

EtherNet/IP for Water Utility pumping systems

CIM 500 / CIU 502 Ethernet

Functional profile and user manual



EtherNet/IP for Water Utility pumping systems

English (GB)
Functional profile and user manual 4
Appendix A 50

English (GB) Functional profile and user manual

Original functional profile and user manual

Table of contents

1. General information	4
1.1 Hazard statements	4
1.2 Notes	4
2. Introduction	4
2.1 About this functional profile	4
2.2 EDS file	5
2.3 Assumptions	5
2.4 Definitions and abbreviations	5
3. System description	5
3.1 EtherNet/IP, CIM 500	6
4. Specification	7
4.1 CIM 500 Ethernet module general data	7
4.2 CIU 502 AutoAdapt	7
4.3 EtherNet/IP	7
5. EtherNet/IP, CIM 500 setup	8
5.1 Connecting the Ethernet cable	8
5.2 Selection of Industrial Ethernet protocol	9
5.3 Setting the IP addresses	9
5.4 Establishing a connection to the webserver	9
5.5 Status LEDs	9
5.6 DATA and LINK LEDs	9
6. Detailed description of data parameters	10
6.1 Connection and Assembly overview	10
6.2 Water utility input/output assembly details	10
6.3 General remarks	10
6.4 Control parameters, Output Assembly 11	11
6.5 Configuration parameters, Input/Output explicit messaging	13
6.6 Dynamic status parameters, Input Assembly 2	14
6.7 Static status parameters, Input Assembly 3	20
6.8 Water utility measurements, Input Assembly 4	20
6.9 Pump P1 and pump P2 measurements, Input Assembly 5	22
6.10 Pump P3 and P4 measurements, Input Assembly 6	26
6.11 Pump P5 and pump P6 measurements, Input Assembly 7	30
6.12 Special parameters, Input explicit messaging	33
7. Alarms and warnings	33
7.1 Dedicated Controls (CU 362), general alarm and warning behavior	33
7.2 Level Control (LC 2XX), general alarm and warning behavior	34
7.3 AUTOADAPT systems (CIU 502), general alarm and warning behavior	34
7.4 Survey of alarm/warning related parameters	34
7.5 Survey of event codes	35
7.6 Alarm and warning bits	39
7.7 Fault finding the product	49
8. Disposing of the product	49

1. General information



Read this document before you install the product. Installation and operation must comply with local regulations and accepted codes of good practice.

1.1 Hazard statements

The symbols and hazard statements below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious personal injury.



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious personal injury.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate personal injury.

The hazard statements are structured in the following way:



SIGNAL WORD

Description of the hazard

Consequence of ignoring the warning

- Action to avoid the hazard.

1.2 Notes

The symbols and notes below may appear in Grundfos installation and operating instructions, safety instructions and service instructions.



Observe these instructions for explosion-proof products.



A blue or grey circle with a white graphical symbol indicates that an action must be taken.



A red or grey circle with a diagonal bar, possibly with a black graphical symbol, indicates that an action must not be taken or must be stopped.



If these instructions are not observed, it may result in malfunction or damage to the equipment.



Tips and advice that make the work easier.

2. Introduction

2.1 About this functional profile

This functional profile describes the following modules and units:

- CIM 500 Ethernet for EtherNet/IP
- CIU 502 AutoAdapt for EtherNet/IP

This functional profile applies to the following Grundfos products:

- Grundfos Dedicated Controls (CU 361 and CU 362)
- Grundfos DP, EF, SL1, SLV and SEG AUTO_{ADAPT} wastewater pumps, connected via CIU 502 unit
- Grundfos level-control system LC 231, LC 241 for wastewater applications
- Grundfos level-control system LC 242 for water supply applications.

In the following, the supported products are referred to as "system". The two supported controllers CU 361 and CU 362 are referred to as CU 36X.

The two supported controllers LC 231 and LC 241 are referred to as LC 2X1.

The supported controller LC 242 is referred to as LC 2X2.

Grundfos cannot be held responsible for any problems caused directly or indirectly by using information in this functional profile.

2.2 EDS file

For this product, an associated Electronic Data Sheet file (Grundfos_EIP_Water_Utility_Adapter_EDS.eds) can be downloaded from the Grundfos Product Center.

2.3 Assumptions

This functional profile assumes that the reader is familiar with commissioning and programming of EtherNet/IP devices.

2.4 Definitions and abbreviations

A	In alarm/warning descriptions this means Alarm only.
AA	In parameter tables this is an abbreviation for CIU 502 AutoAdapt interface.
A/W	In alarm/warning descriptions this means Alarm and Warning.
ARP	Address Resolution Protocol. Translates IP addresses into MAC addresses.
Auto-MDIX	Ensures that both crossover cable types and non-crossover cable types can be used.
CAT5	Ethernet cable type with four twisted pairs of wires.
CAT5e	Enhanced CAT5 cable with better performance.
CAT6	Ethernet cable compatible with CAT5 and CAT5e, with very high performance.
CIM	Communication Interface Module.
CIU	Communication Interface Unit.
CIU 502	An assembly of CIU 902 AutoAdapt unit with a CIM 500 module mounted inside.
CRC	Cyclic Redundancy Check. A data error detection method.
DC	In parameter tables this is an abbreviation for CU 36x Dedicated Controls.
DHCP	Dynamic Host Configuration Protocol. Used to configure network devices so that they can communicate on an IP network.
DNS	Domain Name System. Used to resolve host names to IP addresses.
Enumeration	List of values.
GENIbus	Proprietary Grundfos fieldbus standard.
GENIpro	Proprietary Grundfos fieldbus protocol.
Grundfos GO Remote	A Grundfos app designed to control Grundfos products via infrared or radio communication. Available for iOS and Android devices.
H	Head. Often used as abbreviation for water head (pressure in metres).
HTTP	Hyper Text Transfer Protocol. The protocol commonly used to navigate the world wide web.
IANA	Internet Assigned Numbers Authority.
LC	In parameter tables this is an abbreviation for Level controllers LC 2x1, LC 2x2.
LED	Light-Emitting Diode.
MAC	Media Access Control. Unique network address for a piece of hardware.
PELV	Protective Extra-Low Voltage.
Ping	Packet InterNet Groper. A software utility that tests connectivity between two TCP/IP hosts.
Q	Often used as abbreviation for water flow rate.
SELV	Separated or Safety Extra-Low Voltage.
TCP/IP	Transmission Control Protocol/Internet Protocol. Protocol for Internet communication, and also used as middle-layer protocol for most Ethernet-based fieldbuses.
Transmission speed	Bits transferred per second, bit/s.
URL	Uniform Resource Locator. The IP address used to connect to a server.
UTC	Coordinated Universal Time. The primary time standard by which the world regulates clocks and time.
W	In alarm/warning descriptions this means Warning only.

3. System description

The system diagrams provide an overview for the different technologies of how to use the CIM module or CIU unit for connecting the different pump controllers to an EtherNet/IP network.

CIM solution, Dedicated Controls (CU 36X)

The Grundfos Dedicated Controls CU 36X controller can be connected to up to six Grundfos wastewater pumps. It offers status information as well as control and monitoring of a wastewater pit via a user-friendly operating panel with display.

CIM 500 is an add-on communication module that you install in the CU 36X, using a 10-pin connection. This enables communication with a PLC, SCADA system, etc.

CIM solution, Level Control LC 2X1 for wastewater pumps

The controller can be connected to one or two Grundfos wastewater pumps. It offers status information as well as control and monitoring of a wastewater pit. From the operating panel, basic status of the pit and the pumps are visible, and basic installation settings can be made. Detailed information is available via Grundfos GO Remote which is also used for more advanced installation settings. This is not shown in the pictures and is not discussed further in this manual.

CIM solution, Level Control LC 242 for submersible pumps

The controller can be connected to one or two Grundfos submersible pumps. It offers status information as well as control and monitoring of a water supply well. From the operating panel, basic status of the system and the pumps are visible, and basic installation settings can be made. Detailed information is available via Grundfos GO Remote which is also used for more advanced installation settings. This is not shown in the pictures and is not discussed further in this manual.

CIU solution, AUTO_{ADAPT} wastewater pumps

The CIU 502 unit (CIU 902 with CIM 500) constitutes a communication interface to a system consisting of up to four Grundfos DP, EF, SL1, SLV or SEG AUTO_{ADAPT} wastewater pumps installed in one or more pump pits. The pumps connect to the CIU 502 running communication over a separate pair of wires.

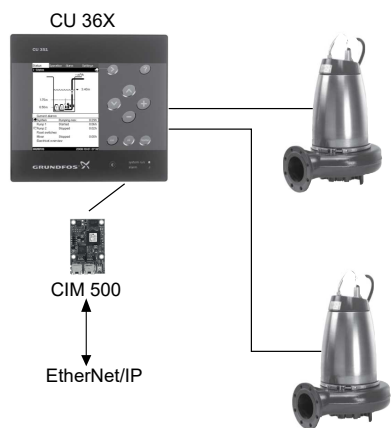
Each pump has an integrated pressure sensor that enables it to monitor and control the water level in the pump pit according to a common reference level and an intermittent operation scheme. By monitoring the water level, the pump will obtain enough information to know when to start and stop pumping.

The CIU 502 unit is not involved in the automatic control of the water level (starting and stopping of pumps) but merely provides the interface necessary for the following:

- Configuration of the pump parameters required for the level control.
- Online monitoring of pit and pump values.
- Individual (manual) control of each pump (forced start and stop and pump-down).
- Obtaining of measured and logged data that is valuable for pump service and pit optimisation.

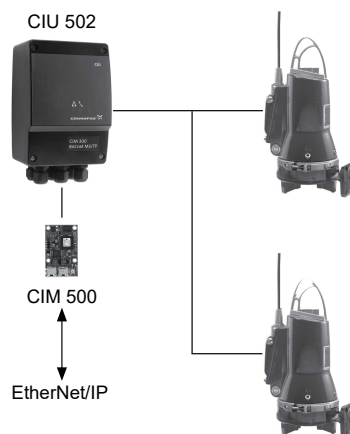
The CIU 502 can communicate with Grundfos GO Remote. This is not shown in the pictures and is not discussed further in this manual.

3.1 EtherNet/IP, CIM 500



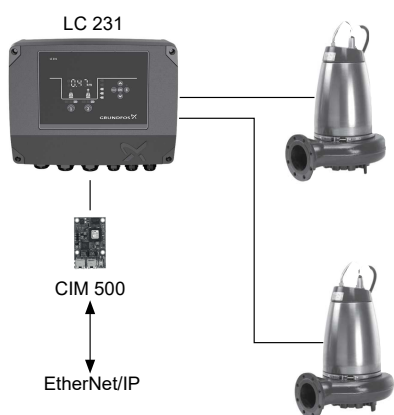
CIM 500 solution for Dedicated Controls. Up to six pumps can be connected to CU 36X.

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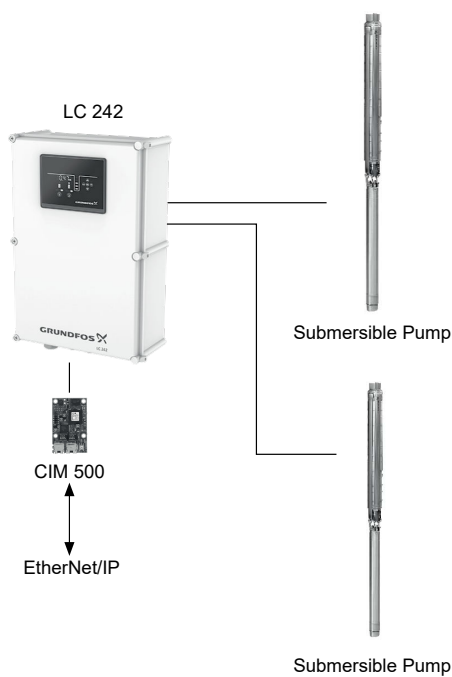
CIU 502 solution for Grundfos DP, EF, SL1, SLV and SEG AUTO_{ADAPT} pumps. Up to four pumps can be connected.

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CIM 500 solution for LC 2X1. Exemplified with the wall-mounted LC 231 version. Up to two pumps can be connected.

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CIM 500 solution for LC 2X2. Exemplified with the control cabinet LC 242 version. Up to two pumps can be connected.

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4. Specification

4.1 CIM 500 Ethernet module general data

General data	Description	Comments
Ambient humidity	30-95 %	Relative, non-condensing.
Operating temperature	-20 to +45 °C	-
Storage temperature	-25 to +70 °C	-
GENIbus visual diagnostics	LED2	The LED will be in one of these states: Off, permanently green, flashing red, permanently red.
Application layer	DHCP, HTTP, Ping, FTP, fieldbus protocols	-
Transport layer	TCP	-
Internet layer	Internet protocol V4 (IPv4)	-
Link layer	ARP, Media Access Control (Ethernet)	-
Ethernet cable	CAT5, CAT5e or CAT6	Supports auto cable-crossover detecting (Auto-MDIX).
Maximum cable length	100 metres at 10/100 Mbit/s	Corresponds to 328 feet.
Transmission speed	10 Mbit/s, 100 Mbit/s	Auto-detected.
Industrial Ethernet fieldbus protocols	PROFINET IO, Modbus TCP, BACnet IP, Ether-Net/IP, GRM IP, Grundfos iSolutions Cloud	Selected with rotary switch.

4.2 CIU 502 AutoAdapt

General data	Description	Comments
Power supply (CIU)	24 to 240 V	Integrated in the unit.
GENIbus connection type (CIU)	RS-485, 3-wire + screen	Conductors: A, B, and Y.
CIU box enclosure class	IP54	-
CIU box dimensions (H x W x D)	182 x 108 x 82 mm	-

4.3 EtherNet/IP

EtherNet/IP specifications	Description
Minimum requested packet interval	15 ms
I/O data	505 bytes output 509 bytes input Maximum 255 bytes I/O data per assembly.
Number of IO connections	10 Default; configurable depending on available socket resources.
Number of encapsulation sessions	10 Default; configurable depending on available socket resources.
Number of explicit messaging connections	2 explicit messaging connections per encapsulation session 20 explicit messaging connections in total, configurable.
User-specific objects	Object 100. Depending on the connected product. - Grundfos pump - Grundfos booster - Grundfos dosing - Grundfos water utility.
Maximum number of connections	2 explicit messaging connections × 10 encapsulation sessions Additional 10 I/O connections Total: 30 connections.
Standard objects	- Identity object (class 0x01) - Message Router object (class 0x02) - Assembly object (class 0x04). Assembly: up to 32 - Connection Manager object (class 0x06) - Device Level Ring (DLR) object (0x47) - Quality of Service (QoS) object (0x48) - TCP/IP Interface object (0xF5) - Ethernet Link object (0xF6)

EtherNet/IP specifications	Description
DHCP	Supported
Functional scope	• Adapter • Support of 2 Ethernet Link objects for implementing ring and daisy chain topologies • Device Level Ring (DLR) protocol (announce-based ring node) • Quality of Service (QoS) • IPv4 Address Conflict Detection (ACD)
Watchdog	Communication watchdog with fixed 5 seconds time-out. It can be enabled via the CIM 500 web page.
Certificate	Plugfest December 2018, Conformance July 2019.

5. EtherNet/IP, CIM 500 setup

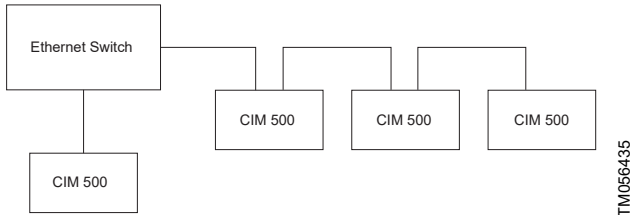
WARNING
Electric shock
 Death or serious personal injury
 - Connect CIM 500 only to SELV or PELV circuits.

5.1 Connecting the Ethernet cable

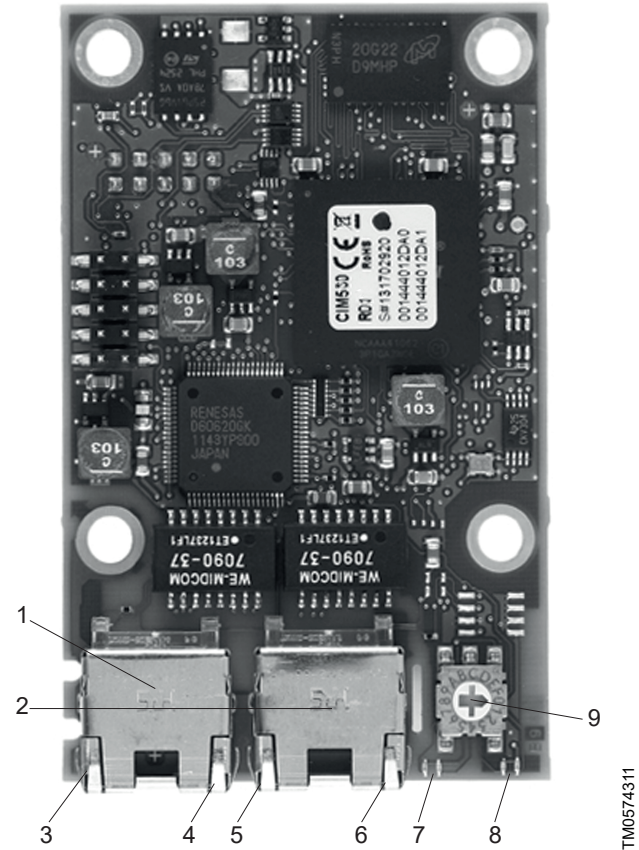
Use RJ45 plugs and an Ethernet cable. Connect the cable shield to protective earth at both ends.

! It is important to connect the cable shield to earth through an earth clamp or to connect the cable shield to earth in the connector.

CIM 500 is designed for flexible network installation: the built-in two-port switch makes it possible to daisy chain from product to product without the need of additional Ethernet switches. The last product in the chain is only connected to one of the Ethernet ports. Each Ethernet port has its own MAC address.



Example of Industrial Ethernet network

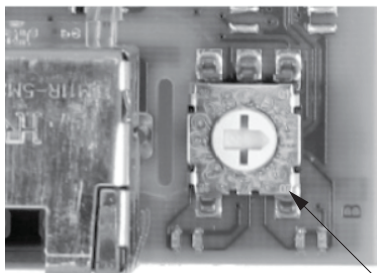


Example of Ethernet connection

Pos.	Description	Designation
1	Industrial Ethernet RJ45 connector 1	ETH1
2	Industrial Ethernet RJ45 connector 2	ETH2
3	Data activity LED for connector 1	DATA1
4	Link LED for connector 1	LINK1
5	Data activity LED for connector 2	DATA2
6	Link LED for connector 2	LINK2
7	Green and red status LED for Ethernet communication	LED1
8	Green and red status LED for internal communication between the module and the pump.	LED2
9	Rotary switch for protocol selection	SW1

5.2 Selection of Industrial Ethernet protocol

The module has a rotary switch for selection of the Industrial Ethernet protocol.



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Selecting the Industrial Ethernet protocol

Pos.	Description
0	PROFINET IO, default
1	Modbus TCP
2	BACnet IP
3	EtherNet/IP
4	GRM IP for Grundfos Remote Management, requires a contract with Grundfos.
5	Grundfos iSOLUTIONS Cloud (GiC)
6...E	Reserved. LED1 is permanently red to indicate an invalid configuration.
F	- Resetting to factory settings. - Set the rotary switch to this position. - LED1 starts to flash red and green for 20 seconds to indicate that factory resetting is about to take place. - After 20 seconds, LED1 stops to flash and factory resetting is initiated. - When both LED1 and LED2 switch off, the resetting is completed. The rotary switch can be moved to another position.



If the rotary switch position is changed when the module is powered on, the module will restart and use the protocol associated with the new position.

5.3 Setting the IP addresses

The CIM 500 Ethernet module is by default set to a fixed IP address. It is possible to change the IP address settings from the built-in webserver.

Default IP settings used by the webserver	IP address: 192.168.1.100 Subnet mask: 255.255.255.0 Gateway: 192.168.1.1
IP settings for EtherNet/IP	Make the settings via the webserver

5.4 Establishing a connection to the webserver

You can configure CIM 500 using the built-in webserver. To establish a connection from a PC to CIM 500, the following steps are required:

- Connect the PC and CIM 500 using an Ethernet cable.
- Configure the PC Ethernet port to the same subnetwork as CIM 500, for example 192.168.1.101, and the subnet mask to 255.255.255.0.
- Open a standard Internet browser, and type 192.168.1.100 in the URL field.
- Log in to the webserver using the following:

Username	admin (default)
Password	Grundfos (default)

The first time you log in, you will be asked to change the password.



The username and password may have been changed from their default values.



CIM 500 connected to a PC

TM056436



You can use both ETH1 and ETH2 to establish a connection to the webserver.



You can access the webserver while the selected Industrial Ethernet protocol is active.

5.5 Status LEDs

The CIM 500 Ethernet module has two status LEDs, LED1 and LED2.

- Red and green status LED, LED1, for Ethernet communication
- Red and green status LED, LED2, for internal communication between CIM 500 and the Grundfos product.

LED1

Status	Description
Off	Ethernet Link is not active.
Permanently green	Ethernet Link is active, connection is established.
Flashing green	Ethernet Link is active, no connection is established.
Permanently red	Ethernet Link is active, IP address conflict is detected.
Flashing red	Ethernet Link is active, any connection is timed out.

LED2

Status	Description
Off	CIM 500 is switched off.
Flashing red	No internal communication between CIM 500 and the Grundfos product.
Permanently red	CIM 500 does not support the Grundfos product connected.
Permanently green	Internal communication between CIM 500 and the Grundfos product is OK.
Permanently red and green	Memory fault.



During startup, there is a delay of up to 5 seconds before LED1 and LED2 status is updated.

5.6 DATA and LINK LEDs

The CIM 500 Ethernet module has two connectivity LEDs related to each RJ45 connector. See fig. Figure 2.

