

CIM/CIU COMMUNICATION INTERFACES

COMPLETE CONTROL FOR PUMPS AND PUMP SYSTEMS



MANAGE YOUR SYSTEMS WITH CIM/CIU COMMUNICATION INTERFACES

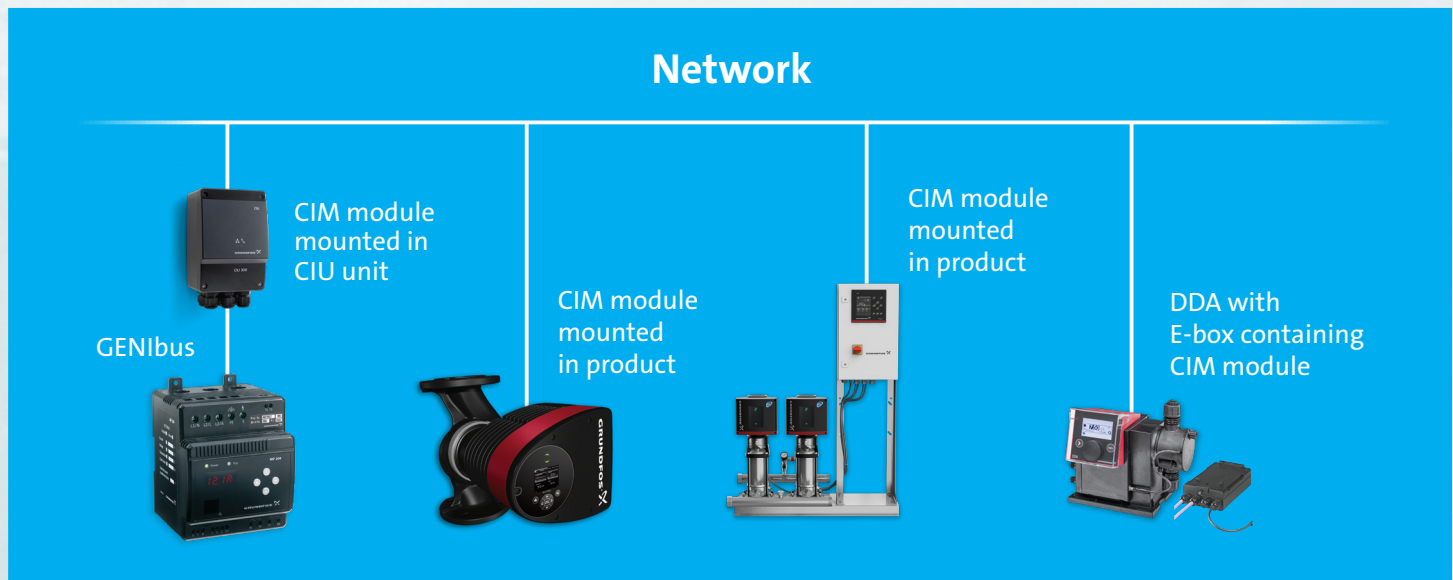
For complete control of pump systems, the Grundfos fieldbus concept is the right solution. The innovative Communication Interface Module (CIM) and the Communication Interface Unit (CIU) enable data communication via open and interoperable networks such as

- Modbus RTU
- Modbus TCP
- BACnet MS/TP
- BACnet IP
- LONWorks
- PROFIBUS DP
- PROFINET IO
- EtherNet/IP
- Grundfos iSOLUTIONS Cloud/Grundfos Remote Management

The series of Grundfos CIM/CIU communication interfaces offer ease of installation and commissioning, user-friendliness and great value for money in the long term. All modules are based on standard functional profiles for an easy integration into the network and easy understanding of data points.

Why CIM/CIU Connectivity Interfaces?

