envea

VIEW 370
VIEW 373

USER MANUAL
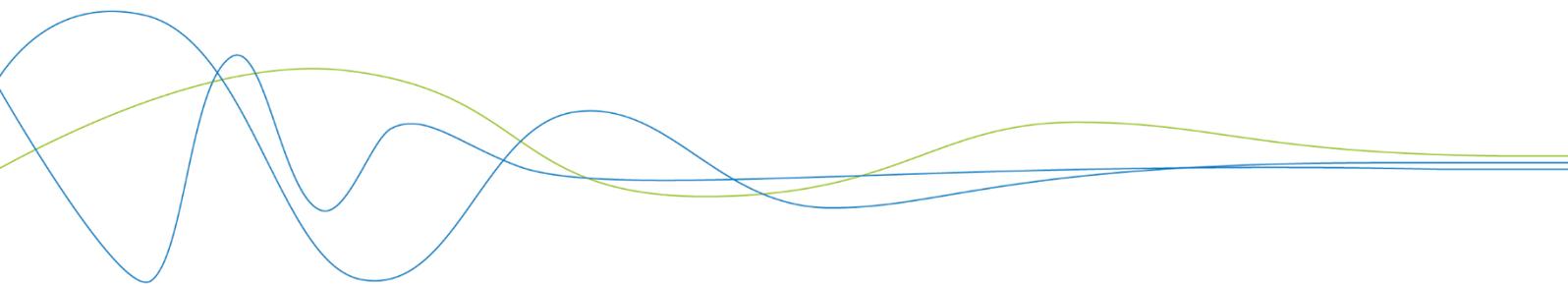
VIEW 370
VIEW 373

Particulate Measurement System

USER MANUAL

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1 Introduction

1.1   Purpose of this Manual

This manual contains all the information necessary for the correct installation, setup, operation, and maintenance of the instrument. The procedures included in this manual must be carried out only by suitably trained and qualified personnel.

1.2   Product Safety

The following symbols are used throughout this manual to indicate procedures that, if not followed correctly, may result in personal injury or damage to equipment.

⚠️	**WARNING**
	Alerts the user to a procedure or practice that can result in personal injury, injury of others, or death if not followed correctly.

⚠️	**CAUTION**
	Alerts the user to a procedure or practice that can result in damage to the system or ancillary equipment if not followed correctly.

NOTE	Notes are used to highlight important information that may assist the reader in carrying out a procedure or understand the text.

1.2.1 Danger from Process

The system may be connected to ducting that contains process particulate (and other flue gas constituents) hazardous to health. This can take one or more of the following forms:

- Particulate which is inflammable or explosive
- Particulate which is toxic or in some other way hazardous to health
- Particulate contained within high-temperature gas.

Take Precautionary Measures

Unless process conditions are known to be entirely safe, suitable precautions such as the use of breathing apparatus or duct purging/detoxifying must be employed before entry is made into the duct for installation or maintenance purposes. If in doubt, consult your local Safety Officer and/or local safety procedures and guidelines.

1.3   Safety Procedures ⚠️

Always observe the following safety precautions. Personnel installing, operating, or maintaining the equipment are responsible for their safety and for the correct handling and use of the equipment in accordance with the safety instructions detailed in this manual.

Follow all warnings and instructions marked on the product and in this manual. Warning labels are situated on the system, indicating a hazard at or near the

location of the warning label. These safety instructions must be followed to avoid possible personal injury, injury to others, and damage to the product.

If the equipment is used in a manner not specified in this manual, the protection provided by the equipment may be impaired.

Retain these instructions in a safe and known place for future use.

WARNING
Risk of personal injury or injury to others. All personnel must be fully trained and adhere to local and, where applicable, site-specific health and safety laws and guidelines. *It is the responsibility of the local organisations to enforce safe working practices at all times.*

WARNING
Electric shock. Only connect to an earthed supply. This unit is a Class 1 construction and must be connected to a protective earth connection (GND).

WARNING
This product must be connected to a power supply of the same voltage (V) and frequency (Hz) as indicated on the product rating plate and provided in the TECHNICAL DATA section of this manual. *A supply cable with an adequate rating must be used. Temperature de-rating must be considered.*

WARNING
Electric shock. A suitable approved and rated mains isolation device must be installed. The device must be clearly marked and easily accessible (within a 2 m/6½ ft. radius) to allow the control unit to be switched off when at the unit. The contact gap of the disconnect device must be at least 3 mm.

CAUTION
Position the unit to avoid excessive heat, vibration, humidity, and dust.

CAUTION
Failure to service or maintain the product, fitting non-approved parts, or carrying out non-approved alterations or servicing can be dangerous. It could affect the safety of the product. It may also invalidate the terms and conditions of the product warranty.

1.4 Intended Use

The VIEW 370/373 is a Particulate CEM designed for high-quality emission measurement in industrial stacks after bag filters, cartridge filters, cyclones, and process driers, where regulatory approvals are not required. The instrument operates between operator-switchable modes for bag-leak/broken-bag detection, process control or emissions reporting, and offers patented quality assurance features for reliable and stable performance.

1.4.1 Limits of Use

To achieve optimum performance and safe operation, the equipment must be operated within the limits detailed in the TECHNICAL DATA section. Operation outside these limits may result in damage to the equipment.

Pollution Degree 2

This equipment is designed for operation in Pollution Degree 2 environments (where only non-conductive pollution occurs, except that occasionally a temporary conductivity caused by condensation is expected.

Overvoltage Category II

Overvoltage Category II is for equipment or instruments intended to be supplied from the building wiring. It applies both to PLUG-CONNECTED EQUIPMENT and to PERMANENTLY CONNECTED EQUIPMENT.

1.5 Additional Information

1.5.1 Product Serial Numbers

The serial number label can be found on the side of the sensor and control unit enclosures. The serial number(s) on the unit(s) should match those on the corresponding Test Record Card for your instrument or system.

1.5.2 List of Abbreviations

The following abbreviations and terms are used in this manual.

Acronym	Meaning
AIM	Auxiliary Input Module
AOM	Analogue Output Module
CEM	Continuous Emissions Monitor
ESP	Electrostatic precipitator
L/min	Litres per minute (purge air flow rate)
PSU Repeater	Network power supply unit
ROM	Relay Output Module

1.5.3 Related Documentation

The following literature may be consulted in conjunction with this manual as applicable. A *Reference Library* with supporting information for your product or system is included with the product documentation. With reference to this product,

the following documents may be requested from ENVEA or your local ENVEA representative:

Included in the Reference Library

- Control unit reference manual (Publication Part Number (PPN): 493500)

- Installation of Network devices (PPN: 493501)

- TN004 Installation Guide (PPN: 491021)

- TN007 Network Cable Lengths (PPN: 491033)

1.5.4 Product Parts and Options

For details of product options, software, accessories, spares, and upgrade options for your instrument, refer to the VIEW 370/373 datasheet and order information available on request and from the ENVEA UK website (see the reverse of this manual).

1.6 Certification

1.6.1 Conformance and related Standards

ENVEA UK Ltd hereby declares that this instrument – within the limits specified in this manual – conforms to the essential requirements and other provisions of the pursuant of the following:

1. European Union Directives: Low Voltage and EMC.

2. UK Regulation 2016: Low Voltage and EMC.

For details, refer to the relevant Declaration of Conformity (DoC) for this instrument or system supplied with your order.

2 Technical Data

2.1   Process and Application Conditions

Stack temperature ranges[A]	-20 to +250 °C (-4 to 482 °F) Option: up to 400 (752 °F) / 800 °C (1,472 °F)
Stack diameter	Ø 100 mm to 6 m (4" to 20 ft., nom.)
Application conditions	Suitable for measurement in non-condensing flue gases. ***Note***: *not suitable for use downstream of ESPs or in applications with water droplets.*
Sensor – Key data	
Measurement capability	0–10 to 0–500 mg/m³ (automatic range changes)
Long-term zero drift	<0.1 mg/m³
Velocity dependency	For use in processes with flow above the 8–20 m/s range with no restrictions. Constant velocity is required outside this range.
Inspection frequency	Every 6 months
Environmental information	
Temperature range	-20 to +50 °C (-4 to 122 °F), ambient

2.2   Sensor Specification

VIEW 370 / 373 Sensor	
Sensor variants	Standard sensor: 0–100 °C / 0–250 °C Insulated sensor: 0–250 °C Passive/active sensor: 0–250 °C / 0–400 °C High-temperature sensor: 0-400 °C / 0–800 °C
Sensor body material	⬩ Standard: 316 Stainless steel ⬩ Passive/active: 316 Stainless steel ⬩ Fully insulated: PTFE-coated 316 Stainless steel
Weight	1.8 kg (4 lb), standard sensor
Stack connection	1½" BSP (female) [B]
Enclosure	
Dimensions	W 122 x H 122 x D 80 mm (5 x 5 x 3.2")
Protection rating	IP65
Enclosure material	Die-cast aluminium (epoxy coated)
Cable entries	2x M16 cable glands (one blanked *ex-works*)

[A] *At monitoring point. Please note that imperial temperatures given are nominal values.*

[B] *Ensure the opening/hole in stack wall is at least Ø 45 mm.*

VIEW 370 / 373 Sensor	
I/O	
Local outputs	RS-485 connection (to control unit)
Power requirements	
Power supply	18–24V (provided by the control unit)
Current consumption	35 mA
Cable type	4-core screen (see the cable specifications below)
Other requirements	
Air Purge provision	May be required on some applications (contact ENVEA or your local ENVEA representative for further details). Requires optional air purge fitting and an external supply of 5–10 L/min of dry, clean (oil-free) instrument air.

2.2.1 Dimensioned Drawings – Standard Sensor
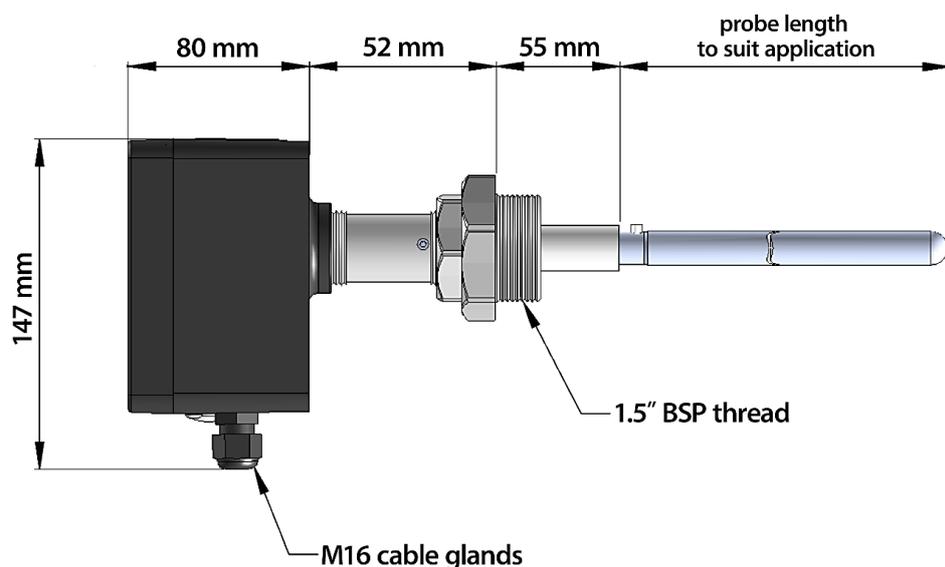
Clearance (in mm): 55 + probe length
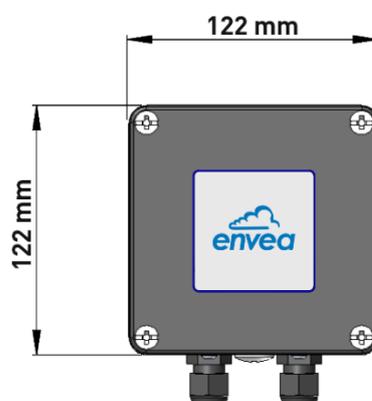
*Figure 1: Dimensional **drawing** of VIEW 370_373 sensor.*

2.2.2 Sensor Options

Rod lengths	◆ Standard: 100–500 mm; <u>option</u>: 600, 800, 1000 mm ◆ Insulated version: 200–1000 mm ◆ Passive/active and high-temperature variants: 100–800 mm
Air purge fittings (ACCAIR)	◆ 1/4" BSP (for standard, insulated, passive sensor versions) ◆ Air purge with Air Filter Regulator assembly (-FFR)
Hazardous zone classification	ATEX / IECEx Dust zones 20/21 (Cat. 2/1D) and 22 (Cat. 3D) *Please refer to the Ex manual for the sensor manual for details.*

2.3 System Options

The system is compatible and may be used in conjunction with ENVEA net modules.