DATA1 and DATA2

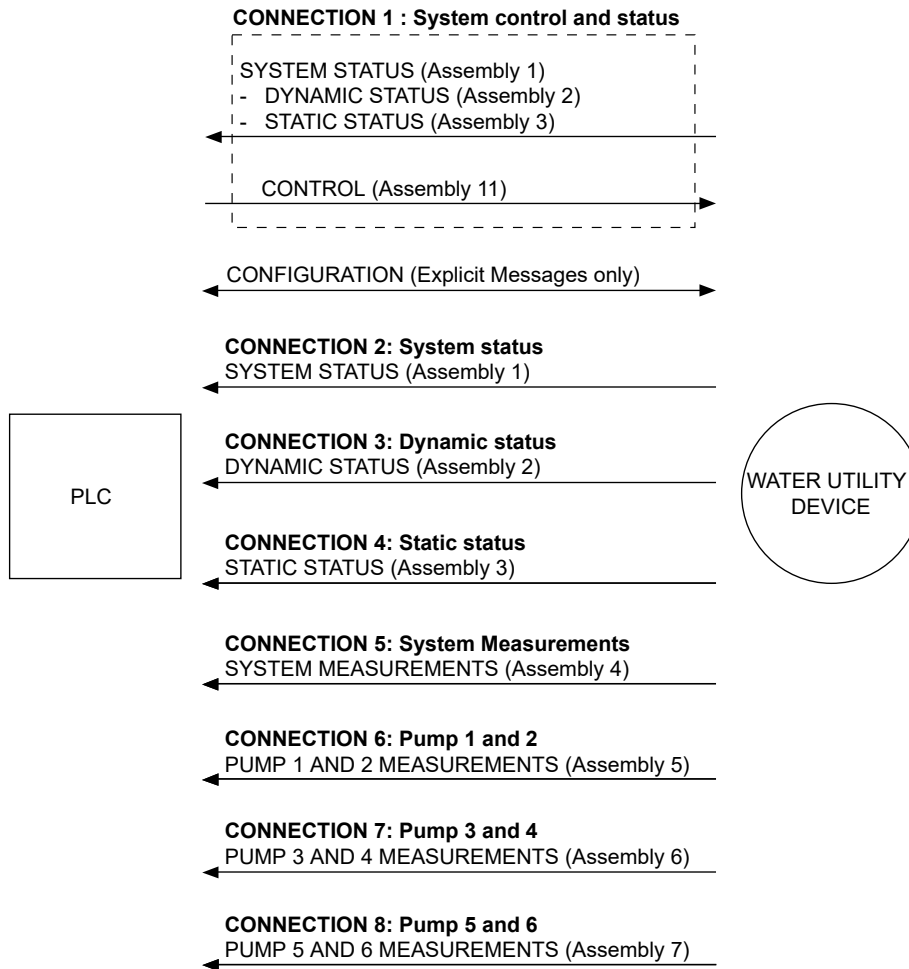
These yellow LEDs indicate data traffic activity.

Status	Description
Yellow off	No data communication on the RJ45 connector.
Yellow flashing	Data communication is ongoing on the RJ45 connector.
Permanently yellow	Heavy network traffic on the RJ45 connector.

LINK1 and LINK2

These green LEDs show whether the Ethernet cable is properly connected.

Status	Description
Green off	No Ethernet Link on the RJ45 connector.
Green on	Ethernet Link on the RJ45 connector is OK.

6. Detailed description of data parameters**6.1 Connection and Assembly overview****6.2 Water utility input/output assembly details**

Connection Nr.	Connection type	Connection name	Input assembly instance	Input assembly size	Output assembly instance	Output assembly size
1	Exclusive owner	System control and status	1	152	11	40
2	Input only	System status	1	152	197	0
3	Input only	System dynamic status	2	144	197	0
4	Input only	System static status	3	8	197	0
5	Input only	System measurements	4	136	197	0
6	Input only	Pump 1 and 2 measurements	5	192	197	0
7	Input only	Pump 3 and 4 measurements	6	192	197	0
8	Input only	Pump 5 and 6 measurements	7	192	197	0

6.3 General remarks

Unused and unsupported bits in supported bitwise interpreted parameters (Array of Booleans) have the value '0'. Unused and unsupported parameters, whether they are bitwise interpreted or not, have the value 'NA' (Not Available=0xFFFF).

6.4 Control parameters, Output Assembly 11

The control parameters are output parameters for controlling and operating of the water utility device. Associated status parameters can be used for reading back the values (confirmation). If the device doesn't accept the value it will not react to it and the read back status value is not updated (no mechanism for a negative confirmations is provided). For the "Configuration" type of data, explicit messaging with read back is used.

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
1	SetRemoteLocal	SINT8, 0xC2	Bool (state)	0, 1	Setting of Remote/Local state: 0=Local, 1=Remote Read back status from ID100.0	•	•	•
2	SetCustomRelayOnOff	SINT8, 0xC2	Bool (state)	0, 1	Setting of Customer relay On/Off state: 0=Off, 1=On	•		
3	TrigResetAlarm	SINT8, 0xC2	Bool (state)	↑1 (positive edge)	Command: Resetting of alarms Acknowledge in ID100.1	•		
4	TrigInterlock	SINT8, 0xC2	Bool (state)	↑1 (positive edge)	Command: Interlocking of system Acknowledge in ID100.3. Status in ID107	•		
5	TrigAuto	SINT8, 0xC2	Bool (state)	↑1 (positive edge)	Command: Releases interlocking, returns to Auto Acknowledge in ID100.2. Status in ID107	•		
6	TrigPulse	SINT8, 0xC2	Bool (state)	↑1 (positive edge)	Command: Pulses customer relay Acknowledge in ID100.4	•		
7	TrigResetUserDefCnt1	SINT8, 0xC2	Bool (state)	↑1 (positive edge)	Command: Reset user def. counter 1 Acknowledge in ID100.5	•		
8	TrigResetUserDefCnt2	SINT8, 0xC2	Bool (state)	↑1 (positive edge)	Command: Reset user def. counter 2 Acknowledge in ID100.6	•		
9	TrigResetUserDefCnt3	SINT8, 0xC2	Bool (state)	↑1 (positive edge)	Command: Reset user def. counter 3 Acknowledge in ID100.7	•		
10	SetOprModeP1	SINT8, 0xC2	Enum	0 - 255	Pump P1 manual operating mode setting: 0: Auto 1: Start (Forced to start) 2: Stop (Forced to stop) Status AA in ID400 Status DC, LC in ID402	•	•	•
11	SetOprModeP2	SINT8, 0xC2	Enum	0 - 255	Pump P2 manual operating mode setting: 0: Auto 1: Start (Forced to start) 2: Stop (Forced to stop) Status AA in ID450 Status DC, LC in ID452	•	•	•
12	SetOprModeP3	SINT8, 0xC2	Enum	0 - 255	Pump P3 manual operating mode setting: 0: Auto 1: Start (Forced to start) 2: Stop (Forced to stop) Status AA in ID500 Status DC, LC in ID502	•	•	
13	SetOprModeP4	SINT8, 0xC2	Enum	0 - 255	Pump P4 manual operating mode setting: 0: Auto 1: Start (Forced to start) 2: Stop (Forced to stop) Status AA in ID550 Status DC, LC in ID552	•	•	
14	SetOprModeP5	SINT8, 0xC2	Enum	0 - 255	Pump P5 manual operating mode setting: 0: Auto 1: Start (Forced to start) 2: Stop (Forced to stop) Status AA in ID600 Status DC, LC in ID602	•		
15	SetOprModeP6	SINT8, 0xC2	Enum	0 - 255	Pump P6 manual operating mode setting: 0: Auto 1: Start (Forced to start) 2: Stop (Forced to stop) Status AA in ID650 Status DC, LC in ID652	•		

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
16	TrigResetAlarmP1	SINT8, 0xC2	Bool (event)	↑1 (positive edge)	Command: Alarm reset of pump P1 Acknowledge in ID101.0		•	
17	TrigResetAlarmP2	SINT8, 0xC2	Bool (event)	↑1 (positive edge)	Command: Alarm reset of pump P2 Acknowledge in ID101.1		•	
18	TrigResetAlarmP3	SINT8, 0xC2	Bool (event)	↑1 (positive edge)	Command: Alarm reset of pump P3 Acknowledge in ID101.2		•	
19	TrigResetAlarmP4	SINT8, 0xC2	Bool (event)	↑1 (positive edge)	Command: Alarm reset of pump P4 Acknowledge in ID101.3		•	
20	TrigPumpDownP1	SINT8, 0xC2	Bool (event)	↑1 (positive edge)	Command: Pump down of pump P1 Acknowledge in ID101.4		•	
21	TrigPumpDownP2	SINT8, 0xC2	Bool (event)	↑1 (positive edge)	Command: Pump down of pump P2 Acknowledge in ID101.5		•	
22	TrigPumpDownP3	SINT8, 0xC2	Bool (event)	↑1 (positive edge)	Command: Pump down of pump P3 Acknowledge in ID101.6		•	
23	TrigPumpDownP4	SINT8, 0xC2	Bool (event)	↑1 (positive edge)	Command: Pump down of pump P4 Acknowledge in ID101.7		•	
24	SetReserved1	SINT8, 0xC2	-	-	Reserved for future use			
25	SetAnalogOutput1	SINT16, 0xC3	0.1 %	0 – 3276.7 %	Setting analog output 1, AO1 No status readback ID	•		
26	SetAnalogOutput2	SINT16, 0xC3	0.1 %	0 – 3276.7 %	Setting analog output 2, AO2 No status readback ID	•		
27	SetAnalogOutput3	SINT16, 0xC3	0.1 %	0 – 3276.7 %	Setting analog output 3, AO3 No status readback ID	•		
28	SetReserved2	SINT16, 0xC3	-	-	Reserved for future use			
29	SetRealTimeClock	SINT32, 0xC4	Unix time	0 - (2 ³¹ -1)= 19.01.2038	Setting the Real Time Clock Status in ID346	•		LC 2x2
30	SetReserved3	SINT16, 0xC3	-	-	Reserved for future use			
31	SetReserved4	SINT16, 0xC3	-	-	Reserved for future use			

6.4.1 Explanation to event trigger

When an EtherNet/IP master writes an output parameter, the write action is triggered by a specific event.

This can work in three ways:

Rising edge

Control bits with a rising-edge event trigger behave like a command that is executed when a bit transition from "0" to "1" occurs. Each of them has a corresponding acknowledge bit in SystemStatus ID 100 or PumpControlAck ID 101, which is set when the command is executed and cleared when the control bit is written back to "0".

State

Control bits with a state-event trigger behave like a "state" that is forced upon the water utility system. CIM 500 will attempt to make the water utility system operate according to the "requested" state.

Value change

Control bits/bytes with a value-change event trigger behave like a command that is executed when the bit/byte changes its value. CIM 500 will attempt to make the water utility system operate according to the "requested" value. The change is reflected in a bit/byte value in a corresponding input parameter.

6.5 Configuration parameters, Input/Output explicit messaging

Configuration parameters are parameters that can be used to program selected settings in the water utility device. They can be read back for value confirmation. If the device doesn't accept the value it will not react to it and the read back status value is not updated.

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
50	ConfOverflowLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the value of the system overflow level	•		
51	ConfHighLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the value of the system high level	•		•
52	ConfAlarmLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the value of the system alarm level	•		
53	ConfDryRunningLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the value of the system dry running level	•		•
54	ConfFoamDrainLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the value of the system foam draining level	•		
55	ConfStartLevelP1	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the start level value of pump P1	•		•
56	ConfStopLevelP1	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the stop level value of pump P1	•		•
57	ConfStartLevelP2	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the start level value of pump P2	•		•
58	ConfStopLevelP2	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the stop level value of pump P2	•		
59	ConfStartLevelP3	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the start level value of pump P3	•		
60	ConfStopLevelP3	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the stop level value of pump P3	•		
61	ConfStartLevelP4	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the start level value of pump P4	•		
62	ConfStopLevelP4	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the stop level value of pump P4	•		
63	ConfStartLevelP5	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the start level value of pump P5	•		
64	ConfStopLevelP5	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the stop level value of pump P5	•		
65	ConfStartLevelP6	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the start level value of pump P6	•		
66	ConfStopLevelP6	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the stop level value of pump P6	•		
67	ConfSinglePitStopLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the value of the AutoAdapt single pit stop level		•	
68	ConfSinglePitStartLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the value of the AutoAdapt single pit start level		•	
69	ConfSinglePitStartBand	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the value of the AutoAdapt single pit start band		•	
70	ConfSinglePitHighLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the value of the AutoAdapt single pit high level		•	
71	ConfMultiPitStartBandP1	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the AutoAdapt multi pit start band of pump P1		•	
72	ConfMultiPitHighLevelP1	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the AutoAdapt multi pit high level of pump P1		•	
73	ConfMultiPitStartBandP2	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the AutoAdapt multi pit start band of pump P2		•	
74	ConfMultiPitHighLevelP2	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the AutoAdapt multi pit high level of pump P2		•	
75	ConfMultiPitStartBandP3	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the AutoAdapt multi pit start band of pump P3		•	
76	ConfMultiPitHighLevelP3	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the AutoAdapt multi pit high level of pump P3		•	
77	ConfMultiPitStartBandP4	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the AutoAdapt multi pit start band of pump P4		•	
78	ConfMultiPitHighLevelP4	SINT16, 0xC3	0.01 m	0 – 327.67 m	Configuring the AutoAdapt multi pit high level of pump P4		•	
79	ConfReserved1	SINT16, 0xC3	-	-	Reserved for future use			

6.6 Dynamic status parameters, Input Assembly 2

Dynamic status parameters are parameters that describe the actual modes and states of the water utility device. They are thus variables that can often change during operation. This assembly is included in Assembly 1.

6.6.1 SystemStatus (ID 100)

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
100	SystemStatus	WORD, 0xD2	Array of Booleans		Miscellaneous states/modes			
	0: RemoteLocal		Bool (state)	0, 1	Present status of Remote/Local state	•	•	•
	1: ResetAlarmAck		Bool (state)	0, 1	Acknowledge bit for "TrigResetAlarm"	•	•	•
	2: AutoAck		Bool (state)	0, 1	Acknowledge bit for "TrigAutoPit"	•		
	3: InterlockAck		Bool (state)	0, 1	Acknowledge bit for "TrigInterlock"	•		
	4: CustRelayPulseAck		Bool (state)	0, 1	Acknowledge bit for "TrigPulse"	•		
	5: ResetUserDefCnt1Ack		Bool (state)	0, 1	Acknowledge bit for "TrigResetUserDefCnt1"	•		
	6: ResetUserDefCnt2Ack		Bool (state)	0, 1	Acknowledge bit for "TrigResetUserDefCnt2"	•		
	7: ResetUserDefCnt3Ack		Bool (state)	0, 1	Acknowledge bit for "TrigResetUserDefCnt3"	•		
	8: ManualControl		Bool (state)	0, 1	Present status of Manual pump control	•	•	•
	9: Alarm		Bool (state)	0, 1	Present status of alarms: 0=No alarms; 1=Alarm present	•	•	•
	10: Warning		Bool (state)	0, 1	Present status of warnings: 0=No warning; 1=Warning present	•	•	•
	11: AutoAdaptPitMode		Bool (state)	0, 1	Present status of AutoAdaptPitMode: 0=Single pit; 1=Multi pit		•	

6.6.2 PumpControlAck (ID 101)

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
101	PumpControlAck	WORD, 0xD2	Array of Booleans		Acknowledge of AA pump control			
	0: ResetAlarmP1Ack		Bool (state)	0, 1	Acknowledge bit for "TrigResetAlarmP1"		•	
	1: ResetAlarmP2Ack		Bool (state)	0, 1	Acknowledge bit for "TrigResetAlarmP2"		•	
	2: ResetAlarmP3Ack		Bool (state)	0, 1	Acknowledge bit for "TrigResetAlarmP3"		•	
	3: ResetAlarmP4Ack		Bool (state)	0, 1	Acknowledge bit for "TrigResetAlarmP4"		•	
	4: PumpDownP1Ack		Bool (state)	0, 1	Acknowledge bit for "TrigPumpDownP1"		•	
	5: PumpDownP2Ack		Bool (state)	0, 1	Acknowledge bit for "TrigPumpDownP2"		•	
	6: PumpDownP3Ack		Bool (state)	0, 1	Acknowledge bit for "TrigPumpDownP3"		•	
	7: PumpDownP4Ack		Bool (state)	0, 1	Acknowledge bit for "TrigPumpDownP4"		•	

6.6.3 UserDigitalIntputsBlock1 (ID 102)

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
102	UserDigitalIntputsBlock1	WORD, 0xD2	Array of Bools		Digital inputs			
	0: DI1		Bool (state)	0, 1	Status of Digital Input 1, DI1 (AutoAdapt: High water alarm)		•	•
	1: DI2		Bool (state)	0, 1	Status of Digital Input 2, DI2 (AutoAdapt: General purpose alarm)		•	•
	2: DI3		Bool (state)	0, 1	Status of Digital Input 3, DI3			•
	3: DI4		Bool (state)	0, 1	Status of Digital Input 4, DI4			•
	4: DI5		Bool (state)	0, 1	Status of Digital Input 5, DI5			•
	5: DI6		Bool (state)	0, 1	Status of Digital Input 6, DI6			•
	6: DI7		Bool (state)	0, 1	Status of Digital Input 7, DI7			•
	7: DI8		Bool (state)	0, 1	Status of Digital Input 8, DI8			•
	8: DI9		Bool (state)	0, 1	Status of Digital Input 9, DI9			•
	9: DI10		Bool (state)	0, 1	Status of Digital Input 10, DI10			•
	10: DI11		Bool (state)	0, 1	Status of Digital Input 11, DI11			•
	11: DI12		Bool (state)	0, 1	Status of Digital Input 12, DI12			•
	12: DI13		Bool (state)	0, 1	Status of Digital Input 13, DI13			•
	13: DI14		Bool (state)	0, 1	Status of Digital Input 14, DI14			LC 2x2
	14: DI15		Bool (state)	0, 1	Status of Digital Input 15, DI15			LC 2x2
	15: DI16		Bool (state)	0, 1	Status of Digital Input 16, DI16			LC 2x2

6.6.4 UserDigitalIntputsBlock2 (ID 103)

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
103	UserDigitalIntputsBlock2	WORD, 0xD2	Array of Bools		Digital inputs			
	0: DI17		Bool (state)	0, 1	Status of Digital Input 17, DI17			LC 2x2
	1: DI18		Bool (state)	0, 1	Status of Digital Input 18, DI18			LC 2x2
	2: DI19		Bool (state)	0, 1	Status of Digital Input 19, DI19			LC 2x2
	3: DI20		Bool (state)	0, 1	Status of Digital Input 20, DI20			LC 2x2
	4: DI21		Bool (state)	0, 1	Status of Digital Input 21, DI21			LC 2x2
	5: DI22		Bool (state)	0, 1	Status of Digital Input 22, DI22			LC 2x2
	6: DI23		Bool (state)	0, 1	Status of Digital Input 23, DI23			LC 2x2
	7: DI24		Bool (state)	0, 1	Status of Digital Input 24, DI24			LC 2x2
	8: DI25		Bool (state)	0, 1	Status of Digital Input 25, DI25			LC 2x2
	9: DI26		Bool (state)	0, 1	Status of Digital Input 26, DI26			LC 2x2
	10: DI27		Bool (state)	0, 1	Status of Digital Input 27, DI27			LC 2x2
	11: DI28		Bool (state)	0, 1	Status of Digital Input 28, DI28			LC 2x2
	12: DI29		Bool (state)	0, 1	Status of Digital Input 29, DI29			LC 2x2
	13: DI30		Bool (state)	0, 1	Status of Digital Input 30, DI30			LC 2x2
	14: DI31		Bool (state)	0, 1	Status of Digital Input 31, DI31			LC 2x2
	15: DI32		Bool (state)	0, 1	Status of Digital Input 32, DI32			LC 2x2

6.6.5 UserDigitalOutputs (ID 104)

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
104	UserDigitalOutputs	WORD, 0xD2	Array of Bools		Digital outputs			
	0: DO1		Bool (state)	0, 1	Status of Digital Output 1, DO1	•		•
	1: DO2		Bool (state)	0, 1	Status of Digital Output 2, DO2	•		•
	2: DO3		Bool (state)	0, 1	Status of Digital Output 3, DO3	•		•
	3: DO4		Bool (state)	0, 1	Status of Digital Output 4, DO4	•		•
	4: DO5		Bool (state)	0, 1	Status of Digital Output 5, DO5	•		•
	5: DO6		Bool (state)	0, 1	Status of Digital Output 6, DO6	•		•
	6: DO7		Bool (state)	0, 1	Status of Digital Output 7, DO7	•		•
	7: DO8		Bool (state)	0, 1	Status of Digital Output 8, DO8	•		•
	8: DO9		Bool (state)	0, 1	Status of Digital Output 9, DO9			•
	9: DO10		Bool (state)	0, 1	Status of Digital Output 10, DO10			•

6.6.6 FloatSwitches (ID 105)

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
105	FloatSwitches	WORD, 0xD2	Array of Bools		Float switches status			
	0: FloatSwitch1		Bool (state)	0, 1	Float Switch 1 status, (function configurable)	•		•
	1: FloatSwitch2		Bool (state)	0, 1	Float Switch 2 status, (function configurable)	•		•
	2: FloatSwitch3		Bool (state)	0, 1	Float Switch 3 status, (function configurable)	•		•
	3: FloatSwitch4		Bool (state)	0, 1	Float Switch 4 status, (function configurable)	•		•
	4: FloatSwitch5		Bool (state)	0, 1	Float Switch 5 status, (function configurable)	•		•
	5: FloatSwitchExtraOverflow		Bool (state)	0, 1	Extra Overflow Switch status	•		

6.6.7 SensorsPresent (ID 106)

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
106	SensorsPresent	WORD, 0xD2	Array of Bools		Bit value "1": Referred sensor is present			
	0: LevelControlSensor		Bool (state)	0, 1	Level control sensor (for CU 362 this is ultrasonic)	•		•
	1: PressControlSensor		Bool (state)	0, 1	Pressure control sensor	•		
	2: FloatSwitches		Bool (state)	0, 1	Float switches	•		•
	3: FlowSensor		Bool (state)	0, 1	Flow sensor	•		LC 2x2
	4: Power/EnergySensor		Bool (state)	0, 1	Power/Energy sensor	•		LC 2x2
	5: UserDefinedAlsens1		Bool (state)	0, 1	User defined analog AI1 sensor	•		LC 2x2
	6: UserDefinedAlsens2		Bool (state)	0, 1	User defined analog AI2 sensor	•		LC 2x2
	7: UserDefinedAlsens3		Bool (state)	0, 1	User defined analog AI3 sensor	•		LC 2x2
	8: UserDefinedAlsens4		Bool (state)	0, 1	User defined analog AI4 sensor			LC 2x2
	9: UserDefinedAlsens5		Bool (state)	0, 1	User defined analog AI5 sensor			LC 2x2
	10: TurbiditySensor		Bool (state)	0, 1	Turbidity sensor			LC 2x2
	11: PHSensor		Bool (state)	0, 1	PH sensor			LC 2x2
	12: ConductivitySensor		Bool (state)	0, 1	Conductivity sensor			LC 2x2
	13: PulseFlowMeter		Bool (state)	0, 1	Pulse flow meter			LC 2x2
	14: PressureSensor		Bool (state)	0, 1	Pressure sensor (measuring only)			LC 2x2
	15: LevelSensor		Bool (state)	0, 1	Level sensor (measuring only)			LC 2x2