- Pumps and controllers have better reliability with reduced downtime, due to monitoring and control functionality on a BMS/SCADA system
- The operational cost of pumps can be lowered by reducing setpoints to match precise system needs via remote control
- Remote monitoring and control via BMS/SCADA systems reduce manual settings, monitoring time and travel time to sites or installations
- Enable predictive maintenance and fast reaction time on process changes and exceptions
- One solution for all products with a modular design prepared for future needs
- One solution offering complete process monitoring and control
- Flexible wide range power supply 24-240 VAC/VDC (CIU unit)
- Easy to install and commission, as Grundfos delivers the required support files and functional profile manuals



Available Communication Interfaces

- CIM 050 for GENibus
- CIM 060 for radio communication to Grundfos GO Remote
- CIM 100/110 for LONWorks networks
- CIM 150 and E-box 150 for PROFIBUS DP
- CIM 200 and E-box 200 for Modbus RTU
- CIM 280 for Grundfos iSOLUTIONS Cloud/GRM
- CIM 300 for BACnet MS/TP networks
- CIM 500 for PROFINET IO, Modbus TCP, BACnet IP, EtherNet/IP and Grundfos iSOLUTIONS Cloud
- E-box 500 for PROFINET IO, Modbus TCP, EtherNet/IP, Grundfos iSOLUTIONS Cloud
- CIU 900 unit for any CIM interface
- CIU 901 CIU unit with IO board
- CIU 903 for SQFlex/MGFlex

Grundfos Communication Interface Modules (CIM) and Units (CIU)

Creating intelligent communications solutions for applications in Industry, Building Services and Water Utility.

Mounting CIM in CIU Unit or E-box

	CIM 	CIU 900 	CIU 901 (IO 270) 	CIU 903 (SQ Flex/MG Flex) 	E-box (Small DDA) 
LON	CIM 100/110	CIU 100/110 assembly	-		-
PROFIBUS DP	CIM 150	CIU 150 assembly	-		E-box 150
Modbus RTU	CIM 200	CIU 201 assembly	CIU 201 assembly		E-box 200
BACnet MS/TP	CIM 300	CIU 300 assembly	-		-
Cellular 3G/4G for Grundfos iSOLUTIONS Cloud/GRM	CIM 280	CIU 280 assembly	CIU 281 assembly	CIU 283 assembly	-
Industrial EtherNet	CIM 500	CIU 500 assembly	CIU 501 assembly	CIU 503 Assembly Grundfos iSOLUTIONS Cloud/GRM only	E-box 500

CIM Modules

The CIM is an add-on communication module installed internally.

Single pumps:

- E-Pumps: All PM & 20-30HP Async
- MAGNA3 circulator pumps

Boosters:

- Hydro/Control MPC, CU 352
- DDD control, CU 354
- Hydro Multi-E and Hydro Multi-B
- MAGNA3-D twin circulator pumps
- TPED twin pump model H/I

Wastewater controllers:

- Dedicated Controls, CU 362
- Level Control, LC 2x1

CIU 900 Wall-Mounted/DIN Rail Unit

The CIU 900 with internal power supply is for Grundfos products that do not support the internal mounting of the CIM module.

- TPED 11-22 kW
- CUE drive for various standard pumps
- MP 204 motor protector
- DDA model XL

CIU 901 Wall-Mounted/DIN-Rail Unit

A CIU 900 unit with additional I/O board integrated which contains:

- 2 configurable inputs (digital or analog 0/4-20 mA, 0-10 V)
- 1 Relay output (230 V, 2 A)
- 1 Analog signal output (0-10 V)
- 1 Temperature input (Pt100/Pt1000, 2-wire)
- 2 digital inputs

Supported from CIM 200 Modbus RTU, CIM 280 Grundfos iSOLUTIONS Cloud/GRM, CIM 500 (Modbus TCP, Grundfos iSOLUTIONS Cloud/GRM)

CIU 903 Wall-Mounted/DIN Rail Unit

- A CIU 900 unit but with integrated powerline communication to connect to wastewater MGEFlex and SQFlex pumps.
- Supported from CIM 280 Grundfos iSOLUTIONS Cloud/GRM, CIM 500 with Grundfos iSOLUTIONS Cloud/GRM only.
- CIU 903 solution for external 24 V AC/DC power supply (not for solar power).

E-Box

An external communication unit for small DDA dosing pumps.

