CUE

(GB) **Service instructions**

Preface

These service instructions describe fault finding in systems with the CUE.

The manual is aimed at professionals who are familiar with the service of electrical products.

Usage of this manual presupposes knowledge of these documents:

- installation and operating instructions of CUE 0.55-90 kW or CUE 110-250 kW
- installation and operating instructions of the system which the CUE is part of or controls.

Note: This manual only deals with the CUE and its interface. If the application includes other Grundfos products or other systems, please refer to the manual of these products.

If the fault cannot be remedied by means of this manual, or you require spare parts or assistance, contact the nearest Grundfos partner or company. (See the back of this manual.)

Please state these pieces of information when you contact Grundfos to get help for fault finding:

- Nameplate data of the pump or system which the CUE controls or is part of.
- Nameplate data of the CUE.
- Status of the indicator lights on the control panel.
- Any alarm or warning text in the display and the code.

This manual is published and maintained on www.grundfos.com > International website > Launch WebCAPS.

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1. Type identification

1.1 Nameplate

The CUE can be identified by means of the nameplate.

Text	Description
T/C (type code)	CUE (product name). 202P1M2T5E20H1BXCXXXSXXXXAXBXCXXXXDX
Prod.no.	Product number: 12345678
S/N	Serial number: 123456 Place of production: G = Gråsten Time of production: 234 = week 23, 2004
1.5 kW (400V)	Typical shaft power on the motor at 400 V
IN	Supply voltage, frequency and maximum input current
OUT	Motor voltage, frequency and maximum output current. The maximum output frequency usually depends on the pump type.
CHASSIS/IP20 Tamb.	Enclosure class. Maximum ambient temperature.

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Fig. 1 Nameplate

1.2 Enclosures

The table shows the enclosures of the CUE product range. The technical information is based on the enclosure of the CUE in question.

The enclosure can be identified on the basis of typical shaft power, voltage and IP class.

Typical shaft power P_2		Enclosure										
		1 x 200-240 V			3 x 200-240 V		3 x 380-500 V		3 x 525-600 V		3 x 525-690 V	
[kW]	[HP]	IP20	IP21	IP55	IP20	IP55	IP20	IP55	IP20	IP55	IP21	IP55
0.55	0.75	A3	B1	A5	A2	A5	A2	A5	A3	A5	B2	B2
0.75	1											
1.1	1.5											
1.5	2											
2.2	3											
3	4				A3							
3.7	5											
4	5						A2	A5	A3	A5		
5.5	7.5		B1	B1	B3	B1	A3					
7.5	10		B2	B2								
11	15						B3	B1			B2	B2
15	20				B4	B2						
18.5	25					C1						
22	30				C3		B4	B2				
30	40											
37	50				C4	C2		C1			C2	C2
45	60						C3					
55	75											
75	100						C4	C2				
90	125											

Example

Read from the nameplate:

- Supply voltage 3 x 380-500 V.
- Typical shaft power 1.5 kW.
- Enclosure class IP20.

From the table it can be seen that the CUE enclosure is A2.

1.3 Schematic diagram

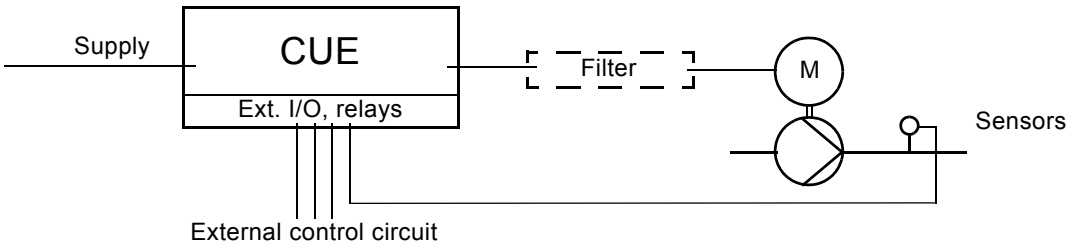


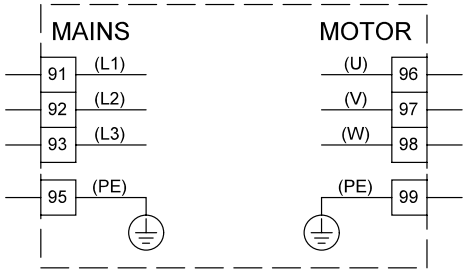
Fig. 2 Schematic diagram

1.4 Terminals

The physical position of the terminals depends on the enclosure of the CUE. See the CUE installation and operating instructions.

1.4.1 Mains and motor connection

The wires in the terminal box must be as short as possible. Excepted from this is the protective earth conductor which must be so long that it is the last one to be disconnected in case the cable is inadvertently pulled out of the cable entry.



Terminal		Function
91	(L1)	Three-phase supply
92	(L2)	
93	(L3)	
95/99	(PE)	Earth connection
96	(U)	Three-phase motor connection, 0-100 % of mains voltage
97	(V)	
98	(W)	

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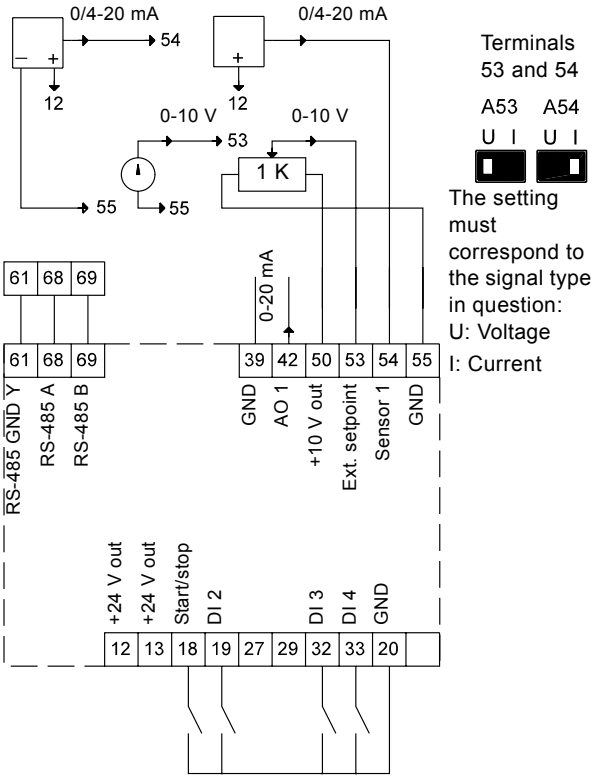
Fig. 3 Wiring diagram, mains and motor terminals