ENVEA Control Unit [c]	◆ Standard Controller (for single-sensor systems) ◆ ProController (multiple sensors, up to 32 channels)
Network Modules	
Analogue Output Module (AOM)	8x 4-20 mA (500Ω)
Auxiliary Input Module (AIM)	4x 4-20 mA inputs or 4x Digital inputs
Network spur	Divides a Modbus (RS-485) cable into two branches.
PSU Repeater	Power supply unit for voltage and signal boost for extended cabling runs with multiple sensors.
Relay Output Module (ROM)	8x Relays (1A @ 250V), user configurable

For more information on connecting the sensor network/system consult the relevant wiring diagrams (see RELATED DOCUMENTATION on page 3).

NOTE	Network modules must only be used in conjunction with ENVEA control units.

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[c] *If a control unit is required, refer to the VIEW 370/373 datasheet and order information for details (see PRODUCT PARTS AND OPTIONS on page 4).*

2.4 Cabling

All cabling should be rated for use up to at least +65 °C (149 °F) to allow for an ambient temperature of up to +50 °C (122 ºF). Cables supplied by ENVEA meet these requirements. For information on sensor cabling requirements and considerations, refer to Technical Note TN007 Network Cable Lengths (see page 3).

Maximum cable lengths	◆ RS-232: 15 m (50 ft.) ◆ RS-485: 1,000 m (0.6 mi / 3,280 ft.) *ProController only –* ◆ Ethernet (RJ45): up to 100 m (333 ft.) between active devices ◆ USB 2.0: 2 m (6½ ft.)

2.4.1 Power Supply Cable Specification

	WARNING
⚠	Hazardous voltages. A suitable approved and rated mains isolation device must be installed. The device must be clearly marked and easily accessible (within a 2 m/6½ ft. radius) to allow the control unit to be switched off when at the unit. The contact gap of the disconnect device must be at least 3 mm.

For mains connections, use an appropriate cable with a conductor area range from 0.75 mm² to 2.5 mm², in accordance with your local regulations.

2.4.2 Data Cable Specification

The minimum requirements are outlined in the following table. Cables supplied by ENVEA meet these requirements.

Cable type	4-core (2-pair) cable; conductor size: 0.5 mm² (16/0.2)
Current rating	1A r.m.s (per core), max.
Working voltage	440V r.m.s, max.
Cable shielding	Flame-retardant PVC outer sheath (Ø7.9 mm/0.3 sq.in.), with overall tinned copper, braided, or foil screen. ***Note**: for electrically noisy environments, the use of a braided, screened cable is recommended. For very noisy environments, use a cable with multiple layers of foil and braid shielding.*
Resistance	<40 Ω/km (12.192 Ω/kft), recommended for long cable runs
Compliance	BS5308 part 2, type 1

2.5   PC Software Suite (PC-ME DUST TOOLS)

The minimum system specification (for desktop/laptop PCs) is set out in the following table. For more information on requirements and software modules, refer to PRODUCT PARTS AND OPTIONS on page 4.

Operating system	Windows XP or higher
System memory	32 Mb RAM, 20 Mb free hard disk space
Monitor	1024 x 768, high-colour graphics
Data communication	• Serial port (for connection to one or more instruments) *ProController only –* • Ethernet (RJ45; via Modbus TCP), • USB 2.0, standard type A-to-A, M:M
Optical disc drive (DVD/CD)	PC-ME DUST TOOLS software is supplied on a software CD, and it is also available for download from the ENVEA UK website (http://www.envea.global/s/process-en/dahs-software/pc-me-dust-tools/).
Licensing	Multi-user license options (for up to 5 or up to 10 users)

3 System Description

3.1   Components

Figure 2: VIEW 370/373 X sensor (with grounding strap).

3.2   Sensor

The VIEW 370 (373) sensor has a metal probe rod mounted to the small 'B' enclosure containing the electronic circuitry. The sensor is connected to the control unit by a cable of up to 1,000m (0.6 mi) in length. For multi-sensor systems, network spurs must be used to connect the sensors to a network.

In addition, the VIEW 373 also provides long-term data logging.

3.3   Control Unit

The VIEW 370 (373) is powered via an ENVEA control unit (supplying 24V DC). The sensor can be interfaced with the Standard Controller for a single-channel Standard system or the multi-channel ProController for an extensible PRO system (with up to 32 sensor channels) that is flexible and can be configured easily.

The control unit further provides remote automatic control, measurement, as well as initiating tests to ensure sensor integrity.

The control unit has its own logging capability for process and regulatory reporting. Data may be downloaded using PC-ME DUST TOOLS, ENVEA's modular software suite. For further details on a control unit, refer to the relevant manual (see page 3).

3.4   Principle of Operation
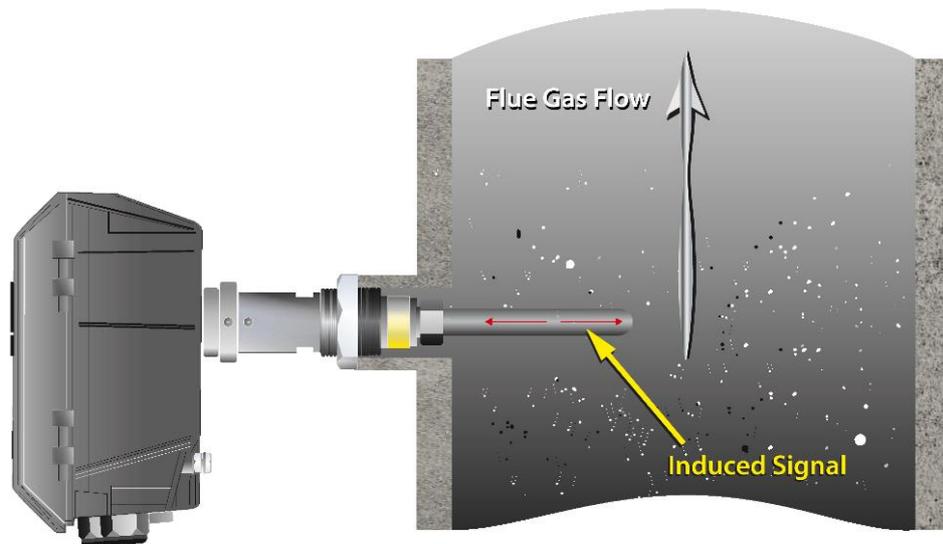
Figure 3: Principle of operation – ElectroDynamic® sensors.

The sensor utilizes the proven and reliable *ElectroDynamic*® Probe Electrification technology patented by ENVEA, whereby the collision and interaction of particles with the probe rod (particle impingement) causes a small electrical charge transfer to occur between the particulate and the probe rod. It is this small electrical charge that provides the signal that is monitored by the electronics. Provided the material type remains constant, the signal generated is proportional to the dust concentration, even if an accumulation of dust forms on the sensor rod.

4 Unpacking and Preparation

4.1 Unpacking and Inspection

Carefully unpack the units and retain the packaging to return equipment for servicing or repair. If the equipment is damaged in any way, return it to ENVEA (see the reverse of this manual) in its original packaging.

No responsibility for damage resulting from the use of non-approved packaging will be accepted.

NOTE	Ensure all items and accessories specified are present. If not, contact ENVEA or your local ENVEA representative.

4.2 Network Layouts

Standard Systems

Connect a single ENVEA sensor directly to a Standard Controller for a standard, single-channel system.

PRO Systems

Connect multiple sensors to the ProController either using network spurs or by daisy-chaining the sensors. For medium to large systems, it is best to place the control unit(s) in the network centre to minimize voltage drop along cable runs.

For large systems, you may need to boost power using a PSU Repeater (power supply unit; see SYSTEM OPTIONS on page 7 for details).

4.3 Prerequisites and Guidelines

4.3.1 Location Requirements

When selecting a mounting location for the sensor, the following should be considered for optimum performance.

1. Mount in the longest, straightest, unrestricted duct available.
2. Ensure correct sensor grounding (see the section below).
3. Avoid excessive vibration. Excessive vibration will affect sensor readings.
4. Ambient or radiating temperatures in the vicinity of the mounting location must not exceed 50 °C (122 °F).

Refer to the Installation Notes (TN004) for more details (see SECTION 1.5.3 on page 3).

4.3.2 Cabling and Cable Routing

Where the network includes a network spur, the two cables between the sensor and spur and the spur and control unit are of the same type (comprising four cores with an overall screen, see SECTION 2.4.2 on page 8). When routing cables, observe the following:

- Ensure the cable sheath fully penetrates the cable entry gland.
- Fit blanking plugs to unused cable entry glands.
- Ensure cable entry glands are tightened to the cable.

- Support cables at appropriate intervals.
- **Do NOT route cables where they may be at risk from lightning** (for example, overexposed roofs)!

4.3.3 Grounding the Sensor

For *ElectroDynamic*® sensors, the sensor body must be grounded to the stack wall. Poorly grounded sensors may pick up external noise-producing false high readings. Ensure the installation complies with the following guidelines:

- The sensor may only be fitted to a metal duct or stack. If the stack is not metallic or you are concerned that the stack may not provide a suitably earthed shield for the sensor, please contact ENVEA or your local ENVEA representative.

- A grounding strap (or earth wire) is provided to ensure the sensor body can be securely grounded to the metallic stack wall. The sensor is electrically grounded to the ductwork by the mechanical connection made between the sensor and the socket, and also by the external grounding strap.

- **DO NOT PUT PTFE TAPE AROUND THE THREAD!** (As this can compromise the sensor grounding connection)

- Remove excessive rust from the thread and socket and apply a small amount of copper-loaded grease.

5 Sensor Installation

5.1   Safety Information

WARNING
Danger from the process.
It is possible that the sensors are to be installed in ducting containing process particulate that is a hazard to health.
Unless the process conditions are known to be entirely safe, suitable precautions such as the use of breathing apparatus or duct purging/detoxifying must be employed before any entry is made into the duct for installation or maintenance purposes.
If in doubt, consult your local Safety Officer and/or local safety procedures.

WARNING
Earthing.
This equipment must be earthed.

CAUTION
Probe damage.
Take care when handling the sensor to avoid bending or damaging the probe. Probe damage may result in inaccurate measurements.

