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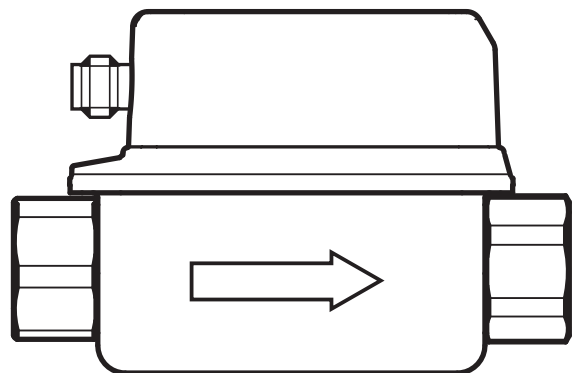
Operating instructions
Vortex flow meter

efector 300[®]

SVxxx4

UK

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Technical data, approvals, accessories and further information at www.ifm.com.

1 Preliminary note

1.1 Symbols used

► Instructions

> Reaction, result

[...] Designation of pushbuttons, buttons or indications

→ Cross-reference



Important note

Non-compliance can result in malfunction or interference.



Information

Supplementary note.

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1.2 Warning signs used



CAUTION

Warning of personal injury.

Slight reversible injuries may result.

2 Safety instructions

- Please read this document prior to set-up of the unit. Ensure that the product is suitable for your application without any restrictions.
- If the operating instructions or the technical data are not adhered to, personal injury and/or damage to property can occur.
- Improper or non-intended use may lead to malfunctions of the unit or to unwanted effects in your application. That is why installation, electrical connection, set-up, operation and maintenance of the unit must only be carried out by qualified personnel authorised by the machine operator.
- In order to guarantee the correct condition of the device for the operating time it is necessary to use the device only for media to which the wetted materials are sufficiently resistant (→ Technical data).
- The responsibility whether the measurement devices are suitable for the respective application lies with the operator. The manufacturer assumes no liability for consequences of misuse by the operator. Improper installation and use of the units result in a loss of the warranty claims.

CAUTION

For medium temperatures above 50 °C (122 °F) some parts of the housing can heat up to over 65 °C (149 °F). Risk of burns.

- ▶ In this case do not touch the unit.
- ▶ Protect the housing against contact with flammable substances and unintentional contact.
- ▶ Do not press the pushbuttons manually; instead use another object (e.g. ballpoint pen).

3 Functions and features

The unit monitors water-based fluids (water, deionised water, cooling water). It detects the two process categories volumetric flow and medium temperature.



Pressure Equipment Directive (PED):

The units comply with the Pressure Equipment Directive and are designed and manufactured for group 2 fluids in accordance with the sound engineering practice. Use of group 1 fluids on request.

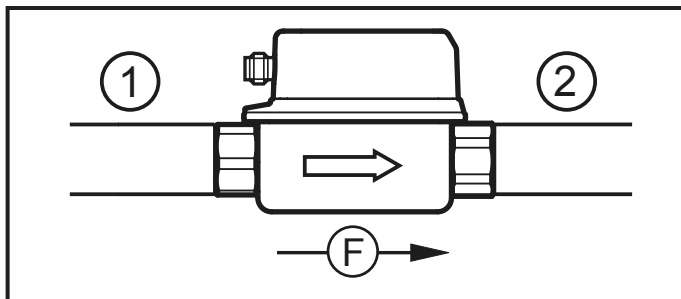
4 Function

- The unit detects the volumetric flow quantity based on the Vortex measuring principle.
- It features an IO-Link interface.
- The unit displays the current flow and temperature. It generates 2 output signals according to the parameter setting:
 - OUT1 / IO-Link: Analogue signal for temperature
 - OUT2: Analogue signal for volumetric flow quantity

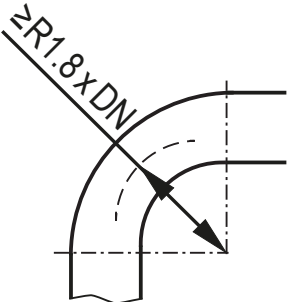
5 Installation

- ▶ Flow in the direction of the arrow. Observe the installation direction.
- ▶ Make sure that pipe and sensor have the same internal diameter.
- ▶ Avoid deposits, accumulated gas and air in the pipe system. Install the unit so that the measuring pipe is always completely filled with medium.
- ▶ Install in front of or in a rising pipe.
- ▶ Recommended tightening torque: 30 Nm
- ▶ Avoid disturbances on the inlet and outlet side. To do so, provide for the following inlet and outlet pipe lengths:

