ControlMaster CMF

Fieldmount universal controller/indicator



—
Fieldmount universal controller / indicator CMF310 / CMF160

Measurement made easy

Introduction

This publication provides the following commissioning instructions for the ControlMaster CMF fieldmount controller / indicator:

1 **Location**
(location requirements)
2 **Mounting**
(options and requirements)
3 **Electrical connections**
(AC min. / max. values and fuse requirements)
4 **Front panel keys**
(how to use the interface quickly and effectively)
5 **Operator level menus**
(menu familiarization)
6 **Access levels and security options**
(steps required to access Basic / Advanced level menus)
7 **Diagnostic messages**
(by icon and message type)
8 **Controller menus – Basic / Advanced levels**
(menu overview / map)
9 **Indicator menus – Basic / Advanced levels**
(menu overview / map)

For more information

Further publications for the ControlMaster CMF are available for free download from:
www.abb.com/measurement

(see links and reference numbers below) or by scanning these codes:

CMF160 indicator

CMF310 controller

	Search for or click on
User Guide ControlMaster CM30, CM50 and CMF310 Universal process controllers – ¼, ½ DIN and fieldmount	IM/CM/ED-EN
User Guide ControlMaster CM15 and CMF160 Universal process indicator/DIN and fieldmount	IM/CM/I-EN
Data Sheet ControlMaster CMF310 Universal process controller, fieldmount	DS/CMF310-EN
Data Sheet ControlMaster CMF160 Universal process indicator, fieldmount	DS/CMF160-EN

To access the IAMA help & support portal please scan the following code:

Health & Safety

Safety precautions

Be sure to read, understand and follow the instructions contained within this manual before and during use of the equipment. Failure to do so could result in bodily harm or damage to the equipment.

WARNING Installation and maintenance of this product must only be conducted by personnel authorized to work on electrical installations and in accordance with relevant local regulations.

Potential safety hazards

Electrical

WARNING To ensure safe use when operating this equipment, the following points must be observed:

- Up to 240V AC may be present. Be sure to isolate the supply before removing the terminal cover.
- Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and / or temperature.

Safety advice concerning the use of the equipment described in this manual or any relevant Material Safety Data Sheets (where applicable) can be obtained from the Company, together with servicing and spares information.

Safety standards

This product has been designed to satisfy the requirements of IEC61010-1:2010 3rd edition 'Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use' and complies with US NEC 500, NIST and OSHA.

Safety conventions

WARNING In this manual, a warning is used to indicate a condition which, if not met, could cause serious personal injury and / or death. Do not proceed beyond a warning until all conditions have been met.

CAUTION A caution is used to indicate a condition which, if not met, could cause minor or moderate personal injury and / or damage to the equipment. Do not proceed beyond a caution until all conditions have been met.

NOTE A note is used to indicate important information or instructions that should be considered before operating the equipment.

EC Directive 89/336/EEC

Electrical – In order to meet the requirements of the EC Directive 89/336/EEC for EMC regulations, this product must be used in an industrial environment.

End-of-life disposal



The recorder contains a small lithium battery that must be removed and disposed of responsibly in accordance with local environmental regulations.

The remainder of the recorder does not contain any substance that causes undue harm to the environment and must be disposed of in accordance with the Directive on Waste Electrical and Electronic Equipment (WEEE). It must not be disposed of in Municipal Waste Collection.



ABB is committed to ensuring that the risk of any environmental damage or pollution caused by any of its products is minimized as far as possible. The European Waste Electrical and Electronic Equipment (WEEE) Directive that initially came into force on 13 August 2005 aims to reduce the waste arising from electrical and electronic equipment; and improve the environmental performance of all those involved in the life cycle of electrical and electronic equipment.

In conformity with European local and national regulations, electrical equipment marked with the above symbol may not be disposed of in European public disposal systems after 12th August 2005

Cleaning

The complete recorder can be hosed down if it has been installed to IP66 / NEMA 4X standards – see section 2, page 5. Warm water and a mild detergent can be used.

Symbols

Symbols that appear on this product are shown below:

	Protective earth (ground) terminal.
	Both direct and alternating current supply.
	This symbol, when noted on a product, indicates a potential hazard which could cause serious personal injury and / or death. The user should reference this instruction manual for operation and / or safety information.
	This symbol, when noted on a product enclosure or barrier, indicates that a risk of electrical shock and / or electrocution exists and indicates that only individuals qualified to work with hazardous voltages should open the enclosure or remove the barrier.
	Recycle separately from general waste under the WEEE directive

Restriction of Hazardous Substances (RoHS)

	The European Union RoHS Directive and subsequent regulations introduced in member states and other countries limits the use of six hazardous substances used in the manufacturing of electrical and electronic equipment. Currently, monitoring and control instruments do not fall within the scope of the RoHS Directive, however ABB has taken the decision to adopt the recommendations in the Directive as the target for all future product design and component purchasing.

UL Class I, Division 2 (when ordered)

This equipment is suitable for use in Class I, Division 2, groups A, B, C, and D hazardous locations or non-hazardous locations only.

WARNING! Do not open equipment in an explosive atmosphere.

This equipment must be installed in accordance with the pertinent clauses of the National Electrical Code and/or Canadian Electrical Code for hazardous locations.

The terminal cover retaining screw must be tightened to a torque of 50 cN.m.

WARNING! Explosion hazard! Substitution of components may impair suitability for class I, division 2

UL Class I, Division 2 (si commandé)

Cet équipement est adapté uniquement à une utilisation en zones dangereuses de classe I, division 2, groupes A, B, C et D ou non dangereuses.

ATTENTION ! Ne pas ouvrir l'équipement dans une atmosphère explosive.
Cet équipement doit être installé conformément aux clauses du Code électrique national pour les Etats-Unis ou au Code électrique canadien pour le Canada relatives aux zones dangereuses.

La vis de fixation du couvercle de protection de borne doit être serrée à un couple de 50 cN.m.

ATTENTION ! Risque d'explosion ! Le remplacement de certains composants peut compromettre la conformité à la classe I, division 2.

Specification

Mechanical data
Protection
IP66 / NEMA 4X

Dimensions
Height – 194 mm (7.64 in) minimum (excluding glands)
Width – 214 mm (8.42 in) – excluding glands
Depth – 98 mm (3.85 in) door closed – minimum (excluding fixing brackets)
Weight – 1.5 kg (3.3 lb)

Materials of construction
Glass-filled polycarbonate

Weight
1.5 kg (3.3 lb).

Electrical
Power supply ranges
100 to 240 V AC max., 50 / 60 Hz ± 10 %
(90 to 264 V AC, 45/65 Hz)

Power consumption
25 W max.

Inputs / Outputs
Analog inputs
2 optional

Analog outputs
2 optional
Galvanically isolated from the rest of the circuitry, 500 V for 1 minute. Range-programmable source and range 0 to 22 mA, maximum load 750 Ω @ 20 mA

Relay outputs
4 standard, 2 optional
Fully-programmable. Contacts rated at 5A @ 110 / 240 V.
Standard relays are changeover.
Optional relays are normally closed (N/C).