1.4.2 Wiring diagram, signal terminals



Terminal	Type	Function
12	+24 V out	Supply to sensor
13	+24 V out	Additional supply
18	DI 1	Digital input, start/stop
19	DI 2	Digital input, programmable
20	GND	Common frame for digital inputs
32	DI 3	Digital input, programmable
33	DI 4	Digital input, programmable
39	GND	Frame for analog output
42	AO 1	Analog output, 0-20 mA
50	+10 V out	Supply to potentiometer
53	AI 1	External setpoint, 0-10 V
54	AI 2	Sensor input, sensor 1, 0/4-20 mA
55	GND	Common frame for analog inputs
61	RS-485 GND Y	GENIbus, screen (frame)
68	RS-485 A	GENIbus, signal A (+)
69	RS-485 B	GENIbus, signal B (-)

Terminals 27, 29 and 37 are not used.

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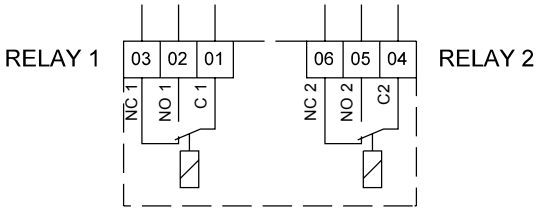
Fig. 4 Wiring diagram, signal terminals

1.4.3 Connection of signal relays



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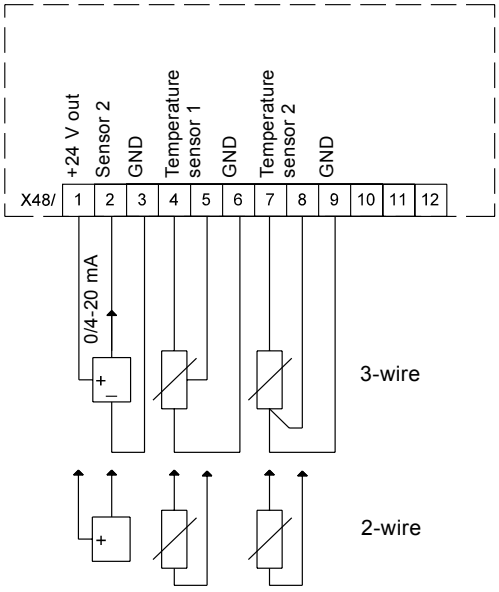
Terminal		Function
C 1	C 2	Common
NO 1	NO 2	Normally open contact
NC 1	NC 2	Normally closed contact

Fig. 5 Terminals for signal relays in normal state (not activated)

1.4.4 Wiring diagram, MCB 114



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Terminal	Type	Function
1	+24 V out	Supply to sensor
2	AI 3	Sensor 2, 0/4-20 mA
3	GND	Common frame for analog input
4, 5	AI 4	Temperature sensor 1, Pt100/Pt1000
6	GND	Common frame for temperature sensor 1
7, 8	AI 5	Temperature sensor 2, Pt100/Pt1000
9	GND	Common frame for temperature sensor 2

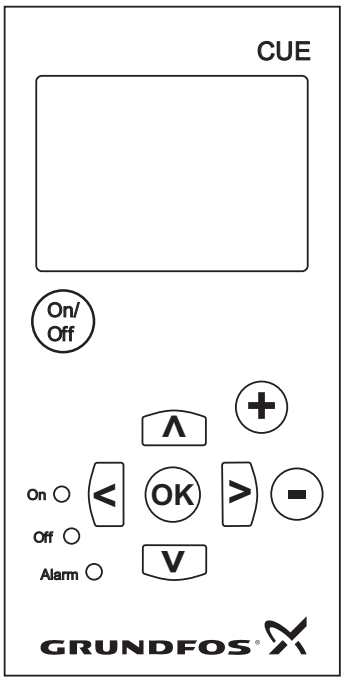
Terminals 10, 11 and 12 are not used.

Fig. 6 Wiring diagram, MCB 114

1.5 Control panel

All operation, status indication, display of menus and settings take place via the control panel.

See the CUE installation and operating instructions for a detailed description of the control panel. This is just a short introduction to the control panel.



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Editing buttons

On/Off	Makes the pump ready for operation/starts and stops the pump.
OK	Saves changed values, resets alarms and expands the value field.
+ −	Changes values in the value field.

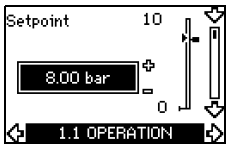
The editing buttons of the control panel can be set to being *Active* or *Not active*.
When set to *Not active* (locked), the editing buttons do not function. It is only possible to navigate in the menus and read values.
Activate or deactivate the buttons by pressing the arrow up and arrow down buttons simultaneously for 3 seconds.

Navigating buttons

< >	Navigates from one menu to another. When the menu is changed, the display shown will always be the top display of the new menu.
∧ ∨	Navigates up and down in the individual menu.

Indicator lights

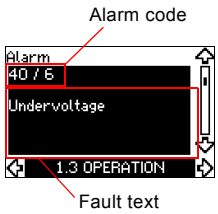
On (green)	The pump is running or has been stopped by a stop function.
	If flashing, the pump has been stopped by the user (CUE menu), external start/stop or bus.
Off (orange)	The pump has been stopped with the on/off button.
Alarm (red)	Indicates an alarm or a warning.



Display

During normal operation, the actual setpoint is shown.

