 Mk8 Expansion Board



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