6.6.8 System states, alarms and warnings (ID 107 - ID 125)

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
107	OperatingMode	SINT16, 0xC3	Enum	0 - 255	Present status of Operating mode			
					0: Standby	•	•	•
					1: Start-up delay	•	•	•
					2: Pumping (Level control)	•	•	•
					3: Stop delay	•		•
					4: Pumping max. (Level control)	•		•
					5: Stopped (Level control)	•	•	•
					6: Foam draining	•		
					7: Daily emptying	•		
					8: Pump anti-seizing	•		•
					9: Manual control (all enabled pumps in manual control)	•	•	•
					10: Interlocked	•		
					11: Mains failure	•	•	•
					12: Level sensor error	•		•
					13: All enabled pumps in alarm	•	•	•
					14: All pumps out of operation	•	•	•
108	AlarmCode	SINT16, 0xC3	Enum	0 - 255	Alarm code (See Survey of event codes)	•	•	•
109	WarningCode	SINT16, 0xC3	Enum	0 - 255	Warning code (See Survey of event codes)	•	•	•
110	PumpsPresent	BYTE, 0xD1	Array of Booleans	Bits	One bit for each pump, "1": Pump is present	•	•	•
111	PumpsRunning	BYTE, 0xD1	Array of Booleans	Bits	One bit for each pump, "1": Pump is running	•	•	•
112	PumpsAlarm	BYTE, 0xD1	Array of Booleans	Bits	One bit for each pump, "1": Pump has an alarm	•	•	•
113	PumpsWarning	BYTE, 0xD1	Array of Booleans	Bits	One bit for each pump, "1": Pump has a warning	•		•
114	PumpsMonitoringFault	BYTE, 0xD1	Array of Booleans	Bits	One bit for each pump, "1": Pump has a communication fault	•	•	•
115	PumpsDisabled	BYTE, 0xD1	Array of Booleans	Bits	One bit for each pump, "1": Pump is disabled	•		
116	NoOffloatSwitches	SINT8, 0xC2	1	0 - 255	No of float switches installed	•		•
117	GrinderOperatingMode	SINT8, 0xC2	Enum	0 - 255	Present status of grinder operating mode:			
					0: Not present			
					1: Out of operation			
					2: Alarm	•		
					3: Stopped			
					4: Forward			
					5: Reverse			
118	DCLCAAlarmBits1	DWORD, 0xD3	Array of Booleans	Bits	DC and LC system alarm bits #1 (See System events - DCLCAAlarmBits1 (ID 118))	•		•
119	DCLCAAlarmBits2	DWORD, 0xD3	Array of Booleans	Bits	DC and LC system alarm bits #2 (See System events - DCLCAAlarmBits2 (ID 119))	•		•
120	DCLCAAlarmBits3	DWORD, 0xD3	Array of Booleans	Bits	DC and LC system alarm bits #3 (See System events - DCLCAAlarmBits3 (ID 120))	•		•
121	DCLCWarningBits1	DWORD, 0xD3	Array of Booleans	Bits	DC and LC system warning bits #1 (See System events - DCLCWarningBits1 (ID 121))	•		•
122	DCLCWarningBits2	DWORD, 0xD3	Array of Booleans	Bits	DC and LC system warning bits #2 (See System events - DCLCWarningBits2 (ID 122))	•		•
123	DCLCWarningBits3	DWORD, 0xD3	Array of Booleans	Bits	DC and LC system warning bits #3 (See System events - DCLCWarningBits3 (ID 123))	•		•
124	AAPitAlarmBits	WORD, 0xD2	Array of Booleans	Bits	AutoAdapt system alarm bits (See System events - AAPitAlarmBits (ID 124))		•	
125	AAPitWarningBits	WORD, 0xD2	Array of Booleans	Bits	AutoAdapt system warning bits (See System events - AAPitWarningBits (ID 125))		•	

6.6.9 Level status (ID 126 - ID 142)

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
126	OverflowLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	Overflow level	•		
127	HighLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	High level	•		•
128	AlarmLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	Alarm level	•		
129	DryRunningLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	Dry running level	•		•
130	FoamDrainLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	Foam drain level	•		
131	StartLevelP1	SINT16, 0xC3	0.01 m	0 – 327.67 m	Start level P1	•	•	•
132	StopLevelP1	SINT16, 0xC3	0.01 m	0 – 327.67 m	Stop level P1	•	•	•
133	StartLevelP2	SINT16, 0xC3	0.01 m	0 – 327.67 m	Start level P2	•	•	•
134	StopLevelP2	SINT16, 0xC3	0.01 m	0 – 327.67 m	Stop level P2	•	•	
135	StartLevelP3	SINT16, 0xC3	0.01 m	0 – 327.67 m	Start level P3	•	•	
136	StopLevelP3	SINT16, 0xC3	0.01 m	0 – 327.67 m	Stop level P3	•	•	
137	StartLevelP4	SINT16, 0xC3	0.01 m	0 – 327.67 m	Start level P4	•	•	
138	StopLevelP4	SINT16, 0xC3	0.01 m	0 – 327.67 m	Stop level P4	•	•	
139	StartLevelP5	SINT16, 0xC3	0.01 m	0 – 327.67 m	Start level P5	•		
140	StopLevelP5	SINT16, 0xC3	0.01 m	0 – 327.67 m	Stop level P5	•		
141	StartLevelP6	SINT16, 0xC3	0.01 m	0 – 327.67 m	Start level P6	•		
142	StopLevelP6	SINT16, 0xC3	0.01 m	0 – 327.67 m	Stop level P6	•		

6.6.10 Analog measurements (ID 143 - ID 160)

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
143	AnalogIn1Min	SINT16, 0xC3	"AnalogIn1Unit"	[-32767; 32767]	Scaling range minimum for analog AI1 sensor, uses associated unit			LC 2x2
144	AnalogIn1Max	SINT16, 0xC3	"AnalogIn1Unit"	[-32767; 32767]	Scaling range maximum for analog AI1 sensor, uses associated unit			LC 2x2
145	AnalogIn2Min	SINT16, 0xC3	"AnalogIn2Unit"	[-32767; 32767]	Scaling range minimum for analog AI2 sensor, uses associated unit			LC 2x2
146	AnalogIn2Max	SINT16, 0xC3	"AnalogIn2Unit"	[-32767; 32767]	Scaling range maximum for analog AI2 sensor, uses associated unit			LC 2x2
147	AnalogIn3Min	SINT16, 0xC3	"AnalogIn3Unit"	[-32767; 32767]	Scaling range minimum for analog AI3 sensor, uses associated unit			LC 2x2
148	AnalogIn3Max	SINT16, 0xC3	"AnalogIn3Unit"	[-32767; 32767]	Scaling range maximum for analog AI3 sensor, uses associated unit			LC 2x2
149	AnalogIn4Min	SINT16, 0xC3	"AnalogIn4Unit"	[-32767; 32767]	Scaling range minimum for analog AI4 sensor, uses associated unit			LC 2x2
150	AnalogIn4Max	SINT16, 0xC3	"AnalogIn4Unit"	[-32767; 32767]	Scaling range maximum for analog AI4 sensor, uses associated unit			LC 2x2
151	AnalogIn5Min	SINT16, 0xC3	"AnalogIn5Unit"	[-32767; 32767]	Scaling range minimum for analog AI5 sensor, uses associated unit			LC 2x2
152	AnalogIn5Max	SINT16, 0xC3	"AnalogIn5Unit"	[-32767; 32767]	Scaling range maximum for analog AI5 sensor, uses associated unit			LC 2x2
153	AnalogIn1Unit	SINT8, 0xC2	Enum	[0; 127]	Unit of measure for analog AI1 sensor			LC 2x2
154	AnalogIn2Unit	SINT8, 0xC2	Enum	[0; 127]	Unit of measure for analog AI2 sensor			LC 2x2
155	AnalogIn3Unit	SINT8, 0xC2	Enum	[0; 127]	Unit of measure for analog AI3 sensor			LC 2x2
156	AnalogIn4Unit	SINT8, 0xC2	Enum	[0; 127]	Unit of measure for analog AI4 sensor			LC 2x2
157	AnalogIn5Unit	SINT8, 0xC2	Enum	[0; 127]	Unit of measure for analog AI5 sensor			LC 2x2
158	DynStatusReserved1	SINT8, 0xC2	-	-	Reserved for future use			
159	DynStatusReserved2	SINT8, 0xC2	-	-	Reserved for future use			
160	DynStatusReserved3	SINT8, 0xC2	-	-	Reserved for future use			

6.6.11 Status of AutoAdapt single/multi pit level settings (ID 161 - ID 173)

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
161	SinglePitStopLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	AutoAdapt single pit stop level		•	
162	SinglePitStartLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	AutoAdapt single pit start level		•	
163	SinglePitStartBand	SINT16, 0xC3	0.01 m	0 – 327.67 m	AutoAdapt single pit start band		•	
164	SinglePitHighLevel	SINT16, 0xC3	0.01 m	0 – 327.67 m	AutoAdapt single pit high level		•	
165	MultiPitStartBandP1	SINT16, 0xC3	0.01 m	0 – 327.67 m	AutoAdapt multi pit start band pump P1		•	
166	MultiPitHighLevelP1	SINT16, 0xC3	0.01 m	0 – 327.67 m	AutoAdapt multi pit high level pump P1		•	
167	MultiPitStartBandP2	SINT16, 0xC3	0.01 m	0 – 327.67 m	AutoAdapt multi pit start band pump P2		•	
168	MultiPitHighLevelP2	SINT16, 0xC3	0.01 m	0 – 327.67 m	AutoAdapt multi pit high level pump P2		•	
169	MultiPitStartBandP3	SINT16, 0xC3	0.01 m	0 – 327.67 m	AutoAdapt multi pit start band pump P3		•	
170	MultiPitHighLevelP3	SINT16, 0xC3	0.01 m	0 – 327.67 m	AutoAdapt multi pit high level pump P3		•	
171	MultiPitStartBandP4	SINT16, 0xC3	0.01 m	0 – 327.67 m	AutoAdapt multi pit start band pump P4		•	
172	MultiPitHighLevelP4	SINT16, 0xC3	0.01 m	0 – 327.67 m	AutoAdapt multi pit high level pump P4		•	
173	DynStatusReserved5	SINT16, 0xC3	-	-	Reserved for future use			

6.7 Static status parameters, Input Assembly 3

Static status parameters are parameters that describe characteristics of the water utility device. They are constants that never change. This assembly is included in Assembly 1.

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
200	UnitFamily	SINT8, 0xC2	Enum	0 - 127	Unit Family: 46=LC 2x1 waste water 48=LC 2x2 water supply	26	28	46, 48
201	UnitType	SINT8, 0xC2	Enum	0 - 127	Unit Type: 1= LC 23x wall mounted 2=LC 24x modular	1	1	1, 2
202	UnitVersion	SINT8, 0xC2	Enum	0 - 127	Unit Version: Major software version	1, 2, 3	0-3	0
203	CIMSoftwareVersion	SINT8, 0xC2	1	0 - 127	CIM Software Version	•	•	•
204	CIMSoftwareRevision	SINT8, 0xC2	1	0 - 127	CIM Software Revision	•	•	•
205	CIMSoftwareFix	SINT8, 0xC2	1	0 - 127	CIM Software Fix	•	•	•
206	StatStatusReserved1	SINT8, 0xC2	-	-	Reserved for future use			
207	StatStatusReserved2	SINT8, 0xC2	-	-	Reserved for future use			

6.8 Water utility measurements, Input Assembly 4

Measured parameters are physical values measured by internal and external sensors and parameters. They are calculated by the water utility device itself, based on measured values and the state/mode behavior of the device.

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
300	WaterLevel	SINT16, 0xC3	0.01 m	0 - 327.67 m	System water level	• ¹⁾	•	• ¹⁾
301	SwitchWaterLevel	SINT16, 0xC3	1	0 - 32767	System switch water level	•		
302	Depth	SINT16, 0xC3	0.01 m	0 - 327.67 m	System actual depth	•		
303	ActualFlowIn	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	System water flow input	• ²⁾		
304	AverageFlowIn	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	System water average flow input	• ²⁾		
305	ActualFlowOut	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	System water flow output	• ²⁾		
306	AverageFlowOut	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	System water average flow output	• ²⁾		
307	PulseFlowMeter	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	System pulse flow meter measurement			LC 2x2 ³⁾
308	OutletPressure	SINT16, 0xC3	0.001 bar	0- 32.767 bar	System outlet pressure	• ⁴⁾		
309	SpecificEnergy	SINT16, 0xC3	1 Wh/m ³	0 – 32767 Wh/m ³	System specific energy	• ^{2) 5)}		
310	EnergyYesterday	SINT16, 0xC3	0.1 kWh	0 – 3276.7 kWh	System energy consumption, yesterday	• ⁵⁾		
311	EnergyToday	SINT16, 0xC3	0.1 kWh	0 – 3276.7 kWh	System energy consumption, today	• ⁵⁾		
312	VolumeYesterday	SINT16, 0xC3	0.1 m ³	0 - 3276.7 m ³	System pumped water volume, yesterday	• ²⁾		
313	VolumeToday	SINT16, 0xC3	0.1 m ³	0 - 3276.7 m ³	System pumped water volume, today	• ²⁾		
314	OverflowVolumeYesterday	SINT16, 0xC3	0.1 m ³	0 - 3276.7 m ³	System overflow volume, yesterday	• ²⁾		
315	OverflowVolumeToday	SINT16, 0xC3	0.1 m ³	0 - 3276.7 m ³	System overflow volume, today	• ²⁾		
316	OverflowTimeYesterday	SINT16, 0xC3	1 min	0 – 32767 min	System overflow time, yesterday	•		
317	OverflowTimeToday	SINT16, 0xC3	1 min	0 – 32767 min	System overflow time, today	•		
318	OverflowCounterYesterday	SINT16, 0xC3	1	0 - 32767	System overflow counter, yesterday	•		
319	OverflowCounterToday	SINT16, 0xC3	1	0 - 32767	System overflow counter, today	•		
320	Turbidity	SINT16, 0xC3	0.1 NTU	0- 3276.7 NTU	System water turbidity measurement			LC 2x2 ⁶⁾
321	PhMeasure	SINT16, 0xC3	0.01 PH	-327.67- 327.67 PH	System water PH measurement			LC 2x2 ⁷⁾
322	Conductivity	SINT16, 0xC3	1 uS/m	0- 32767 uS/m	System water conductivity measurement			LC 2x2 ⁸⁾
323	MixerStartsPerHour	SINT16, 0xC3	1 h ⁻¹	0- 32767 h ⁻¹	System mixer starts per hour	•		•
324	AnalogInput1	SINT16, 0xC3	0.1 %	0 - 3276.7 %	System analog input AI1	• ¹²⁾		• ¹²⁾
325	AnalogInput2	SINT16, 0xC3	0.1 %	0 - 3276.7 %	System analog input AI2	• ¹²⁾		• ¹²⁾
326	AnalogInput3	SINT16, 0xC3	0.1 %	0 - 3276.7 %	System analog input AI3	• ¹²⁾		• ¹²⁾
327	AnalogInput4	SINT16, 0xC3	0.1 %	0 - 3276.7 %	System analog input AI4			• ¹²⁾
328	AnalogInput5	SINT16, 0xC3	0.1 %	0 - 3276.7 %	System analog input AI5			• ¹²⁾
329	SysMeasReserved1	SINT16, 0xC3	-	-	Reserved for future use			
330	SysMeasReserved2	SINT16, 0xC3	-	-	Reserved for future use			

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
331	SysMeasReserved3	SINT16, 0xC3	-	-	Reserved for future use			
332	Power	SINT32, 0xC4	1 W	0 - (2 ³¹ -1) W	System power consumption	● ⁵⁾	●	●
333	Energy	SINT32, 0xC4	0.1 kWh	0 - 214748364.7 kWh	System energy consumption	● ⁵⁾	●	●
334	Runtime	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	System running time	●	●	●
335	Volume	SINT32, 0xC4	0.1 m ³	0 - 214748364.7 m ³	System pumped water volume	● ²⁾		
336	OverflowVolume	SINT32, 0xC4	0.1 m ³	0 - 214748364.7 m ³	System overflow volume, total	● ²⁾		
337	OverflowTime	SINT32, 0xC4	1 min	0 - (2 ³¹ -1)	System overflow time, total	●		
338	OverflowCounter	SINT32, 0xC4	1	0 - (2 ³¹ -1)	System overflow counter, total	●		
339	MixerRuntime	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	System mixer running time	●		
340	MixerStartCounter	SINT32, 0xC4	1	0 - (2 ³¹ -1)	System No. of mixer starts	●		
341	GrinderRunTime	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	System grinder running time	●		
342	GrinderReverseCounter	SINT32, 0xC4	1	0 - (2 ³¹ -1)	System No. of grinder reverses	●		
343	UserDefCounter1	SINT32, 0xC4	1	0 - (2 ³¹ -1)	User defined counter 1	●		
344	UserDefCounter2	SINT32, 0xC4	1	0 - (2 ³¹ -1)	User defined counter 2	●		
345	UserDefCounter3	SINT32, 0xC4	1	0 - (2 ³¹ -1)	User defined counter 3	●		
346	RealTimeClock	SINT32, 0xC4	Unix time	0 - (2 ³¹ -1) s	Present value of Real Time Clock	●		LC 2x2
347	SysMeasReserved4	SINT32, 0xC4	-	-	Reserved for future use			
348	SysMeasReserved5	SINT32, 0xC4	-	-	Reserved for future use			
349	SysMeasReserved6	SINT32, 0xC4	-	-	Reserved for future use			

1) Level sensor required

2) Inlet respectively outlet flow sensor required

3) Pulse flow meter required

4) Outlet pressure sensor required

5) Power/Energy meter required

6) Turbidity sensor required

7) PH sensor required

8) Conductivity sensor required

9) MP 204 can provide this measurement

10) IO 113 can provide this measurement

11) CUE can provide this measurement

12) Analog input sensor required

6.9 Pump P1 and pump P2 measurements, Input Assembly 5

Measured parameters are physical values measured by internal and external sensors and parameters. They are calculated by the device or the referred pump itself based on measured values and the state/mode behavior of the device or its pumps. The assembly contains measured parameters from pump P1 and pump P2 for all three device types DC, AA and LC.

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
400	Pump1OperatingMode	SINT8, 0xC2	Enum	0 - 127	Pump P1 Operating Mode 0: Auto 1: Start (Forced to start) 2: Stop (Forced to stop) 3-254: Illegal 255: Unknown/Not present		•	LC 2x2
401	Pump1ConnectionType	SINT8, 0xC2	Enum	0 - 127	Pump P1 Connection Type 0: CU 362 relay / LC 231 relay 1: IO 351 relay / IO 242 relay 2: CU 362 + VFD 3: IO 351 + VFD 4-254: Illegal 255: Unknown/Not present	•		•
402	Pump1ControlSource	SINT8, 0xC2	Enum	0 - 127	Pump P1 Control Source 0: Auto 1: Manual by switch 2: Manual by display 3: Manual from bus 4-254: Illegal 255: Unknown/Not present	•		•
403	Pump1PumpingMode	SINT8, 0xC2	Enum	0 - 127	Pump P1 Pumping Mode 0: Running 1: Stopped 2: Disabled 3: Pump not present 4-254: Illegal 255: Unknown/Not present	•		•
404	Pump1AuxDeviceIO113	SINT8, 0xC2	Enum	0 - 127	Pump P1 Aux Device IO 113 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
405	Pump1AuxDeviceMP204	SINT8, 0xC2	Enum	0 - 127	Pump P1 Aux Device MP 204 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
406	Pump1AuxDeviceCUE	SINT8, 0xC2	Enum	0 - 127	Pump P1 Aux Device CUE 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
407	Pump1VFDMode	SINT8, 0xC2	Enum	0 - 127	Pump P1 VFD mode 0: Not in control 1: - 2: Stopped 3: Reversed flushing 4: Start flushing 5: Normal 6: Run flushing	•		
408	Pump1Sensors	WORD, 0xD2	Array of Bools		Bit value "1": Referred sensor is present			
	0: WaterInOilSensor		Bool (state)	0, 1	Water in oil sensor present	•		
	1: CurrentSensor		Bool (state)	0, 1	Current sensor present	•		
409	Pump1MeasReserved1	WORD, 0xD2	-	-	Reserved for future use			

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
410	DCLCPump1AlarmBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P1 alarm bits, part 1 (See 7.6.9 Pump events - DCLCPump1AlarmBits1 (ID 410))	•		•
411	DCLCPump1AlarmBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P1 alarm bits, part 2 (See 7.6.10 Pump events - DCLCPump1AlarmBits2 (ID 411))	•		•
412	DCLCPump1WarningBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P1 warning bits, part 1 (See 7.6.11 Pump events - DCLCPump1WarnBits1 (ID 412))	•		•
413	DCLCPump1WarningBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P1 warning bits, part 2 (See 7.6.12 Pump events - DCLCPump1WarnBits2 (ID 413))	•		•
414	AAPump1AlarmBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P1 alarm bits (See 7.6.13 Pump events - AAPump1Alarm-Bits (ID 414))		•	
415	AAPump1WarningBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P1 warning bits (See 7.6.14 Pump events - AAPump1Warn-Bits (ID 415))		•	
416	Pump1MeasReserved2	SINT16, 0xC3	-	-	Reserved for future use			
417	Pump1Level	SINT16, 0xC3	0.01 m	0 - 327.67 m	Pump P1 water level		•	
418	Pump1Flow	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	Pump P1 water flow	• ²⁾		
419	Pump1LatestFlow	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	Pump P1 latest water flow pumping	• ²⁾		
420	Pump1Current	SINT16, 0xC3	0.1 A	0 - 3276.7 A	Pump P1 motor current	• ^{9) 11)}	•	•
421	Pump1LatestCurrent	SINT16, 0xC3	0.1 A	0 - 3276.7 A	Pump P1 latest motor current pumping	• ^{9) 11)}	•	•
422	Pump1Insulation	SINT16, 0xC3	10 kΩ	0 - 327670 kΩ	Pump P1 motor electrical insulation	• ^{9) 10)}		
423	Pump1WaterInOil	SINT16, 0xC3	0.01 %	0 - 100.00 %	Pump P1 motor water in oil	• ¹⁰⁾		
424	Pump1MotorTemp1	SINT16, 0xC3	0.01 °C	-273.15 - 327.67 °C	Pump P1 motor temperature 1	• ¹⁰⁾	•	
425	Pump1MotorTemp2	SINT16, 0xC3	0.01 °C	-273.15 - 327.67 °C	Pump P1 motor temperature 2	• ¹⁰⁾	•	
426	Pump1CosPhi	SINT16, 0xC3	0.01	0 - 1.00	Pump P1 motor cos phi	• ⁹⁾	•	•
427	Pump1Frequency	SINT16, 0xC3	0.01 Hz	0 - 327.67 Hz	Pump P1 motor frequency	• ¹¹⁾	•	
428	Pump1Voltage	SINT16, 0xC3	0.1 V	0 - 3276.7 V	Pump P1 motor voltage	• ^{9) 11)}	•	•
429	Pump1CurrentAsym	SINT16, 0xC3	0.1 %	0 - 100.0 %	Pump P1 motor current asymmetry	• ⁹⁾		
430	Pump1StartsPerHour	SINT16, 0xC3	1 h ⁻¹	0 - 32767 h ⁻¹	Pump P1 starts per hour	•		•
431	Pump1LatestRuntime	SINT16, 0xC3	1 s	0 - 32767 s	Pump P1 test running time	•		•
432	Pump1Runtime	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	Pump P1 total running time	•	•	•
433	Pump1RuntimeYesterday	SINT16, 0xC3	1 min	0 - 32767 min	Pump P1 total running time yesterday	•		•
434	Pump1RuntimeToday	SINT16, 0xC3	1 min	0 - 32767 min	Pump P1 total running time today	•		LC 2x2
435	Pump1NoOfStarts	SINT32, 0xC4	1	0 - (2 ³¹ -1)	Pump P1 total number of starts	•	•	•
436	Pump1NoOfStartsYesterday	SINT16, 0xC3	1	0 - 32767	Pump P1 total number of starts yesterday	•		•
437	Pump1NoOfStartsToday	SINT16, 0xC3	1	0 - 32767	Pump P1 total number of starts today	•		LC 2x2
438	Pump1TimeToService	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	Pump P1 time to next service	•		•
439	Pump1Power	SINT32, 0xC4	1 W	0 - (2 ³¹ -1) W	Pump P1 power	• ^{9) 11)}	•	•
440	Pump1Energy	SINT32, 0xC4	0.1 kWh	0 - (2 ³¹ -1) kWh	Pump P1 energy consumption	• ^{9) 11)}	•	•
450	Pump2OperatingMode	SINT8, 0xC2	Enum	0 - 127	Pump P2 Operating Mode 0: Auto 1: Start (Forced to start) 2: Stop (Forced to stop) 3-254: Illegal 255: Unknown/Not present		•	LC 2x2
451	Pump2ConnectionType	SINT8, 0xC2	Enum	0 - 127	Pump P2 Connection Type 0: CU 362 relay / LC 231 relay 1: IO 351 relay / IO 242 relay 2: CU 362 + VFD 3: IO 351 + VFD 4-254: Illegal 255: Unknown/Not present	•		•