5.2   Mounting the Sensor

5.2.1 Fitting the Sensor to the Stack
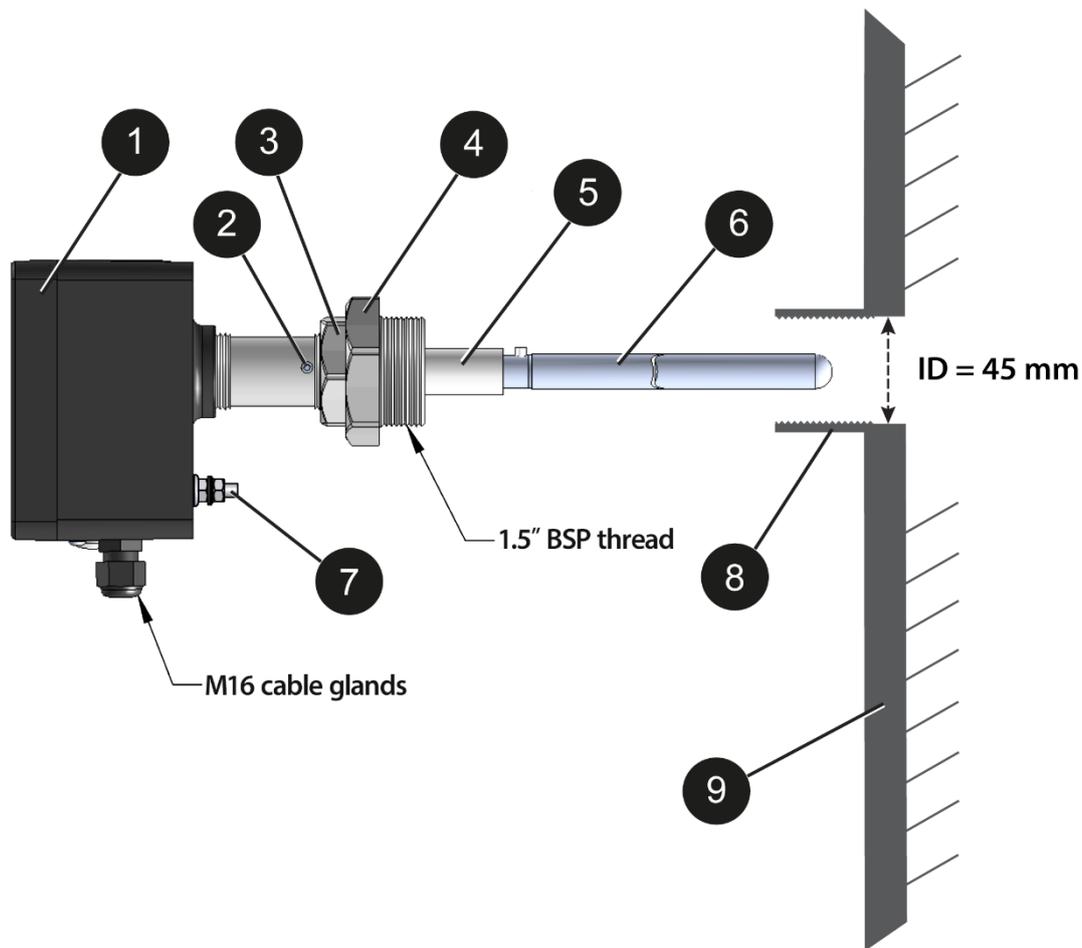
1 .... Sensor 'B' enclosure
2 ....Air purge inlet
3 ....Lock nut
4 .... Floating nut
5 .... Insulator
6 .... Probe rod (insulated version)
7 .... Earth stud assembly
8 ....1.5" BSP socket
9 .... Stack/duct wall
Not shown .... Grounding strap (attached to earth stud)

Figure 4: Fitting the sensor to the stack (example).

1. Drill a hole of at least Ø 45 mm (1.8") in the stack where the sensor is to be located (monitoring point).

2. Fit a 1½" BSP socket [8] which must be welded securely to the stack [9]. Ensure the BSP socket is perpendicular (at 90°) to the stack or so that the

probe rod [6] points slightly down into the stack, allowing condensate to drain off.

3. Weld a suitable earth stud or bolt to the stack wall and connect the grounding strap (supplied with earth stud [7] and fitted on the rear of the enclosure) between sensor enclosure [1] and stack wall [9].

NOTE	The strap should be long enough to allow the sensor to be removed from the stack and put on the ground during maintenance without detaching.

4. Insert the probe [6] into the socket and secure it with the floating nut [4].

5. Ensure the sensor unit is upright with the cable entry glands at the bottom and adequately supported when tightening the floating nut [4].

    Ensure that the sensor probe does not reach the opposite duct wall.

6. Tighten the lock nut [3]. When tightening the lock nut [3], ensure the floating nut [4] is held securely with a wrench.

NOTE	This must provide a good electrical connection between the sensor and ductwork – **hence PTFE or other insulating tapes must NOT be used!**

Proceed to connecting and setting up the sensor (see section 5.3 below).

5.3   Connecting the Sensor

5.3.1 Sensor Connections
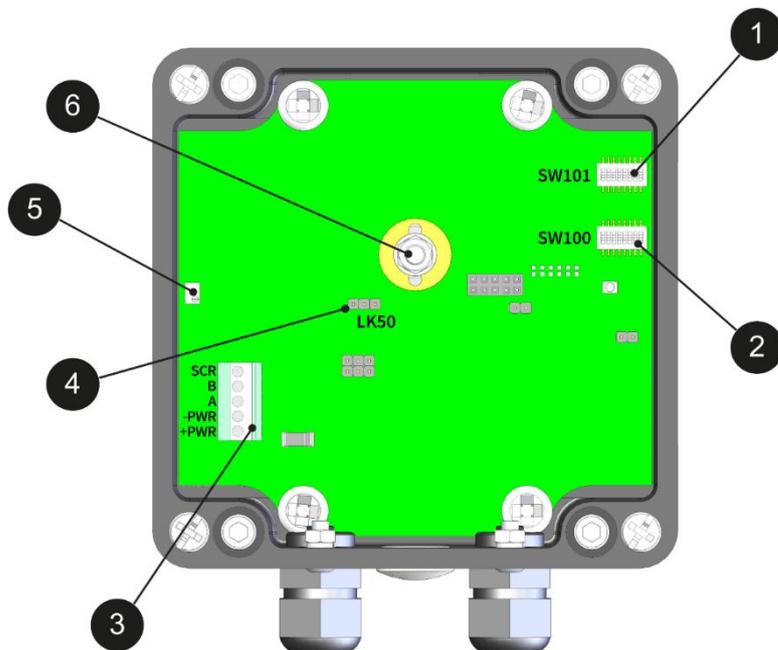
1	....	Comms mode switch (SW101)
2	....	Address switch (SW100)
3	....	Power/comms connector (Modbus)
4	...............................Probe enable/disable link (LK50) **ᴰ**
5	.... *do not adjust*
6	.... Main probe

Figure 5: Sensor PCB connections.

5.3.2 Electrical Connections (Power/Comms)

⚡	**WARNING**
	Hazardous voltages.
	Ensure the sensor is not connected to the control unit power during wiring.

⚠	**CAUTION**
	The VIEW 370 (373) sensor wiring order differs from the standard ENVEA wiring connection. – Please check the wiring tables carefully.

Refer to FIGURE 4 above for the location of the terminals. After the installation of the sensor, make the comms/power connections as described below.

ᴰ *Probe enabled ex works (jumper position: two pins on the right).*

Sensor

Route the input cable through the cable gland nearest to connector **K1**. Make the connections to the **K1** terminals from top to bottom as outlined below.

Pins (top to bottom):	Wire colour	Connector name
SCR	Cable screen	**SENSOR: Power/comms connector**
B (Comms)	Blue	
A (Comms)	Green	
- PWR (0V)	Black	
+ PWR (24V)	Brown	

At the Network Spur

At the spur, make the connections as outlined below.

Pins (L–R):	Wire colour	Connector name
0V	Black	**SPUR:** *any connector*
Comms B	Blue	
Comms A	Green	
24V	Brown	
SCR	Cable screen	

Before refitting the cover lid, the sensor unit must be configured in accordance with the setup instructions provided in the following sections.

5.3.3 Set Address Switch (SW100)

Each sensor must have a unique address on the network. The address is set by means of a DIP switch (SW100).

Only switch positions 1 through 6 are used, giving valid address settings from 1 to 64. The illustration below shows address 5. The address switch uses binary coding to calculate the required address.

<u>Example</u>: to set the sensor to address number 5: set switch 1 (binary 1) ON and switch 3 (binary 4) ON (4 + 1 = 5).

5.3.4 Set Sensor Comms Mode (SW101)

The sensor offers two communications (comms) modes: ASCII and RTU. The Comms mode is set by means of a DIP switch (SW101).

When setting up the system, ensure that the settings in the control unit match those in the sensor (see SECTION 6.4.3 on page 24).

- The default mode is **ASCII**: 19200 Baud, No Parity, 1 Stop bit, ASCII mode (7 bits). The settings are shown in [1] below.
- **RTU** is a faster communications protocol but is not available for all devices. If RTU mode is required, set the DIP switch as shown in [2] below.

| Comms mode – ASCII [1] | Comms mode – RTU [2] |
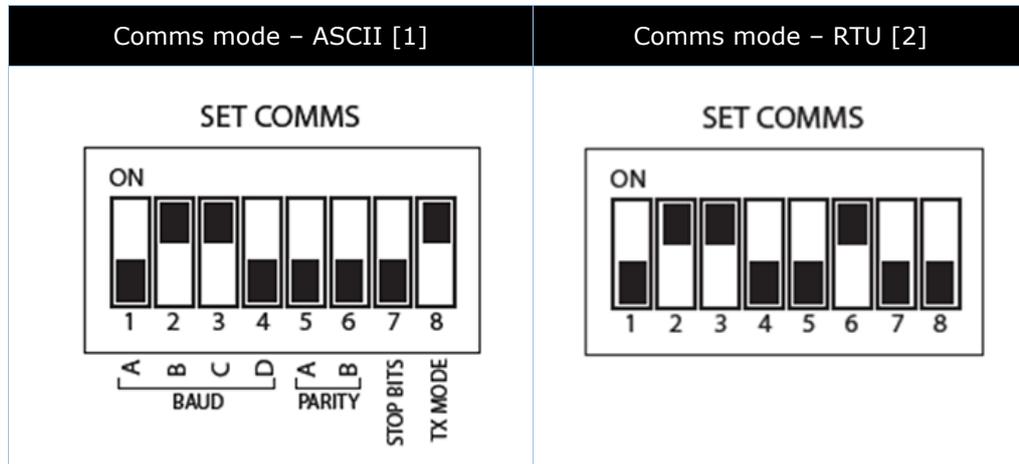
Refit the sensor cover lid and secure it with four screws. *Do not over-tighten the screws.*

6 Basic System Setup

This section provides information on the initial setup and operation of the ENVEA control unit. The same procedure applies to both the Standard Controller (Standard systems) and ProController (PRO systems). For advanced configuration, refer to the relevant control unit manual (see page 3). This section provides an overview of the available user controls on the control units, their functionality and configurability.