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DN = nominal width of the pipe
R = radius

Disturbance	Inlet pipe length (1)	Outlet pipe length (2)
Non-ideal bend	$\geq 5 \times \text{DN}$	$\geq 1 \times \text{DN}$
Ideal bend 	$\geq 0.5 \times \text{DN}$	
Multiple bends (2 x 90°)	$\geq 15 \times \text{DN}$	
Reduction of internal pipe diameter	$\geq 15 \times \text{DN}$	$\geq 15 \times \text{DN}$
Valve or pump	$\geq 25 \times \text{DN}$	

- ▶ Mount the unit in a way that no mechanical forces are exerted on the pipe. To do so, use angle brackets if required.
 - For direct installation, fix the unit on the surface using 4 self-tapping screws M4 DIN 7500. Maximum insertion depth in the housing: 5.5 mm.

- For installation using the fixing element: ifm mounting accessories at www.ifm.com.

► Avoid the following installation positions:

- Directly in front of a falling pipe.
- In a falling pipe.
- At the highest point of the pipe system.
- Directly in front of the spout of the pipe.
- On the suction side of a pump.

6 Electrical connection



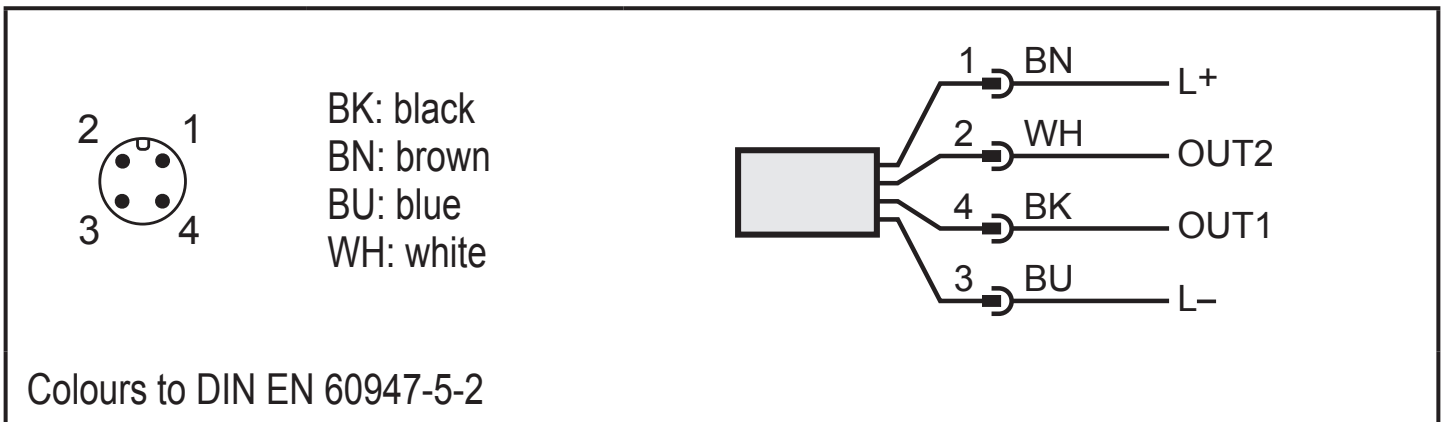
The unit must be connected by a qualified electrician.

The national and international regulations for the installation of electrical equipment must be adhered to.

Voltage supply according to EN 50178, SELV, PELV.

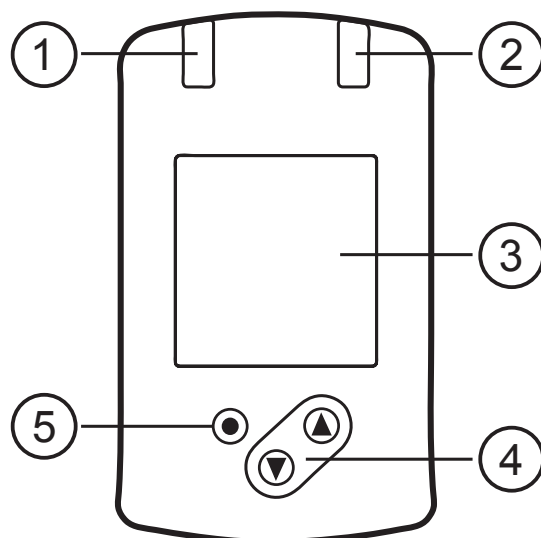
► Disconnect power.