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
452	Pump2ControlSource	SINT8, 0xC2	Enum	0 - 127	Pump P2 Control Source 0: Auto 1: Manual by switch 2: Manual by display 3: Manual from bus 4-254: Illegal 255: Unknown/Not present	•		•
453	Pump2PumpingMode	SINT8, 0xC2	Enum	0 - 127	Pump P2 Pumping Mode 0: Running 1: Stopped 2: Disabled 3: Pump not present 4-254: Illegal 255: Unknown/Not present	•		•
454	Pump2AuxDeviceIO113	SINT8, 0xC2	Enum	0 - 127	Pump P2 Aux Device IO 113 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
455	Pump2AuxDeviceMP204	SINT8, 0xC2	Enum	0 - 127	Pump P2 Aux Device MP 204 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
456	Pump2AuxDeviceCUE	SINT8, 0xC2	Enum	0 - 127	Pump P2 Aux Device CUE 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
457	Pump2VFDMode	SINT8, 0xC2	Enum	0 - 127	Pump P2 VFD mode 0: Not in control 1: - 2: Stopped 3: Reversed flushing 4: Start flushing 5: Normal 6: Run flushing	•		
458	Pump2Sensors	WORD, 0xD2	Array of Booleans		Bit value "1": Referred sensor is present			
	0: WaterInOilSensor		Bool (state)	0, 1	Water in oil sensor present	•		
	1: CurrentSensor		Bool (state)	0, 1	Current sensor present	•		
459	Pump2MeasReserved1	WORD, 0xD2	-	-	Reserve for future use			
460	DCLCPump2AlarmBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P2 alarm bits, part 1 (See 7.6.9 Pump events - DCLCPump1AlarmBits1 (ID 410))	•		•
461	DCLCPump2AlarmBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P2 alarm bits, part 2 (See 7.6.10 Pump events - DCLCPump1AlarmBits2 (ID 411))	•		•
462	DCLCPump2WarningBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P2 warning bits, part 1 (See 7.6.11 Pump events - DCLCPump1WarnBits1 (ID 412))	•		•
463	DCLCPump2WarningBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P2 warning bits, part 2 (See 7.6.12 Pump events - DCLCPump1WarnBits2 (ID 413))	•		•
464	AAPump2AlarmBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P2 alarm bits (See 7.6.13 Pump events - AAPump1Alarm-Bits (ID 414))		•	
465	AAPump2WarningBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P2 warning bits (See 7.6.14 Pump events - AAPump1Warn-Bits (ID 415))		•	
466	Pump2MeasReserved2	SINT16, 0xC3	-	-	Reserved for future use			

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
467	Pump2Level	SINT16, 0xC3	0.01 m	0 - 327.67 m	Pump P2 water level		•	
468	Pump2Flow	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	Pump P2 water flow	• ²⁾		
469	Pump2LatestFlow	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	Pump P2 latest water flow pumping	• ²⁾		
470	Pump2Current	SINT16, 0xC3	0.1 A	0 - 3276.7 A	Pump P2 motor current	• ⁹⁾ 11)	•	•
471	Pump2LatestCurren	SINT16, 0xC3	0.1 A	0 - 3276.7 A	Pump P2 latest motor current pumping	• ⁹⁾ 11)	•	•
472	Pump2Insulation	SINT16, 0xC3	10 kΩ	0 - 327670 kΩ	Pump P2 motor electrical insulation	• ⁹⁾ 10)		
473	Pump2WaterInOil	SINT16, 0xC3	0.01 %	0 - 100.00 %	Pump P2 motor water in oil	• ¹⁰⁾		
474	Pump2MotorTemp1	SINT16, 0xC3	0.01 °C	-273.15 - 327.67 °C	Pump P2 motor temperature 1	• ¹⁰⁾	•	
475	Pump2MotorTemp2	SINT16, 0xC3	0.01 °C	-273.15 - 327.67 °C	Pump P2 motor temperature 2	• ¹⁰⁾	•	
476	Pump2CosPhi	SINT16, 0xC3	0.01	0 - 1.00	Pump P2 motor cos phi	• ⁹⁾	•	•
477	Pump2Frequency	SINT16, 0xC3	0.01 Hz	0 - 327.67 Hz	Pump P2 motor frequency	• ¹¹⁾	•	
478	Pump2Voltage	SINT16, 0xC3	0.1 V	0 - 3276.7 V	Pump P2 motor voltage	• ⁹⁾ 11)	•	•
479	Pump2CurrentAsym	SINT16, 0xC3	0.1 %	0 - 100.0 %	Pump P2 motor current asymmetry	• ⁹⁾		
480	Pump2StartsPerHour	SINT16, 0xC3	1 h ⁻¹	0 - 32767 h ⁻¹	Pump P2 starts per hour	•		•
481	Pump2LatestRuntime	SINT16, 0xC3	1 s	0 - 32767 s	Pump P2 test running time	•		•
482	Pump2Runtime	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	Pump P2 total running time	•	•	•
483	Pump2RuntimeYesterday	SINT16, 0xC3	1 min	0 - 32767 min	Pump P2 total running time yesterday	•		•
484	Pump2RuntimeToday	SINT16, 0xC3	1 min	0 - 32767 min	Pump P2 total running time today	•		LC 2x2
485	Pump2NoOfStarts	SINT32, 0xC4	1	0 - (2 ³¹ -1)	Pump P2 total number of starts	•	•	•
486	Pump2NoOfStartsYesterday	SINT16, 0xC3	1	0 - 32767	Pump P2 total number of starts yesterday	•		•
487	Pump2NoOfStartsToday	SINT16, 0xC3	1	0 - 32767	Pump P2 total number of starts today	•		LC 2x2
488	Pump2TimeToService	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	Pump P2 time to next service	•		•
489	Pump2Power	SINT32, 0xC4	1 W	0 - (2 ³¹ -1) W	Pump P2 power	• ⁹⁾ 11)	•	•
490	Pump2Energy	SINT32, 0xC4	0.1 kWh	0 - (2 ³¹ -1) kWh	Pump P2 energy consumption	• ⁹⁾ 11)	•	•

1) Analog level sensor required

2) Flow calculation feature must be activated

3) Pulse flow meter required

4) Outlet pressure sensor required

5) Power/Energy meter,
CUE or 3rd party VFD required

6) Turbidity sensor required

7) PH sensor required

8) Conductivity sensor required

9) MP 204 can provide this measurement

10) IO 113 can provide this measurement

11) CUE or 3rd party VFD can provide this measurement

12) Analog sensor required

6.10 Pump P3 and P4 measurements, Input Assembly 6

Measured parameters are physical values measured by internal and external sensors and parameters. They are calculated by the device or the referred pump itself based on measured values and the state/mode behavior of the device or its pumps. The assembly contains measured parameters from pump P3 and pump P4 for device types DC and AA. LC types don't have a pump P3 or pump P4.

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
500	Pump3OperatingMode	SINT8, 0xC2	Enum	0 - 127	Pump P3 Operating Mode 0: Auto 1: Start (Forced to start) 2: Stop (Forced to stop) 3-254: Illegal 255: Unknown/Not present		•	
501	Pump3ConnectionType	SINT8, 0xC2	Enum	0 - 127	Pump P3 Connection Type 0: CU 362 relay / LC 231 relay 1: IO 351 relay / IO 242 relay 2: CU 362 + VFD 3: IO 351 + VFD 4-254: Illegal 255: Unknown/Not present	•		
502	Pump3ControlSource	SINT8, 0xC2	Enum	0 - 127	Pump P3 Control Source 0: Auto 1: Manual by switch 2: Manual by display 3: Manual from bus 4-254: Illegal 255: Unknown/Not present	•		
503	Pump3PumpingMode	SINT8, 0xC2	Enum	0 - 127	Pump P3 Pumping Mode 0: Running 1: Stopped 2: Disabled 3: Pump not present 4-254: Illegal 255: Unknown/Not present	•		
504	Pump3AuxDeviceIO113	SINT8, 0xC2	Enum	0 - 127	Pump P3 Aux Device IO 113 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
505	Pump3AuxDeviceMP204	SINT8, 0xC2	Enum	0 - 127	Pump P3 Aux Device MP 204 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
506	Pump3AuxDeviceCUE	SINT8, 0xC2	Enum	0 - 127	Pump P3 Aux Device CUE 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
507	Pump3VFDMode	SINT8, 0xC2	Enum	0 - 127	Pump P3 VFD mode 0: Not in control 1: - 2: Stopped 3: Reversed flushing 4: Start flushing 5: Normal 6: Run flushing	•		
508	Pump3Sensors	WORD, 0xD2	Array of Bools		Bit value "1": Referred sensor is present			
	0: WaterInOilSensor		Bool (state)	0, 1	Water in oil sensor present	•		
	1: CurrentSensor		Bool (state)	0, 1	Current sensor present	•		
509	Pump3MeasReserved1	WORD, 0xD2	-	-	Reserved for future use			

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
510	DCLCPump3AlarmBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P3 alarm bits, part 1 (See 7.6.9 Pump events - DCLCPump1AlarmBits1 (ID 410))	•		
511	DCLCPump3AlarmBits2	DWORD, 0xD3	Array of Booleans	Bits	U 362, LC 2xx P3 alarm bits, part 2 (See 7.6.10 Pump events - DCLCPump1AlarmBits2 (ID 411))	•		
512	DCLCPump3WarningBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P3 warning bits, part 1 (See 7.6.11 Pump events - DCLCPump1WarnBits1 (ID 412))	•		
513	DCLCPump3WarningBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P3 warning bits, part 2 (See 7.6.12 Pump events - DCLCPump1WarnBits2 (ID 413))	•		
514	AAPump3AlarmBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P3 alarm bits (See 7.6.13 Pump events - AAPump1Alarm-Bits (ID 414))		•	
515	AAPump3WarningBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P3 warning bits (See 7.6.14 Pump events - AAPump1Warn-Bits (ID 415))		•	
516	Pump3MeasReserved2	SINT16, 0xC3	-	-	Reserved for future use			
517	Pump3Level	SINT16, 0xC3	0.01 m	0 - 327.67 m	Pump P3 water level		•	
518	Pump3Flow	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	Pump P3 water flow	• ²⁾		
519	Pump3LatestFlow	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	Pump P3 latest water flow pumping	• ²⁾		
520	Pump3Current	SINT16, 0xC3	0.1 A	0 - 3276.7 A	Pump P3 motor current	• ^{9) 11)}	•	
521	Pump3LatestCurrent	SINT16, 0xC3	0.1 A	0 - 3276.7 A	Pump P3 latest motor current pumping	• ^{9) 11)}	•	
522	Pump3Insulation	SINT16, 0xC3	10 kΩ	0 - 327670 kΩ	Pump P3 motor electrical insulation	• ^{9) 10)}		
523	Pump3WaterInOil	SINT16, 0xC3	0.01 %	0 - 100.00 %	Pump P3 motor water in oil	• ¹⁰⁾		
524	Pump3MotorTemp1	SINT16, 0xC3	0.01 °C	-273.15 - 327.67 °C	Pump P3 motor temperature 1	• ¹⁰⁾	•	
525	Pump3MotorTemp2	SINT16, 0xC3	0.01 °C	-273.15 - 327.67 °C	Pump P3 motor temperature 2	• ¹⁰⁾	•	
526	Pump3CosPhi	SINT16, 0xC3	0.01	0 - 1.00	Pump P3 motor cos phi	• ⁹⁾	•	
527	Pump3Frequency	SINT16, 0xC3	0.01 Hz	0 - 327.67 Hz	Pump P3 motor frequency	• ¹¹⁾	•	
528	Pump3Voltage	SINT16, 0xC3	0.1 V	0 - 3276.7 V	Pump P3 motor voltage	• ^{9) 11)}	•	
529	Pump3CurrentAsym	SINT16, 0xC3	0.1 %	0 - 100.0 %	Pump P3 motor current asymmetry	• ⁹⁾		
530	Pump3StartsPerHour	SINT16, 0xC3	1 h ⁻¹	0 - 32767 h ⁻¹	Pump P3 starts per hour	•		
531	Pump3LatestRuntime	SINT16, 0xC3	1 s	0 - 32767 s	Pump P3 test running time	•		
532	Pump3Runtime	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	Pump P3 total running time	•	•	
533	Pump3RuntimeYesterday	SINT16, 0xC3	1 min	0 - 32767 min	Pump P3 total running time yesterday	•		
534	Pump3RuntimeToday	SINT16, 0xC3	1 min	0 - 32767 min	Pump P3 total running time today	•		
535	Pump3NoOfStarts	SINT32, 0xC4	1	0 - (2 ³¹ -1)	Pump P3 total number of starts	•	•	
536	Pump3NoOfStartsYesterday	SINT16, 0xC3	1	0 - 32767	Pump P3 total number of starts yesterday	•		
537	Pump3NoOfStartsToday	SINT16, 0xC3	1	0 - 32767	Pump P3 total number of starts today	•		
538	Pump3TimeToService	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	Pump P3 time to next service	•		
539	Pump3Power	SINT32, 0xC4	1 W	0 - (2 ³¹ -1) W	Pump P3 power	• ^{9) 11)}	•	
540	Pump3Energy	SINT32, 0xC4	0.1 kWh	0 - (2 ³¹ -1) kWh	Pump P3 energy consumption	• ^{9) 11)}	•	
550	Pump4OperatingMode	SINT8, 0xC2	Enum	0 - 127	Pump P4 Operating Mode 0: Auto 1: Start (Forced to start) 2: Stop (Forced to stop) 3-254: Illegal 255: Unknown/Not present		•	
551	Pump4ConnectionType	SINT8, 0xC2	Enum	0 - 127	Pump P4 Connection Type 0: CU 362 relay / LC 231 relay 1: IO 351 relay / IO 242 relay 2: CU 362 + VFD 3: IO 351 + VFD 4-254: Illegal 255: Unknown/Not present	•		

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
552	Pump4ControlSource	SINT8, 0xC2	Enum	0 - 127	Pump P4 Control Source 0: Auto 1: Manual by switch 2: Manual by display 3: Manual from bus 4-254: Illegal 255: Unknown/Not present	•		
553	Pump4PumpingMode	SINT8, 0xC2	Enum	0 - 127	Pump P4 Pumping Mode 0: Running 1: Stopped 2: Disabled 3: Pump not present 4-254: Illegal 255: Unknown/Not present	•		
554	Pump4AuxDeviceIO113	SINT8, 0xC2	Enum	0 - 127	Pump P4 Aux Device IO 113 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
555	Pump4AuxDeviceMP204	SINT8, 0xC2	Enum	0 - 127	Pump P4 Aux Device MP 204 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
556	Pump4AuxDeviceCUE	SINT8, 0xC2	Enum	0 - 127	Pump P4 Aux Device CUE 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
557	Pump4VFDMODE	SINT8, 0xC2	Enum	0 - 127	Pump P4 VFD mode 0: Not in control 1: - 2: Stopped 3: Reversed flushing 4: Start flushing 5: Normal 6: Run flushing	•		
558	Pump4Sensors	WORD, 0xD2	Array of Booleans		Bit value "1": Referred sensor is present			
	0: WaterInOilSensor		Bool (state)	0, 1	Water in oil sensor present	•		
	1: CurrentSensor		Bool (state)	0, 1	Current sensor present	•		
559	Pump4MeasReserved1	WORD, 0xD2	-	-	Reserved for future use			
560	DCLCPump4AlarmBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P4 alarm bits, part 1 (See 7.6.9 Pump events - DCLCPump1AlarmBits1 (ID 410))	•		
561	DCLCPump4AlarmBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P4 alarm bits, part 2 (See 7.6.10 Pump events - DCLCPump1AlarmBits2 (ID 411))	•		
562	DCLCPump4WarningBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P4 warning bits, part 1 (See 7.6.11 Pump events - DCLCPump1WarnBits1 (ID 412))	•		
563	DCLCPump4WarningBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P4 warning bits, part 2 (See 7.6.12 Pump events - DCLCPump1WarnBits2 (ID 413))	•		
564	AAPump4AlarmBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P4 alarm bits (See 7.6.13 Pump events - AAPump1Alarm-Bits (ID 414))		•	
565	AAPump4WarningBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P4 warning bits (See 7.6.14 Pump events - AAPump1Warn-Bits (ID 415))		•	
566	Pump4MeasReserved2	SINT16, 0xC3	-	-	Reserved for future use			

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
567	Pump4Level	SINT16, 0xC3	0.01 m	0 - 327.67 m	Pump P4 water level		•	
568	Pump4Flow	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	Pump P4 water flow	• ²⁾		
569	Pump4LatestFlow	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	Pump P4 latest water flow pumping	• ²⁾		
570	Pump4Current	SINT16, 0xC3	0.1 A	0 - 3276.7 A	Pump P4 motor current	• ⁹⁾ 11)	•	
571	Pump4LatestCurren	SINT16, 0xC3	0.1 A	0 - 3276.7 A	Pump P4 latest motor current pumping	• ⁹⁾ 11)	•	
572	Pump4Insulation	SINT16, 0xC3	10 kΩ	0 - 327670 kΩ	Pump P4 motor electrical insulation	• ⁹⁾ 10)		
573	Pump4WaterInOil	SINT16, 0xC3	0.01 %	0 - 100.00 %	Pump P4 motor water in oil	• ¹⁰⁾		
574	Pump4MotorTemp1	SINT16, 0xC3	0.01 °C	-273.15 - 327.67 °C	Pump P4 motor temperature 1	• ¹⁰⁾	•	
575	Pump4MotorTemp2	SINT16, 0xC3	0.01 °C	-273.15 - 327.67 °C	Pump P4 motor temperature 2	• ¹⁰⁾	•	
576	Pump4CosPhi	SINT16, 0xC3	0.01	0 - 1.00	Pump P4 motor cos phi	• ⁹⁾	•	
577	Pump4Frequency	SINT16, 0xC3	0.01 Hz	0 - 327.67 Hz	Pump P4 motor frequency	• ¹¹⁾	•	
578	Pump4Voltage	SINT16, 0xC3	0.1 V	0 - 3276.7 V	Pump P4 motor voltage	• ⁹⁾ 11)	•	
579	Pump4CurrentAsym	SINT16, 0xC3	0.1 %	0 - 100.0 %	Pump P4 motor current asymmetry	• ⁹⁾		
580	Pump4StartsPerHour	SINT16, 0xC3	1 h ⁻¹	0 - 32767 h ⁻¹	Pump P4 starts per hour	•		
581	Pump4LatestRuntime	SINT16, 0xC3	1 s	0 - 32767 s	Pump P4 test running time	•		
582	Pump4Runtime	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	Pump P4 total running time	•	•	
583	Pump4RuntimeYesterday	SINT16, 0xC3	1 min	0 - 32767 min	Pump P4 total running time yesterday	•		
584	Pump4RuntimeToday	SINT16, 0xC3	1 min	0 - 32767 min	Pump P4 total running time today	•		
585	Pump4NoOfStarts	SINT32, 0xC4	1	0 - (2 ³¹ -1)	Pump P4 total number of starts	•	•	
586	Pump4NoOfStartsYesterday	SINT16, 0xC3	1	0 - 32767	Pump P4 total number of starts yesterday	•		
587	Pump4NoOfStartsToday	SINT16, 0xC3	1	0 - 32767	Pump P4 total number of starts today	•		
588	Pump4TimeToService	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	Pump P4 time to next service	•		
589	Pump4Power	SINT32, 0xC4	1 W	0 - (2 ³¹ -1) W	Pump P4 power	• ⁹⁾ 11)	•	
590	Pump4Energy	SINT32, 0xC4	0.1 kWh	0 - (2 ³¹ -1) kWh	Pump P4 energy consumption	• ⁹⁾ 11)	•	

¹⁾ Analog level sensor required

²⁾ Flow calculation feature must be activated

³⁾ Pulse flow meter required

⁴⁾ Outlet pressure sensor required

⁵⁾ Power/Energy meter, CUE or 3rd party VFD required

⁶⁾ Turbidity sensor required

⁷⁾ PH sensor required

⁸⁾ Conductivity sensor required

⁹⁾ MP 204 can provide this measurement

¹⁰⁾ IO 113 can provide this measurement

¹¹⁾ CUE or 3rd party VFD can provide this measurement

¹²⁾ Analog sensor required

6.11 Pump P5 and pump P6 measurements, Input Assembly 7

Measured parameters are physical values measured by internal and external sensors and parameters. They are calculated by the device or the referred pump itself based on measured values and the state/mode behavior of the device or its pumps. The assembly contains measured parameters from pump P5 and pump P6. Only the DC device type can have the pump P5 and pump P6.