Digital inputs / outputs
6 standard, user-programmable as input or output
Minimum input pulse duration: 125 ms
Input:
— Volt-free
(contact open > 10 MΩ, contact closed < 100 kΩ)
— 24 V DC
(1-signal 15 to 30 V, 0-signal –3 to 5 V)
— TTL
(low: 0 to 0.8 V / high: 2 to 5 V)
— Conforms to IEC 61131-2

Output:
— Open collector
— 30 V, 100 mA max. switched
— Conforms to IEC 61131-2

Update rate:
— 125 ms

Environmental data
Ambient operating temperature:
0 to 55 ºC (32 to 131 ºF)

Ambient operating humidity:
Up to 95 % RH non-condensing

Storage temperature:
– 20 to 70 °C (–4 to 158 °F) without sensor
0 to 55 °C (41 to 131 °F) with sensor

Approvals, certification and safety
uULus

General safety
EN61010-1
Pollution Degree 2
Insulation Class 1

EMC
Emissions & immunity
Meets requirements of IEC61326 for an industrial environment

1 Location

Locate and install in a clean, dry, well ventilated and vibration-free location providing easy access. Avoid rooms containing corrosive gases or vapors, for example, chlorination equipment or chlorine gas cylinders.

WARNING – Bodily injury The CMF310 controller (or CMF160 indicator) is not fitted with a switch – an isolation device such as a switch or circuit breaker conforming to local safety standards must be fitted to the final installation. It must be fitted in close proximity to the CMF310 controller (or CMF160 indicator), within easy reach of the operator and marked clearly as the isolation device for the CMF310 controller (or CMF160 indicator).

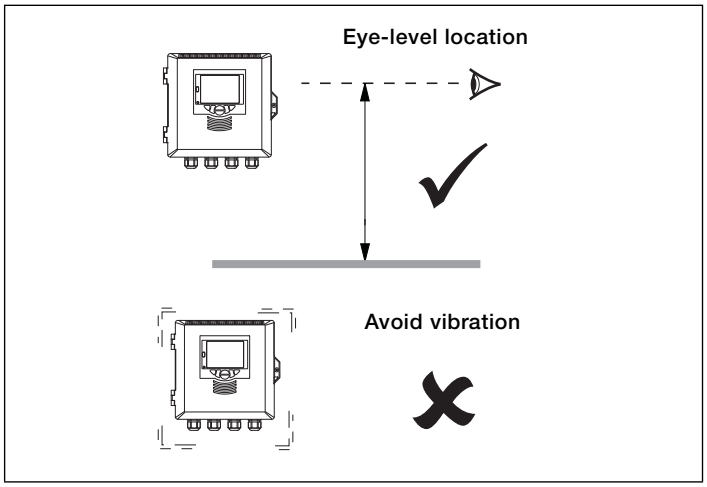


Fig. 1 Siting

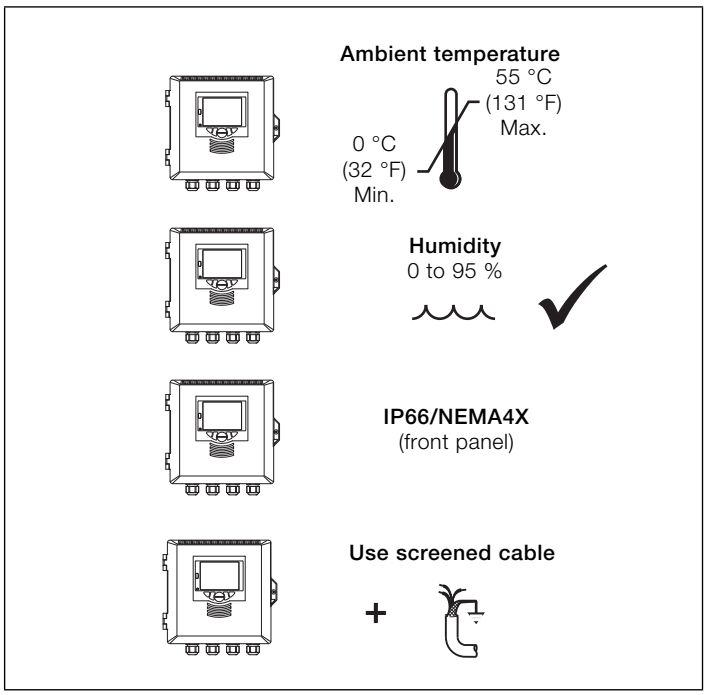


Fig. 2 Environmental requirements

2 Mounting

Panel mounting

Tighten (both) panel clamp anchor screws against the panel to a torque value of 0.5 to 0.6 Nm (4.42 to 5.31 lbf/in.).