► Connect the unit as follows:



Pin 1	L+
Pin 3	L-
Pin 4 (OUT1)	<ul style="list-style-type: none"> • Analogue signal for temperature • IO-Link
Pin 2 (OUT2)	<ul style="list-style-type: none"> • Analogue signal for volumetric flow quantity

7 Operating and display elements



1 and 2: LEDs

No function

3: TFT display

- Display of current process values (volumetric flow quantity, temperature)
- Display of the parameters and parameter values

4: Buttons [▲] and [▼]

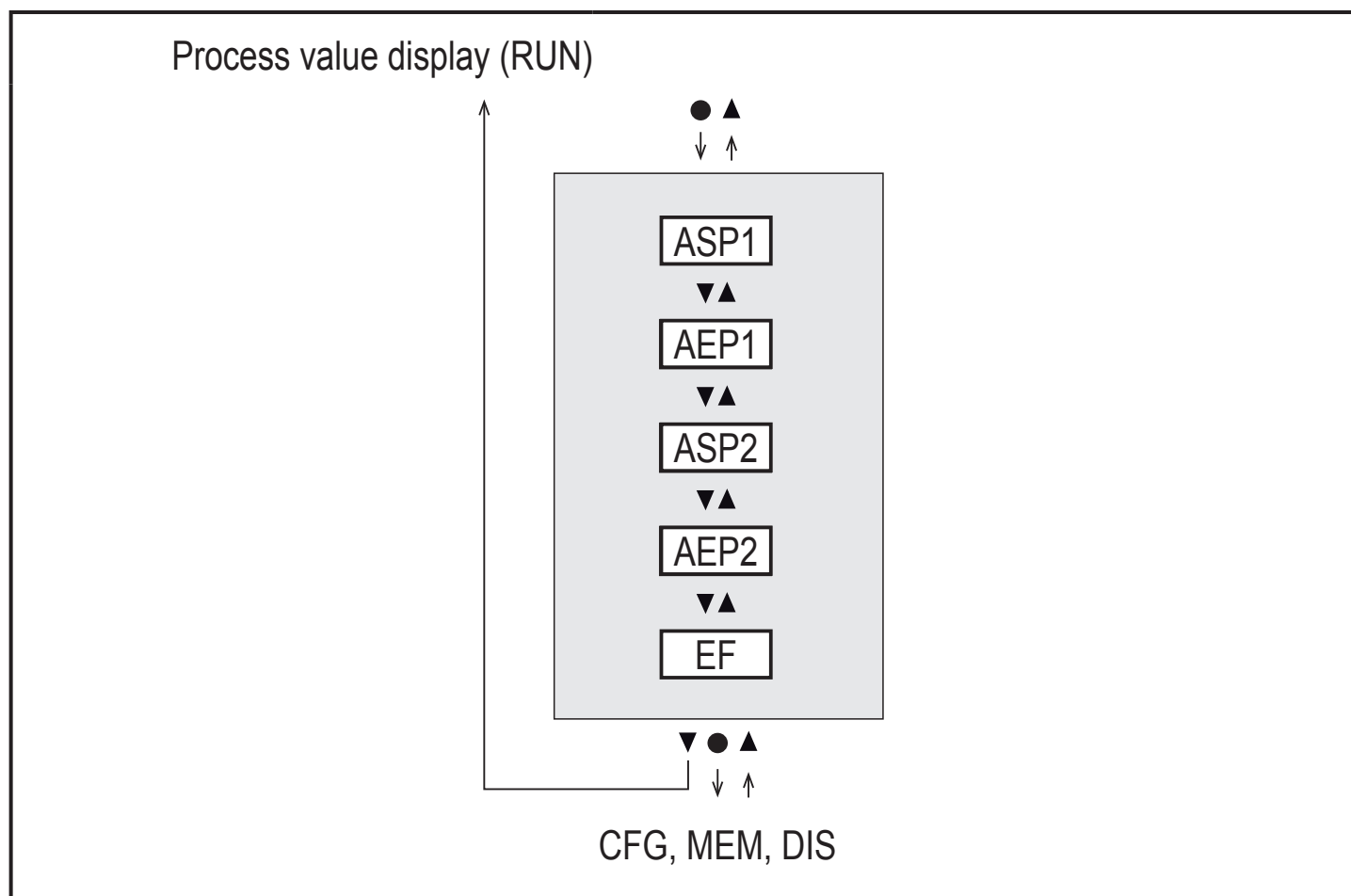
- Select parameters
- Change parameter values (hold button pressed)
- Change of the process value display in the normal operating mode (Run mode)
- Locking / unlocking (press buttons simultaneously > 10 seconds)