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
600	Pump5OperatingMode	SINT8, 0xC2	Enum	0 - 127	Pump P5 Operating Mode 0: Auto 1: Start (Forced to start) 2: Stop (Forced to stop) 3-254: Illegal 255: Unknown/Not present			
601	Pump5ConnectionType	SINT8, 0xC2	Enum	0 - 127	Pump P5 Connection Type 0: CU 362 relay / LC 231 relay 1: IO 351 relay / IO 242 relay 2: CU 362 + VFD 3: IO 351 + VFD 4-254: Illegal 255: Unknown/Not present	•		
602	Pump5ControlSource	SINT8, 0xC2	Enum	0 - 127	Pump P5 Control Source 0: Auto 1: Manual by switch 2: Manual by display 3: Manual from bus 4-254: Illegal 255: Unknown/Not present	•		
603	Pump5PumpingMode	SINT8, 0xC2	Enum	0 - 127	Pump P5 Pumping Mode 0: Running 1: Stopped 2: Disabled 3: Pump not present 4-254: Illegal 255: Unknown/Not present	•		
604	Pump5AuxDeviceIO113	SINT8, 0xC2	Enum	0 - 127	Pump P5 Aux Device IO 113 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
605	Pump5AuxDeviceMP204	SINT8, 0xC2	Enum	0 - 127	Pump P5 Aux Device MP 204 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
606	Pump5AuxDeviceCUE	SINT8, 0xC2	Enum	0 - 127	Pump P5 Aux Device CUE 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
607	Pump5VFDMode	SINT8, 0xC2	Enum	0 - 127	Pump P5 VFD mode 0: Not in control 1: - 2: Stopped 3: Reversed flushing 4: Start flushing 5: Normal 6: Run flushing	•		
608	Pump5Sensors	WORD, 0xD2	Array of Bools		Bit value "1": Referred sensor is present			
	0: WaterInOilSensor		Bool (state)	0, 1	Water in oil sensor present	•		
	1: CurrentSensor		Bool (state)	0, 1	Current sensor present	•		
609	Pump5MeasReserved1	WORD, 0xD2	-	-	Reserved for future use			

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
610	DCLCPump5AlarmBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P5 alarm bits, part 1 (See 7.6.9 Pump events - DCLCPump1AlarmBits1 (ID 410))	•		
611	DCLCPump5AlarmBits2	DWORD, 0xD3	Array of Booleans	Bits	U 362, LC 2xx P5 alarm bits, part 2 (See 7.6.10 Pump events - DCLCPump1AlarmBits2 (ID 411))	•		
612	DCLCPump5WarningBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P5 warning bits, part 1 (See 7.6.11 Pump events - DCLCPump1WarnBits1 (ID 412))	•		
613	DCLCPump5WarningBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P5 warning bits, part 2 (See 7.6.12 Pump events - DCLCPump1WarnBits2 (ID 413))	•		
614	AAPump5AlarmBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P5 alarm bits (See 7.6.13 Pump events - AAPump1Alarm-Bits (ID 414))			
615	AAPump5WarningBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P5 warning bits (See 7.6.14 Pump events - AAPump1Warn-Bits (ID 415))			
616	Pump5MeasReserved2	SINT16, 0xC3	-	-	Reserved for future use			
617	Pump5Level	SINT16, 0xC3	0.01 m	0 - 327.67 m	Pump P5 water level			
618	Pump5Flow	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	Pump P5 water flow	● ²⁾		
619	Pump5LatestFlow	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	Pump P5 latest water flow pumping	● ²⁾		
620	Pump5Current	SINT16, 0xC3	0.1 A	0 - 3276.7 A	Pump P5 motor current	● ^{9) 11)}		
621	Pump5LatestCurrent	SINT16, 0xC3	0.1 A	0 - 3276.7 A	Pump P5 latest motor current pumping	● ^{9) 11)}		
622	Pump5Insulation	SINT16, 0xC3	10 kΩ	0 - 327670 kΩ	Pump P5 motor electrical insulation	● ^{9) 10)}		
623	Pump5WaterInOil	SINT16, 0xC3	0.01 %	0 - 100.00 %	Pump P5 motor water in oil	● ¹⁰⁾		
624	Pump5MotorTemp1	SINT16, 0xC3	0.01 °C	-273.15 - 327.67 °C	Pump P5 motor temperature 1	● ¹⁰⁾		
625	Pump5MotorTemp2	SINT16, 0xC3	0.01 °C	-273.15 - 327.67 °C	Pump P5 motor temperature 2	● ¹⁰⁾		
626	Pump5CosPhi	SINT16, 0xC3	0.01	0 - 1.00	Pump P5 motor cos phi	● ⁹⁾		
627	Pump5Frequency	SINT16, 0xC3	0.01 Hz	0 - 327.67 Hz	Pump P5 motor frequency	● ¹¹⁾		
628	Pump5Voltage	SINT16, 0xC3	0.1 V	0 - 3276.7 V	Pump P5 motor voltage	● ^{9) 11)}		
629	Pump5CurrentAsym	SINT16, 0xC3	0.1 %	0 - 100.0 %	Pump P5 motor current asymmetry	● ⁹⁾		
630	Pump5StartsPerHour	SINT16, 0xC3	1 h ⁻¹	0 - 32767 h ⁻¹	Pump P5 starts per hour	•		
631	Pump5LatestRuntime	SINT16, 0xC3	1 s	0 - 32767 s	Pump P5 test running time	•		
632	Pump5Runtime	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	Pump P5 total running time	•		
633	Pump5RuntimeYesterday	SINT16, 0xC3	1 min	0 - 32767 min	Pump P5 total running time yesterday	•		
634	Pump5RuntimeToday	SINT16, 0xC3	1 min	0 - 32767 min	Pump P5 total running time today	•		
635	Pump5NoOfStarts	SINT32, 0xC4	1	0 - (2 ³¹ -1)	Pump P5 total number of starts	•		
636	Pump5NoOfStartsYesterday	SINT16, 0xC3	1	0 - 32767	Pump P5 total number of starts yesterday	•		
637	Pump5NoOfStartsToday	SINT16, 0xC3	1	0 - 32767	Pump P5 total number of starts today	•		
638	Pump5TimeToService	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	Pump P5 time to next service	•		
639	Pump5Power	SINT32, 0xC4	1 W	0 - (2 ³¹ -1) W	Pump P5 power	● ^{9) 11)}		
640	Pump5Energy	SINT32, 0xC4	0.1 kWh	0 - (2 ³¹ -1) kWh	Pump P5 energy consumption	● ^{9) 11)}		
650	Pump6OperatingMode	SINT8, 0xC2	Enum	0 - 127	Pump P6 Operating Mode 0: Auto 1: Start (Forced to start) 2: Stop (Forced to stop) 3-254: Illegal 255: Unknown/Not present			
651	Pump6ConnectionType	SINT8, 0xC2	Enum	0 - 127	Pump P6 Connection Type 0: CU 362 relay / LC 231 relay 1: IO 351 relay / IO 242 relay 2: CU 362 + VFD 3: IO 351 + VFD 4-254: Illegal 255: Unknown/Not present	•		

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
652	Pump6ControlSource	SINT8, 0xC2	Enum	0 - 127	Pump P6 Control Source 0: Auto 1: Manual by switch 2: Manual by display 3: Manual from bus 4-254: Illegal 255: Unknown/Not present	•		
653	Pump6PumpingMode	SINT8, 0xC2	Enum	0 - 127	Pump P6 Pumping Mode 0: Running 1: Stopped 2: Disabled 3: Pump not present 4-254: Illegal 255: Unknown/Not present	•		
654	Pump6AuxDeviceIO113	SINT8, 0xC2	Enum	0 - 127	Pump P6 Aux Device IO 113 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
655	Pump6AuxDeviceMP204	SINT8, 0xC2	Enum	0 - 127	Pump P6 Aux Device MP 204 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
656	Pump6AuxDeviceCUE	SINT8, 0xC2	Enum	0 - 127	Pump P6 Aux Device CUE 0: Not Present 1: OK 2: Fault 3: No communication 4-254: Illegal 255: Unknown	•		
657	Pump6VFDMODE	SINT8, 0xC2	Enum	0 - 127	Pump P6 VFD mode 0: Not in control 1: - 2: Stopped 3: Reversed flushing 4: Start flushing 5: Normal 6: Run flushing	•		
658	Pump6Sensors	WORD, 0xD2	Array of Booleans		Bit value "1": Referred sensor is present			
	0: WaterInOilSensor		Bool (state)	0, 1	Water in oil sensor present	•		
	1: CurrentSensor		Bool (state)	0, 1	Current sensor present	•		
659	Pump6MeasReserved1	WORD, 0xD2	-	-	Reserved for future use			
660	DCLCPump6AlarmBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P6 alarm bits, part 1 (See 7.6.9 Pump events - DCLCPump1AlarmBits1 (ID 410))	•		
661	DCLCPump6AlarmBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P6 alarm bits, part 2 (See 7.6.10 Pump events - DCLCPump1AlarmBits2 (ID 411))	•		
662	DCLCPump6WarningBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P6 warning bits, part 1 (See 7.6.11 Pump events - DCLCPump1WarnBits1 (ID 412))	•		
663	DCLCPump6WarningBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P6 warning bits, part 2 (See 7.6.12 Pump events - DCLCPump1WarnBits2 (ID 413))	•		
664	AAPump6AlarmBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P6 alarm bits (See 7.6.13 Pump events - AAPump1Alarm-Bits (ID 414))			
665	AAPump6WarningBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P6 warning bits (See 7.6.14 Pump events - AAPump1Warn-Bits (ID 415))			
666	Pump6MeasReserved2	SINT16, 0xC3	-	-	Reserved for future use			

ID	Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
667	Pump6Level	SINT16, 0xC3	0.01 m	0 - 327.67 m	Pump P6 water level			
668	Pump6Flow	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	Pump P6 water flow	● ²⁾		
669	Pump6LatestFlow	SINT16, 0xC3	0.1 ltr/s	0 - 3276.7 ltr/s	Pump P6 latest water flow pumping	● ²⁾		
670	Pump6Current	SINT16, 0xC3	0.1 A	0 - 3276.7 A	Pump P6 motor current	● ⁹⁾ 11)		
671	Pump6LatestCurren	SINT16, 0xC3	0.1 A	0 - 3276.7 A	Pump P6 latest motor current pumping	● ⁹⁾ 11)		
672	Pump6Insulation	SINT16, 0xC3	10 kΩ	0 - 327670 kΩ	Pump P6 motor electrical insulation	● ⁹⁾ 10)		
673	Pump6WaterInOil	SINT16, 0xC3	0.01 %	0 - 100.00 %	Pump P6 motor water in oil	● ¹⁰⁾		
674	Pump6MotorTemp1	SINT16, 0xC3	0.01 °C	-273.15 - 327.67 °C	Pump P6 motor temperature 1	● ¹⁰⁾		
675	Pump6MotorTemp2	SINT16, 0xC3	0.01 °C	-273.15 - 327.67 °C	Pump P6 motor temperature 2	● ¹⁰⁾		
676	Pump6CosPhi	SINT16, 0xC3	0.01	0 - 1.00	Pump P6 motor cos phi	● ⁹⁾		
677	Pump6Frequency	SINT16, 0xC3	0.01 Hz	0 - 327.67 Hz	Pump P6 motor frequency	● ¹¹⁾		
678	Pump6Voltage	SINT16, 0xC3	0.1 V	0 - 3276.7 V	Pump P6 motor voltage	● ⁹⁾ 11)		
679	Pump6CurrentAsym	SINT16, 0xC3	0.1 %	0 - 100.0 %	Pump P6 motor current asymmetry	● ⁹⁾		
680	Pump6StartsPerHour	SINT16, 0xC3	1 h ⁻¹	0 - 32767 h ⁻¹	Pump P6 starts per hour	●		
681	Pump6LatestRuntime	SINT16, 0xC3	1 s	0 - 32767 s	Pump P6 test running time	●		
682	Pump6Runtime	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	Pump P6 total running time	●		
683	Pump6RuntimeYesterday	SINT16, 0xC3	1 min	0 - 32767 min	Pump P6 total running time yesterday	●		
684	Pump6RuntimeToday	SINT16, 0xC3	1 min	0 - 32767 min	Pump P6 total running time today	●		
685	Pump6NoOfStarts	SINT32, 0xC4	1	0 - (2 ³¹ -1)	Pump P6 total number of starts	●		
686	Pump6NoOfStartsYesterday	SINT16, 0xC3	1	0 - 32767	Pump P6 total number of starts yesterday	●		
687	Pump6NoOfStartsToday	SINT16, 0xC3	1	0 - 32767	Pump P6 total number of starts today	●		
688	Pump6TimeToService	SINT32, 0xC4	1 min	0 - (2 ³¹ -1) min	Pump P6 time to next service	●		
689	Pump6Power	SINT32, 0xC4	1 W	0 - (2 ³¹ -1) W	Pump P6 power	● ⁹⁾ 11)		
690	Pump6Energy	SINT32, 0xC4	0.1 kWh	0 - (2 ³¹ -1) kWh	Pump P6 energy consumption	● ⁹⁾ 11)		

¹⁾ Analog level sensor required

²⁾ Flow calculation feature must be activated

³⁾ Pulse flow meter required

⁴⁾ Outlet pressure sensor required

⁵⁾ Power/Energy meter, CUE or 3rd party VFD required

⁶⁾ Turbidity sensor required

⁷⁾ PH sensor required

⁸⁾ Conductivity sensor required

⁹⁾ MP 204 can provide this measurement

¹⁰⁾ IO 113 can provide this measurement

¹¹⁾ CUE or 3rd party VFD can provide this measurement

¹²⁾ Analog sensor required

6.12 Special parameters, Input explicit messaging

Special parameters are parameters that might be used by the PLC, but bear no relation to the operation or monitoring of the water utility device.

ID	Name	Data type	Scaling	Legal range	Description
700	RPILimits	UINT32, 0xC8	1 μs	15000 - 200000 μs	Requested Packet Interval
800	TCIPCapability	DWORD32, 0xD3	-	-	For Logix EDS AOP integration

7. Alarms and warnings

7.1 Dedicated Controls (CU 362), general alarm and warning behavior

All alarms and warnings can be of acknowledge type "Auto" or "Manual". If the acknowledge type is "Auto", for the event in question, CU 36X does not use any restart delay for the pumps. Except for the delay that might be present in the auxiliary devices, for MP 204 this is programmable, a pump restarts immediately when the alarm condition that caused its stop disappears. The belonging alarm or warning modules and the LED indication are also reset automatically. The alarm and warning relay has its own Auto/Manual acknowledge setting.

If the acknowledge type is "Manual", for the event in question, CU 36X remains in alarm or warning state when the alarm or warning condition disappears. No pump is auto-restarted. The belonging alarm or warning indication in data modules remains and so will the LED indication. The alarm and warning relay has its own Auto/Manual acknowledge setting. A ResetAlarm command or an alarm acknowledgement via the CU 36X display is necessary to clear the alarm and warning indication. This also deactivates the alarm and warning relay if it was set to manual acknowledgement.

7.2 Level Control (LC 2XX), general alarm and warning behavior

All alarms and warnings can be of acknowledge type "Auto" or "Manual". If the acknowledge type is "Auto" for the event in question, LC 2XX does not use any restart delay for the pumps. A pump restarts immediately when the alarm condition that caused its stop disappears. The belonging alarm and warning modules and the display indication are also reset automatically.

If the acknowledge type is "Manual" for the event in question, LC 2XX remains in alarm or warning state when the alarm or warning condition disappears. No pump is auto-restarted. The belonging alarm or warning indication in data modules remain and so will the display indication. A ResetAlarm command or an alarm acknowledgement via the LC 2XX display is necessary to clear the alarm or warning indication.

7.3 AUTOADAPT systems (CIU 502), general alarm and warning behavior

A pump automatically restarts after an alarm when the alarm condition disappears. Overcurrent is not detected before the pump attempts to restart. To prevent rapid and continuous switching out and in of a pump due to an overcurrent alarm appearing and disappearing, the pump uses an overcurrent alarm restart-delay with a fixed factory value of 5 minutes. All other alarm conditions can be detected while the pump is stopped. A value hysteresis for the measured voltage and temperature value.

7.4 Survey of alarm/warning related parameters

ID	Parameter Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
System								
108	AlarmCode	SINT16, 0xC3	Enum	0 - 255	Alarm code	•	•	•
109	WarningCode	SINT16, 0xC3	Enum	0 - 255	Warning code	•	•	•
110	PumpsPresent	BYTE, 0xD1	Array of Bools	Bits	One bit for each pump, “1”: Pump is present	•	•	•
111	PumpsRunning	BYTE, 0xD1	Array of Bools	Bits	One bit for each pump, “1”: Pump is running	•	•	•
112	PumpsAlarm	BYTE, 0xD1	Array of Bools	Bits	One bit for each pump, “1”: Pump has an alarm	•	•	•
113	PumpsWarning	BYTE, 0xD1	Array of Bools	Bits	One bit for each pump, “1”: Pump has a warning	•		•
114	PumpsMonitoringFault	BYTE, 0xD1	Array of Bools	Bits	One bit for each pump, “1”: Pump has a comm. fault	•	•	•
118	DCLCAAlarmBits1	DWORD, 0xD3	Array of Bools	Bits	DC and LC system alarm bits #1	•		•
119	DCLCAAlarmBits2	DWORD, 0xD3	Array of Bools	Bits	DC and LC system alarm bits #2	•		•
120	DCLCAAlarmBits3	DWORD, 0xD3	Array of Bools	Bits	DC and LC system alarm bits #3	•		•
121	DCLCWarningBits1	DWORD, 0xD3	Array of Bools	Bits	DC and LC system warning bits #1	•		•
122	DCLCWarningBits2	DWORD, 0xD3	Array of Bools	Bits	DC and LC system warning bits #2	•		•
123	DCLCWarningBits3	DWORD, 0xD3	Array of Bools	Bits	DC and LC system warning bits #3	•		•
124	AAPitAlarmBits	WORD, 0xD2	Array of Bools	Bits	AutoAdapt system alarm bits		•	
125	AAPitWarningBits	WORD, 0xD2	Array of Bools	Bits	AutoAdapt system warning bits		•	
Pump P1								
410	DCLCPump1AlarmBits1	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P1 alarm bits, part 1	•		•
411	DCLCPump1AlarmBits2	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P1 alarm bits, part 2	•		•
412	DCLCPump1WarningBits1	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P1 warning bits, part 1	•		•
413	DCLCPump1WarningBits2	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P1 warning bits, part 2	•		•
414	AAPump1AlarmBits	DWORD, 0xD3	Array of Bools	Bits	AutoAdapt CIU 502 P1 alarm bits		•	
415	AAPump1WarningBits	DWORD, 0xD3	Array of Bools	Bits	AutoAdapt CIU 502 P1 warning bits		•	
Pump P2								
460	DCLCPump2AlarmBits1	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P2 alarm bits, part 1	•		•
461	DCLCPump2AlarmBits2	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P2 alarm bits, part 2	•		•
462	DCLCPump2WarningBits1	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P2 warning bits, part 1	•		•
463	DCLCPump2WarningBits2	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P2 warning bits, part 2	•		•
464	AAPump2AlarmBits	DWORD, 0xD3	Array of Bools	Bits	AutoAdapt CIU 502 P2 alarm bits		•	
465	AAPump2WarningBits	DWORD, 0xD3	Array of Bools	Bits	AutoAdapt CIU 502 P2 warning bits		•	
Pump P3								
510	DCLCPump3AlarmBits1	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P3 alarm bits, part 1	•		
511	DCLCPump3AlarmBits2	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P3 alarm bits, part 2	•		
512	DCLCPump3WarningBits1	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P3 warning bits, part 1	•		
513	DCLCPump3WarningBits2	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P3 warning bits, part 2	•		
514	AAPump3AlarmBits	DWORD, 0xD3	Array of Bools	Bits	AutoAdapt CIU 502 P3 alarm bits		•	
515	AAPump3WarningBits	DWORD, 0xD3	Array of Bools	Bits	AutoAdapt CIU 502 P3 warning bits		•	
Pump P4								
560	DCLCPump4AlarmBits1	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P4 alarm bits, part 1	•		
561	DCLCPump4AlarmBits2	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P4 alarm bits, part 2	•		
562	DCLCPump4WarningBits1	DWORD, 0xD3	Array of Bools	Bits	CU 362, LC 2xx P4 warning bits, part 1	•		

ID	Parameter Name	Data type	Scaling	Legal range	Description	Device type		
						DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
563	DCLCPump4WarningBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P4 warning bits, part 2	•		
564	AAPump4AlarmBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P4 alarm bits		•	
565	AAPump4WarningBits	DWORD, 0xD3	Array of Booleans	Bits	AutoAdapt CIU 502 P4 warning bits		•	
Pump P5								
610	DCLCPump5AlarmBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P5 alarm bits, part 1	•		
611	DCLCPump5AlarmBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P5 alarm bits, part 2	•		
612	DCLCPump5WarningBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P5 warning bits, part 1	•		
613	DCLCPump5WarningBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P5 warning bits, part 2	•		
Pump P6								
660	DCLCPump6AlarmBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P6 alarm bits, part 1	•		
661	DCLCPump6AlarmBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P6 alarm bits, part 2	•		
662	DCLCPump6WarningBits1	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P6 warning bits, part 1	•		
663	DCLCPump6WarningBits2	DWORD, 0xD3	Array of Booleans	Bits	CU 362, LC 2xx P6 warning bits, part 2	•		

7.5 Survey of event codes

Event Code	Description	Device type			Event Source
		DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2	
System events					
3	External fault ³⁾	A/W	A	A/W	DC: System, DI LC: System, DI AA: System, DI1
6	Mains supply fault	A/W			DC: System
10	Communication fault pump		A/W		LC: System
12	Time for service is exceed	A/W			DC: Dosing pump
15	SCADA Call-back fault	A/W			DC: System
17	Capacity too low (Perform. requirement not met)	A/W		W	DC: Dosing pump LC: System
19	Diaphragm break, dosing pump	A/W			DC: Dosing pump
25	Setup conflict / Parameter in-consistency		A/W	A	AA: System LC: System, LC 2xx
33	Soon time for service	A/W			DC: Dosing pump
35	Gas in pump head, deaerating problem, dosing pump	A/W			DC: Dosing pump
36	Pressure valve leakage, dosing pump	A/W			DC: Dosing pump
37	Suction valve leakage, dosing pump	A/W			DC: Dosing pump
38	Venting valve defect, dosing pump	A/W			DC: Dosing pump
46	External warning signal			W	LC: System
47	Cable breakdown on analogue (Reference input signal fault)	A/W			DC: Dosing pump
51	Blocked motor/pump	A/W			DC: Dosing pump
57	Empty tank (Dry Running)	A/W			DC: Dosing pump
57	Dry running alarm	A/W		A	DC: System IO Dosing pump LC: System IO
72	Hardware fault (general)	A/W			DC: CU 362 / IO 351
76	Internal communication fault			A	LC: System
84	Memory access error			W	LC: System
82	Verification error, code area (ROM, FLASH)		W		AA: CIU 502
94	Limit exceeded sensor 1			A/W	LC: System AI
95	Limit exceeded sensor 2			A/W	LC: System AI
102	Dosing pump not ready	A/W			DC: Dosing pump
103	Emergency stop	A/W			DC: System
115	Too many grinder reversals	A/W			DC: System
116	Grinder motor overtemperature	A/W			DC: System