- Setpoint set
- Actual setpoint
- Actual value

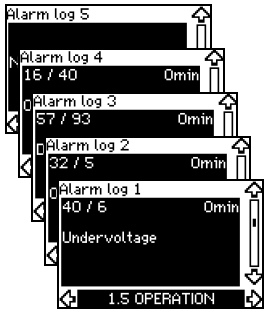


Actual alarm and warning

If there is an alarm or a warning, the display will change to showing this. Warnings are only shown if there is no alarm at the same time. Warnings and alarms are also shown in the bottom of menu OPERATION.

The first line shows the alarm code consisting of two digits separated by a slash. Alarm codes, see section 2.5.1 Alarm and warning list.

The second line shows the fault text.



Alarm and warning logs

This display is repeated five times and shows the five most recent alarms.

The display shows the logged alarm or warning with code and text.

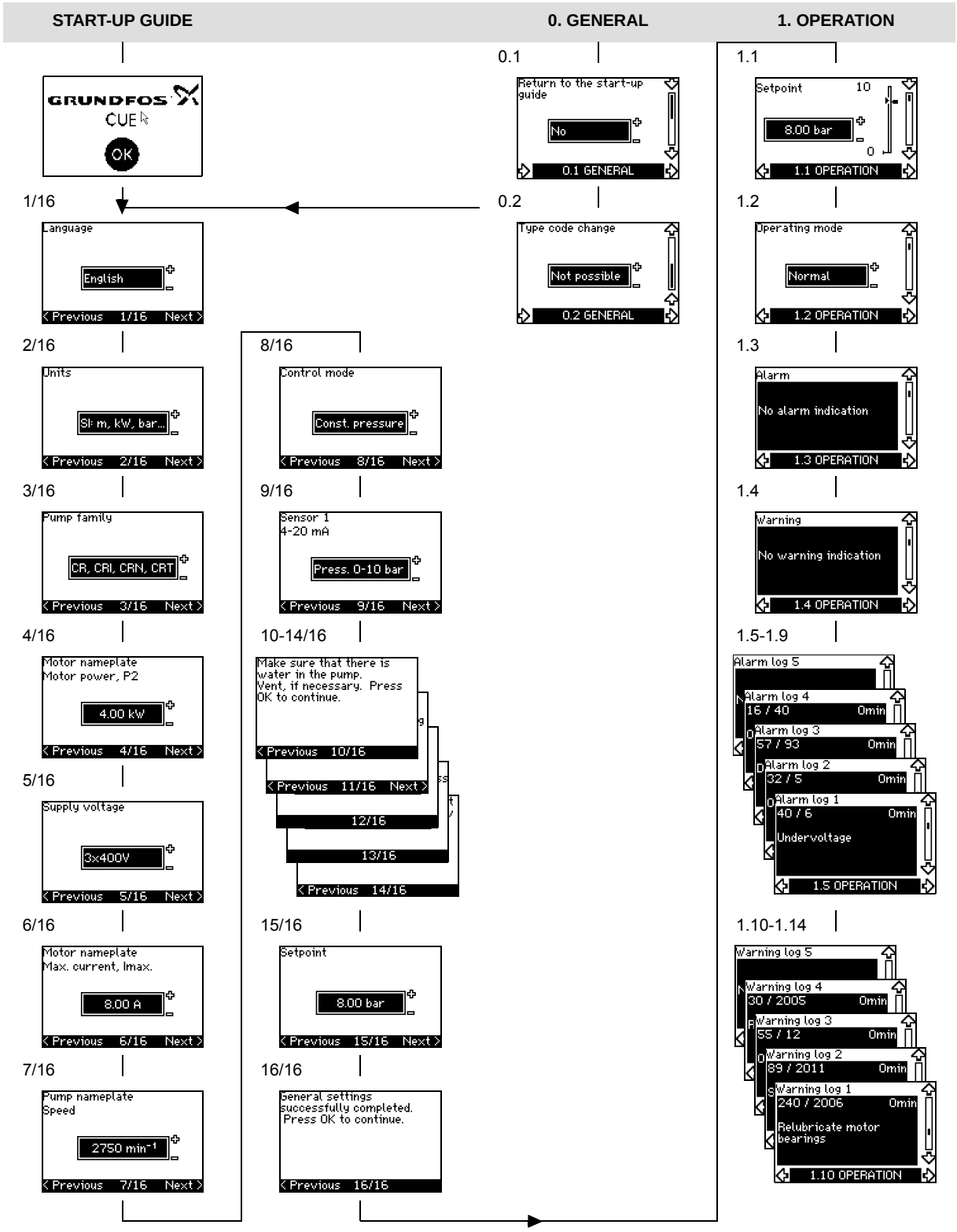
The the top right corner shows how long ago the alarm occurred.