6.1 User Controls and Functionality

6.1.1 The ProController UI
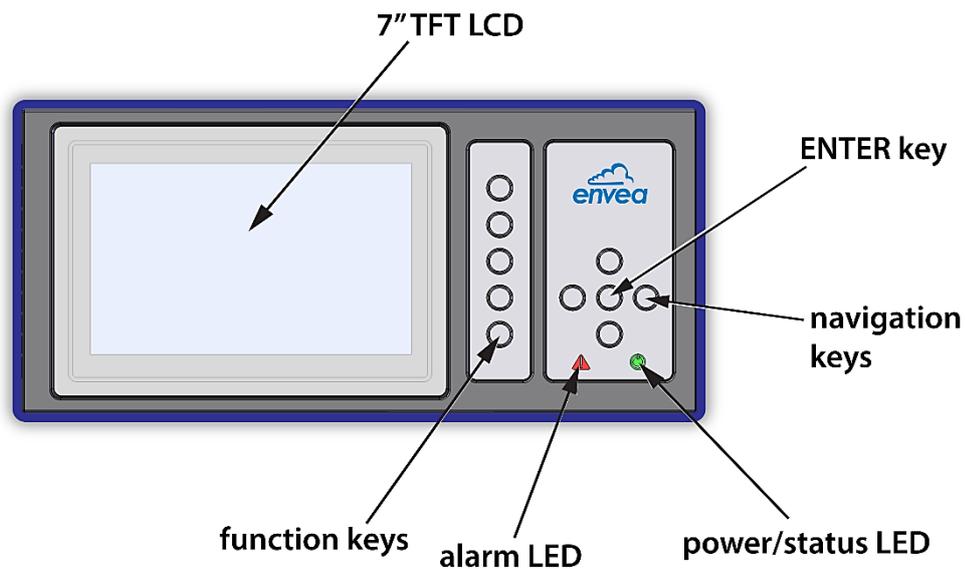
Figure 6: ProController – User interface with controls.

Use the navigation and ENTER keys to select the required menu screen. Five function keys are available for rapid menu access (see SECTION 6.2 below).

UI Element	Purpose	Description
Function keys	*See below for details.*	Five function keys are available for quick menu access and response. Two keys (F1, F2) are user-programmable.
Navigation buttons (arrow keys)	**ENTER ↵**	Press to select or confirm, or to adjust a value (incremental).
	UP/DOWN	Choose this menu option to modify. Select an entry value (for example, a digit for a password).
	RIGHT	Select a menu option. Confirm entry (applies and stores the chosen value).
	LEFT (CANCEL)	Abort change and return to the main menu or previous item.
Power LED	Switch ON power. [Status]	**Green** = ON **Off** = No power

Alarm LED	Switch ON power. [Status]	**Red** (flashing) = alarm **Off =** no alarm

6.1.2 Standard Controller UI
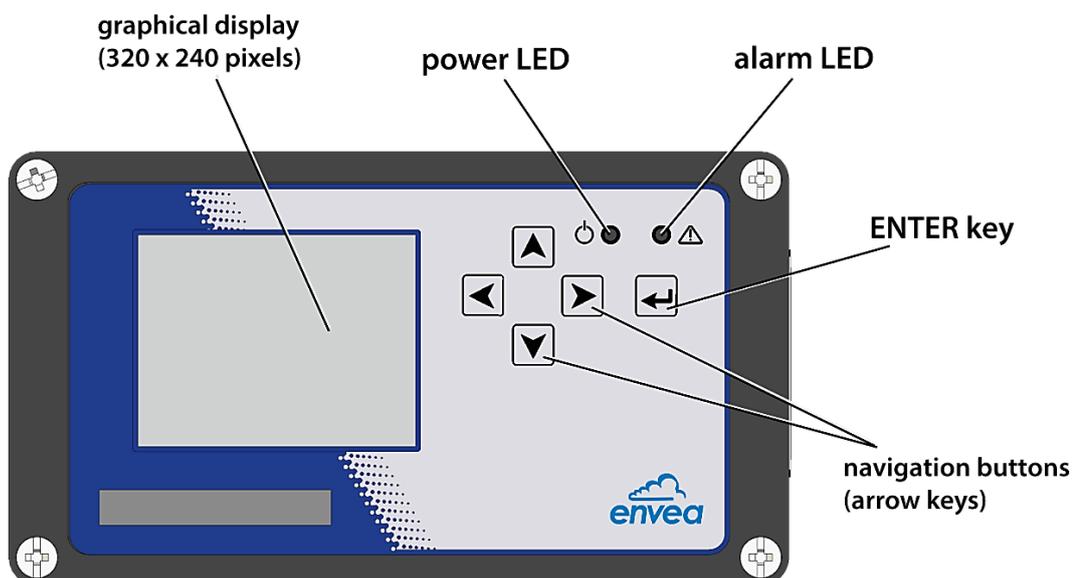
Figure 7: Standard Controller – User interface with controls.

Refer to the appropriate control unit manual to view the UI layout showing the location of the user controls and Alarm/Power indicators.

UI Element	Purpose	Description	
Navigation buttons (arrow keys)	**ENTER ↵**	Press to select or confirm, or to adjust a value (incremental).	
	UP/DOWN	Use these buttons to modify values. Select an entry value (for example, a digit for a password).	
	RIGHT	Select a menu option. Confirm entry (applies and stores the chosen value).	
	LEFT (CANCEL)	Abort change and return to the main menu or go to the previous item.	
Power/Comms LED	Switch ON power. [Status]	**Green** **Off**	= ON = No power
Alarm LED	Sensor/system alarm. [Status]	**Red** (flashing) **Off**	= Alarm = No alarm

6.2   ProController – Function Keys

The control unit provides five function keys for rapid menu access and response. Two of the function keys (F1, F2) are user-programmable for quick access to frequently required information. Refer to the table below for details on how to

operate them and set the function keys for quick access to frequently viewed screens.

Symbol	Meaning	Action
	'BACK TO TOP'	Displays the current top-level menu icon. Press the **BACK TO TOP** button to return to the current top-level menu screen (see icon) in one click.
	FAVOURITE 1	▪ Open the desired menu screen. ▪ Press and hold **F1 + 'TOP'** to save the current screen as Favourite 1 (F1). ▪ The power LED flashes GREEN to confirm the selection has been saved.
	FAVOURITE 2	▪ Open the desired menu screen. ▪ Press and hold **F2 + 'TOP'** to save the current screen as Favourite 2 (F2). ▪ The power LED flashes GREEN to confirm the selection has been saved.
	SAVE / YES / OK	Press for a positive response or to CONFIRM. (Refers to the current screen.)
	CANCEL / NO / BACK	Press for a negative response or to QUIT the page. (Refers to the current screen.)

6.3   Main Menu Screens

The icon bar at the top of the control unit screen is displayed on start-up. Select the required menu using the navigation and ENTER keys.

Symbol	Menu screen	Description
	MULTIPLE DEVICES	Displays all available sensor/device channels as bar graphs or as a list.
	BAR GRAPH	Displays (single) bar graph with emissions for a single stack; shows up to six channels, scalable.
	SYSTEM OVERVIEW	Provides a summary table and shows the current alarm status for each sensor on one screen.
	ALARM LOG	Select to view and scroll through the Event log; enables operators to reset latched alarms.
	DATA GRAPH	Displays logged or real-time data per sensor as line graph; log type and time (span) are selectable.

	QUALITY ASSURANCE / SELF-TESTS	Provides access to self-check screens, calibration, maintenance, and to run sensor checks manually.
	PASSWORD ENTRY	Set a password; with the Lock option (to prevent unauthorized changes).
	SENSOR SETUP / SYSTEM SETUP	Main Setup screen; access other functions and more sensor settings from this screen.
[Date]	*not selectable*	Display format: dd/mm/yy (set via main Setup screen)
[Time]	*not selectable*	Display format: hh:mm (set via main Setup screen)

6.3.1 Other Symbols

Language	English
Latch Alarms	☐
FailSafe Relays?	☑
RS485 1	●
Set Password	●
Reset Functions	●
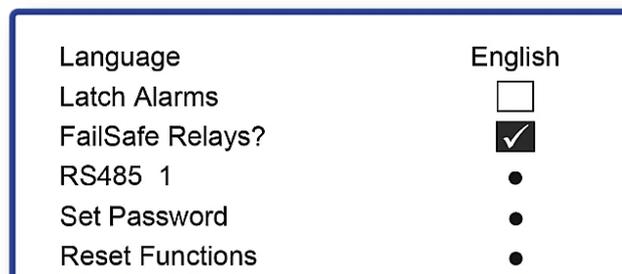
Figure 8: Screen elements (example).

Use the UP/DOWN buttons to select a setting and press ENTER to activate/deactivate ('tick') a checkbox. Select a button (□) and press ENTER to display the detail screen for this function. Refer to individual sections for further details and functionality.

6.4 Initial System Checks

6.4.1 On Power-up

Switch on the external power supply to the control unit. Check that the Power LED is ON, and the graphical display is illuminated. When using the control unit for the first time, communication must be established between the control unit and all connected devices in the network. If the control unit is being reconfigured, then all existing settings can be cleared by performing a Master Reset (see below for details).

6.4.2 Performing a Master Reset

CAUTION
Loss of data- Performing a Master Reset deletes all settings and logged data.
Download the data to a PC using the ENVEA software tool before carrying out a system reset.

1. Open the **Setup** ⚙ menu screen.

2. Select **Other Functions | Reset Functions**.

3. Select **Master Reset** to erase the current configuration.

6.4.3 Checking the Sensor Comms Mode

The communications (Comms) mode is set by ENVEA prior to installation and should be checked during the system installation.

1. Select **Setup | Other Functions | Advanced Functions**.

    Check the **Sensor Comms Mode**. The sensor communication settings should match (refer to SECTION 5.3.4 on page 18 for details). If there are problems, check that the sensor communications setting (SW101) is the same as the Sensor Comms Mode settings in the control unit.

Sensor comms	Mode	Baud rate	Parity
Standard	**ASCII**	19200	Odd
Optional	**RTU**	19200	None

6.5   Adding Sensors to the Network

NOTE	Use the manual method of adding sensors only when manual control over the order in which the devices are displayed is required, or if only specific sensors are to be added.

6.5.1 Detecting Sensors Automatically

Sensor channels can be added to the control unit automatically using the Autodetect functionality or manually. In Autodetect mode, the control unit scans the Modbus addresses to identify all the sensors/devices in the network.