Event Code	Description	Device type			Event Source
		DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2	
117	Intrusion (Door opened)	A/W		W	DC: System, DI LC: System, DI
118	Hydrogen sulfide (H ₂ S) sensor fault	A/W			DC: System AI (H ₂ S sensor)
130	Missing Cable detected, cable theft			W	LC: System
142	Operating on battery backup			W	LC: System
157	Real time clock out of order warning			W	LC: System, LC 2xx
159	Add-on CIM communication fault	A/W		W	DC: Add-on CIM LC: Add-on CIM
160	SIM card fault	A/W			DC: Add-on CIM 260
168	Pressure sensor, discharge line, signal fault	A/W			DC: AI (Pressure sensor)
169	Flow sensor signal fault / Cable breakdown on DDA Flow Monitor	A/W			DC: AI (Flow sensor) DDA dosing pump (cable break)
186	Power meter sensor signal fault	A/W			DC: AI (Power sensor)
188, 165	User defined AI sensor 1 signal fault	A/W		A	DC: AI (User sensor 1) LC: AI (User sensor 1)
188	User defined AI sensor 2 signal fault	A/W			DC: AI (User sensor 2)
188	User defined AI sensor 3 signal fault	A/W			DC: AI (User sensor 3)
189	Level/pressure sensor signal fault	A/W			DC: AI (Level sensor)
190	Alarm level alarm	A/W			DC: System IO
191	High level alarm	A/W	A	A	DC: System IO AA: CIU 502, DI0 LC: System IO
192	Overflow alarm	A/W			DC: System IO
196	Operation with reduced efficiency, specific energy high	A/W			DC: System
204	Inconsistency between switches and sensor	A/W			DC: System IO
205	Level float switch sequence inconsistency	A/W		A	DC: System IO LC: System IO
206	Pre empty tank, dosing pump	A/W			DC: Dosing pump
208	Cavitation, dosing pump	A/W			DC: Dosing pump
210	Over pressure, dosing pump	A/W			DC: Dosing pump
211	Mean pressure to low (Under pressure), dosing pump	A/W			DC: Dosing pump
221	Mixer contactor feedback fault	A/W			DC: DI (Mixer contactor)
222	Mixer time for service	A/W			DC: System (Mixer)
223	Mixer maximum number of starts per hour exceeded	A/W			DC: System (Mixer)
226	Distributed I/O module communication fault ¹⁾	A/W		A	DC: IO 351 LC: IO 241
227	"Combi event" No. 1, 2, 3 or 4	A/W			DC: System
229	Water on floor	A/W		W	DC: System, DI LC: System, DI
230	Network alarm		A		AA: CIU 502
231	Ethernet: No IP address from DHCP serve	A/W			DC: System
232	Ethernet: Auto disabled due to misuse	A/W			DC: System
235	Gas detected	A/W			DC: System IO
236	Pump 1 fault		A/W		AA: Pump 1
237	Pump 2 fault		A/W		AA: Pump 2
238	Pump 3 fault		A/W		AA: Pump 3
239	Pump 4 fault		A/W		AA: Pump 4
246	Custom relay activated	A/W			DC: CU362
247	Power on occurred	A/W			DC: System
248	Battery/UPS fault	A/W		A	DC: System (Battery/UPS) LC: System (Battery/UPS)
249	User defined event 1	A/W		A/W	DC: System LC: System
250	User defined event 2	A/W		A/W	DC: System LC: System
251	User defined event 3	A/W			DC: System
252	User defined event 4	A/W			DC: System

Event Code	Description	Device type			Event Source
		DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2	
Pump events					
1	Leakage current	A/W			DC: CUE, pump No. [1; 6]
2	Motor missing phase	A/W			A DC: MP204/CUE, pump No. [1; 6] LC: Pump module, pump No. [1; 2]
4	Too many pump auto-restarts (per 24 h)	A/W	A	A	DC: MP 204, Pump No. [1; 6] AA: Pump No. [1; 4] LC: Pump module, pump No. [1; 2]
6	Motor fault in mains supply	A/W			DC: Pump No. [1; 6]
9	Motor phase sequence reversal	A/W	A	A	DC: MP204, pump No. [1; 6] AA: Pump No. [1; 4] LC: Pump module, pump No. [1; 2]
10	Pump (Power line) communication fault	A/W	A		DC: IO 113, pump No. [1; 6] LC: Power line connection to pump
11	Motor oil water content too high (water in oil)	A/W			DC: AI/IO 113, pump No. [1; 6]
12	Motor operating time service limit exceeded	A/W			W DC: Pump No. [1; 6] LC: Pump No. [1; 2]
16	Other ²⁾	A/W			DC: CUE, pump No. [1; 6]
18	Motor protector commanded (test) trip	A/W			DC: MP 204, pump No. [1; 6]
20	Motor insulation resistance low	A/W			DC: IO 113/MP204, pump No. [1; 6]
21	Motor max. starts per hour limit exceeded	A/W			A DC: System, pump No. [1; 6] LC: System, pump No. [1; 2]
22	Motor moisture switch	A/W			A DC: IO 113, pump No. [1; 6] LC: Pump module, pump No. [1; 2]
24	Motor/pump vibration high	A/W			DC: IO 113, pump No. [1; 6]
25	Setup conflict	A/W			DC: IO 113, pump No. [1; 6]
26	Load continues despite motor relay is off	A/W			DC: MP 204, pump No. [1; 6]
27	Motor protector activated	A/W			DC: DI, pump No. [1; 6]
30	Change bearings (specific service information)	A/W			DC: CUE, pump No. [1; 6]
32	Motor overvoltage	A/W	A	A	DC: MP204/CUE, pump No. [1; 6] AA: Pump No. [1; 4] LC: LC Controller
40	Motor low voltage (no voltage)	A/W	A	A	DC: MP204/CUE, Pump No. [1; 6] AA: Pump No. [1; 4] LC: LC Controller
48	Motor overload (max. current)	A/W	A/W	A	DC: AI/MP204/CUE, pump No. [1; 6] AA: Pump No. [1; 4] LC: Pump module
49	Overcurrent	A/W			DC: CUE, pump No. [1; 6]
51	Pump/motor blocked	A/W	A		DC: System, pump No. [1; 6] AA: Pump No. [1; 4]
55	Motor current protection activated (MCP)	A/W			CUE, Pump No. [1; 6]
56	Motor underload (min current)	A/W			A DC: AI/MP204, Pump No. [1; 6] LC: Pump module, pump No. [1; 2]
57	Dry running	A/W	W		DC: CUE, Pump No. [1; 6] AA: Pump No. [1; 4] LC: Pump module, pump No. [1; 2]
58	Pump low flow	A/W			DC: Pump No. [1; 6]
64	Motor stator temperature high (T ₁ , PT1000/PT100)	A/W			DC: IO 113/CUE, pump No. [1; 6]
65	Motor temperature high	A/W			AA: Pump No. [1; 4]
66	Temperature control electronics high	A/W			AA: Pump No. [1; 4]
69	Motor temperature alarm, PTC1	A/W	A	A	DC: IO 113, pump No. [1; 6] AA: Pump No. [1; 4] LC: Pump module, pump No. [1; 2]
70	Motor temperature alarm, PTC2	A/W	A		DC: IO351/MP204 CUE, pump No. [1; 6] AA: Pump No. [1; 4]
71	Motor stator temperature high (T ₂ , PT1000/PT100)	A/W			DC: MP 204, pump No. [1; 6]
72	General hardware fault	A/W			A DC: IO 113/MP204, pump No. [1; 6] LC: Pump module, pump No. [1; 2]
77	Communication fault, twin-head pump	A/W			DC: CUE, pump No. [1; 6]

Event Code	Description	Device type			Event Source
		DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2	
82	Verification error, code area (ROM, FLASH)		W		AA: Pump No. [1; 4]
83	Verification error, FE parameter area (EEPROM)		W		AA: Pump No. [1; 4]
85	Verification error, parameter area (EEPROM)			A	LC: Pump module, pump No. [1; 2]
88	Motor current sensor signal fault	A/W	A/W		DC: AI, pump No. [1; 6] AA: Pump No. [1; 4]
89	Signal fault, (feedback) sensor 1	A/W			DC: CUE, pump No. [1; 6]
91	Signal fault, temperature 1 sensor	A/W			DC: CUE, pump No. [1; 6]
93	Signal fault, sensor 2	A/W			DC: CUE, pump No. [1; 6]
108	Dry running sensor calibration timeout / Signal fault dry running sensor		W		AA: Pump No. [1; 4]
111	Motor current asymmetry	A/W			DC: MP 204, pump No. [1; 6]
112	Motor cos(φ) too high	A/W			DC: MP 204, pump No. [1; 6]
113	Motor cos(φ) too low	A/W			DC: MP 204, pump No. [1; 6]
145	Motor support bearing temperature high (PT100)	A/W			DC: IO 113, pump No. [1; 6]
146	Motor main bearing temperature high (PT100)	A/W			DC: IO 113, pump No. [1; 6]
148	Motor bearing temperature high (Pt100) in drive end (DE)	A/W			DC: CUE, pump No. [1; 6]
149	Motor bearing temp. high (Pt100) in non-drive end (NDE)	A/W			DC: CUE, pump No. [1; 6]
155	Inrush fault	A/W			DC: CUE, pump No. [1; 6]
163	Conflict in setup parameter(s)			A	LC: Pump module, pump No. [1; 2]
165	Motor drive protection measurement fault			A	LC: Pump module, AI1
170	Water in oil (WIO) sensor signal fault	A/W			DC: AI, pump No. [1; 6]
175	PT100 sensor signal fault)	A/W			DC: IO 113/ MP 204/ CUE, pump No. [1; 6]
176	Signal fault, temperature 3 sensor (t_mo3)	A/W			DC: CUE, pump No. [1; 6]
179	Motor support bearing temp. sensor signal fault	A/W			DC: IO 113, pump No. [1; 6]
180	Motor main bearing temp. sensor signal fault	A/W			DC: IO 113, pump No. [1; 6]
181	PTC sensor signal fault	A/W			IO 113, pump No. [1; 6]
186	Motor power sensor signal fault	A/W			DC: AI, pump No. [1; 6]
191	Sensor limit 2 exceeded		W		AA: Pump No. [1; 4]
213	VFD not ready	A/W			DC: IO 351, pump No. [1; 6]
220	Motor contactor feedback fault	A/W			DC: DI, pump No. [1; 6]
224	Pump malfunction due to auxiliary component fault	A/W			DC: Pump No. [1; 6]
225	Distributed pump module communication fault	A/W		A	DC: IO 113, MP 204, IO 351, pump [1; 6] LC: Pump module
240	Lubricate bearings (specific service information)	A/W			DC: CUE, pump No. [1; 6]
241	Motor phase failure	A/W			DC: DI/CUE, pump No. [1; 6]
242	Automatic motor model recognition failed	A/W			DC: CUE, pump No. [1; 6]
243	Relay has been forced (manually operated/commanded)	A/W			DC: DI, pump No. [1; 6]
245	Pump max. continuous run-time limit exceeded	A/W	A/W		DC: System, pump No. [1; 6] AA: Pump No. [1; 4]

1) Used for communication fault with IO 351

2) The alarms 190 (sensor limit 1 exceeded) and 191 (sensor limit 2 exceeded) from the CUE is mapped to "Other" in the CU 362

3) If coming from an MP 204 this event code is mapped to code 70, (motor temperature alarm)

7.6 Alarm and warning bits

7.6.1 System events - DCLCArmBits1 (ID 118)

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
System events						
118	DCLCArmBits1	DWORD, 0xD3	DC and LC system alarm bits part 1			
	0: OverflowAlarm		Overflow alarm (192)	•		
	1: HighLevelAlarm		High level alarm (191)	•		•
	2: AlarmLevelAlarm		Alarm Level (190)	•		
	3: DryRunningAlarm		Dry running (57)	•		•
	4: MainsSupplyFaultAlarm		Mains supply fault (6)	•		
	5: FloatSwitchSeqInconsAlarm		Float switch sequence inconsistency (205)	•		•
	6: InconsSwitchesSensorAlarm		Inconsistency between switches and sensor (204)	•		
	7: LevelPressSensorSigAlarm		Level/pressure sensor signal fault (168/189)	•		
	8: FlowSensorSigAlarm		Flow sensor signal fault (169)	•		
	9: PowerMeterSensorSigAlarm		Power meter sensor signal fault (186)	•		
	10: MixerContactorFbAlarm		Mixer contactor feedback fault (221)	•		
	11: DistIOModuleCommAlarm		Distributed I/O module communication fault (226)	•		•
	12: AddOnCIMCommAlarm		Add-on CIM communication fault (159)	•		
	13: SIMCardAlarm		SIM card fault (160)	•		
	14: SCADACallBackAlarm		SCADA Call-back fault (15)	•		
	15: PowerOnOccurredAlarm		Power on occurred (247)	•		
	16: BatteryUPSAlarm		Battery/UPS fault (248)	•		•
	17: HardwareFaultAlarm		Hardware fault (general) (72)	•		
	18: DHCPSErverIPAddrAlarm		Ethernet port, no IP address from DHCP server (231)	•		
	19: EthernetMisuseAlarm		Ethernet port auto disabled due to misuse (232)	•		
	20: MixerTimeForServiceAlarm		Mixer time for service (222)	•		
	21: MixerStartsPerHourAlarm		Mixer max. No. of starts per hour exceeded (223)	•		
	22: CustomRelayActivatedAlarm		Custom relay activated (246)	•		
	23: Unused		Unused	•		
	24: ExternalFaultAlarm		External fault (3)	•		
	25: CombiEventNo1Alarm		Combi Event No. 1 (227)	•		
	26: CombiEventNo2Alarm		Combi Event No. 2 (227)	•		
	27: CombiEventNo3Alarm		Combi Event No. 3 (227)	•		
	28: CombiEventNo4Alarm		Combi Event No. 4 (227)	•		
	29: SensorSignalFaultAI1Alarm		Analog sensor signal fault, AI1 (165/188)	•		
	30: SensorSignalFaultAI2Alarm		Analog sensor signal fault, AI2 (188)	•		
	31: SensorSignalFaultAI3Alarm		Analog sensor signal fault, AI3 (188)	•		

7.6.2 System events - DCLCArmBits2 (ID 119)

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
System events						
119	DCLCArmBits2	DWORD, 0xD3	DC and LC system alarm bits part 2			
	0: DischargePressSensorSigAlarm		Discharge pressure sensor signal fault (168)	•		
	1: WaterOnFloorAlarm		Water on floor (229)	•		
	2: GasDetectedAlarm		Gas detected (235)	•		
	3: UserEvent1Alarm		User defined event 1 (249)	•		•
	4: UserEvent2Alarm		User defined event 2 (250)	•		•
	5: UserEvent3Alarm		User defined event 3 (251)	•		
	6: UserEvent4Alarm		User defined event 4 (252)	•		
	7: H2SSensorSignalAlarm		Hydrogen sulfide (H ₂ S) sensor signal fault (118)	•		
	8: LimitExceded1Alarm		Limit exceeded sensor 1 (94)			LC 2x2
	9: LimitExceded2Alarm		Limit exceeded sensor 2 (95)			LC 2x2

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
10:	TooManyGrinderReversalsAlarm (LC 2x2: ExternalFaultAlarm)		CU 362: Too many grinder reversals (115) LC 2x2: External fault signal (3)	•		LC 2x2
11:	GrinderMotorOverTempAlarm		Grinder motor over temperature (116)	•		
12:	IntrusionAlarm		Intrusion (Door opened) (117)	•		
13:	Unused		Unused			
14:	InternalCommFaultAlarm		Internal communication fault (76)			•
15:	SetupConflictAlarm		Setup conflict (25)			•
16:	DosPumpOverPressAlarm		Dosing pump over pressure alarm (210)	•		
17:	DosPumpUnderPressAlarm		Dosing pump pressure to low (Under pressure) (211)	•		
18:	DosPumpDeaeratingAlarm		Dosing pump has gas in head, deaerating problem (35)	•		
19:	DosPumpCavitationAlarm		Dosing pump cavitation (208)	•		
20:	DosPumpPressValLeakAlarm		Dosing pump pressure valve leakage (36)	•		
21:	DosPumpSucValLeakAlarm		Dosing pump suction valve leakage (37)	•		
22:	DosPumpVentValDefectAlarm		Dosing pump venting valve defect (38)	•		
23:	DosPumpServiceTimeAlarm		Dosing pump time for service is exceed (12)	•		
24:	DosPumpSoonServTimeAlarm		Dosing pump soon time for service (33)	•		
25:	DosPumpCapTooLowAlarm		Dosing pump capacity too low (Perform. requirement not met) (17)	•		
26:	DosPumpDiaphBreakAlarm		Dosing pump diaphragm break (19)	•		
27:	DosPumpBlockedAlarm		Dosing pump blocked motor/pump (51)	•		
28:	DosPumpPreemptyTankAlarm		Dosing pump pre empty tank (206)	•		
29:	DosPumpEmptyTankAlarm		Dosing pump empty tank (Dry Running) (57)	•		
30:	DosPumpCableBreakFMAAlarm		Dosing pump cable break on Flow Monitor (Flow sensor sig. fault) (169)	•		
31:	DosPumpCableBreakAnaAlarm		Dosing pump cable break on analog (Reference input signal fault) (47)	•		

7.6.3 System events - DCLCArmBits3 (ID 120)

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
System events						
120	DCLCArmBits3	DWORD, 0xD3	DC and LC system alarm bits part 3			
	0: Unused		Unused			
	1: Unused		Unused			
	2: Unused		Unused			
	3: Unused		Unused			
	4: SpecificEnergyHighAlarm		Reduced efficiency operation, spec. energy high (196)	•		
	5: LevelSettingInvalidAlarm		Start or stop level setting invalid or missing (25)			•
	6: MissingAnalogLevelSettingAlarm		Analog level sensor not configured (25)			•
	7: DuplicateSwitchSettingAlarm		Duplicate switch setting (25)			•
	8-15: Unused		Unused			

7.6.4 System events - DCLCWarningBits1 (ID 121)

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
System events						
121	DCLCWarningBits1	DWORD, 0xD3	DC and LC system warning bits part 1			
	0: OverflowWarn		Overflow alarm (192)	•		
	1: HighLevelWarn		High level alarm (191)	•		
	2: AlarmLevelWarn		Alarm Level (190)	•		
	3: DryRunningWarn		Dry running (57)	•		
	4: MainsSupplyFaultWarn		Mains supply fault (6)	•		

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
5:	FloatSwitchSegInconsWarn		Float switch sequence inconsistency (205)	•		
6:	InconsSwitchesSensorWarn		Inconsistency between switches and sensor (204)	•		
7:	LevelPressSensorSigWarn		Level/pressure sensor signal fault (168/189)	•		
8:	FlowSensorSigWarn		Flow sensor signal fault (169)	•		
9:	PowerMeterSensorSigWarn		Power meter sensor signal fault (186)	•		
10:	MixerContactorFbWarn		Mixer contactor feedback fault (221)	•		
11:	DistIOModuleCommWarn		Distributed I/O module communication fault (226)	•		
12:	AddOnCIMCommWarn		Add-on CIM communication fault (159)	•		•
13:	SIMCardWarn		SIM card fault (160)	•		
14:	SCADACallBackWarn		SCADA call-back fault (15)	•		
15:	PowerOnOccuredWarn		Power on occurred (247)	•		
16:	BatteryUPSWarn		Battery/UPS fault (248)	•		
17:	HardwareFaultWarn		Hardware fault (general) (72)	•		
18:	DHCPServerIPAdrWarn		Ethernet port, no IP address from DHCP server (231)	•		
19:	EthernetMisuseWarn		Ethernet port auto disabled due to misuse (232)	•		
20:	MixerTimeForServiceWarn		Mixer time for service (222)	•		
21:	MixerStartsPerHourWarn		Mixer max. No. of starts per hour exceeded (223)	•		
22:	CustomRelayActivatedWarn		Custom relay activated (246)	•		
23:	Unused		Unused	•		
24:	ExternalFaultWarn		External fault (3)	•		
25:	CombiEventNo1Warn		Combi Event No. 1 (227)	•		
26:	CombiEventNo2Warn		Combi Event No. 2 (227)	•		
27:	CombiEventNo3Warn		Combi Event No. 3 (227)	•		
28:	CombiEventNo4Warn		Combi Event No. 4 (227)	•		
29:	SensorSignalFaultAI1Warn		Analog sensor signal fault, AI1 (165/188)	•		
30:	SensorSignalFaultAI2Warn		Analog sensor signal fault, AI2 (188)	•		
31:	SensorSignalFaultAI3Warn		Analog sensor signal fault, AI3 (188)	•		

7.6.5 System events - DCLCWarningBits2 (ID 122)

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
System events						
122	DCLCWarningBits2	DWORD, 0xD3	DC and LC system warning bits part 2			
	0: DischargePressSensorSigWarn		Discharge pressure sensor signal fault (168)	•		
	1: WaterOnFloorWarn		Water on floor (229)	•		•
	2: GasDetectedWarn		Gas detected (235)	•		
	3: UserEvent1Warn		User defined event 1 (249)	•		•
	4: UserEvent2Warn		User defined event 2 (250)	•		•
	5: UserEvent3Warn		User defined event 3 (251)	•		
	6: UserEvent4Warn		User defined event 4 (252)	•		
	7: H2SSensorSignalWarn		Hydrogen sulfide (H2S) sensor signal fault (118)	•		
	8: LimitExceeded1Warn		Limit exceeded sensor 1 (94)			LC 2x2
	9: LimitExceeded2Warn		Limit exceeded sensor 2 (95)			LC 2x2
	10: TooManyGrinder ReversalsWarn (LC 2x2: ExternalFaultWarn)		Too many grinder reversals (115) / External fault signal (3)	•		LC 2x2
	11: GrinderMotorOverTempWarn		Grinder motor over temperature (116)	•		
	12: IntrusionWarn		Intrusion (door opened) (117)	•		•
	13: MemoryAccessErrorWarn		Memory access error (84)			•
	14: InternalCommFaultWarn		Internal communication fault (76)			
	15: SetupConflictWarn		Setup conflict (25)			
	16: DosPumpOverPressWarn		Dosing pump over pressure alarm (210)	•		
	17: DosPumpUnderPressWarn		Dosing pump mean pressure to low (under pressure) (211)	•		
	18: DosPumpDeaeratingWarn		Dosing pump has gas in head, deaerating problem (35)	•		