5: Button [●] = Enter

- Change from RUN mode to the main menu
- Change to setting mode
- Acknowledgement of the set parameter value

8 Menu

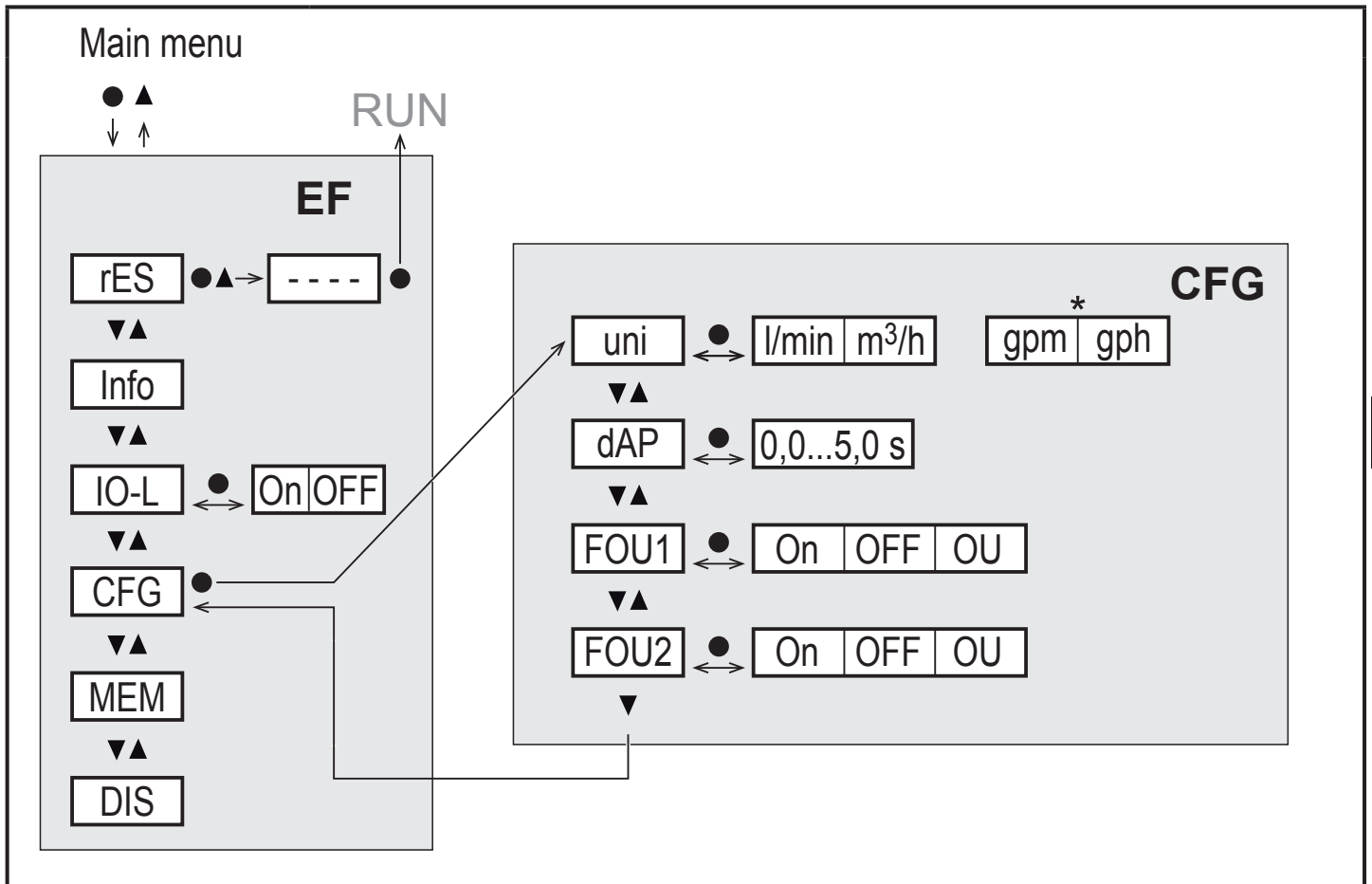
8.1 Main menu



8.1.1 Explanation main menu

ASP1	Analogue start value for temperature
AEP1	Analogue end value for temperature
ASP2	Analogue start value for volumetric flow
AEP2	Analogue end value for volumetric flow
EF	Extended functions. Opening of the lower menu level.