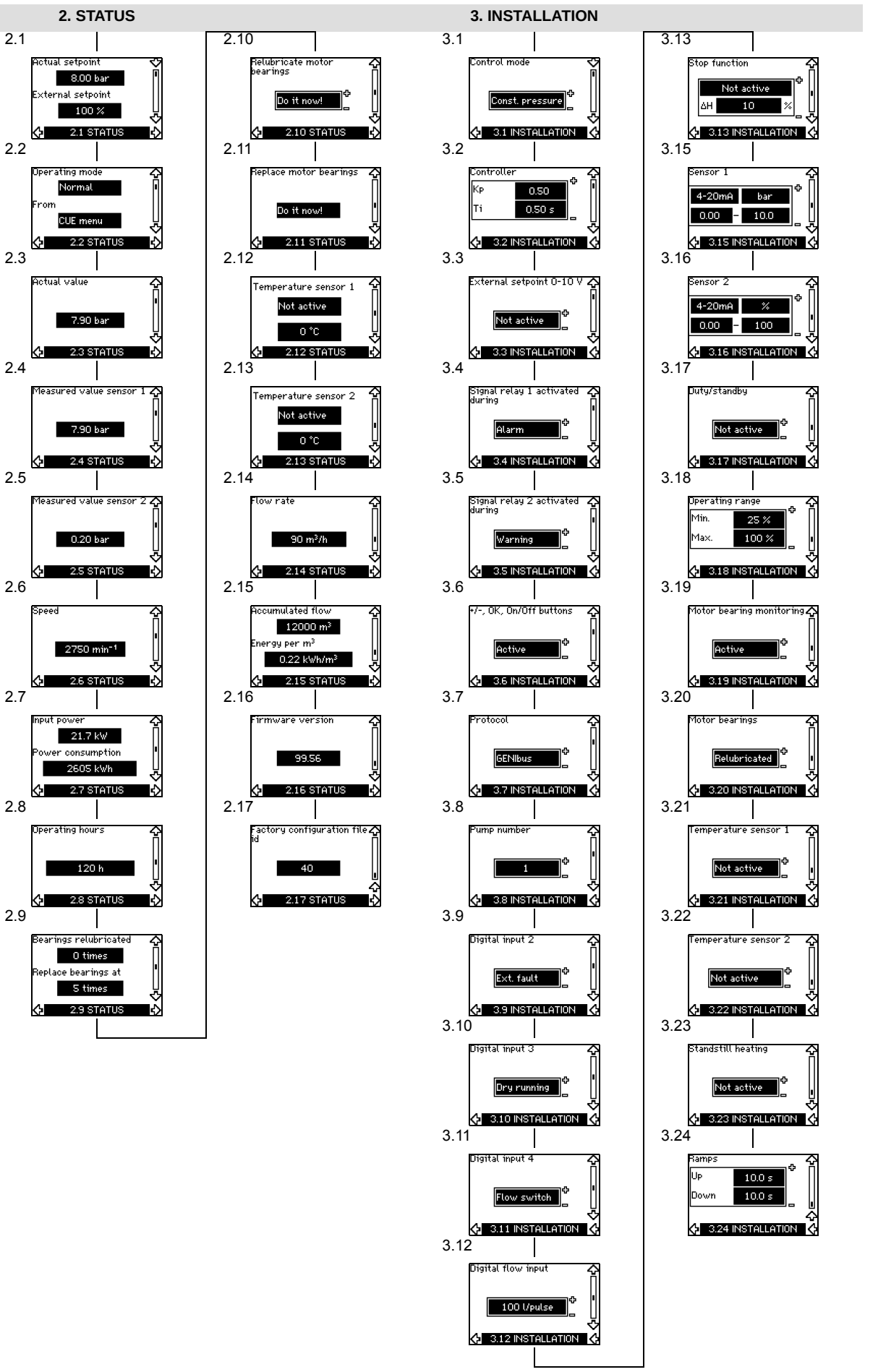
If the log in question is empty, the display will show "No alarm indication".

1.6 Menu structure

The CUE has a start-up guide which is started at the first start-up. After the start-up guide, the CUE has a menu structure divided into four main menus:

1. GENERAL gives access to the start-up guide for the general setting of the CUE.
2. OPERATION enables the setting of setpoint, selection of operating mode and resetting of alarms. It is also possible to see the latest five warnings and alarms.
3. STATUS shows the status of the CUE and the pump. It is not possible to change or set values.
4. INSTALLATION gives access to all parameters. Here a detailed setting of the CUE can be made.




2. STATUS
3. INSTALLATION
2.1
Actual setpoint
8.00 bar
External setpoint
100 %
2.1 STATUS
2.2
Operating mode
Normal
From
CUE menu
2.2 STATUS
2.3
Actual value
7.90 bar
2.3 STATUS
2.4
Measured value sensor 1
7.90 bar
2.4 STATUS
2.5
Measured value sensor 2
0.20 bar
2.5 STATUS
2.6
Speed
2750 min-1
2.6 STATUS
2.7
Input power
21.7 kW
Power consumption
2605 kWh
2.7 STATUS
2.8
Operating hours
120 h
2.8 STATUS
2.9
Bearings relubricated
0 times
Replace bearings at
5 times
2.9 STATUS
2.10
Relubricate motor bearings
Do it now!
2.10 STATUS
2.11
Replace motor bearings
Do it now!
2.11 STATUS
2.12
Temperature sensor 1
Not active
0 °C
2.12 STATUS
2.13
Temperature sensor 2
Not active
0 °C
2.13 STATUS
2.14
Flow rate
90 m³/h
2.14 STATUS
2.15
Accumulated flow
12000 m³
Energy per m³
0.22 kWh/m³
2.15 STATUS
2.16
Firmware version
99.56
2.16 STATUS
2.17
Factory configuration file id
40
2.17 STATUS
3.1
Control mode
Const. pressure
3.1 INSTALLATION
3.2
Controller
Kp 0.50
Ti 0.50 s
3.2 INSTALLATION
3.3
External setpoint 0-10 V
Not active
3.3 INSTALLATION
3.4
Signal relay 1 activated during
Alarm
3.4 INSTALLATION
3.5
Signal relay 2 activated during
Warning
3.5 INSTALLATION
3.6
+/-, OK, On/Off buttons
Active
3.6 INSTALLATION
3.7
Protocol
GENIbus
3.7 INSTALLATION
3.8
Pump number
1
3.8 INSTALLATION
3.9
Digital input 2
Ext. fault
3.9 INSTALLATION
3.10
Digital input 3
Dry running
3.10 INSTALLATION
3.11
Digital input 4
Flow switch
3.11 INSTALLATION
3.12
Digital flow input
100 l/pulse
3.12 INSTALLATION
3.13
Stop function
Not active
ΔH 10 %
3.13 INSTALLATION
3.15
Sensor 1
4-20mA bar
0.00 - 10.0
3.15 INSTALLATION
3.16
Sensor 2
4-20mA %
0.00 - 100
3.16 INSTALLATION
3.17
Duty/standby
Not active
3.17 INSTALLATION
3.18
Operating range
Min. 25 %
Max. 100 %
3.18 INSTALLATION
3.19
Motor bearing monitoring
Active
3.19 INSTALLATION
3.20
Motor bearings
Relubricated
3.20 INSTALLATION
3.21
Temperature sensor 1
Not active
3.21 INSTALLATION
3.22
Temperature sensor 2
Not active
3.22 INSTALLATION
3.23
Standstill heating
Not active
3.23 INSTALLATION
3.24
Ramps
Up 10.0 s
Down 10.0 s
3.24 INSTALLATION

2. Fault finding

The operational status of the CUE and faults are automatically shown via the indicator lights and the display of the control panel.