Select **Setup** | **Autodetect** to initiate the system scan (FIGURE 9).
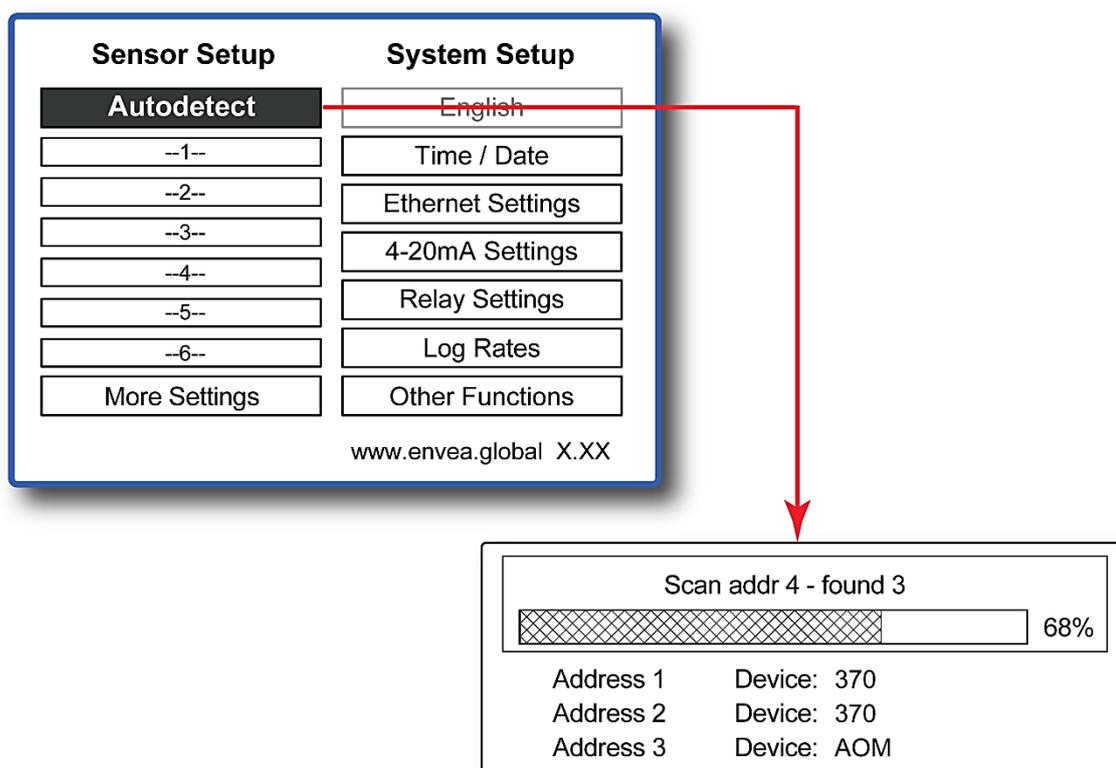
Figure 9: Autodetect – Adding sensors automatically.

- The control unit will attempt to configure all the sensors in the network with the default settings. When this is complete, a bar graph or text view of all the sensor data is displayed.

- Select the **Multi-Bar/Text** menu screen to switch between the bar graph and text display. The menu sequence is shown in the related menu map (see FIGURE 18 on page 44).

6.6 Editing Basic Sensor Settings

After running Autodetect, a configuration button for each detected channel (up to six) is displayed in the Sensor Setup section of the main Setup screen (FIGURE 10).

Figure 10: Setup screen – Sensor/system settings.

- Advanced sensor/device settings and additional sensors can be accessed by selecting **Setup | More Settings** (for a menu map, see FIGURE 19 on page 45).

- To edit the basic settings for a channel, select the required channel (for example, 'Stack1 Dust') and press ENTER to display a list of sensor settings (FIGURE 11).

Figure 11: Basic sensor settings.

6.7   Scaling Factor

The Scaling Factor is used to scale the raw dust reading. The Scaling Factor scales the raw reading as follows:

Scaled reading = Raw instrument reading x Scaling Factor

The Scaling Factor is applied to the following settings:

- The Bar Graph/Text display values (used to generate emission alarms)

- Logged data within the instrument

- Analogue (4-20 mA) outputs

- Modbus RS-485 output values

The default Scaling Factor is 1.00. Refer to APPENDIX A– SCALING on page 40 for detailed information on calibrating the instrument.

6.8   Log Rates

The Log Rates option allows the storage rate for the long-term memory and the short-term memory to be viewed or changed.

NOTE	Only one log type may be selected at a time. Instruments are supplied with only the short-term log enabled. See below how to change the active log. **The long-term log is only available on the VIEW 373.**

6.8.1 Adjusting Log Rates

The Log Rates option allows the storage period of the long-term log (available on the VIEW 373 only) to be viewed and changed.

1. Select **Setup | Log Rates** to display this screen.

2. Select **Long**/**Short Term** and press ENTER to adjust the interval (1 to 240 min).

To set the active log for individual sensors, select **More Settings | Edit an Existing Device**, then select the required sensor and change the **Log Options** setting

6.9   More Sensor Settings

The More Settings menu allows users to make advanced changes to sensor settings as well as to add or delete sensors manually.
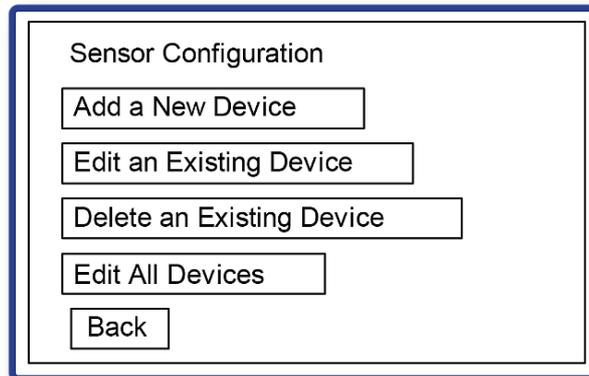
Select **Setup | More Settings** to display the sensor settings screen (see FIGURE 12 below).

6.9.1 Adding Sensors Manually

NOTE	Use the manual method of adding sensors only when manual control over the order in which the devices are displayed is required, or if only specific sensors are to be added.

---

1. Select the **Setup | More Settings | Add a new device**.

2. Choose the correct **Channel Type** from the list and set the following parameters:

   a. **Modbus Address**: set to the address set on the sensor DIP switches.

   b. **Group and Device Name**: set to identify the channel (default: Stack1 Dust).

Sensor Configuration

Add a New Device

Edit an Existing Device

Delete an Existing Device

Edit All Devices

Back

Figure 12: More Settings – Sensor settings screen.

3. Select **Save** to apply the settings and return to the main menu.

   For some sensor types, this will initiate a download to the sensor. If this fails, an error message is displayed, and the display will revert to the sensor settings screen. Recheck the **Modbus Address** and retry. If the download fails repeatedly, press **Cancel**. Refer to TROUBLESHOOTING on page 38 to diagnose the problem.

   For sensors that do not need to download configuration settings, a sensor channel will be added automatically to the Bar Graph/Text screen. Open the **Bar Graph** screen and check the sensor is reading correctly. If the sensor fails to communicate for 10 seconds, a 'No Response' alarm will appear for that device. If this happens, select **Edit an Existing Device,** and check the **Modbus Address**. If the alarm remains, refer to TROUBLESHOOTING on page 38 to diagnose the problem.

6.9.2 Editing Sensor/Device Settings

1. Select **Setup** | **More Settings | Edit an existing device**.

2. Select the **Device** to be edited and change the settings as required.

3. Select **Save** to apply the new settings to the sensor/device.

6.9.3 Deleting a Sensor/Device

1. Select **Setup** | **More Settings | Delete an existing device**.

2. Select the **Device** to be deleted, and then press ENTER to confirm.

NOTE	This will permanently remove all settings and logged data associated with the device. Entries in the Event Log for the device will be marked as deleted.

6.9.4 Editing Settings for all Sensors/Devices at Once

For large systems, it may be easier to set all sensor/device settings to the same value at the same time:

1. Select **Setup | More Settings | Edit all devices**.

2. Select the parameter to be edited and set the value.

3. Select **Save** to apply the new settings to all the sensors/devices.

6.9.5 Advanced Settings

For information on more advanced sensor/device settings, refer to the relevant control unit manual and to the Control Unit Reference manual (see SECTION 1.5.3 on page 3).

7 Quality Assurance and Sensor Self-Tests

7.1 Introduction

The control unit QA/Self-Tests menu screen provides the following maintenance and testing functions.

Function	Purpose
Maintenance mode (Start/Stop)	Puts sensor in a Maintenance mode to allowing cleaning and maintenance of the sensor.
Sensor Self-tests (Zero, Span, Short-circuit)	Run internal sensor self-tests to check the validity and reliability of measurements.
Comms check	Checks communication between the control unit and the sensor.
Scaling	Obtain an average sensor reading to scale against an isokinetic sample result.

7.2 Sensor Self-Tests

The QA/Self-Tests menu screen allows the status of self-tests to be reviewed for each sensor. These may be set to run automatically and can also be manually forced (for example, during installation or maintenance).

Self-tests provide automatic monitoring of the integrity of sensors. The control unit can be configured to provide alarm notification of self-test failures. In addition, self-tests can be manually run to check the validity of measurements before carrying out isokinetic sampling used for calibration.

7.2.1 Running Self-checks Manually

Select the **Quality Assurance / Self-Tests** icon to display this screen (FIGURE 13).
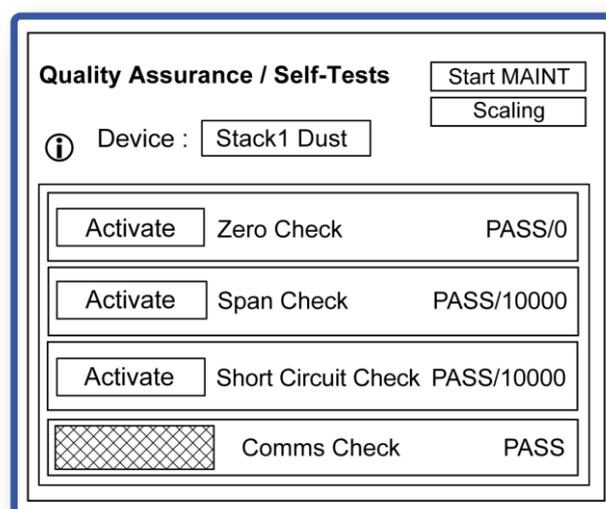
Figure 13: Quality Assurance (QA)/Self Tests screen.

The following main sensor self-tests are provided:

- Zero and Span checks: used to check for faults with the sensor hardware.
- Contamination check (short-circuit check): indicate the probe needs cleaning.

The QA/Self-Tests menu screen displays the latest self-test results for the currently selected sensor (default: Stack1 Dust). The choice of sensor is made from the **Device** drop-down list at the top of the menu screen. Press the **Activate** button next to a test to run it. For each test, the display alternates between PASS or FAIL and the numerical result of the test: the meaning of the results is explained in SECTION 7.2.4.

7.2.2 Zero and Span Checks

These checks are used to test the correct functioning of the sensor. The QA screen shows Zero / Span check results for the main probe (used for measurement). Failure of these tests suggests the sensor may be physically damaged in some way.

7.2.3 Short-circuit Check (Contamination Check)

The Short-circuit check performs a basic test for contamination between the probe rod and the base of the probe by checking for the existence of an electrical short circuit. If the Short-circuit check fails, it suggests the sensor needs cleaning and may not be providing reliable measurements.

7.2.4 Self-test Values (Pass levels)

The following table gives the numerical values required for the self-tests to pass:

Sensor Self-test	Minimum Pass Level	Optimum Level	Maximum Pass Level
Zero check	---	<10	100
Span check	9000	10000	11000
Short-circuit check	8000	10000	15000

7.2.5 Disabling Self-tests

1. Select **Setup | More Settings | Edit an Existing Device**.
2. Select the device to edit, then set **Self-tests Active** to **Yes** (or **No**).
3. Press **Save** to apply the setting and return to the main menu.

7.2.6 Disabling Sensor Check Alarms

1. Select **Setup | More Settings | Edit an Existing Device**.
2. Select the **device** to edit and set the **Zero/Span alarm?** (**Short circuit alarm?**) to **Yes** (or **No**).
3. Press **Save** to apply the setting and return to the main menu.

7.3   Comms Check

This sensor self-check tests the communication between the control unit and a selected sensor automatically and should show 'OK' at no loss.

If this test fails, check the wiring between the control unit and the sensor. Check the address and comms settings on the sensor and control unit. If the problem persists, refer to TROUBLESHOOTING on page 38 to diagnose the problem.

8 Maintenance

8.1 Safety Information

⚠	**WARNING**
	Refer all servicing and maintenance to qualified personnel.
	Only suitably trained and competent staff should be carrying out the procedures in this chapter.