8.2 Extended functions – basic settings



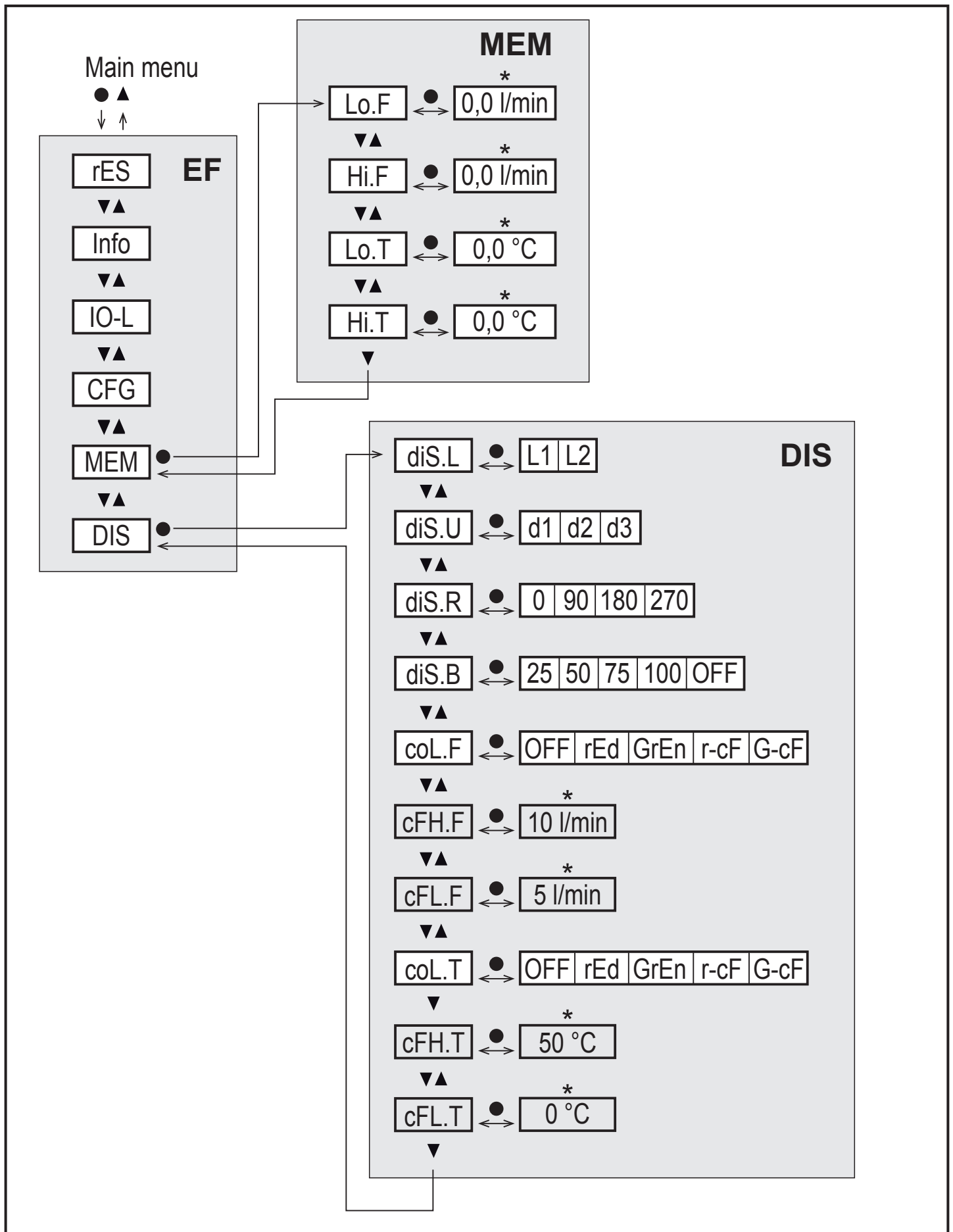
* For SVx6xx units: gpm / gph

rES	Restoring the factory settings
Info	Device information
IO-L	Activate IO-Link communication
CFG	Submenu basic settings
MEM	Submenu min/max memory
DIS	Submenu display settings