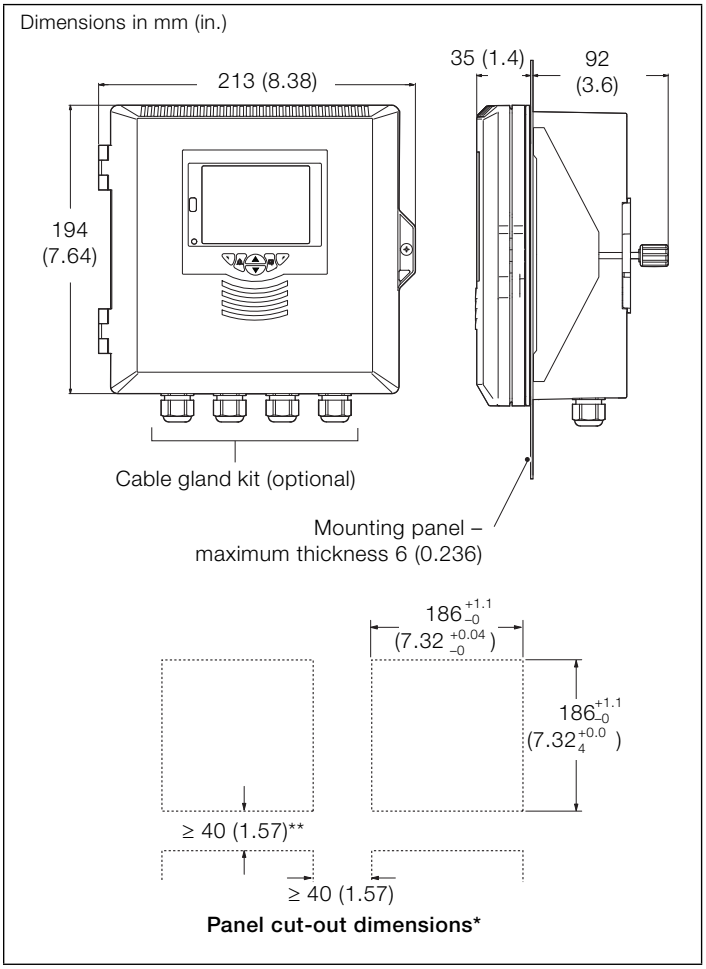


Fig. 3 Panel-mount options

Pipe mounting

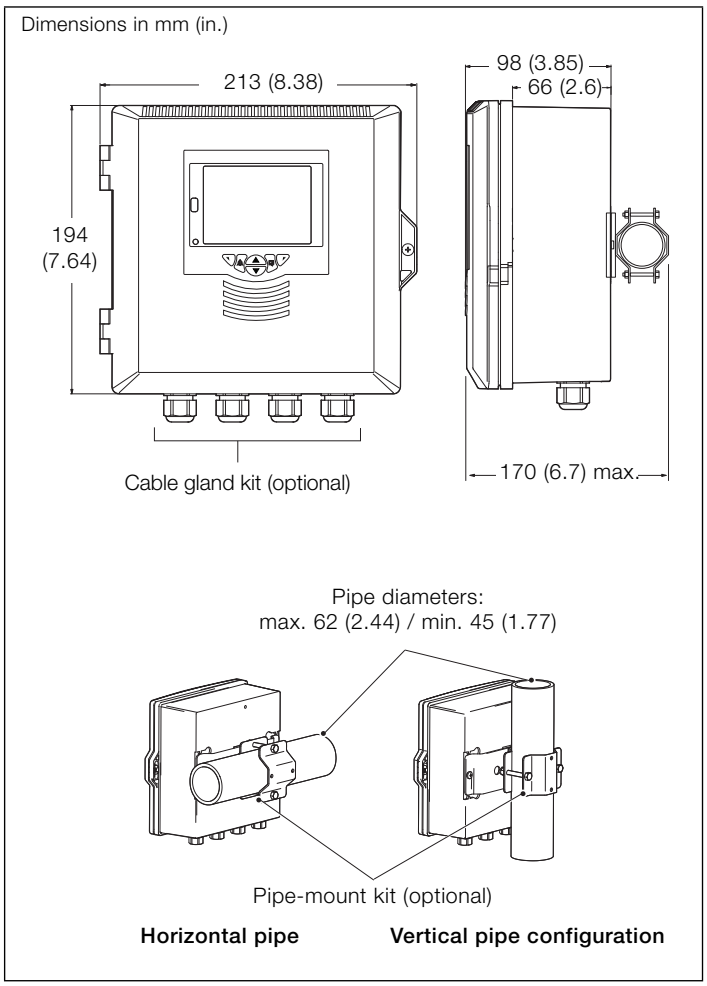


Fig. 4 Pipe-mount options

Wall mounting

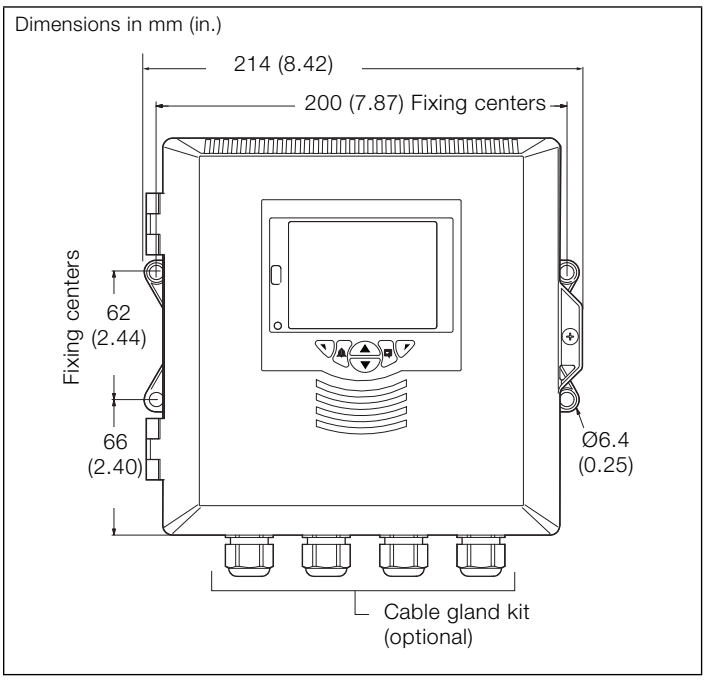


Fig. 5 Wall-mount option

Weathershield (pipe- and wall-mount installations)

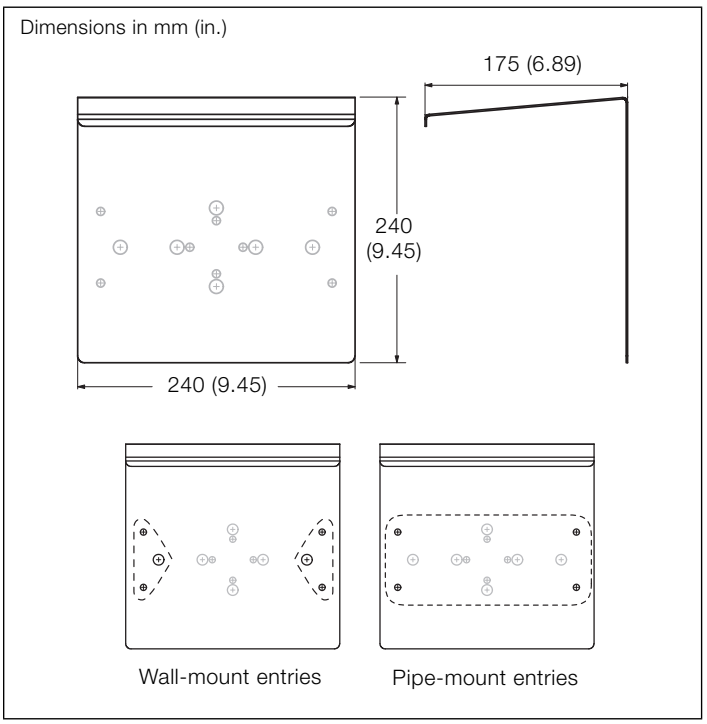


Fig. 6 Weathershield (pipe- and wall-mount installations)

3 Electrical connections

WARNING – Bodily injury

- If the CMF310 controller (or CMF160 indicator) is used in a manner not specified by the Company, the protection provided by the equipment may be impaired.
- Remove all power from supply, relay, any powered control circuits and high common mode voltages before accessing or making any connections. Use cable appropriate for the load currents: 3-core cable rated 3 A and 75 °C (167 °F) minimum, and voltage: 100 / 240 V that conform to either IEC 60227 or IEC 60245, or to the National Electrical Code (NEC) for the US, or the Canadian Electrical Code for Canada. The terminals accept cables 0.14 to 2.5 mm^2 (26 to 14 AWG).
- Ensure the correct fuse is fitted – see Fig. 8 for fuse details.
- Replacement of the internal battery must be carried out by an approved technician only.
- The CMF310 controller (or CMF160 indicator) conforms to Insulation Class I of IEC 61010.
- All connections to secondary circuits must have insulation to required local safety standards. After installation, there must be no access to live parts, for example, terminals. Use screened cable for signal inputs and relay connections. Route signal leads and power cables separately, preferably in an earthed (grounded) flexible metal conduit.
- All equipment connected to the CMF310 controller (or CMF160 indicator) terminals must comply with local safety standards (IEC 60950, EN61010-1).

USA and Canada Only

- The supplied cable glands are provided for the connection of signal input and ethernet communication wiring ONLY.
- The supplied cable glands and use of cable / flexible cord for connection of the mains power source to the mains input and relay contact output terminals is not permitted in the USA or Canada.
- For connection to mains (the mains input and relay contact outputs), use only suitably rated field wiring insulated copper conductors rated min. 300 V, 14 AWG, 90 °C. Route wires through suitably rated flexible conduits and fittings.