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
19:	DosPumpCavitationWarn		Dosing pump cavitation (208)	•		
20:	DosPumpPressValLeakWarn		Dosing pump pressure valve leakage (36)	•		
21:	DosPumpSucValLeakWarn		Dosing pump suction valve leakage (37)	•		
22:	DosPumpVentValDefectWarn		Dosing pump vent valve defect (38)	•		
23:	DosPumpServiceTimeWarn		Dosing pump time for service is exceed (12)	•		
24:	DosPumpSoonServTimeWarn		Dosing pump soon time for service (33)	•		
25:	DosPumpCapTooLowWarn		Dosing pump capacity too low (performance requirement not met) (17)	•		
26:	DosPumpDiaphBreakWarn		Dosing pump diaphragm break (19)	•		
27:	DosPumpBlockedWarn		Dosing pump blocked motor /pump (51)	•		
28:	DosPumpPreemptyTankWarn		Dosing pump pre empty tank (206)	•		
29:	DosPumpEmptyTankWarn		Dosing pump empty tank (dry Running) (57)	•		
30:	DosPumpCableBreakFMWarn		Dosing pump cable break on Flow Monitor. (flow sensor signal fault) (169)	•		
31:	DosPumpCableBreakAnaWarn		Dosing pump cable break on analog (reference input signal fault) (47)	•		

7.6.6 System events - DCLCWarningBits3 (ID 123)

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
System events						
123	DCLCWarningBits3	DWORD, 0xD3	DC and LC system warning bits part 3			
	0: PerformRequirementWarn		Performance requirement cannot be met (17)			LC 2x2
	1: ExternalWarningSignalWarn		External warning signal (46)			LC 2x2
	2: MissingCableDetectedWarn		Missing cable detected, cable theft (130)			LC 2x2
	3: RTCOutOfOrderWarn		Real time clock out of order warning (157)			LC 2x2
	4: SpecificEnergyHighWarn		Reduced efficiency operation, spec. energy high (196)		•	
	5: Unused		Unused			
	6: Unused		Unused			
	7: Unused		Unused			
	8: OperatingOnBatteryBackup		Operating on battery backup (142)			•
	9-15: Unused		Unused			

7.6.7 System events - AAPitAlarmBits (ID 124)

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
System events						
124	AAPitAlarmBits	DWORD, 0xD2	AutoAdapt system alarm bits			
	0: AAExternalFaultAlarm		External fault signal (3)		•	
	1: AACommunicationFaultAlarm		Communication fault, pump (10)		•	
	2: Unused		Unused			
	3: AAPump1FaultAlarm		Pump 1 in alarm (236)		•	
	4: AAPump2FaultAlarm		Pump 2 in alarm (237)		•	
	5: AAPump3FaultAlarm		Pump 3 in alarm (238)		•	
	6: AAPump4FaultAlarm		Pump 4 in alarm (239)		•	
	7: AAHighLevelAlarm		Sensor limit 2 exceeded (high level) (191)		•	
	8: AASetupConflictAlarm		Setup conflict/Parameter inconsistency (25)		•	
	9-15: Unused		Unused			

7.6.8 System events - AAPitWarningBits (ID 125)

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
System events						
125	AAPitWarningBits	DWORD, 0xD2	AutoAdapt System Warning Bits			
	0: Unused		Unused			
	1: AACommunicationFaulWarn		Communication fault, pump (10)		●	
	2: AAMemoryVerificationErrWarn		Verification error (ROM,FLASH), code area (82)		●	
	3: AAPump1Warn		Pump 1 has a warning (236)		●	
	4: AAPump2Warn		Pump 2 has a warning (237)		●	
	5: AAPump3Warn		Pump 3 has a warning (238)		●	
	6: AAPump4Warn		Pump 4 has a warning (239)		●	
	7: Unused		Unused			
	8: AASetupConflictWarn		Setup conflict/Parameter inconsistency (25)		●	
	9-15: Unused		Unused			

7.6.9 Pump events - DCLCPump1AlarmBits1 (ID 410)

The following parameters have the same bit interpretation: DCLCPump2AlarmBits1 (ID 460), DCLCPump3AlarmBits1 (ID 510), DCLCPump4AlarmBits1 (ID 560), DCLCPump5AlarmBits1 (ID 610), DCLCPump6AlarmBits1 (ID 660).

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
Pump events						
410	DCLCPump1AlarmBits1	DWORD, 0xD3	CU 362 (DC) and LC 2xx controller alarm bits for pump P1, part1			
	0: P1MotorTempPTC1Alarm		Motor temperature PTC1 alarm (69)			
	1: P1MotorTempPTC2Alarm		Motor temperature PTC2 alarm (70)			
	2: P1MotorStatorTemp1Alarm		Motor stator temperature (T1) alarm (64)			
	3: P1MotorStatorTemp2Alarm		Motor stator temperature (T2) alarm (71)			
	4: P1MotorSupBearTempAlarm		Motor support bearing temperature high alarm (145)			
	5: P1MotorMainBearTempAlarm		Motor main bearing temperature high alarm (146)			
	6: P1MotorInsulLowAlarm		Motor insulation resistance low alarm (20)			
	7: P1MotorLowVoltageAlarm		Motor voltage low alarm (40)			
	8: P1MotorHighVoltageAlarm		Motor voltage high alarm (32)			
	9: P1MotorPhaseSeqRevAlarm		Motor phase sequence reversed alarm (9)			
	10: P1MotorOverloadAlarm		Motor overload alarm (48)			
	11: P1MotorUnderloadAlarm		Motor underload (56)			
	12: P1MotorProtTestTripAlarm		Motor protector activated alarm (27)			
	13: P1MotorMissingPhaseAlarm		Motor missing phase alarm (2)			
	14: P1MotorCurrentAsymAlarm		Motor current asymmetry alarm (111)			
	15: P1MotorLoadContinuesAlarm		Load continues, but motor relay is off, alarm (26)			
	16: P1MotorProtActivatedAlarm		Motor protector test trip alarm (18)			
	17: P1MotorPhaseFailureAlarm		Motor phase failure alarm (241)			
	18: P1MotorMoistSwitchAlarm		Motor moisture switch alarm (22)			
	19: P1MotorVibrationAlarm		Pump vibration too high alarm (24)			
	20: P1MotorWaterInOilAlarm		Water in oil level too high (11)			
	21: P1MotorMainSupplyAlarm		Fault in the mains power supply alarm (6)			
	22: P1MotorContactorAlarm		Motor contactor feedback alarm (220)			
	23: P1MotorStartsPerHourAlarm		Motor max. starts per hour limit exceeded alarm (21)			
	24: P1MotorServiceTimeAlarm		Motor service time exceeded alarm (12)			
	25: P1TooManyAutoRestartsAlarm		Too many auto restarts of pump alarm (4)			
	26: P1PumpLowFlowAlarm		Pump low flow alarm (58)			
	27: P1MaxContRuntimeAlarm		Pump max. continuous runtime limit exceeded alarm (245)			

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
28:	P1MotorCosPhiHighAlarm		Motor cosine phi too high alarm (112)	•		
29:	P1MotorCosPhiLowAlarm		Motor cosine phi too low alarm (113)	•		
30:	P1EEPROMParmErrAlarm		EEPROM error in parameter area (85)			•
31:	Unused		Unused			•

7.6.10 Pump events - DCLCPump1AlarmBits2 (ID 411)

The following parameters have the same bit interpretation: DCLCPump2AlarmBits2 (ID 461), DCLCPump3AlarmBits2 (ID 511), DCLCPump4AlarmBits2 (ID 561), DCLCPump5AlarmBits2 (ID 611), DCLCPump6AlarmBits2 (ID 661).

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
Pump events						
411	DCLCPump1AlarmBits2	DWORD, 0xD3	CU 362 (DC) and LC 2xx controller alarm bits for pump P1, part 2			
	0: P1AuxiliaryDeviceFaultAlarm		Fault in auxiliary component alarm (224)	•		•
	1: P1PumpmoduleCommAlarm		Fault in pump communication alarm (225)	•		
	2: P1OnOffAutoSwFaultAlarm		Fault in manual switch alarm (243)	•		
	3: P1PT100SensorSignalAlarm		PT 100 sensor signal fault alarm (175)	•		
	4: P1PTCSensorSignalAlarm		PTC sensor signal fault alarm (181)	•		
	5: P1WIOSensorSignalAlarm		Water-in-oil sensor signal fault alarm (170)	•		
	6: P1SupBearTempSignalAlarm		Motor support bearing temperature sensor signal fault alarm(179)	•		
	7: P1MainBearTempSignalAlarm		Motor main bearing temperature sensor signal fault alarm (180)	•		
	8: P1PowerlineCommFaultAlarm		Pump powerline communication fault alarm (10)	•		
	9: P1SetupConflichAlarm		Conflict in setup parameter(s), alarm (25/163)	•		•
	10: P1GenHardwareFaultAlarm		General hardware fault alarm (72)	•		•
	11: P1MotorCurrentSignalAlarm		Motor current sensor signal fault alarm (88)	•		
	12: P1InrushFaultAlarm		Current inrush fault alarm (155)	•		
	13: P1SignalFaultSensor2Alarm		Signal fault sensor 2 alarm (93)	•		
	14: P1BearDETempHighAlarm		Motor bearing drive end temperature alarm (148)	•		
	15: P1BearNDETempHighAlarm		Motor bearing non-drive end temperature alarm (149)	•		
	16: P1LeakageCurrentAlarm		Leakage current alarm (1)	•		
	17: P1SignalFaultTemp3Alarm		Temperature sensor 3 signal fault alarm (176)	•		
	18: P1SignalFaultSensor1Alarm		Sensor 1 signal fault alarm (89)	•		
	19: P1OvercurrentAlarm		Overcurrent alarm (49)	•		
	20: P1MotorProtectionActAlarm		Motor protection activated alarm (55)	•		
	21: P1ChangeBearingsAlarm		Change bearings alarm (30)	•		
	22: P1LubricateBearingsAlarm		Lubricate bearings alarm (240)	•		
	23: P1MotorRecognFailedAlarm		Motor not recognized alarm (242)	•		
	24: P1CommFaultTwinHeadAlarm		Communication fault - twin head alarm (77)	•		
	25: P1SignalFaultTemp1Alarm		Temperature sensor 1 fault alarm (91)	•		
	26: P1DryRunningAlarm		Dry running alarm (57)	•		
	27: P1VFDontReadyAlarm		Variable frequency drive not ready alarm (123)	•		
	28: P1OtherAlarm		Other alarm (16)	•		
	29:P1PumpBlockedAlarm		Pump blocked alarm (51)	•		
	30: P1SignalFaultPowerAlarm		Power sensor signal fault alarm (186)	•		
	31: Unused		Unused			

7.6.11 Pump events - DCLCPump1WarnBits1 (ID 412)

The following parameters have the same bit interpretation: DCLCPump2WarnBits1 (ID 462), DCLCPump3WarnBits1 (ID 512), DCLCPump4WarnBits1 (ID 562), DCLCPump5WarnBits1 (ID 612), DCLCPump6WarnBits1 (ID 662).

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
Pump events						
412	DCLCPump1WarnBits1	DWORD, 0xD3	CU 362 (DC) and LC 2xx warning bits for pump P1, part 1			
	0: P1MotorTempPTC1Warn		Motor temperature PTC1 warning (69)	•		
	1: P1MotorTempPTC2Warn		Motor temperature PTC2 warning (70)	•		
	2: P1MotorStatorTemp1Warn		Motor stator temperature (T1) warning (64)	•		
	3: P1MotorStatorTemp2Warn		Motor stator temperature (T2) warning (71)	•		
	4: P1MotorSupBearTempWarn		Motor support bearing temperature high warning (145)	•		
	5: P1MotorMainBearTempWarn		Motor main bearing temperature high warning (146)	•		
	6: P1MotorInsulLowWarn		Motor insulation resistance low warning (20)	•		
	7: P1MotorLowVoltageWarn		Motor voltage low warning (40)	•		
	8: P1MotorHighVoltageWarn		Motor voltage high warning (32)	•		
	9: P1MotorPhaseSeqRevWarn		Motor phase sequence reversed warning (9)	•		
	10: P1MotorOverloadWarn		Motor overload warning (48)	•		
	11: P1MotorUnderloadWarn		Motor underload warning (56)	•		
	12: P1MotorProtTestTripWarn		Motor protector activated warning (27)	•		
	13: P1MotorMissingPhaseWarn		Motor missing phase warning (2)	•		
	14: P1MotorCurrentAsymWarn		Motor current asymmetry warning (111)	•		
	15: P1MotorLoadContinuesWarn		Load continues, but motor relay is off, warning (26)	•		
	16: P1MotorProtActivatedWarn		Motor protector test trip warning (18)	•		
	17: P1MotorPhaseFailureWarn		Motor phase failure warning (241)	•		
	18: P1MotorMoistSwitchWarn		Motor moisture switch warning (22)	•		
	19: P1MotorVibrationWarn		Pump vibration too high warning (24)	•		
	20: P1MotorWaterInOilWarn		Water in oil level too high warning (11)	•		
	21: P1MotorMainsSupplyWarn		Fault in the mains power supply warning (6)	•		
	22: P1MotorContactorWarn		Motor contactor feedback warning (220)	•		
	23: P1MotorStartsPerHourWarn		Motor max. starts per hour limit exceeded warning (21)	•		
	24: P1MotorServiceTimeWarn		Motor service time exceeded warning (12)	•		•
	25: P1TooManyAutoRestartsWarn		Too many auto restarts of pump warning (4)	•		
	26: P1PumpLowFlowWarn		Pump low flow warning (58)	•		
	27: P1MaxContRuntimeWarn		Pump max. cont. runtime limit exceeded warning (245)	•		
	28: P1MotorCosPhiHighWarn		Motor cosine phi too high warning (112)	•		
	29: P1MotorCosPhiLowWarn		Motor cosine phi too low warning (113)	•		
	30: Unused		Unused			
	31: P1DriveProtMeasFaultWarn		Motor drive protection measurement fault warn. (165)			

7.6.12 Pump events - DCLCPump1WarnBits2 (ID 413)

The following parameters have the same bit interpretation: DCLCPump2WarnBits2 (ID 463), DCLCPump3WarnBits2 (ID 513), DCLCPump4WarnBits2 (ID 563), DCLCPump5WarnBits2 (ID 613), DCLCPump6WarnBits2 (ID 663).

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
Pump events						
413	DCLCPump1WarnBits2	DWORD, 0xD3	CU 362 (DC) and LC 2xx warning bits for pump P1, part 2			
	0: P1AuxiliaryDeviceFaultWarn		Fault in auxiliary component warning (224)	•		
	1: P1PumpmoduleCommWarn		Fault in pump communication warning (225)	•		
	2: P1OnOffAutoSwFaultWarn		Fault in manual switch warning (243)	•		
	3: P1PT100SensorSignalWarn		PT 100 sensor signal fault warning (175)	•		
	4: P1PTCSensorSignalWarn		PTC sensor signal fault warning (181)	•		
	5: P1WIOSensorSignalWarn		Water-in-oil sensor signal fault warning (170)	•		

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
6:	P1SupBearTempSignalWarn		Motor support bearing temp. sensor signal warning (179)	•		
7:	P1MainBearTempSignalWarn		Motor main bearing temp. sensor signal warning (180)	•		
8:	P1PowerlineCommFaultWarn		Pump powerline communication fault warning (10)	•		
9:	P1SetupConflictWarn		Conflict in setup parameter(s), warning (25/163)	•		
10:	P1GenHardwareFaultWarn		General hardware fault warning (72)	•		
11:	P1MotorCurrentSignalWarn		Motor current sensor signal fault warning (88)	•		
12:	P1InrushFaultWarn		Current Inrush fault warning (155)	•		
13:	P1SignalFaultSensor2Warn		Signal fault sensor 2 warning (93)	•		
14:	P1BearDETempHighWarn		Motor bearing drive end temperature warning (148)	•		
15:	P1BearNDETempHighWarn		Motor bearing non-drive end temperature warning (149)	•		
16:	P1LeakageCurrentWarn		Leakage current warning (1)	•		
17:	P1SignalFaultTemp3Warn		Temperature sensor 3 signal fault warning (176)	•		
18:	P1SignalFaultSensor1Warn		Sensor 1 signal fault warning (89)	•		
19:	P1OvercurrentWarn		Overcurrent warning (49)	•		
20:	P1MotorProtectionActWarn		Motor protection activated warning (55)	•		
21:	P1ChangeBearingsWarn		Change bearings warning (30)	•		
22:	P1LubricateBearingsWarn		Lubricate bearings warning (240)	•		
23:	P1MotorRecognFailedWarn		Motor not recognized warning (242)	•		
24:	P1CommFaultTwinHeadWarn		Communication fault – twin head warning (77)	•		
25:	P1SignalFaultTemp1Warn		Temperature sensor 1 fault warning (91)	•		
26:	P1DryRunningWarn		Dry running warning (57)	•		
27:	P1VFDnotReadyWarn		Variable frequency drive not ready warning (213)	•		
28:	P1OtherWarn		Other warning (16)	•		
29:	P1PumpBlockedWarn		Pump blocked warning (51)	•		
30:	P1SignalFaultPowerWarn		Power sensor signal fault warning (186)	•		
31:	Unused		Unused			

7.6.13 Pump events - AAPump1AlarmBits (ID 414)

The following parameters have the same bit interpretation: AAPump2AlarmBits (ID 464), AAPump3AlarmBits (ID 514), AAPump4AlarmBits (ID 564).

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
Pump events						
414	AAPump1AlarmBits	DWORD, 0xD3	AutoAdapt CIU 502 alarm bits for pump P1			
	0: P1PhaseSequenceAlarm		Phase sequence reversed alarm (9)		•	
	1: P1OvervoltageAlarm		Overvoltage alarm (32)		•	
	2: P1UndervoltageAlarm		Undervoltage alarm (40)		•	
	3: P1OverloadAlarm		Overload alarm (48)		•	
	4: P1BlockedMotorAlarm		Blocked motor/pump alarm (51)		•	
	5: Unused		Unused			
	6: P1MotorTempAlarm		Motor temperature alarm (65)		•	
	7: P1ElectronicTempAlarm		Temperature, control electronics alarm (66)		•	
	8: P1TermoRelay1Alarm		Termo Relay 1 in motor (e.g. clixon) alarm (69)		•	
	9: P1TermoRelay2Alarm		Termo Relay 2 in motor (e.g. termistor) alarm (70)		•	
	10: Unused		Unused			
	11: Unused		Unused			
	12: P1SensorSignalAlarm		Sensor signal fault alarm (88)		•	
	13: Unused		Unused			
	14: P1TooManyAutoRestartsAlarm		Too many auto restarts alarm (4)		•	
	15: P1RunTimeContHighAlarm		Pump continuous runtime too long alarm (245)		•	
	16: Unused		Unused			

7.6.14 Pump events - AAPump1WarnBits (ID 415)

The following parameters have the same bit interpretation: AAPump2WarnBits (ID 465), AAPump3WarnBits (ID 515), AAPump4WarnBits (ID 565).

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
Pump events						
415	AAPump1WarnBits	DWORD, 0xD3	AutoAdapt CIU 502 warning bits for pump P1			
	0: Unused		Unused			
	1: Unused		Unused			
	2: Unused		Unused			
	3: P1OverloadWarn		Overload warning (48)		•	
	4: Unused		Unused			
	5: P1DryRunningWarn		Dry running warning (57)		•	
	6: P1MotorTempWarn		Motor temperature warning (65)		•	
	7: P1ElectronicTempWarn		Temperature warning, control electronics (66)		•	
	8: Unused		Unused			
	9: Unused		Unused			
	10: P1VerificationErrorWarn		Verification error warning (ROM, FLASH), code area (82)		•	
	11: P1VerificationErrorEEPROM		Verification error warning (EEPROM), FE param. area (83)		•	
	12: P1SensorSignalWarn		Sensor signal fault warning (88)		•	
	13: P1HighLevelWarn		Sensor limit 2 exceeded warning (high level) (191)		•	
	14: Unused		Unused			
	15: P1RunTimeContHighWarn		Pump continuous runtime too long warning (245)		•	
	16: P1DryRunSensorCalbrWarn		Dry-run sensor calibration timeout warning (108)		•	
	17: Unused		Unused			

7.6.15 Pump events (ID 460 - ID 563)

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
Pump events						
460	DCLCPump2AlarmBits1	DWORD, 0xD3	CU 362 (DC) and LC 2xx alarm bits for pump P2, part 1. Bit definition like ID 410.	A		A
461	DCLCPump2AlarmBits2	DWORD, 0xD3	CU 362 (DC) and LC 2xx alarm bits for pump P2, part 2. Bit definition like ID 411.	A		A
462	DCLCPump2WarnBits1	DWORD, 0xD3	CU 362 (DC) and LC 2xx warning bits for pump P2, part 1. Bit definition like ID 412.	W		W
463	DCLCPump2WarnBits2	DWORD, 0xD3	CU 362 (DC) and LC 2xx warning bits for pump P2, part 2. Bit definition like ID 413.	W		W
464	AAPump2AlarmBits	DWORD, 0xD3	AutoAdapt CIU 502 alarm bits for pump P2. Bit definition like ID 414.		A	
465	AAPump2WarnBits	DWORD, 0xD3	AutoAdapt CIU 502 warning bits for pump P2. Bit definition like ID 415.		W	
510	DCLCPump3AlarmBits1	DWORD, 0xD3	CU 362 (DC) alarm bits for pump P3, part 1. Bit definition like ID 410.	A		
511	DCLCPump3AlarmBits2	DWORD, 0xD3	CU 362 (DC) alarm bits for pump P3, part 2. Bit definition like ID 411.	A		
512	DCLCPump3WarnBits1	DWORD, 0xD3	CU 362 (DC) warning bits for pump P3, part 1. Bit definition like ID 412.	W		
513	DCLCPump3WarnBits2	DWORD, 0xD3	CU 362 (DC) warning bits for pump P3, part 2. Bit definition like ID 413.	W		
514	AAPump3AlarmBits	DWORD, 0xD3	AutoAdapt CIU 502 alarm bits for pump P3. Bit definition like ID 414.		A	
515	AAPump3WarnBits	DWORD, 0xD3	AutoAdapt CIU 502 warning bits for pump P3. Bit definition like ID 415.		W	
560	DCLCPump4AlarmBits1	DWORD, 0xD3	CU 362 (DC) alarm bits for pump P4, part 1. Bit definition like ID 410.	A		

ID	Name	Data type	Description and event code	Device type		
				DC CU 362	AA CIU 502	LC LC 2x1 LC 2x2
561	DCLCPump4AlarmBits2	DWORD, 0xD3	CU 362 (DC) alarm bits for pump P4, part 2. Bit definition like ID 411.	A		
562	DCLCPump4WarnBits1	DWORD, 0xD3	CU 362 (DC) warning bits for pump P4, part 1. Bit definition like ID 412.	W		
563	DCLCPump4WarnBits2	DWORD, 0xD3	CU 362 (DC) warning bits for pump P4, part 2. Bit definition like ID 413.	W		
564	AAPump4AarmBits	DWORD, 0xD3	AutoAdapt CIU 502 alarm bits for pump P4. Bit definition like ID 414.		A	
565	AAPump4WarnBits	DWORD, 0xD3	AutoAdapt CIU 502 warning bits for pump P4. Bit definition like ID 415.		W	
610	DCLCPump5AlarmBits1	DWORD, 0xD3	CU 362 (DC) alarm bits for pump P5, part 1. Bit definition like ID 410.	A		
611	DCLCPump5AlarmBits2	DWORD, 0xD3	CU 362 (DC) alarm bits for pump P5, part 2. Bit definition like ID 411.	A		
612	DCLCPump5WarnBits1	DWORD, 0xD3	CU 362 (DC) warning bits for pump P5, part 1. Bit definition like ID 412.	W		
613	DCLCPump5WarnBits2	DWORD, 0xD3	CU 362 (DC) warning bits for pump P5, part 2. Bit definition like ID 413.	W		
660	DCLCPump6AlarmBits1	DWORD, 0xD3	CU 362 (DC) alarm bits for pump P6, part 1. Bit definition like ID 410.	A		
661	DCLCPump6AlarmBits2	DWORD, 0xD3	CU 362 (DC) alarm bits for pump P6, part 2. Bit definition like ID 411.	A		
662	DCLCPump6WarnBits1	DWORD, 0xD3	CU 362 (DC) warning bits for pump P6, part 1. Bit definition like ID 412.	W		
663	DCLCPump6WarnBits2	DWORD, 0xD3	CU 362 (DC) warning bits for pump P6, part 2. Bit definition like ID 413.	W		

7.7 Fault finding the product

You can detect faults in a module by observing the status of the two status LEDs.