- E-box 150 PROFIBUS DP with build in CIM 150
- E-box 200 Modbus RTU with build in CIM 200
- E-box 500 Ethernet with build in CIM 500 for support of PROFINET, Modbus TCP, EtherNet/IP and Grundfos iSOLUTIONS Cloud/GRM

CIM/CIU Interface Products Mapped To Protocols

	MAGNA3-D Twin pump 2)	MAGNA 3	TPED 11-22 kW Twin pump	Twin pump TPED Model H/I 1)	E-Pumps All PM & 20-30 HP Async	CUE	Hydro MPC (CU 352)	Multi-E MGE 11-22 kW model G/F	Multi-E Model H/I/J 1)	MP 204	Dedicated Controls (CU 362)	LC 2x1	DDA dosing 3)
GENIBus	 CIM 050	 CIM 050	built-in	built-in	built-in	built-in	 CIM 050	built-in	built-in	built-in	 CIM 050		built-in
LON	 CIM 110	 CIM 100	 2x CIU 900 + 2x CIM 100	 CIM 110	 CIM 100	 CIU 900 + CIM 100	 CIM 110	 CIU 900 + CIM 100	 CIM 110				
PROFIBUS DP	 CIM 150	 CIM 150	 2x CIU 900 + 2x CIM 150	 CIM 150	 CIM 150	 CIU 900 + CIM 150	 CIM 150	 CIU 900 + CIM 150	 CIM 150	 CIU 900 + CIM 150	 CIM 150	 CIM 150	 CIU 900 + CIM 150 or E-box 150
PROFINET IO	 CIM 500	 CIM 500	 2x CIU 900 + 2x CIM 500	 CIM 500	 CIM 500	 CIU 900 + CIM 500	 CIM 500	 CIU 900 + CIM 500	 CIM 500	 CIU 900 + CIM 500	 CIM 500	 CIM 500	 CIU 900 + CIM 500 or E-box 500
Modbus TCP	 CIM 500	 CIM 500	 2x CIU 900 + 2x CIM 500	 CIM 500	 CIM 500	 CIU 900 + CIM 500	 CIM 500	 CIU 900 + CIM 500	 CIM 500	 CIU 900 + CIM 500	 CIM 500	 CIM 500	 CIU 900 + CIM 500 or E-box 500
Modbus RTU	 CIM 200	 CIM 200	 2x CIU 900 + 2x CIM 200	 CIM 200	 CIM 200	 CIU 900 + CIM 200	 CIM 200	 CIU 900 + CIM 200	 CIM 200	 CIU 900 + CIM 200	 CIM 200	 CIM 200	 CIU 900 + CIM 200 or E-box 200
EtherNet/IP	 CIM 500	 CIM 500	 2x CIU 900 + 2x CIM 500	 CIM 500	 CIM 500	 CIU 900 + CIM 500	 CIM 500	 CIU 900 + CIM 500	 CIM 500				 CIU 900 + CIM 500 or E-box 500
BACnet MS/TP	 CIM 300	 CIM 300	 2x CIU 900 + 2x CIM 300	 CIM 300	 CIM 300	 CIU 900 + CIM 300	 CIM 300	 CIU 900 + CIM 300	 CIM 300				
BACnet IP	 CIM 500	 CIM 500	 2x CIU 900 + 2x CIM 500	 CIM 500	 CIM 500	 CIU 900 + CIM 500	 CIM 500	 CIU 900 + CIM 500	 CIM 500				
Grundfos iSOLUTIONS Cloud 4)	 CIM 280/ CIM 500	 CIM 280/ CIM 500	 2x CIU 900 + 2x CIM 280 / 2x CIM 500	 CIM 280/ CIM 500	 CIM 280/ CIM 500	 CIU 900 + CIM 280/ CIM 500	 CIM 280/ CIM 500	 CIU 900 + CIM 280/ CIM 500	 CIM 280/ CIM 500	 CIU 900 + CIM 280/ CIM 500	 CIM 280/ CIM 500	 CIM 280/ CIM 500	 CIU 900 + CIM 500 or E-box 500
Radio to Grundfos GO Remote	built-in	built-in		built-in	built-in				built-in		 CIM 060		

Note: To create a CIU xxx solution, you need to order a CIU 900 + the required CIM xxx interface and mount the CIM xxx interface into CIU 900. This is the same for a CIU xx1, CIU xx2, CIU xx3.