Accessing the connection board

IMPORTANT (NOTE) Before fitting cable glands, identify the connections required and cable gland entries to be used.

Referring to Fig. 7:

1. Using a pozi-drive screwdriver, turn the (captive) electronics section door retaining screw (A) 1/4 turn counter-clockwise and open the door.
2. Turn the cover plate retaining screw (B) anti-clockwise until the cover plate (C) can be removed.
3. Make connections to connection board terminals – see Fig. 8, page 8.

   WARNING In order to comply with General Safety Insulation Class 1, the mains earth wire must be connected to the protective earth terminal block ⏚ as shown, **NOT** to the case stud.

4. Refit cover plate (C) and secure it by turning retaining screw (B) clockwise until finger-tight. Close the door to the electronics section and turn door retaining screw (A) 1/4 turn clockwise to secure.

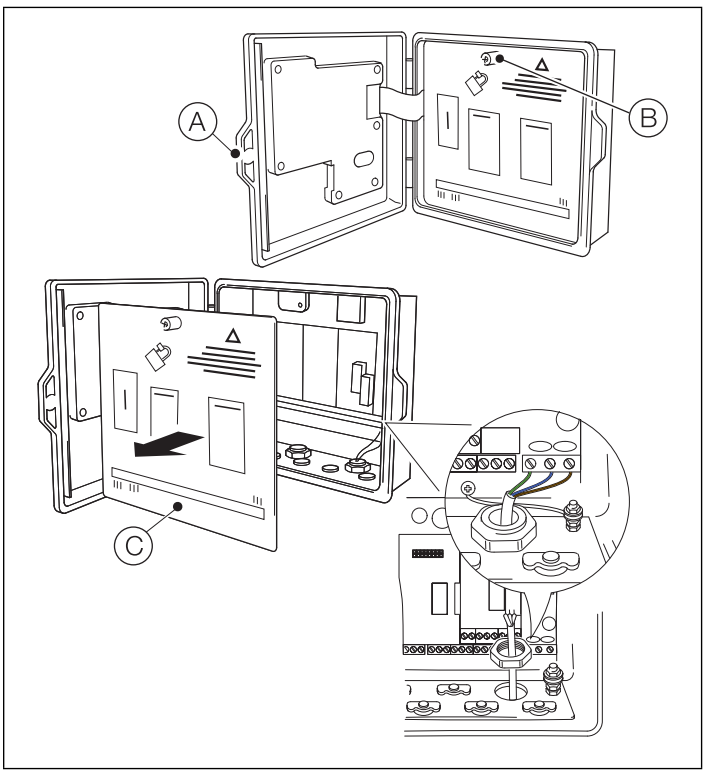


Fig. 7 Accessing the connection board and making electrical connections

Electrical connection board

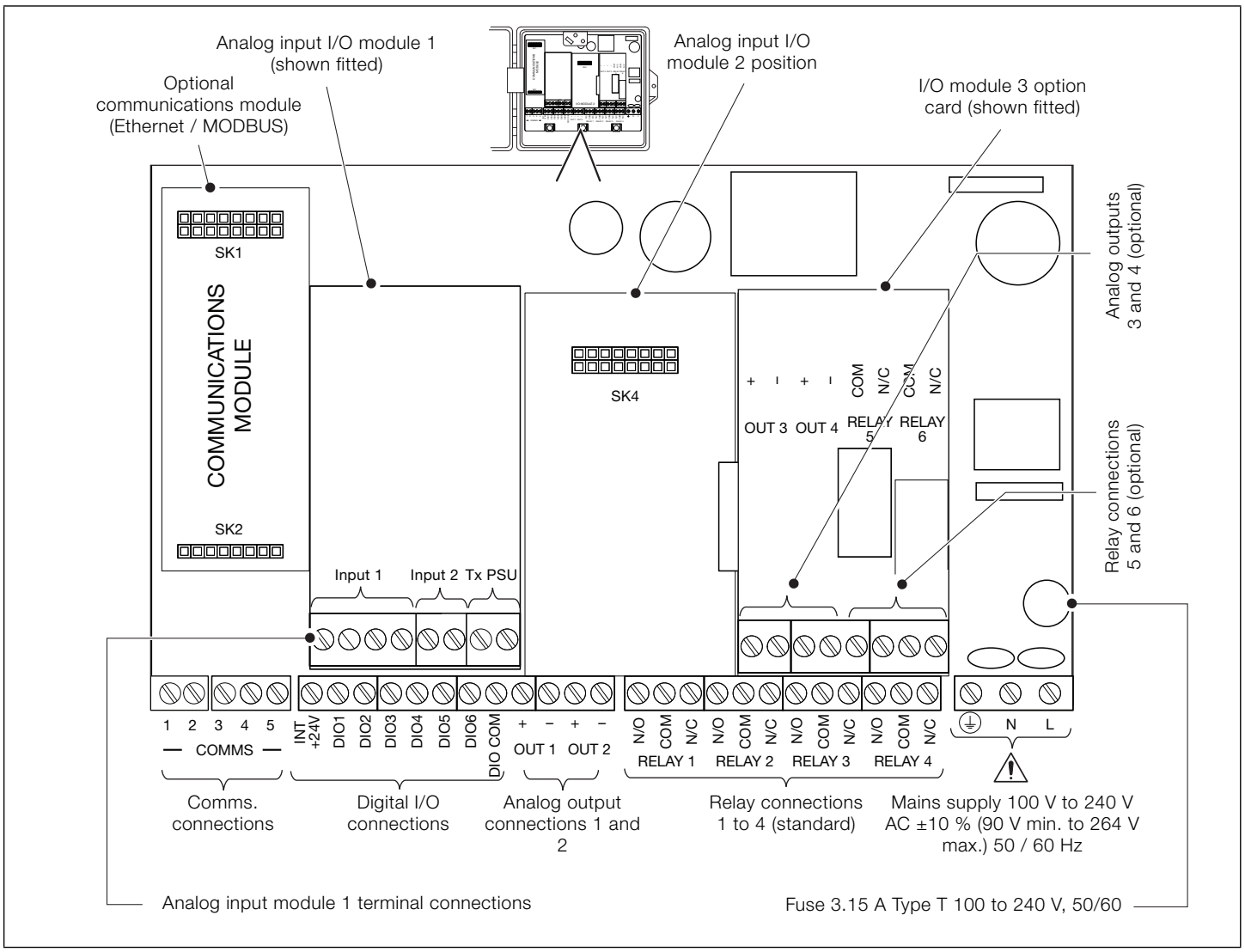
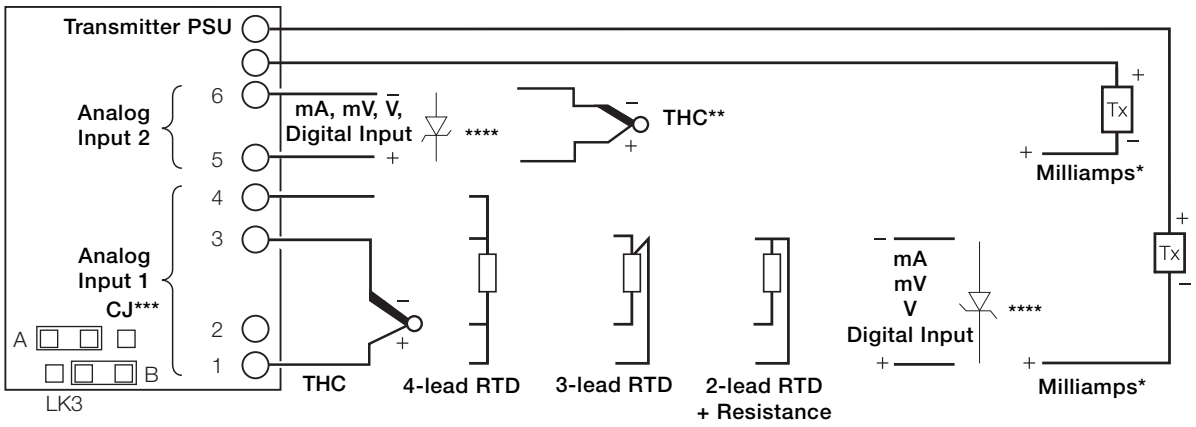