⚡	**WARNING**
	Electric shock.
	The control unit contains lethal voltages! Ensure the power supply is switched off and isolated before opening the unit enclosures.

⚡	**WARNING**
	Electric shock.
	Hazardous voltage levels are still present when the main power supply fuse has failed. (Refer to the relevant control unit manual for information on how to change the fuse, provided the fuse is user replaceable.)

⚠	**WARNING**
	Danger from the process.
	It is possible that the sensors are to be installed in ducting containing process particulate that is a hazard to health.
	Unless the process conditions are known to be entirely safe, suitable precautions such as the use of breathing apparatus or duct purging/detoxifying must be employed before any entry is made into the duct for installation or maintenance purposes.
	If in doubt, consult your local Safety Officer and/or local safety procedures.

⚠	**CAUTION**
	Do not rotate the sensor by its enclosure as this can damage the sensor resulting in incorrect readings.

8.2 Maintenance Mode

Maintenance mode allows sensors to be disabled for routine maintenance. There are three ways of disabling a sensor:

- **Power OFF the control** unit: this removes power from all sensors in the network. A 'Power Interruption' alarm will be recorded in the Event log indicating the maintenance period. A gap will appear in all emission logs.

- **Disconnect the sensor from the network**: if the sensors are connected to the network using spurs, it is possible to physically disconnect the sensor from the network without affecting polling to the other sensors. A 'No

Response' alarm will be generated in the Control Unit for that channel during the maintenance period.

- **Maintenance mode menu in the control unit**: Sensors placed in Maintenance mode will be re-enabled automatically after 8 hours.

| NOTE	Switching to Maintenance mode prepares the system for manual intervention by forcing the 4-20mA output to 4mA, removing any alarm levels, and tagging internal data logs on the control unit (to enable further actions within PC-ME DUST TOOLS).

8.2.1 Placing a Sensor in Maintenance Mode

There are two ways to activate Maintenance mode: via the QA menu for a specific device or via Other Functions for all devices or a sensor selected from a list of devices.

For a specific Sensor/Device

1. Select **QA/Self Tests** to display this screen (see Figure 13 on page 30).

2. Select the required channel from the **Device** drop-down list.

3. Press the **Start Maint** button and when prompted, select **YES** to place the sensor in Maintenance mode. (The button toggles to 'Stop Maint'.)

4. When servicing is complete, click the **Stop Maint** button and when prompted, select **YES** to return the system to normal operation.

For all Sensors/Devices in a Network

1. Select **Setup | Other Functions** to display this screen (Figure 14).

2. Select **Start Maintenance (All Devices)** to put all sensors into Maintenance mode.

3. When servicing is complete, select **Stop Maintenance (All Devices)**.
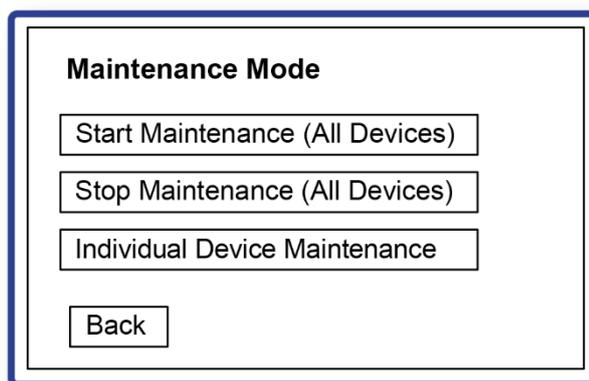
Figure 14: Maintenance Mode screen.

For an Individual Sensor/Device

1. To place individual sensors in Maintenance Mode: select **Individual Device Maintenance** to display the sensor status screen (Figure 15).
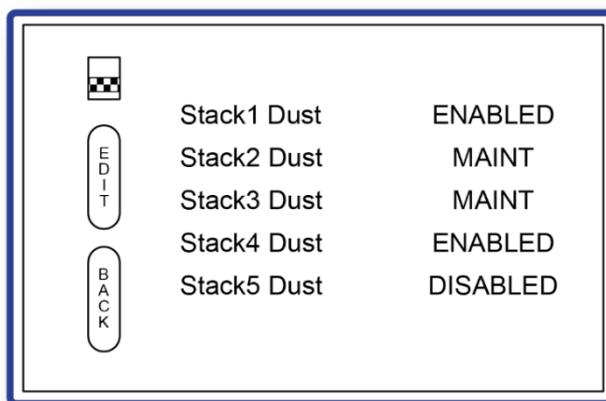
2. Use the scrollbar to highlight the required channel in the list, then press **EDIT** to put the sensor into Maintenance mode ('MAINT').

3. Press **BACK** to return to the main menu.

8.2.2 Sensor Status

The following table details the status of various functions according to sensor status:

Function	Sensor Status		
	Enabled	**Maint**	**Disabled**
Emission Alarms (control unit relays and ROM devices)	Active	Inactive	Inactive
Comms and Self-test Alarms	Active	Active	Inactive
4-20mA and AOM Outputs	Active	Set to 0	Set to 0
Bar Graph Displays	Active	Active (labelled MAINT)	Set to 0
Logging	Active	Active (labelled MAINT)[E]	Inactive
Alarm Log	---	Maintenance Alarm	---

8.3 Service Messages

The control unit generates Service Messages at various points in the life of the sensors to ensure sensors are correctly maintained. Three types of Service

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[E] *This data may be excluded from PC-ME DUST TOOLS reports.*

messages are created. The meaning of these messages is explained in the table below.

Message	Time after installation	Action required
Inspection due	6 months	Remove the sensor from the stack for inspection and cleaning
Service due	12 months	Arrange service visit by ENVEA Service Engineer or a local representative
Major Service due	4 years	Recommended return to ENVEA for testing and refurbishment if required

Messages advising inspection are displayed one month prior to the due date. If messages are not cleared within a month, 'Overdue' messages will be displayed, and the control unit LED will flash RED.

8.3.1 Clearing Service Messages

All active service messages can be cleared by entering Maintenance mode, performing the required servicing actions on the sensor, and then returning to normal operation (see page 33 for details).

8.4   Inspecting and Cleaning the Sensor

The nature of many processes is such that a build-up of particulate may develop on the sensor rod. This build-up will normally not affect the instrument's performance, but it is recommended that the build-up is periodically removed.

If the probe rod requires cleaning, remove the sensor from the duct and thoroughly clean the entire rod, paying particular attention to the area of the non-metallic insulator and about 25 mm (1") of the metal parts on either side of the insulator (the aim is to prevent shorting across the insulator). The cleaning may be performed using wire wool, or for sticky or stubborn deposits, a cleaning agent may be used (use a fast-drying solvent cleaner – *not water!*).

Always ensure that the probe rod is thoroughly dried before refitting to the ductwork.

Preparation:

Put the sensor(s) into Maintenance mode. This will force 4-20 mA outputs to 4 mA and disable relays (see SECTION 8.2 on page 33 for instructions).

At the Sensor:

1. Remove the sensor unit from the ductwork.

2. [Floating nut designs only] Ensure the lock nut is fully undone and that the floating nut is pulled back as far as possible to expose the complete insulator.

3. Thoroughly clean the probe rod and insulator as described above.

4. Clean off any excessive build-up from the sensor enclosure using a stiff brush or damp (not wet) cloth.

5. Check that the lock nut and floating nut move freely.

6. Apply a small amount of copper slip or grease to the mounting thread. This prevents binding and helps ensure a good grounding is maintained with the stack.

7. Refit the sensor unit to the ductwork (ensure the lock nut is fully tightened).

8. Ensure that the sealed connectors are secure and undamaged.

9. Inspect the connecting cables (where possible), ensure that these are not damaged or stressed.

10. Check that no moisture or foreign bodies have entered the sensor unit enclosure. Ensure that the lid is securely refitted.

At the Control Unit:

Refer to the relevant control unit manual for information on setting up, testing the functions, and maintenance (see RELATED DOCUMENTATION on page 3).

8.5   Troubleshooting

8.5.1 Communication Failure

The control unit can support many sensors and devices that may be spread over a wide area of plant. It is, therefore, essential to be methodical in the approach to locating the cause of communications problems. If you cannot get the complete network to communicate, it is best to disconnect some of the sensors and add them in one by one to see where the problem occurs.

Diagnostics

- Use the control unit to check the Sensor Comms mode (refer to the BASIC SYSTEM SETUP on page 20).

- Run **AutoDetect** and note which devices fail to be detected. If existing devices have stopped communicating, this will show up as:

  - A 'No Response' alarm at the bottom of the screen

  - A flashing red LED

  - On the QA/Self-Tests page, the Comms Check shows 'No Response'.

If the problem exists with only one or two devices, visit those devices and check:

- Cable connections

- Comms DIP switch settings

- Network address DIP switch settings.

NOTE	To prevent bus conflicts, each device must have a unique address. Devices must not use address '0'.

8.5.2 Checking Network Spurs

Where spurs are used, the internal yellow and green LEDs may be used as a service guide. The devices communicate by a set of query-response cycles. If either LED is stuck ON, this indicates a wiring error or possibly an incorrectly set bus termination switch at some point in the network.

8.5.3 Power Loss

The sensors are powered from the control unit (24V). With long cable runs, there will be voltage drop along the cable. If the voltage drop is too large (<18V), the sensor will not communicate correctly. Check the voltage at each sensor with a multimeter between the 24V and 0V pins.

NOTE	If the voltage is too low at any sensor in the network, this may cause communication problems in the whole network. Correct voltage problems by adding a PSU Repeater to the network. If you are already using a PSU Repeater, check it has not been powered OFF.

8.5.4 Frozen Readings

If a sensor reading is not updating, then

1. If there is also a 'No Response' alarm, then you have either:

a. A communication problem, which must be fixed (see SECTION 8.5.1 above).

b. A faulty sensor PCB, which needs to be replaced.

2. If there is NOT a 'No Response' alarm, then either:

a. The sensor is running a self-test (go to **QA/Self-Tests** to check this).

b. The sensor is disabled (go to **Setup | More Settings | Edit an existing device** and check the 'Enabled' setting).

c. The sensor is in 'Plant Stop' mode. a 'STOP' message is displayed under the sensor reading.

d. The control unit software is too busy reading other sensors. To solve this, power the control unit OFF, then ON again. The control unit will restart, sharing its time between all sensors on the network.

8.5.5 Sensor Reading too Low or too High

The control unit gets the reading from the sensor using digital Modbus communication, which has error checking. Therefore, if the reading is being displayed at the control unit without any 'No Response' message (and not frozen – see section above), you can be confident this is a genuine reading from the sensor.

If it is not the reading expected, consider the following:

- Adjust the sensor sensitivity (via the **More Settings** menu).

- Adjust the Scaling Factor: dust monitors do not provide a reading pre-calibrated to mg/m³. To scale the sensor reading, adjust the Scaling Factor (see APPENDIX A– SCALING on page 40 for instructions).

- Check the grounding of the sensor. For *ElectroDynamic*® sensors, the sensor body must be grounded to the stack. Poorly grounded sensors may pick up external noise-producing false high readings (see SECTION 4.3.3 on page 13).

  - Ensure the grounding strap is firmly attached to the stack.

  - If you are not using a grounding strap, the sensor relies on the thread or flange connection to provide grounding: remove any PTFE tape from the thread and remove rust from the thread and apply copper slip or grease.

NOTE	If the stack/duct is not metallic or you are concerned it may not provide a suitably earthed shield for the sensor, then please contact ENVEA or your local ENVEA representative (see the reverse of this manual for details).