- 1) A second CIM module can optionally be mounted in pump no. 2 for redundancy
- 2) MAGNA3-D model D requires 1x CIM in master head, MAGNA3-D models A-C require a CIM in each head (for LON 2x CIM 100)
- 3) Small DDA uses the E-box, whereas DDA XL uses the CIU unit plus the appropriate CIM module
- 4) CIM 280 Grundfos iSOLUTIONS Cloud/GRM 3G/4G are available in regional versions for USA (consider needed 3G/4G frequency bands)

Note: Hydro Multi-B is supported by CIM 050 GENIBus, CIM 110 LON, CIM 200 Modbus RTU, CIM 300 BACnet MS/TP, CIM 500 (Modbus TCP, BACnet IP), CIM 280 Grundfos iSOLUTIONS Cloud/GRM 3G/4G cellular.

Note: E-pumps are CRE/CRNE/CRIE, MTRE, CME, TPE2/TPE3, NBE/NKE.

BACnet IP, BACnet MS/TP, LON

For pumps and boosters

General CIU 900 Data

Supply voltage	24-240 VAC/VDC, -10 %/+15 %
Frequency	0-60 Hz
Power consumption	Max. 11 W
Cable size	IEC: 0.2-4 mm ² , UL: 24-12 AWG
Enclosure class	IP 54, according to IEC 60529
Cable entry	6 x M16 Ø4 - Ø10
Operating temperatures	-20 °C to +45 °C (-4 °F to +113 °F)
Storage temperatures	-20 °C to +60 °C (-4 °F to +140 °F)
Dimensions (H/W/D)	182 x 108 x 82 mm

GENibus Communication

Protocol	GENibus
Transceiver	RS-485
Recommended cable type	Screened, double twisted-pair
Maximum cable length	1200 m/4000 ft

CIM 500 BACnet IP Communication

Protocol	BACnet IP (set rotary switch to position 2)
Transmission speeds	10/100 Mbit/s
Ports	2x RJ45
IP settings	built-in webserver

CIM 300 BACnet MS/TP Communication

Protocol	BACnet MS/TP (Master)
Transceiver	RS-485
Transmission speeds	9.6, 19.2, 38.4, 76.8 kbits/s
BACnet master address	0-127

CIM 100 LON for Pumps/CIM 110 LON for Booster and Twin Pump Communication

Protocol	LONtalk
Transceiver	FTT-10
Transmission speeds	78 kbits/s

Example with BACnet MS/TP



Data Points

BACnet IP, BACnet MS/TP, LON							
	MAGNA/UPE	MAGNA3	E-pumps <11 kW E-pumps model J	CUE E-pumps 11-22 kW	Multi-E, TPED	Hydro MPC/ Control MPC	Hydro Multi-B
s = if sensor installed s* = available with sensor or TPE 2000 and TPE3 ¹ differential or absolute, depends on sensor ² Not standard for Control MPC G= only for MGE model G or later H= only for MGE model H or later							
Control							
Operating Mode	•	•	•	•	•	•	•
Setpoint	•	•	•	•	•	•	•
Control Mode	•	•	•	•	H	•	
Relay Control			•	•	H		
Tank Filling Status							•
Status							
Operating Mode Status	•	•	•	•	•	•	•
Control Mode Status	•	•	•	•	•	•	•
Feedback	•	•	•	•	•	•	•
Alarm/Warning Information	•	•	•	•	•	•	•
Bearing Service Information			G	•			
Tank Filling Control							•
Measured Data							
Power/Energy Consumption	•	•	•	•	•	•	•
Pressure (Head) ¹	•	•	s*	s*	•	* ²	s
Flow	•	•	s*	s*	H+s	* ²	
Relative Performance	•	•	•	•	•	•	•
Speed and Frequency	•	•	•	•			
Digital Input/Output	•	•	•	•	•	•	•
Motor Current		•	•	•	•		
Motor Voltage			G only	•			
Remote Flow		s	G+s	s	H+s		
Inlet Pressure ¹			G+s	s	H+s	s	s
Remote Pressure ¹		s	G+s	s	H+s	s	
Level			s	s	H+s	s	s
Motor Temperature			G+s	s			
Remote Temperature		s	s	s	H+s	s	
Pump Liquid Temperature	•	•	G+s	s	H+s		
Bearing Temperatures			H+s	s			
Auxiliary Sensor Input			s	s	H+s		
Operation Time (Run Time)	•	•	•	•	•	•	•
Total On Time	•	•	•	•	•		
Number Of Starts		•	•	•			
Volume			H+s	CUE + s			
Ambient Temperature			H+s		H+s	s	
Inlet and Outlet Temperatures						s	
Heat Energy Meter	•		H				
Outlet Pressure ¹			H+s		H+s	s	s
Feed Tank Level			H+s		H+s	s	s
Subpump Data							
Alarm/Status Information					•	•	•
Operation Time (Run Time)					•	•	•
Speed					H	•	•
Line Current/Power Consumption					H	•	•
Motor Temperature					H	•	•
Number of Starts					H	•	•
Control Pump: Force To Stop/Auto						•	•