Fig. 8 CMF160 / 310 electrical connections

Analog inputs



* Using internal power supply

** Analog Input 2 can be used only with THC inputs if Analog Input 1 is also used as a THC input.

*** To connect the CJ, put LK3 into position B. To disconnect the CJ put LK3 into position A.

**** For mA input types, to ensure loop continuity when the CMF310 controller (or CMF160 indicator) is switched off, fit a 2V7 Zener diode

Note. 3-lead RTD: 3 leads must have equal resistance, not exceeding 20 Ω each.

Fig. 9 Standard Analog Inputs (1 and 2)

Digital I/O, relays and analog output connections

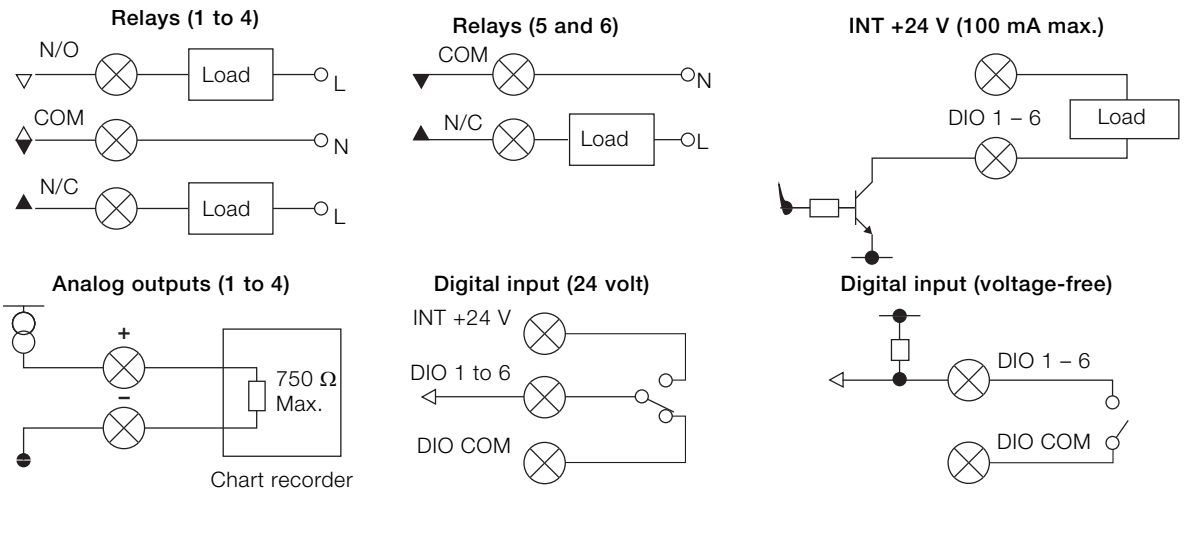
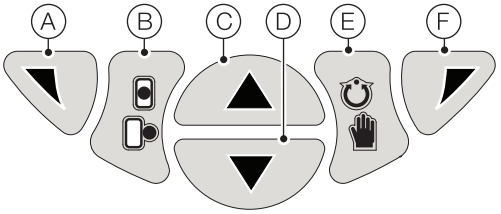
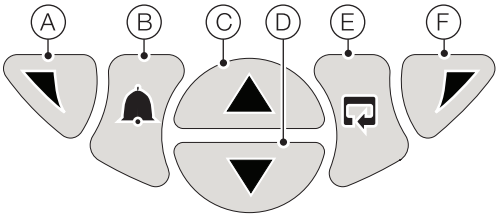


Fig. 10 Digital I/O, relays and analog output connections

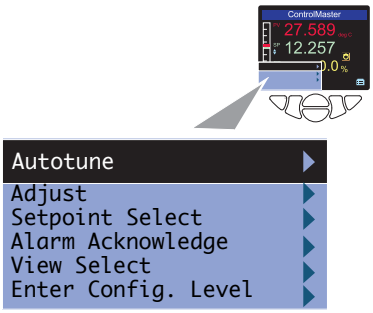
4 Front panel keys

Operation is performed using the keys on the front panel. These enable local navigation and selection of software options on all displays, acknowledgement and monitoring and access to all menus. All diagnostic messages are displayed in the *Diagnostic View*. Prompts associated with active keys are displayed on each screen. *Diagnostic* and *display icon descriptions* are included in this document.

Key functions for controller and indicator overlays are described in the following table:

Controller		**Indicator**
		
Key	**Function**	
(A)	Navigation key – left and *Operator Level* access key	
(B)	Local / Remote setpoint mode selection key	Alarm acknowledge key – acknowledges any active and unacknowledged alarms
(C)	Up key – navigate up menus and increase displayed values	
(D)	Down key – navigate down menus and decrease displayed values	
(E)	Auto / Manual control mode selection key	Scroll key – scrolls through each available operator view
(F)	Navigation key – right and programmable Soft Key At menu level, selects the highlighted menu item, operation button or edits a selection When a Soft Key option is assigned to key (5), the *Advanced Level* must be accessed using the *Operator Level* access key (1).	

5 Operator level menus



Operator level menus are used to adjust setpoint(s) and output(s), select setpoints, select the view and to enter *Basic* and *Advanced* modes (via the *Access* level).

To access Operator Level menus:

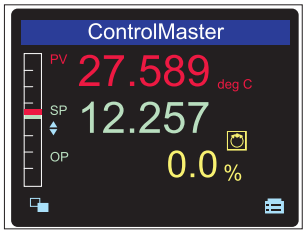
1. From the *Operator Page*, press (F) to view the available menus.
2. Use the (C)/(D) keys to scroll through the menus and menu options.
3. Press (F) to expand menu levels and to select menu options or press (A) to return to the previous menu.