If the alarm light is lit, the display shows a code which gives information of the cause. See 2.5.1 Alarm and warning list.

2.1 Safety regulations

Warning

Do not use the on/off button on the control panel as a safety switch.

All service work must be carried out by trained personnel.

Warning

Touching the electrical parts may be fatal, even after the equipment has been switched off, due to the capacitors of the CUE.

Disconnect the mains voltage, and as a minimum wait the amount of time stated on the nameplate before touching any current-carrying parts.

Note that the relay may be connected to an external voltage supply and still be current-carrying after disconnecting the mains voltage.

2.2 Procedure of fault finding

Fault diagnosing and fault correction is based on these sections:

- 2.3 Operating conditions
- 2.4 Fault finding by means of the indicator lights on the control panel
- 2.5 Fault finding by means of alarm and warning codes.

Contacting Grundfos

Please state these pieces of information when you contact Grundfos to get help for fault finding:

- Nameplate data of the pump or system which the CUE controls or is part of.
- Nameplate data of the CUE.
- Status of the indicator lights on the control panel.
- Any alarm or warning text in the display and the code.

2.3 Operating conditions

The CUE is the controlling unit and will react and control the pump depending on the following:

Mains supply

- Check nameplate data, and measure the actual voltage supply with a voltmeter (true RMS).
- Check the earth leakage circuit breaker and the backup fuses. The CUE has no internal fuses.

Pump and motor load

- Check nameplate data, and measure the actual current consumption with an amperemeter (true RMS). Does the pump and the CUE match?

External signals, for instance from another controller

- Check that the external signals match the CUE. See section 1.4.2 Wiring diagram, signal terminals and the CUE installation and operating instructions.
- Check that terminals 18 and 20 are connected and the CUE has been started via the control panel.

Sensors connected

- Check that the sensor measuring range matches the pump application.
- Check that the settings of the CUE match the sensors (current, voltage, minimum and maximum values).

Electromagnetic disturbances

- Check that the cable run is EMC-correct. See the CUE installation and operating instructions.

Start-up, installation and operating settings are made via the control panel.

- Check whether the signal indicator On on the control panel is lit.
- Go through the start-up guide, and set the CUE to the correct values for the pump application. (The start-up guide is described in detail in the CUE installation and operating instructions.)
- Check that the settings in the installation menu match the pump application. (The displays are described in detail in the CUE installation and operating instructions.)
- Check the status display of the control panel if the pump has stopped.

If the above items are according to the CUE installation and operating instructions and the pump application, but a fault still exists, continue the fault finding in sections 2.4 Fault finding by means of the indicator lights on the control panel and 2.5 Fault finding by means of alarm and warning codes.

2.4 Fault finding by means of the indicator lights on the control panel

Indicator lights			Condition/cause	Remedy
Off Orange	**On Green**	**Alarm Red**		
Off	**Off**	**Off**	**The display of the CUE is off**	
			1. Fault in the current supply of the control panel.	Check the supply voltage to the CUE.
			2. The control circuit current supply is overloaded.	Pull all signal terminals out of the control board. • If the control panel lights up: The fault is in the control circuit. Check the control circuit for short-circuits or faulty connections before reconnecting the signal terminals. • If the control panel does not light up: Contact Grundfos Service.
On	**Off**	**Off**	**The CUE has been switched off with the on/off button**	
			1. The CUE has been switched off with the on/off button.	Switch on the CUE with the on/off button.
On	**Off**	**On**	**The CUE has been switched off with the on/off button and is in alarm state.**	
			1. There is an alarm indication in the display of the CUE.	a) Alarm cause and remedy, see section 2.5 Fault finding by means of alarm and warning codes. b) Reset the alarm. (If it is a locked alarm, the mains supply must be switched off before the CUE can be restarted.) c) Switch on the CUE again with the on/off button.
Off	**Off**	**On**	**The CUE has stopped due to an alarm**	
			1. An alarm has caused the CUE to stop.	a) Alarm cause and remedy, see section 2.5 Fault finding by means of alarm and warning codes. b) Reset the alarm. (If it is a locked alarm, the mains supply must be switched off before the CUE can be restarted.)
Off	**On**	**Off**	**The CUE is in operation, i.e. the pump connected is running or has been stopped by a stop function (no alarm)**	
			1. Stopped by stop function.	Is the system pressure or level okay? • No: Check the settings of the stop function. • Yes: Normal operational stop. The CUE will restart when the stop function has ceased.
			2. External setpoint has been activated.	a) If the markers for actual setpoint and actual value in display 1.1, Setpoint, are level, the pump has been stopped according to its settings. b) If external setpoint = 0 % in display 1.2, Operating mode, the CUE will not detect an input signal. Check the voltage on terminal 53. • If no voltage is measured, the fault is in the external control circuit. • If the voltage measured is greater than 0 V, the CUE is defective. Contact Grundfos Service. c) If external setpoint > 0 % in display 1.2, Operating mode: Check the voltage on terminal 53: If the measured voltage does not correspond to the external setpoint in display 1.2, the CUE is defective; contact Grundfos Service.