Appendix A– Scaling

Introduction

VIEW 370 (373) sensors attached to a control unit can be calibrated in mg/m³ in certain applications.

NOTE	Calibration of each sensor is necessary on at least an annual basis and should be carried out either by ENVEA or an authorized representative.

The calibration (scaling) of the sensor is carried out with reference to an isokinetic sample (manual stack method). Isokinetic sampling should be carried out to the relevant standards as defined by your local environmental authority or government agency.

At its simplest level, the calibration procedure is carried out to calculate a Scaling Factor used to scale up the raw sensor readings into a true dust concentration value displayed directly in mg/m³. The use of a simple calibration (scaling) factor is possible since the response of the instrument is directly proportional to the dust concentration over a predefined range.

Calculating the Scaling Factor

The basic method to calculate a new Scaling Factor (SF) uses the following formula:

New Scaling Factor =
Current Scaling Factor x (Test Result/Sensor Average)

where

- The Test Result is the result obtained from a single sample of the stack.
- The Current Scaling Factor is the calibration (or scaling) factor entered into the instrument at the time of sampling. The default is 1.0.
- The Sensor Average is the average of the readings displayed in your control unit using the Current Scaling Factor.

  Example:

  - Sampling test result =   50 mg/m³
  - Current Scaling factor setting =   2.5
  - Instrument average =   20 units
  - New Scaling Factor =   2.5 x (50 / 20) = 6.25

Calibration Procedure

To obtain a valid Scaling Factor, carry out the following procedure:

1. Ensure that the sensors and control unit are running properly and that the plant is running normally with representative conditions.

2. Carry out an isokinetic test.

3. Calculate the average sensor response displayed in your control unit ('Sensor Average').

4. Record the sensor settings.

5. Obtain the isokinetic sampling results ('Test Result').

6. Calculate the new SF using the automatic or manual method (see above).

7. Enter the new Scaling Factor (as described below).

Entering a new Scaling Factor

1. Select **Setup | More Settings | Edit an existing device**.

2. Select the **Device** to be edited and enter the **Scaling Factor** value.

3. Select **Save** to apply the setting and return to the main menu.

Setting the Units to mg/m³

1. Select **Setup | More Settings | Edit an existing device**.

2. Select the **Device** to be edited and adjust the **Units Name** using the arrow keys.

3. Select **Save** to apply the setting and return to the main menu.

Using the Calibration Tool

The control unit software contains a Calibration tool to aid the scaling procedure (see FIGURE 22 on page 48). The tool can be used to carry out a simple calibration with a single sample and to obtain sensor averages for sample runs to send to ENVEA.

1. Open the **QA/Self-Tests** menu screen (see FIGURE 13 ON page 30).

2. Select the required **Device** from the drop-down list.

3. Click on the **Scaling** button (top right) to display this screen (FIGURE 16).

Figure 16: Calibration tool (with direction of editing).

4. Set the **Start Time** by using the LEFT/RIGHT arrow keys to move between fields and pressing the **+** / **−** keys to adjust the values.

The control unit will now search the logs and calculate and display the Sensor Average. A **Max Reading** is also displayed. By comparing the maximum reading to the sensor average, it is possible to judge if the sensor readings were steady during the period.

NOTE	The log type used for the calculation is displayed to the right of the 'Max Reading' value. – The LT log is only available on the VIEW 373.

Calculating the Scaling Factor

Calculate the Scaling Factor manually

1. Record the Sensor Average.

2. Obtain the isokinetic sampling test result.

3. Calculate the Scaling Factor (see CALCULATING THE SCALING FACTOR above).

Update the new Scaling Factor in the Control Unit

1. Select **Setup | More Settings | Edit an Existing Device**.

2. **Select the device to edit and enter the Scaling Factor.**

3. Select **Save** to store the settings and return to the main menu.

Calculating the Scaling Factor: Automatic Method

1. Obtain and enter the isokinetic sampling test result.

2. Select **Calc** to perform the calculation and display the new Scaling Factor.

    a. If the new Scaling Factor is acceptable, select **Save** to automatically update it in the sensor configuration and return to the main QA menu screen.

    b. If the new Scaling Factor is not acceptable, press **Back** to return the calculation screen and repeat the calculation procedure, or select **Cancel** to return to the main QA menu screen.

Appendix B– Menu Maps

Main Menu Screens

Figure 17: Menu map – Main menu screens and their icons.

Basic Sensor Setup

Sensor Setup

| Autodetect |
| Stack1 Dust |
| Stack2 Dust |
| Stack3 Dust |
| Stack4 Dust |
| --5-- |
| --6-- |
| More Settings |

System Setup

| English |
| Time / Date |
| Ethernet Settings |
| 4-20mA Settings |
| Relay Settings |
| Log Rates |
| Other Functions |

www.envea.global X.XX

Scan adr 15 - found 3

Address 1   Device : 370
Address 2   Device: 370
Address 3   Device: AOM

Download Stack1 Dust   21%

Stack1   Dust 1   0.04   mg/m3
Stack2   Dust 2   3.25   mg/m3

B
A
R

Scaling Factor	1.0000
Instant Warning Alarm	0.0000
Instant Limit Alarm	0.0000
Averaging Time (sec)	60
Average Warning Alarm	0.0000
Average Limit Alarm	0.0000
Alarm Delay (sec)	5
Cancel	Save

Figure 18: Menu map – Basic sensor setup.

More Sensor Settings
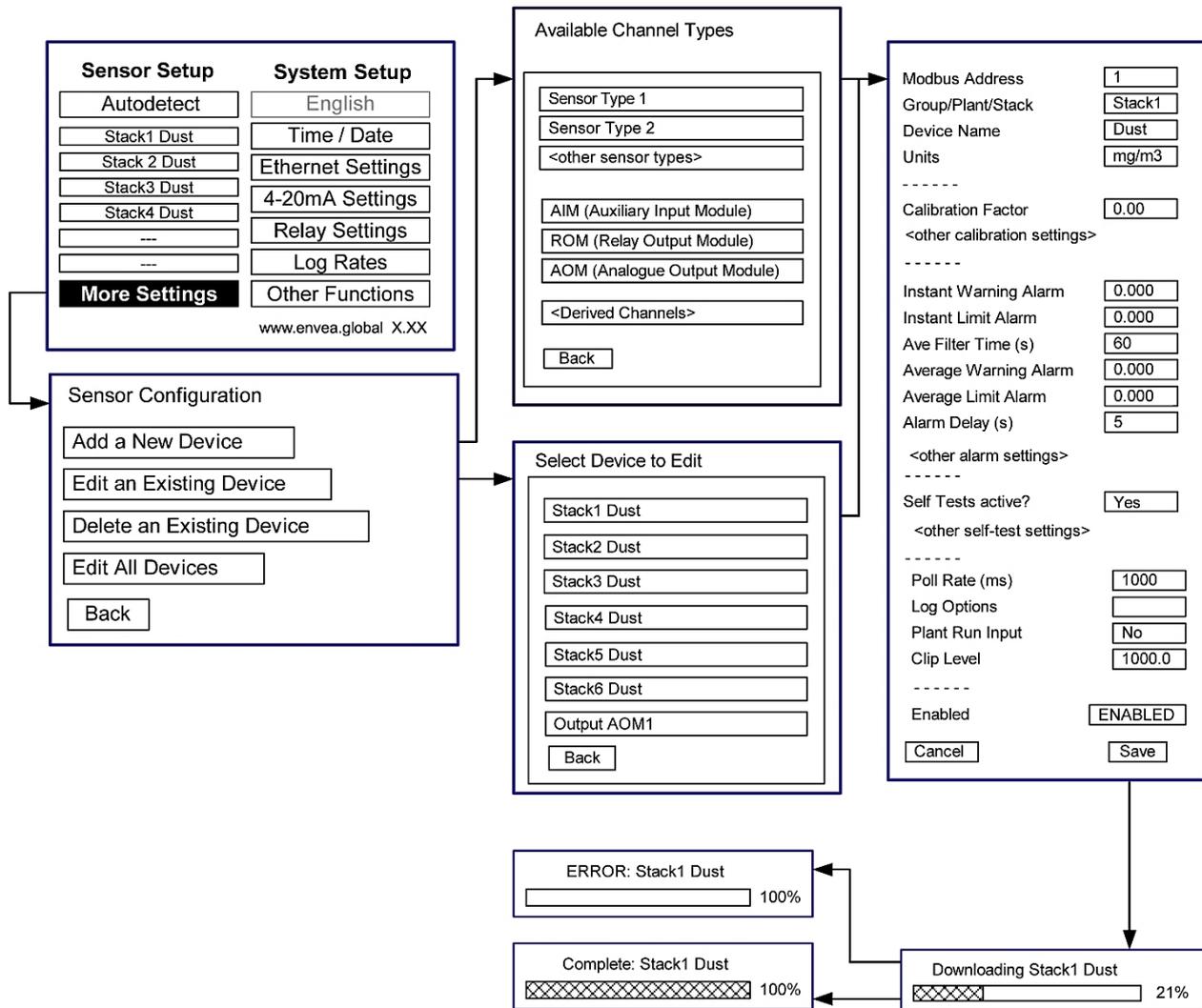
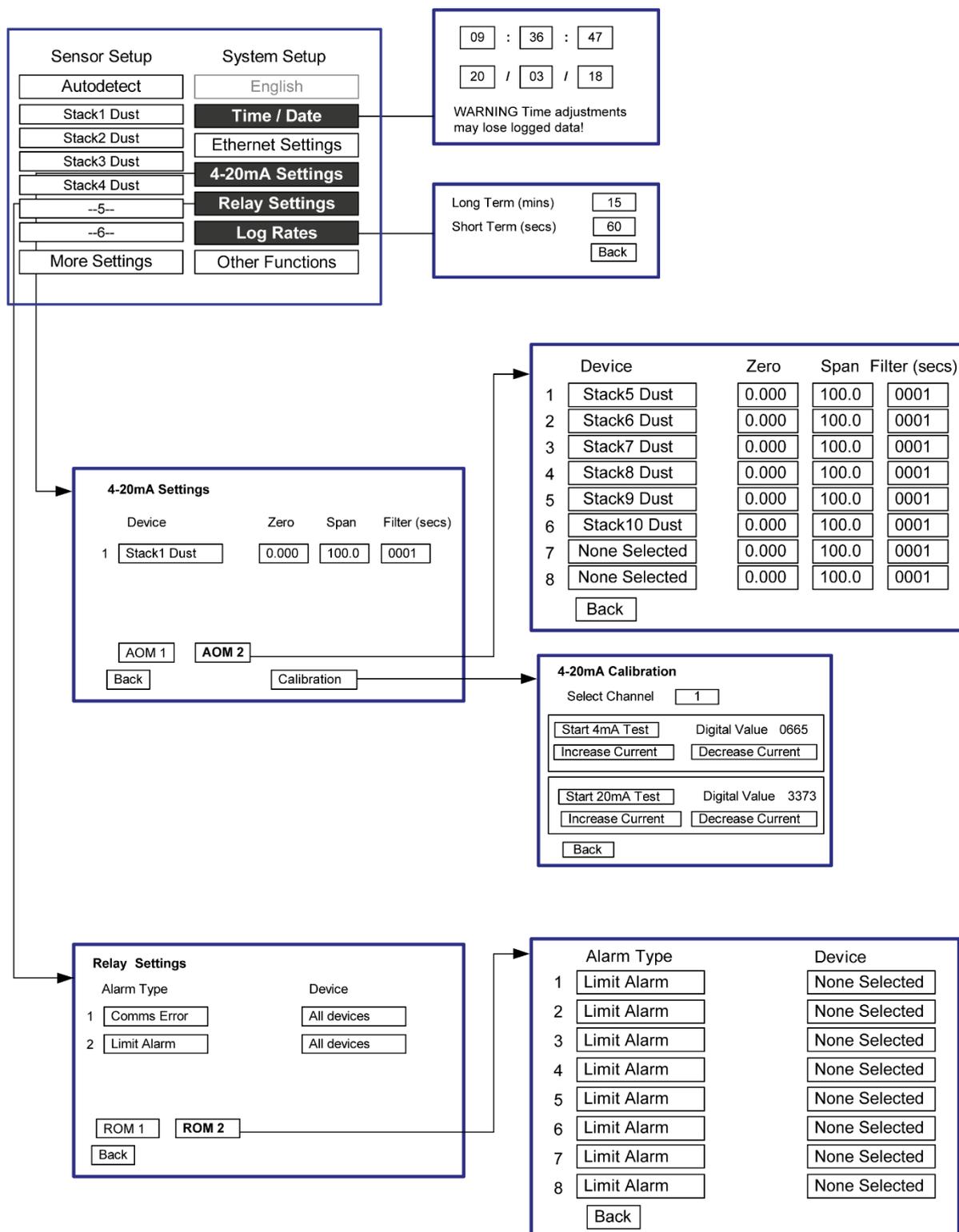*Figure 19: Menu map – More Settings menus.*