Menu functions are described in the following table:

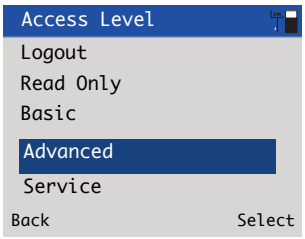
Autotune	Used to start or stop an autotune routine. This menu is enabled only if *Autotune* mode is *On*.
Adjust	Enables a value to be adjusted using the (C)/(D) keys. The ▲▼ icon next to a value indicates the current adjustable selection.
Setpoint Select	Selects the local setpoint to be used (displayed only if more than 1 local setpoint is configured).
Alarm Acknowledge	Acknowledges any active but unacknowledged alarms.
View Select	Selects the *Operator* view to be displayed.
Enter Config. Level	Displays the *Access Level* selection views – see Section 6, page 11 for security options.

6 Access levels and security options

Access levels



Operator View mode



Access Level menus

The Access level menus are used to enter *Basic* and *Advanced* menus, view all parameters in *Read Only* mode and to logout (back to *Operator View* mode).

To view Access Level menus:

1. From the *Operator View* mode:
   - press ⊡,
     OR
   - press ⊡ to display the available *Operator* menus and use the ⊡ / ⊡ keys to scroll to the *Enter Config*. mode, then press ⊡.
     The *Access Level* menus are displayed.
2. Use the ⊡ / ⊡ keys to scroll to the required / permitted level of access (*Basic* or *Advanced*), then press ⊡.
3. Refer to page 14 for Controller / Indicator menu options or page 15 for *Indicator* menu options.

Notes.

A 5-minute time-out period enables a user to return to the *Operator View* and re-access the previous menu (displayed at exit) without re-entering the password. For periods over 5-minutes (or if *Logout* is selected), a password must be entered to access protected levels.

Service level is reserved for factory-use only and is not enabled for end-users.

Logout	Displayed after *Basic* or *Advanced* level are accessed. Logs the user out of *Basic* or *Advanced* level. If passwords are set, a password must be entered to access these levels again after selecting Logout.
Read Only	Enables all parameter settings to be viewed.
Basic	Enables access to the Basic level and adjustment of PID parameters, enabling autotuning configuration and adjustment of alarm trip points.
Advanced	Enables configuration access to all parameters.
Service	Reserved for use by authorized service personnel.

Security options

Passwords can be set to enable secure end-user access at 2 levels: *Basic* and *Advanced* The *Service* level is password-protected and reserved for factory-use only.

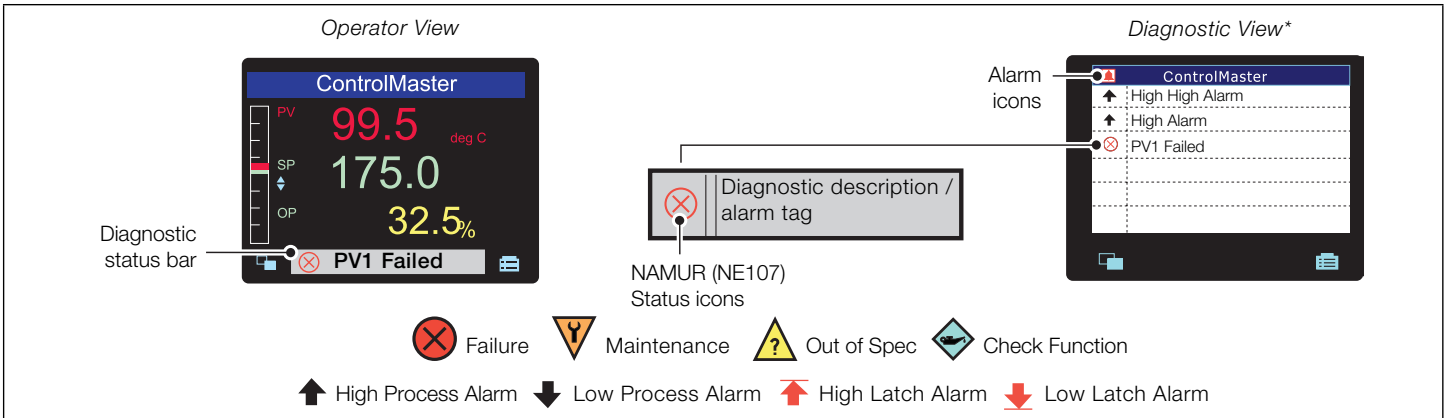
Passwords are set, changed or restored to their default settings at the *Device Setup / Security Setup* parameter – see page 14 (CMF310 controller) or 15 (CMF160 indicator).

IMPORTANT (NOTE) When the CMF310 controller (or CMF160 indicator) is powered-up for the first time the *Basic* and *Advanced* level levels can be accessed without password protection. Protected access to these levels must be allocated on-site as required.

7 Diagnostic messages

The controller (or indicator) is programmed to display diagnostic messages that provide information on servicing requirements and any other conditions that develop during operation.
When a diagnostic condition is detected, the associated NAMUR icon, plus the highest priority diagnostic message, is displayed in the *Status Bar* when in *Operator View*. A list of all currently active diagnostic alarm states are displayed in the *Diagnostic View*.

Diagnostic status bar / Diagnostic View



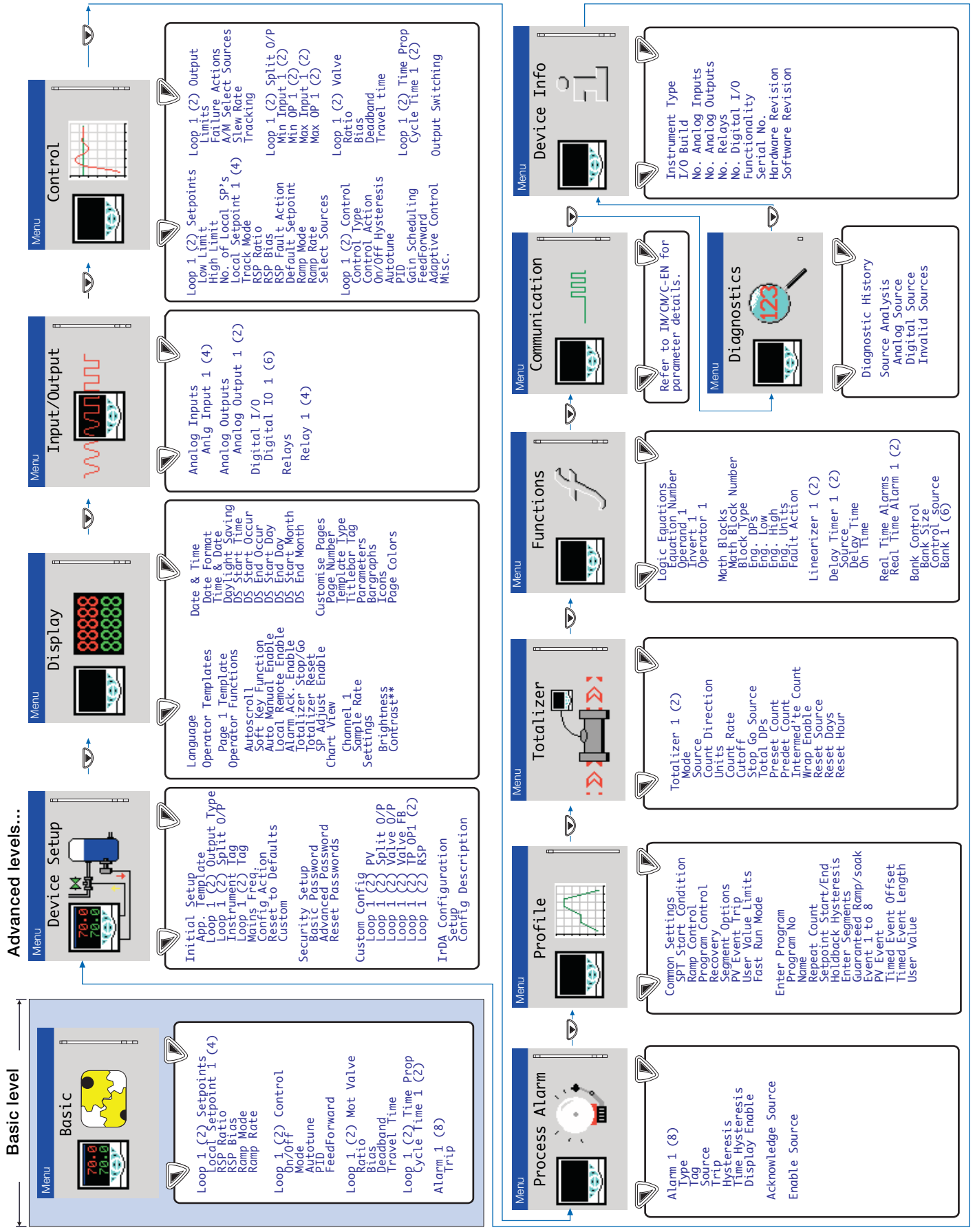
*The *Diagnostic View* is selected via the *Operator Level* (see Section 4, key (A)) / *View Select* menu.