Note 1) E-pumps = CRE/CRNE/CRIE, MTRE, CME, TPE2/TPE3, NBE/NKE.
Note 2) TPED twin pump model F or G in range 3-22 kW needs always 2 CIU modules.
Note 3) MAGNA3-D twinpump model D requires 1x CIM interface installed in master head.
 For LON 1x CIM 110 installed in master head.

PROFINET IO, Modbus TCP, EtherNet/IP, PROFIBUS DP, Modbus RTU

For pumps and boosters

General CIU 900, CIU 901, CIU 902, CIU 903

Supply voltage	24-240 VAC/VDC, -10 %/+15 %
Frequency	0-60 Hz
Power consumption	Max. 11 W
Cable size	IEC: 0.2-4 mm ² , UL: 24-12 AWG
Enclosure class	IP 54, according to IEC 60529
Cable entry	6 x M16 Ø4 - Ø10
Operating temperatures	-20 °C to +45 °C (-4 °F to +113 °F)
Storage temperatures	-20 °C to +60 °C (-4 °F to +140 °F)
Dimensions (H/W/D)	182 x 108 x 82 mm

CIU 902 is used together with wastewater AUTOADAPT pumps
 CIU 903 is used together with MGEFlex and SQFlex pumps, and only with CIM 280 for Grundfos iSOLUTIONS Cloud

GENibus Communication

Protocol	GENibus
Transceiver	RS-485
Recommended cable type	Screened, double twisted-pair
Maximum cable length	1200 m/4000 ft

CIM 500 PROFINET IO, Modbus TCP, EtherNet/IP Communication

Protocol	PROFINET IO (rotary switch position 0) Modbus TCP (rotary switch position 1) EtherNet/IP (rotary switch position 3)
Transmission speeds	10/100 Mbits/s
Ports	2x RJ45
Conformance class	B

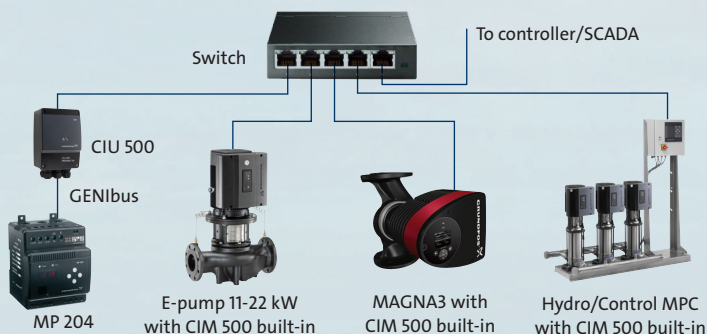
CIM 200 Modbus RTU Communication

Protocol	Modbus RTU
Transceiver	RS-485
Transmission speeds	1.2, 2.4, 4.8, 9.6, 19.2, 38.4 kbits/s
Parity settings	Even, Odd or No parity
Stop bits	1 or 2
Modbus Slave address	1-247, set via rotary switches