8.2.1 Explanation basic settings (CFG)

uni	Standard unit of measurement for volumetric flow
dAP	Measured value damping in seconds (only for volumetric flow)
FOU1	Behaviour of output OUT1 in case of an error
FOU2	Behaviour of output OUT2 in case of an error

8.3 Extended functions – min / max memory – display



* For SVx6xx units: gpm, °F

■ The parameters are only displayed when selected r-cF oder G-cF.

8.3.1 Explanation min/max memory (MEM)

Lo.F	Minimum value of the flow measured in the process
Hi.F	Maximum value of the flow measured in the process
Lo.T	Minimum value of the temperature measured in the process
Hi.T	Maximum value of the temperature measured in the process

8.3.2 Explanation display function (DIS)

diS.L	Standard layout of the display(L1: flow or L2: flow and temperature)	
diS.U	Update rate of display	
diS.R	Display rotation	
diS.B	Display brightness	
coL.F	Colour configuration volumetric flow	
coL.T	Colour configuration temperature	
	OFF	No colour change
	rEd	Process value always red
	GrEn	Process value always green
	r-cF	Display red if measured value between limit values cFL...cFH
	G-cF	Display green if measured value between limit values cFL...cFH
cFH.F	Upper limit value for colour change flow	Only if r-cF or G-cF is selected.
cFL.F	Lower limit value for colour change flow	
cFH.T	Upper limit value for colour change temperature	
cFL.T	Lower limit value for colour change temperature	

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9 Parameter setting

Parameters can be set before installation and set-up of the unit or during operation.



If you change parameters during operation, this will influence the function of the plant.

- Ensure that there will be no malfunctions in your plant.

During parameter setting the unit remains in the operating mode. It continues to monitor with the existing parameter until the parameter setting has been completed.



The parameters can also be set via the IO-Link interface.

9.1 Parameter setting in general

1. Change from RUN mode to the main menu	[●]
2. Selection of the requested parameter	[▲] or [▼]
3. Change to setting mode	[●]
4. Modification of the parameter value	[▲] or [▼] > 1 s
5. Acknowledgement of the set parameter value	[●]
6. Return to the RUN mode	> 30 seconds (timeout) or press [▲] + [▼] simultaneously until the RUN mode is reached.

10 Troubleshooting

Display	Type	Description
[Err]	Error	Unit faulty / malfunction
Off	Error	Supply voltage too low or setting diS.B = OFF
[PArA]	Error	Parameter setting outside the valid range
[cr.UL]	Error	Measured value smaller than -30 %, critically low temperature
[cr.OL]	Error	Measured value greater than 130 %, critical excess flow / temperature
[🔒 Locked via key]	Warning	Setting pushbuttons on the unit locked, parameter change rejected.
[🔒 Locked via Communication]	Warning	Parameter setting locked via pushbuttons, parameter setting active via IO-Link communication.
[🔒 Locked via system]	Warning	Setting buttons locked via parameter software, parameter change rejected.
[UL]	Warning	Below the detection zone: Measured value lower than -20 % of the final value of the measuring range.
[OL]	Warning	Detection zone exceeded: Measured value greater than 120 % of the final value of the measuring range.

11 Factory setting

Parameter	Factory setting	User setting
ASP1 (TEMP)	0 % *	
AEP1 (TEMP)	100 % *	
ASP2 (FLOW)	0 % *	
AEP2 (FLOW)	100 % *	
FOU1 (TEMP)	OFF	
FOU2 (FLOW)	OFF	
col.F (FLOW)	OFF	
col.T (TEMP)	OFF	
uni	l/min (SVx6xx: gpm)	
dAP	0,6 s	
diS.L	L2	
diS.U	d2	
diS.R	0	
diS.B	75 %	
cFH.F	MEW	
cFL.F	MAW	
cFH.T	MEW	
cFL.T	MAW	

MEW = final value of the measuring range

MAW = initial value of the measuring range

* The percentage values refer to the final value of the measuring range.

More information at www.ifm.com