CIM 500 fitted in a Grundfos water utility controller or CIM 500 fitted in a CIU 502



Ensure that SW1 is in position "3".

Fault (LED status)	Possible cause	Remedy
LED1 and LED2 remain off when the power supply is connected.	The module is fitted incorrectly in the Grundfos product.	Check that the module is fitted and connected correctly.
	The module is defective.	Replace the module.
	CIU 500 is defective.	Replace CIU 500.
LED1 remains off.	SW1 is not set correctly.	Set the switch to "3".
LED2 is flashing red.	No internal communication between the module and the Grundfos product.	Check that the module is fitted correctly.
	No internal communication between CIU 500 and the Grundfos product.	- Check the cable connection between the Grundfos product and CIU 500. - Check that the individual conductors have been connected correctly, for example not reversed. - Check the power supply to the Grundfos product.
	The module does not support the connected Grundfos product.	Contact the nearest Grundfos company.
LED2 is permanently red.	IP address conflict.	Check the IP address configuration.
LED1 is permanently red.	SW1 is in illegal position.	Check that SW1 is set to "3".
	Connection time-out.	Verify the connection and communication between PLC and CIM 500.
LED1 is flashing red.	Error in firmware download.	Use the webserver to download the firmware again.
LED1 is permanently red and green at the same time.	Memory fault.	Replace the module.
LED2 is permanently red and green at the same time.		

8. Disposing of the product

This product or parts of it must be disposed of in an environmentally sound way.

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.



The crossed-out wheellie bin symbol on a product means that it must be disposed of separately from household waste. When a product marked with this symbol reaches its end of life, take it to a collection point designated by the local waste disposal authorities. The separate collection and recycling of such products will help protect the environment and human health.

See also end-of-life information at www.grundfos.com/product-recycling.

Appendix A

A.1. Webserver configuration

The built-in webserver offers easy monitoring of the CIM 500 module and makes it possible to configure the selected Industrial Ethernet protocol. Using the webserver, you can also update the firmware of the CIM 500 module and store or restore settings, among other functions. To connect a PC to CIM 500, proceed as follows:

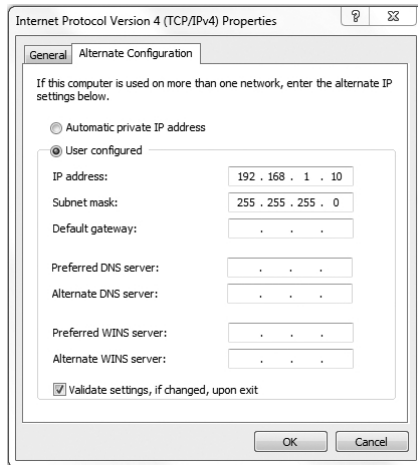
1. Connect the PC and the module using an Ethernet cable.
2. Configure the Ethernet port of the PC to the same subnetwork as CIM 500, for example 192.168.1.101.
3. Open a standard Internet browser and type 192.168.1.100 in the URL field.

Related information

[A.1.1. How to configure an IP address on your PC using Windows 10](#)

A.1.1. How to configure an IP address on your PC using Windows 10

1. Search for "Ethernet" in Windows.
2. Select "Change Ethernet setting".
3. Select "Change adapter options".
4. Right-click "Ethernet" and select "Properties".
5. Select properties for "Internet Protocol Version 4 (TCP/IPv4)".
6. Select the "Alternate Configuration" tab and enter the user-configured IP address and subnet mask you would like to assign to your PC.



Example from windows 10

A.1.2. Login

For administration of username and password, see also [A.1.5. User Management](#).



If you experience problems with logging in to the webserver after a firmware update, perform a factory reset.

Login

Object	Description
Username	Enter username. Default: admin.
Password	Enter password. Default: Grundfos. After the first log in, you are forced to change the password. The password must contain: • at least 8 and maximum 20 characters • at least one lower case letter • at least one upper case letter • at least one numeric or special character. When logging in, you have four attempts before a back-off algorithm starts an exponentially increasing time delay between each attempt. Power cycling CIM 500 resets the back-off algorithm.

Related information[A.1.5. User Management](#)

A.1.3. EtherNet/IP configuration

This web page is used to configure all the parameters relevant to the EtherNet/IP protocol standard.

GRUNDFOS

Information

- System
- Version
- Licence

Configuration

- Real Time Ethernet Protocol
- Network Settings
- User Management
- Firmware Update / Restart

Logout

Service Info

- Contact

Real Time Ethernet Protocol Configuration - EtherNet/IP

Protocol Settings

IP Address:

Subnet Mask:

Gateway:

Use DHCP: ☐

Comm. Watchdog: ☐ 5s timeout.

Product Simulation

Grundfos product simulation:

TM074519

Real Time Ethernet Protocol Configuration - EtherNet/IP

Object	Description
IP Address	Configuration of the static IP address if a DHCP server is not used. EtherNet/IP is not allowed to share the IP address with a CIM 500 webserver.
Subnet Mask	Configuration of the subnet mask if a DHCP server is not used.
Gateway	Configuration of the gateway address if a DHCP server is not used.
Use DHCP	The CIM 500 module can be configured to automatically obtain its EtherNet/IP network settings from a DHCP server, if available on the network. Default: No use of DHCP.
Communication Watchdog	For enabling of a 5 seconds communication watchdog timer. Only active for pump or booster products. Unchecked: Watchdog is disabled (default). Checked: Watchdog is enabled, time-out is 5 seconds. Watchdog action: The pump or the booster is set to local mode.
Grundfos product simulation	The module can be put in product simulation mode to generate realistic simulated values of all the EtherNet/IP input data. It will thus be possible to connect an EtherNet/IP master to a module fitted in a CIU or an E-box without installing this device in a real industrial process system. In an office environment, it can then be verified that communication works, and data is received and handled correctly by the EtherNet/IP master application program (for example PLC program) before installing the device. To enable product simulation, select a product type from the dropdown list. To terminate product simulation, select "No Simulation".



You need a contract with Grundfos and an external router with Internet connection to gain access to the GRM server.

A.1.4. Network settings

This web page is used to configure the network settings of the webserver and of the GENIpro TCP protocol. The network settings here are also used for BACnet IP. Additional configuration of BACnet IP is done in the Real Time Ethernet Protocol menu.

TM074524

Network settings

Object	Description
IP Address	Configuration of the static IP address if a DHCP server is not used. Default: 192.168.1.100.
Subnet Mask	Configuration of the subnet mask if a DHCP server is not used. Default: 255.255.255.0.
Gateway	Configuration of the gateway address if a DHCP server is not used. Default: 192.168.1.1.
DNS Server	The module can be configured to use a specific domain name server, if available on the network. Default: 0.0.0.0.
Use DHCP	The module can be configured to automatically obtain the IP address from a DHCP server, if available on the network. Default: Do not use DHCP.

Related information

[A.1.3. EtherNet/IP configuration](#)

A.1.5. User Management

A login is required for any change of the CIM 500 settings, and this web page is used to configure the username and password.

 It is only possible to configure one user.

GRUNDFOS

Information

System

Version

Licence

Configuration

Real Time Ethernet Protocol

Network Settings

GENpro TCP Protocol

User Management

Firmware Update / Restart

Logout

Service Info

Contact

User Management

Type	Username	New password	Confirm password
Administration	admin		

Submit

Administration:
* User has all access rights.

User name requirements:
* Minimum 1 character and maximum 20 characters.
* Can only contain alphanumerics.

Password requirements:
* Minimum 8 characters and maximum 20 characters.
* Minimum 1 lower case alphabetic character.
* Minimum 1 upper case alphabetic character.
* Minimum 1 numeric or special character.

User management

Related information

[A.1.2. Login](#)

A.1.6. Update

You can update the firmware by means of the built-in webserver. The binary file is supplied by Grundfos. To make installation and configuration easier, you can upload the configuration to a PC for backup or distribution to multiple modules.

 If you experience problems with logging in to the webserver after a firmware update, perform a factory reset.

GRUNDFOS

Information

System

Version

Licence

Configuration

Real Time Ethernet Protocol

Network Settings

GENpro TCP Protocol

User Management

Firmware Update / Restart

Logout

Service Info

Contact

Update

Firmware

This updates the software of the CIM 500 module.

Firmware:

Browse...

Update

Configuration

This downloads/uploads the configuration of the CIM 500 module.

File:

Browse...

Download to module

Upload from device

Restart

By pressing this button, the CIM 500 module will make a power reset

Restart module

Update

Object	Description
Firmware	Path to binary firmware image that can be used for updating the module.
Update	Click [Update] to start the update. The procedure takes approximately one minute.
File	Path to the configuration file.
Download to module	Click here to transfer the configuration file to the module.
Upload from device	Click here to upload the configuration of the module to a file on your PC.
Restart module	By pressing this button, the CIM 500 module performs a power-up reset.

Argentina

Bombas GRUNDFOS de Argentina S.A.
Ruta Panamericana km. 37.500 Industrias
1619 - Garín Pcia. de B.A.
Tel.: +54-3327 414 444
Fax: +54-3327 45 3190

Australia

GRUNDFOS Pumps Pty. Ltd.
P.O. Box 2040
Regency Park
South Australia 5942
Tel.: +61-8-8461-4611
Fax: +61-8-8340-0155

Austria

GRUNDFOS Pumpen Vertrieb Ges.m.b.H.
Grundfosstraße 2
A-5082 Grödig/Salzburg
Tel.: +43-6246-883-0
Fax: +43-6246-883-30

Belgium

N.V. GRUNDFOS Bellux S.A.
Boomsesteenweg 81-83
B-2630 Aartselaar
Tel.: +32-3-870 7300
Fax: +32-3-870 7301

Belarus

Представительство ГРУНДФОС в Минске
220125, Минск
ул. Шафарьянская, 11, оф. 56, БЦ «Порт»
Тел.: +375 17 397 397 3
+375 17 397 397 4
Факс: +375 17 397 397 1
E-mail: minsk@grundfos.com

Bosnia and Herzegovina

GRUNDFOS Sarajevo
Zmaja od Bosne 7-7A
BiH-71000 Sarajevo
Tel.: +387 33 592 480
Fax: +387 33 590 465
www.ba.grundfos.com
E-mail: grundfos@bih.net.ba

Brazil

BOMBAS GRUNDFOS DO BRASIL
Av. Humberto de Alencar Castelo Branco,
630
CEP 09850 - 300
São Bernardo do Campo - SP
Tel.: +55-11 4393 5533
Fax: +55-11 4343 5015

Bulgaria

Grundfos Bulgaria EOOD
Slatina District
Iztochna Tangenta street no. 100
BG - 1592 Sofia
Tel.: +359 2 49 22 200
Fax: +359 2 49 22 201
E-mail: bulgaria@grundfos.bg

Canada

GRUNDFOS Canada inc.
2941 Brighton Road
Oakville, Ontario
L6H 6C9
Tel.: +1-905 829 9533
Fax: +1-905 829 9512

China

GRUNDFOS Pumps (Shanghai) Co. Ltd.
10F The Hub, No. 33 Suhong Road
Minhang District
Shanghai 201106 PRC
Tel.: +86 21 612 252 22
Fax: +86 21 612 253 33

Columbia

GRUNDFOS Colombia S.A.S.
Km 1.5 via Siberia-Cota Conj. Potrero
Chico,
Parque Empresarial Arcos de Cota Bod. 1A.
Cota, Cundinamarca
Tel.: +57(1)-2913444
Fax: +57(1)-8764586

Croatia

GRUNDFOS CROATIA d.o.o.
Buzinski prilaz 38, Buzin
HR-10010 Zagreb
Tel.: +385 1 6595 400
Fax: +385 1 6595 499
www.hr.grundfos.com

Czech Republic

GRUNDFOS Sales Czechia and Slovakia
s.r.o.
Čajkovského 21
779 00 Olomouc
Tel.: +420-585-716 111

Denmark

GRUNDFOS DK A/S
Martin Bachs Vej 3
DK-8850 Bjerringbro
Tel.: +45-87 50 50 50
Fax: +45-87 50 51 51
E-mail: info_GDK@grundfos.com
www.grundfos.com/DK

Estonia

GRUNDFOS Pumps Eesti OÜ
Peterburi tee 92G
11415 Tallinn
Tel.: + 372 606 1690
Fax: + 372 606 1691

Finland

OY GRUNDFOS Pumput AB
Trukkikuja 1
FI-01360 Vantaa
Tel.: +358-(0) 207 889 500

France

Pompes GRUNDFOS Distribution S.A.
Parc d'Activités de Chesnes
57, rue de Malacombe
F-38290 St. Quentin Fallavier (Lyon)
Tel.: +33-4 74 82 15 15
Fax: +33-4 74 94 10 51

Germany

GRUNDFOS GMBH
Schlüterstr. 33
40699 Erkrath
Tel.: +49-(0) 211 929 69-0
Fax: +49-(0) 211 929 69-3799
E-mail: infoservice@grundfos.de
Service in Deutschland:
kundendienst@grundfos.de

Greece

GRUNDFOS Hellas A.E.B.E.
20th km. Athinon-Markopoulou Av.
P.O. Box 71
GR-19002 Peania
Tel.: +0030-210-66 83 400
Fax: +0030-210-66 46 273

Hong Kong

GRUNDFOS Pumps (Hong Kong) Ltd.
Unit 1, Ground floor, Siu Wai industrial
Centre
29-33 Wing Hong Street & 68 King Lam
Street, Cheung Sha Wan
Kowloon
Tel.: +852-27861706 / 27861741
Fax: +852-27858664

Hungary

GRUNDFOS Hungária Kft.
Tópark u. 8
H-2045 Törökbálint
Tel.: +36-23 511 110
Fax: +36-23 511 111

India

GRUNDFOS Pumps India Private Limited
118 Old Mahabalipuram Road
Thoraiakkam
Chennai 600 097
Tel.: +91-44 2496 6800

Indonesia

PT GRUNDFOS Pompa
Graha intirub Lt. 2 & 3
Jln. Cililitan Besar No.454. Makasar,
Jakarta Timur
ID-Jakarta 13650
Tel.: +62 21-469-51900
Fax: +62 21-460 6910 / 460 6901

Ireland

GRUNDFOS (Ireland) Ltd.
Unit A, Merrywell Business Park
Ballymount Road Lower
Dublin 12
Tel.: +353-1-4089 800
Fax: +353-1-4089 830

Italy

GRUNDFOS Pompe Italia S.r.l.
Via Gran Sasso 4
I-20060 Truccazzano (Milano)
Tel.: +39-02-95838112
Fax: +39-02-95309290 / 95838461

Japan

GRUNDFOS Pumps K.K.
1-2-3, Shin-Miyakoda, Kita-ku
Hamamatsu
431-2103 Japan
Tel.: +81 53 428 4760
Fax: +81 53 428 5005

Korea

GRUNDFOS Pumps Korea Ltd.
6th Floor, Aju Building 679-5
Yeoksam-dong, Kangnam-ku, 135-916
Seoul, Korea
Tel.: +82-2-5317 600
Fax: +82-2-5633 725

Latvia

SIA GRUNDFOS Pumps Latvia
Deglava biznesa centrs
Augusta Deglava ielā 60
LV-1035, Rīga,
Tel.: + 371 714 9640, 7 149 641
Fax: + 371 914 9646

Lithuania

GRUNDFOS Pumps UAB
Smolensko g. 6
LT-03201 Vilnius
Tel.: + 370 52 395 430
Fax: + 370 52 395 431

Malaysia

GRUNDFOS Pumps Sdn. Bhd.
7 Jalan Peguam U1/25
Glenmarie industrial Park
40150 Shah Alam, Selangor
Tel.: +60-3-5569 2922
Fax: +60-3-5569 2866

Mexico

Bombas GRUNDFOS de México
S.A. de C.V.
Boulevard TLC No. 15
Parque industrial Stiva Aeropuerto
Apodaca, N.L. 66600
Tel.: +52-81-8144 4000
Fax: +52-81-8144 4010

Netherlands

GRUNDFOS Netherlands
Veluwezoom 35
1326 AE Almere
Postbus 22015
1302 CA ALMERE
Tel.: +31-88-478 6336
Fax: +31-88-478 6332
E-mail: info_gnl@grundfos.com

New Zealand

GRUNDFOS Pumps NZ Ltd.
17 Beatrice Tinsley Crescent
North Harbour Industrial Estate
Albany, Auckland
Tel.: +64-9-415 3240
Fax: +64-9-415 3250

Norway

GRUNDFOS Pumper A/S
Strømsveien 344
Postboks 235, Leirdal
N-1011 Oslo
Tel.: +47-22 90 47 00
Fax: +47-22 32 21 50

Poland

GRUNDFOS Pompy Sp. z o.o.
ul. Klonowa 23
Baranowo k. Poznania
PL-62-081 Przeźmierowo
Tel.: (+48-61) 650 13 00
Fax: (+48-61) 650 13 50

Portugal

Bombas GRUNDFOS Portugal, S.A.
Rua Calvet de Magalhães, 241
Apartado 1079
P-2770-153 Paço de Arcos
Tel.: +351-21-440 76 00
Fax: +351-21-440 76 90

Romania

GRUNDFOS Pompe România SRL
S-PARK BUSINESS CENTER, Clădirea
A2, etaj 2
Str. Tipograflor, Nr. 11-15, Sector 1, Cod
013714
Bucuresti, Romania
Tel.: 004 021 2004 100
E-mail: romania@grundfos.ro

Russia

ООО Грундфос Россия
ул. Школьная, 39-41
Москва, RU-109544, Russia
Тел. (+7) 495 564-88-00 (495) 737-30-00
Факс (+7) 495 564 8811
E-mail grundfos.moscow@grundfos.com

Serbia

Grundfos Srbija d.o.o.
Omladinskih brigada 90b
11070 Novi Beograd
Tel.: +381 11 2258 740
Fax: +381 11 2281 769
www.rs.grundfos.com

Singapore

GRUNDFOS (Singapore) Pte. Ltd.
25 Jalan Tukang
Singapore 619264
Tel.: +65-6681 9688
Fax: +65-6681 9689

Slovakia

GRUNDFOS s.r.o.
Prievozská 4D 821 09 BRATISLAVA
Tel.: +421 2 5020 1426
sk.grundfos.com

Slovenia

GRUNDFOS LJUBLJANA, d.o.o.
Leskoškova 9e, 1122 Ljubljana
Tel.: +386 (0) 1 568 06 10
Fax: +386 (0) 1 568 06 19
E-mail: tehnika-si@grundfos.com

South Africa

GRUNDFOS (PTY) LTD
16 Lascelles Drive, Meadowbrook Estate
1609 Germiston, Johannesburg
Tel.: (+27) 10 248 6000
Fax: (+27) 10 248 6002
E-mail: lgradidge@grundfos.com

Spain

Bombas GRUNDFOS España S.A.
Camino de la Fuentequilla, s/n
E-28110 Algete (Madrid)
Tel.: +34-91-848 8800
Fax: +34-91-628 0465

Sweden

GRUNDFOS AB
Box 333 (Lunnagårdsgatan 6)
431 24 Mölndal
Tel.: +46 31 332 23 000
Fax: +46 31 331 94 60

Switzerland

GRUNDFOS Pumpen AG
Bruggacherstrasse 10
CH-8117 Fällanden/ZH
Tel.: +41-44-806 8111
Fax: +41-44-806 8115

Taiwan

GRUNDFOS Pumps (Taiwan) Ltd.
7 Floor, 219 Min-Chuan Road
Taichung, Taiwan, R.O.C.
Tel.: +886-4-2305 0868
Fax: +886-4-2305 0878

Thailand

GRUNDFOS (Thailand) Ltd.
92 Chaloei Phrakiat Rama 9 Road
Dokmai, Pravej, Bangkok 10250
Tel.: +66-2-725 8999
Fax: +66-2-725 8998

Turkey

GRUNDFOS POMPA San. ve Tic. Ltd. Sti.
Gebze Organize Sanayi Bölgesi
İhsan dede Caddesi
2. yol 200. Sokak No. 204
41490 Gebze/ Kocaeli
Tel.: +90 - 262-679 7979
Fax: +90 - 262-679 7905
E-mail: satis@grundfos.com

Ukraine

ТОВ "ГРУНДФОС УКРАЇНА"
Бізнес Центр Європа
Столичне шосе, 103
м. Київ, 03131, Україна
Tel.: (+38 044) 237 04 00
Fax: (+38 044) 237 04 01
E-mail: ukraine@grundfos.com

United Arab Emirates

GRUNDFOS Gulf Distribution
P.O. Box 16768
Jebel Ali Free Zone, Dubai
Tel.: +971 4 8815 166
Fax: +971 4 8815 136

United Kingdom

GRUNDFOS Pumps Ltd.
Grovebury Road
Leighton Buzzard/Beds. LU7 4TL
Tel.: +44-1525-850000
Fax: +44-1525-850011

U.S.A.

GRUNDFOS Water Utility Headquarters
856 Koomey Road
Brookshire, Texas 77423 USA

Uzbekistan

Grundfos Tashkent, Uzbekistan
The Representative Office of Grundfos
Kazakhstan in Uzbekistan
38a, Oybek street, Tashkent
Tel.: (+998) 71 150 3290 / 71 150 3291
Fax: (+998) 71 150 3292

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