Indicator lights			Condition/cause	Remedy
Off Orange	**On Green**	**Alarm Red**		
Off	**Flashing**	**Off**	**The CUE is ready for operation, but has been stopped by the user, an external start/stop signal or via the bus**	
			1. The CUE has been stopped in display 1.2, Operating mode.	Restart the CUE by selecting another operating mode: *Min.*, *Max.* or *Normal*.
			2. The CUE has been stopped by an external start/stop signal, or there is a fault in the external control circuit.	Check that the CUE receives a start signal on the external start/stop input. (Terminals 18 and 20 must be connected).
			3. The CUE has been stopped by a signal on digital input DI 2, 3 or 4.	Check whether the inputs have been set to Ext. fault, Flow contact or Dry running (displays 3.9 to 3.11).
			4. The CUE has been stopped via the bus.	Check display 2.2, Operating mode. If the operating mode is "Stop", and From is "Bus", the CUE has detected a stop signal via the bus. Contact the system integrator or Grundfos Service if the bus does not send a stop signal.
Off	**On**	**On**	**The CUE in operation, but there is an unreset warning/alarm**	
			1. There is or has been an alarm or a warning that did not cause a stop.	See the alarm text in the display.
Off	**Flashing**	**On**	**The CUE is ready for operation, but has been stopped by the user, an external start/stop signal or via the bus, and there is an unreset warning/alarm**	
			1. The CUE has been stopped in display 1.2, Operating mode.	Restart the CUE by selecting another operating mode: *Min.*, *Max.* or *Normal*.
			2. The CUE has been stopped by an external start/stop signal, or there is a fault in the external control circuit.	Check that the CUE receives a start signal on the external start/stop input. (Terminals 18 and 20 must be connected).
			3. The CUE has been stopped by a signal on digital input DI 2, 3 or 4.	Check whether the inputs have been set to Ext. fault, Flow contact or Dry running (displays 3.9 to 3.11).
			4. The CUE has been stopped via the bus.	Check display 2.2, Operating mode. If the operating mode is "Stop", and From is "Bus", the CUE has detected a stop signal via the bus. Contact the system integrator or Grundfos Service if the bus does not send a stop signal.
			5. There is or has been an alarm or a warning that did not cause a stop.	See the alarm text in the display.

2.5 Fault finding by means of alarm and warning codes

Besides being indicated by the indicator lights on the control panel, faults are also shown as codes in the display.

2.5.1 Alarm and warning list

The following list gives you an overview of the possible alarms and warnings and a description of the causes and suggestions for remedy.

These abbreviations are used in the column "Alarm":

W: Warning.

A: Alarm.

L: Locked alarm: The alarm cannot be reset until the mains supply has been switched off.

1): The action in case of alarm depends on the pump type.

Alarm code	Fault indication	Alarm	Alarm action	Reset
Cause/explanation	**Remedy**			
1/14	Too high leakage current	W L	Stop	Man.
There is a discharge or current unbalance: • between the CUE output phases or from phases to earth • in the cable to the motor • in the motor • There may be a great unbalance between the motor winding resistances. • The CUE is faulty.	Switch off the CUE, and remove the motor cable from terminals 96, 97 and 98. a) Meg these parts: • the cable between the CUE and the motor • the motor. b) Contact Grundfos Service.			
2/4	Phase failure (only three-phase CUE)	A	Stop	Aut.
Missing phase, or the supply voltage unbalance is too high.	Re-establish the voltage supply to the CUE according to the nameplate. If the fuses blow again, or if the alarm cannot be reset, contact Grundfos Service.			
3/2004	External fault	A	Stop	Man.
One of the digital inputs • DI 2 (see display 3.9) • DI 3 (see display 3.10) • DI 4 (see display 3.11) is set to "External fault", and the input has been or is still closed.	Check if the digital input set to "External fault" is open or closed. • If the input is closed, reset the alarm cause in the external control circuit.			
16/1	Other fault	W	-	Aut.
Overload of the 10 V voltage supply to the external control circuit. The voltage between terminals 50 and 39 is less than 10 V.	Pull the terminal block for the external input signals out of the CUE. • If the warning disappears, the fault is overload in the control circuit for the external setpoint. • If the warning does not disappear, contact Grundfos Service.			
16/-	Other fault	W A	-	Aut./man.
Other alarms with an alarm code starting at 16/.	Contact Grundfos Service.			
30/2005	Replace motor bearings	W	-	Man.
The pump has reached the factory-set number of operating hours, and the bearings have been relubricated the maximum number of times.	Replace the bearings, and confirm the replacement in display 3.20, Motor bearings.			
32/5	Overvoltage	W	-	Aut.
The supply voltage has caused the intermediate circuit voltage (DC) to be higher than the warning limit of the control system. The CUE is still active.	• Check the supply voltage according to the CUE nameplate. • Check the mains supply. (See also 32/7.) • If the mains supply is okay, contact Grundfos Service.			
	Alarm/warning limits:			
	Voltage supply:	3 x 200-240 V	3 x 380-480 V	3 x 525-600 V
	Voltage warning high:	390 VDC	810 VDC	943 VDC

Alarm code	Fault indication		Alarm	Alarm action	Reset
Cause/explanation		**Remedy**			
32/7	Overvoltage		A	Stop	Aut.
The supply voltage has caused the intermediate circuit voltage (DC) to be higher than the alarm limit of the control system. The CUE will stop after a while.		• Check the supply voltage according to the CUE nameplate. • Check the mains supply. (See also 32/5.) • If the mains supply is okay, contact Grundfos Service.			
		Alarm/warning limits:			
		Voltage supply:	3 x 200-240 V	3 x 380-480 V	3 x 525-600 V
		Overvoltage:	410 VDC	855 VDC	975 VDC
40/6	Undervoltage		W	-	Aut.
The intermediate circuit voltage (DC) is lower than the warning limit of the control system. The CUE is still active.		• Increase the supply voltage to the prescribed level according to the CUE nameplate. • Check the mains supply. (See also 40/8.) • If the mains supply is okay, contact Grundfos Service.			
		Alarm/warning limits:			
		Voltage supply:	3 x 200-240 V	3 x 380-480 V	3 x 525-600 V
		Voltage warning low:	205 VDC	410 VDC	585 VDC
40/8	Undervoltage		W A	Stop	Aut.
The intermediate circuit voltage (DC) is lower than the alarm limit of the control system.		• Increase the supply voltage to the prescribed level according to the CUE nameplate. • Check the mains supply. (See also 40/6.) • If the mains supply is okay, contact Grundfos Service.			
		Alarm/warning limits:			
		Voltage supply:	3 x 200-240 V	3 x 380-480 V	3 x 525-600 V
		Undervoltage:	185 VDC	373 VDC	532 VDC
48/9	Overload		W A	Stop	Aut.
The CUE is stopping due to an overload. (The current is more than 10 % higher than the maximum output current stated on the nameplate.) First a warning is given, which is followed by an alarm if the overload exists for more than 1 minute.		• Check the motor current according to the CUE nameplate. • Check the pump.			
48/10	Overload		A	Stop	Aut.
The electronic thermal protection of the CUE has detected that the motor is persistently overloaded.		• Check the motor current according to the CUE nameplate. • Check the pump. • Go through the start-up guide.			
48/16	Overload		L	Stop	Man.
There is a short-circuit in the motor cable, filter or motor.		Switch off the CUE, and remove the motor cable from terminals 96, 97 and 98. Meg or high-voltage test the cable, filter and motor.			
49/13	Overload		W A	Stop	Aut.
The CUE is stopping due to an overload. (The current is more than 10 % higher than the maximum output current stated on the nameplate.) First a warning is given, which is followed by an alarm if the overload exists for more than 1 minute.		Switch off the CUE, and check that the motor shaft can be turned and that the motor size fits the CUE.			
55/12	Overload		W	Stop	Aut.
Torque limitation. The CUE is overloaded and limits the power to the motor. The pump may therefore not reach full speed.		• Check the motor current according to the CUE nameplate. • Check the pump. • Go through the start-up guide, as some settings may be incorrect.			
55/59	Overload		W	-	Aut.
The CUE is overloaded, but the alarm limit has not yet been reached.		• Check the motor current according to the CUE nameplate. • Check the pump. • Go through the start-up guide, as the current is higher than the value in display 6/16 of the start-up guide.			