Basic System Setup

Figure 20: Menu map – System setup menus.
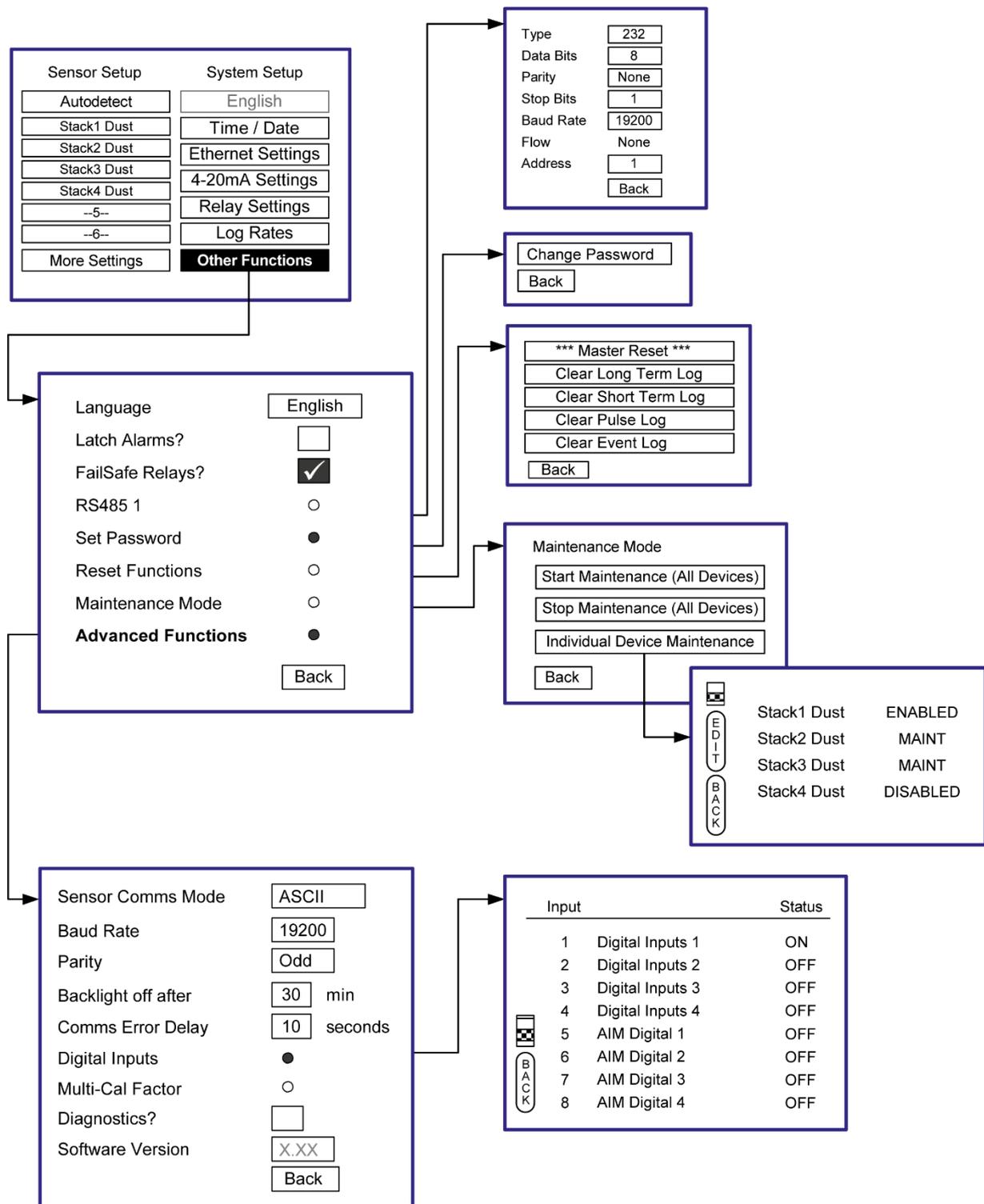
Other Functions

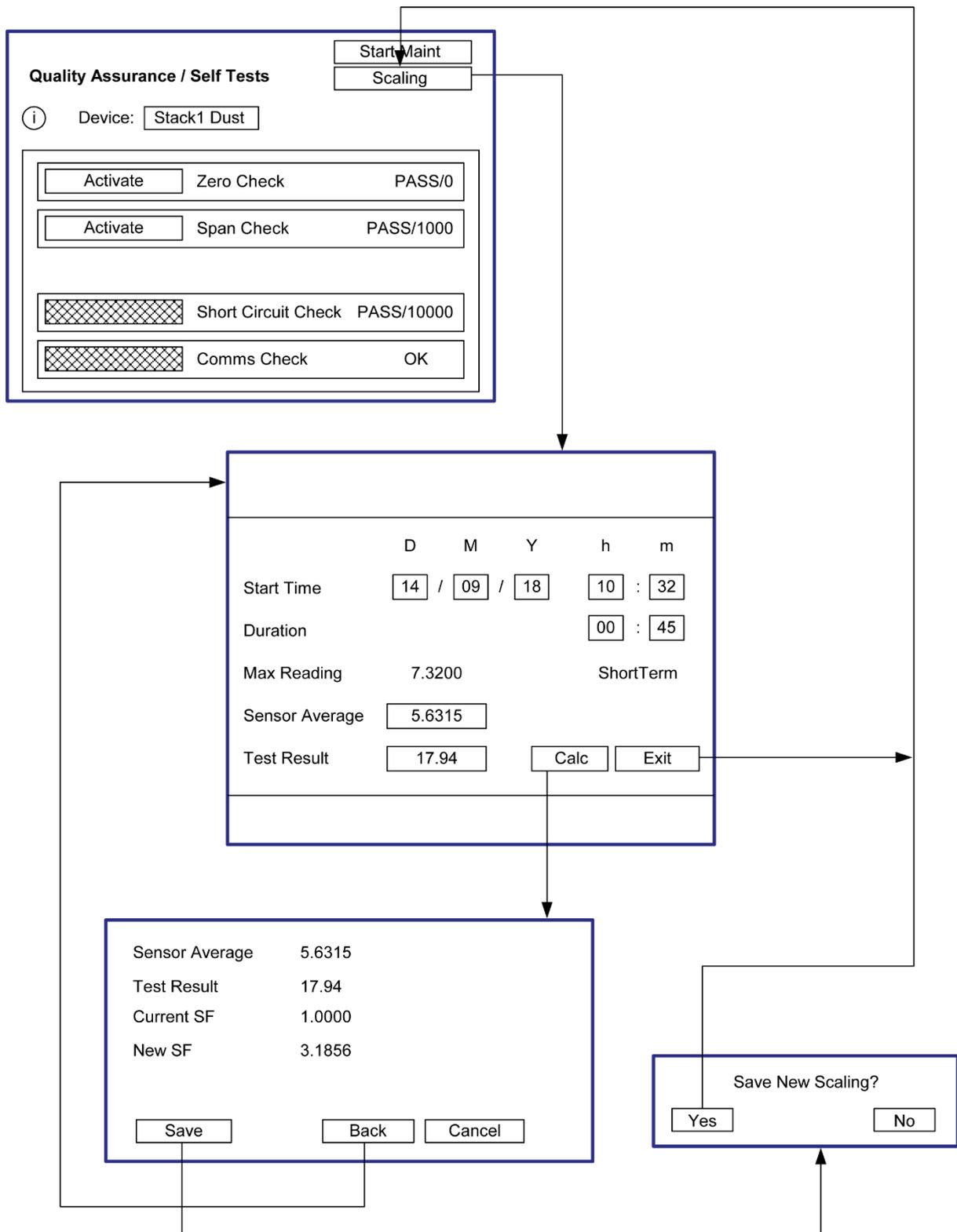*Figure 21: Menu map – Other Functions menus.*

Quality Assurance (QA) and Scaling

Start Maint
Scaling

Quality Assurance / Self Tests

(i)   Device: | Stack1 Dust |

| Activate | Zero Check | PASS/0 |
| Activate | Span Check | PASS/1000 |

| | Short Circuit Check | PASS/10000 |
| | Comms Check | OK |

	D	M	Y	h	m
Start Time	14 / 09 / 18	10 : 32
Duration			00 : 45
Max Reading	7.3200		ShortTerm
Sensor Average	5.6315
Test Result	17.94		Calc	Exit

Sensor Average	5.6315
Test Result	17.94
Current SF	1.0000
New SF	3.1856

| Save | Back | Cancel |

Save New Scaling?

| Yes | | No |

Figure 22: Menu map – QA and Scaling menus.

General Notices

Compliance

Waste of Electrical and Electronic Equipment (WEEE) Directive (2012/19/EU)

This symbol, if marked on the product or its packaging, indicates that this product must not be disposed of with general household waste.

In the European Union and many countries, separate collection systems have been set up to handle the recycling of electrical and electronic waste.

In countries outside the EU:

Dispose of this product at a collection point for the recycling of electrical and electronic equipment according to local government regulations.

RoHS Compliance Statement

ENVEA UK Ltd is compliant with the EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS Directive).

List of Materials

A list of the materials used in the construction of the product or products (if part of a system) is provided below. For more information, please contact ENVEA.

Sensor – Material	Where used
Standard variants (up to 250 °C)	
316 Stainless steel	Rod and sensor body
Aluminium alloy LM6M	Enclosure
Electronic components	Sensor electronics
Fibreglass	PCB
Nylon	Insulator (low-temperature version only)
PTFE	Insulator
Viton®	O-rings
High-temperature variants (400/800 °C)	
Alumina	High-temperature insulator
PEEK	Insulator
Sialon	High-temperature insulator

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ENVEA SERVICE AND SUPPORT CENTRES

ENVEA UK Ltd, part of the ENVEA Group (France), supports distribution and service partners worldwide where teams of ENVEA Sales and Service engineers are available to consult regarding equipment suitability and technical support.

To find a local ENVEA representative for your country or region, please contact us or visit our website at www.envea.global

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THE QUEEN'S AWARDS