Diagnostic messages

Icon	Number / Message	Possible Cause	Suggested Action
⊗	242.004 ADC 1 Failed	Temporary or permanent failure of analog to digital converter on the main I/O board.	Cycle power to device. If problem persists replace main I/O board, contact local service organization.
⊗	240.005 ADC 2 Failed	Temporary or permanent failure of analog to digital converter on the option board.	Cycle power to device. If problem persists replace option board, contact local service organization.
⊗	250.000 (248.001) PV 1 (2) Failed	Problem with Input assigned to Loop 1 (2) PV. Broken sensor leads, defective input source or input signal out of permitted range.	Check wiring. Check input source. Check if input signal is outside permitted limits.
⊗	246.002 (244.003) RSP 1 (2) Failed	Problem with Input assigned to Loop 1 (2) Remote Setpoint. Broken sensor leads, defective input source or input signal out of permitted range.	Check wiring. Check input source. Check if input signal is outside permitted limits.
⊗	222.014 (220.015) CJ 1 (2) Failed	Error in Cold junction measurement associated with AIN1 (AIN3). Wiring fault or defective sensor.	Check cold junction device is correctly fitted. Ensure I/P 2(4) is turned off. Replace CJ sensor.
⊗	226.012 (224.013) DV 1 (2) Failed	Problem with input assigned to Loop 1 (2) disturbance variable. Broken sensor leads, defective input source or input signal out of permitted range.	Check wiring. Check input source. Check if input signal is outside permitted limits.
⊗	230.010 (228.011) WV 1 (2) Failed	Problem with input assigned to Loop 1 (2) wild variable. Broken sensor leads, defective input source or input signal out of permitted range.	Check wiring. Check input source. Check if input signal is outside permitted limits.
⊗	234.008 (232.009) PFB 1 (2) Failed	Problem with input assigned to Loop 1 (2) position feedback. Broken sensor leads, defective input source or input signal out of permitted range.	Check wiring. Check input source. Check if input signal is outside permitted limits.
⊗	216.016 NV Error Proc Bd	Failure of non-volatile memory on processor / display board or permanent corruption of its data.	Check all configuration parameters and correct any errors. Acknowledge error. If problem persists contact local service organization.

Icon	Number / Message	Possible Cause	Suggested Action
⊗	214.017 NV Error Main Bd	Failure of non-volatile memory on main board or permanent corruption of its data.	Check calibration of AO1 and AO2. Recalibrate if necessary. Acknowledge error. If problem persists contact local service organization.
⊗	212.018 NV Error Opt Bd 1	Failure of non-volatile memory on option board 1 or permanent corruption of its data.	Check calibration of AIN1 and AIN2. Recalibrate If necessary. Acknowledge error. If problem persists contact local service organization.
⊗	210.019 NV Error Opt Bd 2	Failure of non-volatile memory on option board 2 or permanent corruption of its data.	Check calibration of AIN3 and AIN4. Recalibrate If necessary. Acknowledge error. If problem persists contact local service organization.
⊗	208.020 NV Error Comm Bd	Failure of non-volatile memory on communications board or permanent corruption of its data.	Acknowledge error. Check communications board is correctly identified by device. If problem persists contact local service organization.
⊗	206.021 NV Error SW Key 1	Failure of non-volatile memory on Software key 1 or permanent corruption of its data.	Acknowledge error. Check software key functionality is enabled. If problem persists contact local service organization.
⊗	204.022 NV Error SW Key 2	Failure of non-volatile memory on Software key 2 or permanent corruption of its data.	Acknowledge error. Check software key functionality is enabled. If problem persists contact local service organization.
⊗	202.023 NV Error SW Key 3	Failure of non-volatile memory on Software key 3 or permanent corruption of its data.	Acknowledge error. Check software key functionality is enabled. If problem persists contact local service organization.
⊗	Config Error	The configuration contains a source that is no longer present or valid.	Check invalid sources in diagnostics menu – see section 7, page 12. Check configuration, check I/O required for configuration is present and correct any illegal use of the invalid signal by changing configuration or fitting additional option cards.
◈	054.044 (052.045) Tune Lp1 (2) Fail	Autotune has failed to complete its sequence or has calculated values outside of its permitted range.	Check process response. Consider if Autotune dynamic setting should be changed. Ensure process is stable and repeat Autotune. If problem persists tune the loop manually.
◈	062.042 (058.043) Tune Lp1 (2) Noise	Autotune has failed due to excessive process or measurement noise.	Check input wiring. Ensure process is stable and repeat Autotune. If problem persists, tune the loop manually.
◈	070.040 (066.041) Tuner 1 (2) Abort	Autotune has been aborted by the user.	If required, perform a fresh Autotune or take no further action.
◈	078.038 (074.039) Adaptive 1 (2) Warn	Parameters calculated by adaptive control have changed by more than the permitted amounts.	Check process for issues that may have caused a large change in its dynamics, for example, a blocked valve. Reset adaptive control. Perform a fresh autotune.
◈	086.036 (082.037) Oscillation 1 (2)	Abnormal oscillations in the control loop.	Check process. Perform new manual or Autotune.
◈	094.034 (090.035) Valve 1 (2) Sticking	Motorized valve travel time is significantly slower than configured time.	Check valve to identify reason for sticking. Check correct travel time is entered in configuration.
▽	168.026 (166.027) (164.028) Tuner 1 Phase 1..3	Autotune is in progress.	Autotune can be aborted if required by selecting *Manual* control mode.
▽	160.030 (158.031) 156.032) Tuner 2 Phase 1..3	Autotune is in progress.	Autotune can be aborted if required by selecting *Manual* control mode.
▽	162.029 (154.033) Tuner 1 (2) Pass	Autotune has completed successfully and calculated new control parameters.	Acknowledge diagnostic message.
▽	178.025 In Configuration	The device is currently in the configuration mode.	For use with remote access via digital communications.