CIM 150 PROFIBUS DP Communication

Protocol	PROFIBUS DP
Transceiver	RS-485
Implementation class	DP-V0
Transmission speeds	9600 bits/s to 12 Mbit/s
Slave address	1-126, set via rotary switches

Example with CIM 500



Data Points

PROFINET IO, Modbus TCP, EtherNet/IP, PROFIBUS DP, Modbus RTU								
s = if sensor installed s* = available with sensor or TPE 2000 and TPE3 1 differential or absolute, depends on sensor 2 Not standard for Control MPC 3 Not supported for all pump variants H = only MGE model H or later G = only MGE model G or later	MAGNA/UPE	MAGNA3	E-pumps <11 kW E-pumps model J	CUE E-pumps 11-22 kW	Multi-E, TPED	Hydro MPC/ Control MPC	Hydro Multi-B	MP 204
Control								
Operating Mode	•	•	•	•	•	•	•	•
Setpoint	•	•	•	•	•	•	•	•
Control Mode	•	•	•	•	H	•		
Relay Control			•	•				
Tank filling control							•	
Status								
Operating Mode Status	•	•	•	•	•	•	•	•
Control Mode Status	•	•	•	•	•	•	•	•
Feedback	•	•	•	•	•	•	•	•
Alarm and warning information	•	•	•	•	•	•	•	•
Bearing Service information			H	•				
Tank filling status information							•	
Measured Data								
Power/Energy Consumption	•	•	•	•	•	•	•	•
Pressure (Head) ¹	•	•	s*	s*	•	s ²	s	
Flow	•	•	s*	s*	H+s	s ²		
Relative Performance	•	•	•	•	•	•	•	
Speed and Frequency	•	•	•	•				
Digital Input/Output	•	•	•	•	•	•	•	
Motor Current	•	•	•	•				•
DC Link Voltage		•	•	•				
Motor Voltage			G only	•				•
Remote Flow		s	G+s	s	H+s			
Inlet Pressure ¹			G+s	s	H+s	s	s	
Remote Pressure ¹		s	G+s	s	H+s	s		
Level			s	s	H+s	s	s	
Motor Temperature			G+s	s				s
Remote Temperature		s	s	s	H+s	s		
Pump Liquid Temperature	•	•	G+s	s				
Bearing Temperatures			H+s	s				
Auxiliary Sensor Input			s	s	H+s			
Operation Time (Run Time)	•	•	•	•	•	•	•	•
Total on time	•	•	•	•	•	•	•	•
Torque (N/A on 1-phased motors)			•	•				
Number Of Starts		•	•	•				
Volume			H+s	CUE+s				
Ambient Temperature			H+s		H+s	s		
Inlet and Outlet Temperatures						s		
Heat energy meter	•	•	H					
Outlet Pressure ¹			H+s		H+s	s ²	s	
Feed Tank Level			H+s		H+s	s	s	
Phase Voltages								•
Line Voltages/Currents/Frequency								•
Start/Run Capacitor								•
Voltages Angles + Cos phi								•
Insulation resistance								•
Starts/h and auto restarts/24h								•
Subpump Data (for each sub pump in the system)								
Status information					•	•	•	
Alarm information					•	•	•	
Operation Time (Run Time)					•	•	•	
Speed					H	•	•	
Line current/power consumption					H	•	•	
Motor temperature					H	•	•	
Number of starts					H	•	•	
Control pump: forc to stop/auto						•	•	

Note 1 E-pumps = CRE/CRNE/CME, MTR, CHIE, TPE2/TPE3, NBE/NKE; **Note 2** For DDA dosing pumps please view to DDA related pages; **Note 3** TPED twin pump model F or G in range 3-22 kW needs always 2 CIU modules; **Note 4** MAGNA3-D twin pump model D only requires 1x CIM interface installed in master head; **Note 5** Hydro Multi-B only supported by Modbus RTU and Modbus TCP