Alarm code	Fault indication	Alarm	Alarm action	Reset
Cause/explanation	**Remedy**			
57/93	Dry running	A	Stop	Aut.
One of the digital inputs • DI 2 (see display 3.9) • DI 3 (see display 3.10) • DI 4 (see display 3.11) is set to "Dry running", and the input has been or is still closed.	Check if the digital input set to "Dry running" is open or closed. • If the input is closed, reset the signal on the external dry-running sensor. • If the input is open, contact Grundfos Service.			
64/-	Too high CUE temperature	W A	Stop	Aut.
The internal temperature of the CUE is too high. Fault causes:				
• The ambient temperature is higher than 45 °C.	Lower the ambient temperature, for instance by providing forced cooling.			
• The installation was not carried out according to the CUE installation and operating instructions.	Check the installation of the CUE.			
• The fan is dirty or defective.	Clean the fan, or contact Grundfos Service.			
77/2009	Duty/standby communication error	W	-	Aut.
Communication between the two pumps set to duty/standby function has been interrupted.				
• The pumps are not set correctly.	Check the setting according to the CUE installation and operating instructions.			
• The voltage supply to the standby pump has been interrupted.	Re-establish the voltage supply.			
• The communication cable has been disconnected.	Check the communication cable.			
89/2011	Sensor 1 outside range	A	1)	Aut.
Sensor 1 (terminal 54): The analog input signal has fallen below these control values for more than 500 ms: Type: 4-20 mA: Alarm under 2 mA (reset over 3 mA). Type: 2-10 V: Alarm under 1 V (reset over 1.5 V). The types 0-20 mA and 0-10 V are not monitored.				
Fault at start-up:				
1. No sensor is connected.	Connect a sensor according to section 6.3 of the CUE installation and operating instructions.			
2. Contact A54 for selection of signal type is set incorrectly.	Set the contact correctly according to section 6.3.5 of the CUE installation and operating instructions.			
3. Display 3.15 is set incorrectly for the sensor.	Correct the sensor setting.			
4. The sensor has been connected incorrectly.	Connect the sensor correctly according to section 6.3 of the CUE installation and operating instructions.			
Fault after start-up:				
5. Incorrect voltage supply to sensor.	Check that there are 24 ± 1 VDC between terminals 12 and 55: • If the voltage is not okay, contact Grundfos Service. • If the voltage is okay, check if there is minimum 4 mA or 1 V between terminals 54 and 55. If yes, contact Grundfos Service.			
6. Sensor or sensor cable defective.	If the cable is missing, or the sensor is defective, contact Grundfos Service.			

Alarm code	Fault indication		Alarm	Alarm action	Reset
Cause/explanation		**Remedy**			
91/2013	Temperature sensor 1 outside range		1)	1)	Aut.
The temperature sensor connected to terminal 5 in the MCB 114 sensor input module measures a value under –50 °C or over 200 °C.					
1. The sensor has been connected incorrectly.		Check the connection according to section 6.5 of the CUE installation and operating instructions.			
2. The supply to the sensor is incorrect.		Check that there are 24 VDC between terminals 4 and 6 of the MCB 114. • If the voltage is not okay, contact Grundfos Service. • If the voltage is okay, check the sensor resistance as described below.			
3. The sensor is defective.		Measure the sensor resistance using an ohmmeter: • Type Pt100: If the resistance is less than 80 Ohm (corresponding to –50 °C) or greater than 240 Ohm (corresponding to 200 °C), the sensor is defective and must be replaced. At 20 °C, the resistance must be 107 Ohm. • Type Pt1000: If the resistance is less than 800 Ohm (corresponding to –50 °C) or greater than 1773 Ohm (corresponding to 200 °C), the sensor is defective and must be replaced. At 20 °C, the resistance must be 1077 Ohm. If the sensor is not defective, contact Grundfos Service.			
93/2012	Sensor 2 outside range		1)	-	Aut.
Sensor input 2 (terminal 2 of MCB 114) is or has been under the control value: Type: 4-20 mA: Alarm under 2 mA (reset over 3 mA).					
Fault at start-up:					
1. The CUE menu setting does not match the sensor type installed.		Check the setting in display 3.16, Sensor 2.			
2. The sensor has been connected incorrectly.		Check the connection according to section 6.5.2 of the CUE installation and operating instructions.			
Fault after start-up:					
3. Incorrect voltage supply to sensor.		Check that there are 24 VDC between terminals 1 and 3 of the MCB 114: • If the voltage is not okay, contact Grundfos Service. • If the voltage is okay, check if there is minimum 4 mA between terminals 2 and 3. If yes, contact Grundfos Service.			
4. Sensor or sensor cable defective.		If the cable is missing, or the sensor is defective, contact Grundfos Service.			