8 Controller – Basic / Advanced level menus



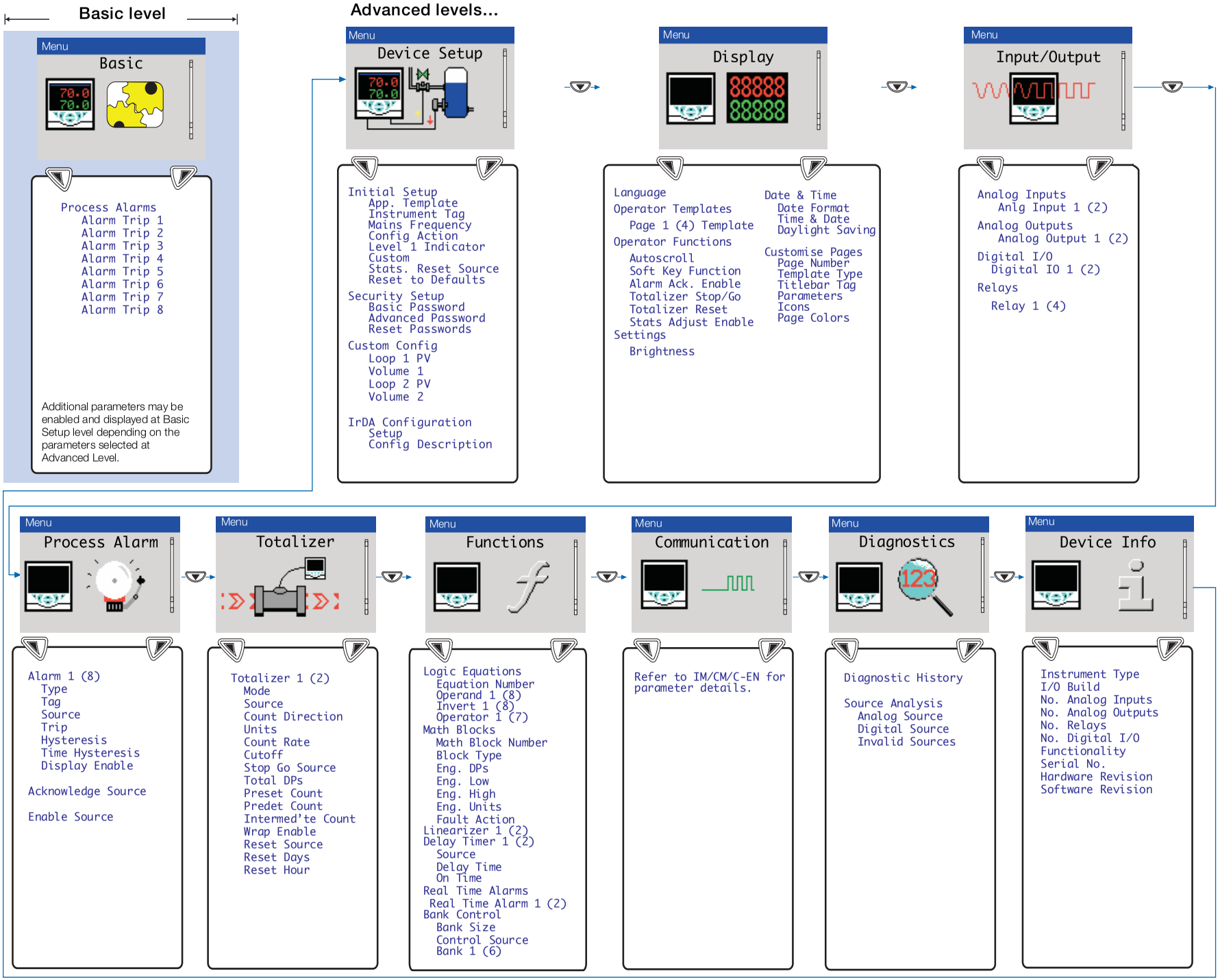

Basic level
Advanced levels...
Menu
Basic
Process Alarms
Alarm Trip 1
Alarm Trip 2
Alarm Trip 3
Alarm Trip 4
Alarm Trip 5
Alarm Trip 6
Alarm Trip 7
Alarm Trip 8
Additional parameters may be enabled and displayed at Basic Setup level depending on the parameters selected at Advanced Level.
Menu
Device Setup
Initial Setup
App. Template
Instrument Tag
Mains Frequency
Config Action
Level 1 Indicator
Custom
Stats. Reset Source
Reset to Defaults
Security Setup
Basic Password
Advanced Password
Reset Passwords
Custom Config
Loop 1 PV
Volume 1
Loop 2 PV
Volume 2
IrDA Configuration
Setup
Config Description
Menu
Display
Language
Operator Templates
Page 1 (4) Template
Operator Functions
Autoscroll
Soft Key Function
Alarm Ack. Enable
Totalizer Stop/Go
Totalizer Reset
Stats Adjust Enable
Settings
Brightness
Date & Time
Date Format
Time & Date
Daylight Saving
Customise Pages
Page Number
Template Type
Titlebar Tag
Parameters
Icons
Page Colors
Menu
Input/Output
Analog Inputs
Anlg Input 1 (2)
Analog Outputs
Analog Output 1 (2)
Digital I/O
Digital IO 1 (2)
Relays
Relay 1 (4)
Menu
Process Alarm
Alarm 1 (8)
Type
Tag
Source
Trip
Hysteresis
Time Hysteresis
Display Enable
Acknowledge Source
Enable Source
Menu
Totalizer
Totalizer 1 (2)
Mode
Source
Count Direction
Units
Count Rate
Cutoff
Stop Go Source
Total DPs
Preset Count
Predet Count
Intermed'te Count
Wrap Enable
Reset Source
Reset Days
Reset Hour
Menu
Functions
Logic Equations
Equation Number
Operand 1 (8)
Invert 1 (8)
Operator 1 (7)
Math Blocks
Math Block Number
Block Type
Eng. DPs
Eng. Low
Eng. High
Eng. Units
Fault Action
Linearizer 1 (2)
Delay Timer 1 (2)
Source
Delay Time
On Time
Real Time Alarms
Real Time Alarm 1 (2)
Bank Control
Bank Size
Control Source
Bank 1 (6)
Menu
Communication
Refer to IM/CM/C-EN for parameter details.
Menu
Diagnostics
Diagnostic History
Source Analysis
Analog Source
Digital Source
Invalid Sources
Menu
Device Info
Instrument Type
I/O Build
No. Analog Inputs
No. Analog Outputs
No. Relays
No. Digital I/O
Functionality
Serial No.
Hardware Revision
Software Revision

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