Alarm code	Fault indication	Alarm	Alarm action	Reset
Cause/explanation	**Remedy**			
96/2010	Setpoint signal outside range	A	1)	Aut.
External setpoint (terminal 53): The external setpoint has fallen below these control values for more than 500 ms: Type: 4-20 mA: Alarm under 2 mA (reset over 3 mA). Type: 2-10 V: Alarm below 1 V (reset over 1.5 V). The types 0-20 mA and 0-10 V are not monitored.				
Fault at start-up:				
1. Contact A53 for selection of signal type is set incorrectly.	Set the contact correctly according to section 6.3.5 of the CUE installation and operating instructions.			
2. Display 3.3, Ext. setpoint, is set incorrectly for the signal in question.	Check the setting in display 3.3, Ext. setpoint.			
3. The external setpoint signal is connected incorrectly.	Connect the signal correctly according to section 6.3 of the CUE installation and operating instructions.			
Fault after start-up:				
4. Incorrect voltage supply to the external setpoint signal.	Check that there are 10 VDC between terminals 50 and 55: • If the voltage is not okay, contact Grundfos Service. • If the voltage is okay, check if there is minimum 4 mA or 1 V between terminals 53 and 55. If yes, contact Grundfos Service.			
5. Signal transmitter or signal cable defective.	If the cable is missing, or the signal transmitter is defective, contact Grundfos Service.			
148/2007	Too high bearing temperature	W	-	Aut.
149/2008		A	Stop	Aut.
148/2007: The D-end motor bearing is too hot. 149/2008: The ND-end motor bearing is too hot.				
1. Motor cooling is not optimum.				
- The motor is dirty.	Clean the motor.			
- The fan is defective.	Replace the fan.			
- The bearing is not lubricated correctly.	Check the lubrication of the bearing.			
- The sensor or its cable is defective.	Check the sensor and cable.			
2. The temperature sensor connected to terminal 5 or 8 of the MCB 114 is outside the monitoring range.	a) Check the connection according to section 6.5 of the CUE installation and operating instructions. b) Check that there are 24 VDC between terminals 4 and 6 or 7 and 9 of the MCB 114. - If the voltage is not okay, contact Grundfos Service. - If the voltage is okay, check the sensor resistance as described below. c) Measure the sensor resistance using an ohmmeter: - Type Pt100: If the resistance is less than 80 Ohm (corresponding to –50 °C) or greater than 240 Ohm (corresponding to 200 °C), the sensor is defective and must be replaced. At 20 °C, the resistance must be 107 Ohm. - Type Pt1000: If the resistance is less than 800 Ohm (corresponding to –50 °C) or greater than 1773 Ohm (corresponding to 200 °C), the sensor is defective and must be replaced. At 20 °C, the resistance must be 1077 Ohm. If the sensor is not defective, contact Grundfos Service.			
155/33	Inrush fault	A	Stop	Aut.
The maximum number of cut-ins has been exceeded. Permissible number of cut-ins: • CUE enclosure A: 2/minute. • CUE enclosures B and C: 1/minute.				
1. The CUE is started/stopped by connecting/ interrupting the mains supply.	Make sure to use a digital input (terminal 18, start/stop) for external control of start/stop.			
2. There is a fault in the mains connection of the CUE.	Tighten the supply terminals 91, 92 and 93. (See the correct tightening torque in the CUE installation and operating instructions.)			
3. There is a fault in the CUE.	Contact Grundfos Service.			

Alarm code	Fault indication		Alarm	Alarm action	Reset
Cause/explanation		**Remedy**			
175/2014	Temperature sensor 2 outside range		A	1)	Aut.
The temperature sensor connected to terminal 8 in the MCB 114 sensor input module measures a value under –50 °C or over 200 °C.					
1. The sensor has been connected incorrectly.		Check the connection according to section 6.5 of the CUE installation and operating instructions.			
2. The supply to the sensor is incorrect.		Check that there are 24 VDC between terminals 7 and 9 of the MCB 114. • If the voltage is not okay, contact Grundfos Service. • If the voltage is okay, check the sensor resistance as described below.			
3. The sensor is defective.		Measure the sensor resistance using an ohmmeter: • Type Pt100: If the resistance is less than 80 Ohm (corresponding to –50 °C) or greater than 240 Ohm (corresponding to 200 °C), the sensor is defective and must be replaced. At 20 °C, the resistance must be 107 Ohm. • Type Pt1000: If the resistance is less than 800 Ohm (corresponding to –50 °C) or greater than 1773 Ohm (corresponding to 200 °C), the sensor is defective and must be replaced. At 20 °C, the resistance must be 1077 Ohm. If the sensor is not defective, contact Grundfos Service.			
240/2006	Relubricate the motor bearings		W	-	Man.
The motor has reached the factory-set number of operating hours for relubrication of motor bearings.		Lubricate the motor bearings, and confirm the lubrication in display 3.20, Motor bearings.			
241/3	Motor phase failure		W	-	Aut.
No motor is connected to the output of the CUE.		Connect a motor to the CUE.			
241/30	Motor phase failure		A	Stop	Aut.
Motor cable between CUE terminal U and the motor missing.		Switch off the CUE, and check motor phase U.			
241/31	Motor phase failure		A	Stop	Aut.
Motor cable between CUE terminal V and the motor missing.		Switch off the CUE, and check motor phase V.			
241/32	Motor phase failure		A	Stop	Aut.
Motor cable between CUE terminal W and the motor missing.		Switch off the CUE, and check motor phase W.			
242/-	AMA did not succeed		W	-	Aut.
Fault indications concerning AMA (Automatic Motor Adaptation)		AMA only takes place in the start-up and is only of peripheral importance for optimum operation. Reset the warning, and continue. If this is not possible, contact Grundfos Service.			

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