PROFINET IO, Modbus TCP, EtherNet/IP, PROFIBUS DP, Modbus RTU

For wastewater products

General CIU 900, CIU 901, CIU 902

Supply voltage	24-240 VAC/VDC, -10 %/+15 %
Frequency	0-60 Hz
Power consumption	Max. 11 W
Cable size	IEC: 0.2-4 mm ² , UL: 24-12 AWG
Enclosure class	IP 54, according to IEC 60529
Cable entry	6 x M16 Ø4 - Ø10
Operating temperatures	-20 °C to +45 °C (-4 °F to +113 °F)
Storage temperatures	-20 °C to +60 °C (-4 °F to +140 °F)
Dimensions (H/W/D)	182 x 108 x 82 mm

CIU 902 is used together with wastewater AUTOADAPT pumps
 CIU 903 is used together with MGEFlex and SQFlex pumps, and
 only with CIM 280 for Grundfos iSOLUTIONS Cloud

GENIbus Communication

Protocol	GENIbus
Transceiver	RS-485
Recommended cable type	Screened, double twisted-pair
Maximum cable length	1200 m/4000 ft

CIM 500 PROFINET IO, Modbus TCP, EtherNet/IP Communication

Protocol	PROFINET IO (rotary switch position 0) Modbus TCP (rotary switch position 1) EtherNet/IP (rotary switch position 3)
Transmission speeds	10/100 Mbits/s
Ports	2x RJ45
Conformance class	B

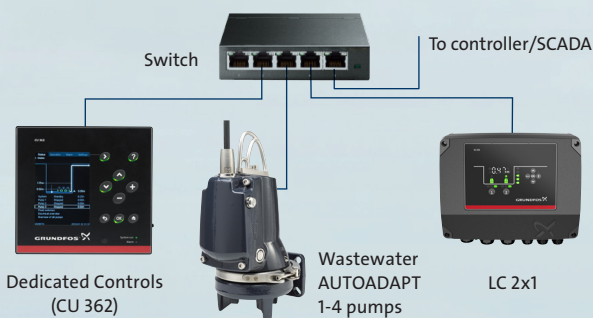
CIM 200 Modbus RTU Communication

Protocol	Modbus RTU
Transceiver	RS-485
Transmission speeds	1.2, 2.4, 4.8, 9.6, 19.2, 38.4 kbits/s
Parity settings	Even, Odd or No parity
Stop bits	1 or 2
Modbus Slave address	1-247, set via rotary switches

CIM 150 PROFIBUS DP Communication

Protocol	PROFIBUS DP
Transceiver	RS-485
Implementation class	DP-V0
Transmission speeds	9600 bits/s to 12 Mbit/s
Slave address	1-126, set via rotary switches

Example with CIM 500



Data Points

PROFINET IO, Modbus TCP, PROFIBUS DP, Modbus RTU	LC 2x1	Dedicated Controls CU 362	Wastewater AUTOADAPT CIU xx2*
Pit Control			
Reset alarm	•	•	•
Interlock pit		•	
Custom relay control (On/Off/Pulse)		•	
Pump Control			
Pumps On/Off/Auto	•	•	•
Pump down			•
Configuration			
Set pit and pumps control levels	•	•	•
Pit status			
Pit operation mode	•	•	•
Active alarms/warnings	•	•	•
Pit mode (single/multi)			•
Status/function of float switches	•	•	
Presence of sensors	•	•	
Real time clock (read and set)		•	
Pit control source (Manual/Auto)	•	•	•
Pit and pumps control levels	•		
Water level	•	•	•
Water level max			•
In/out flow		•	
Power/Energy consumption	•	• ¹	• ¹
Specific energy		•	
Volume		• ¹	
Overflow volume/time/counter		• ¹	
Operation time	•	•	•
Operation time for simultaneous pumps		• ¹	•
Mixer average starts per hours		•	
3 x user defined sensor inputs	•	•	
Float switches	•	•	
Digital inputs	•		•
8 x I/O logic outputs		•	
Digital Outputs	•		
Pump status			
Presence of pump	•	•	•
Pump enabled/disabled		•	
Running/Stopped	•	•	•
Active alarms/warnings	•	•	•
Auxiliary equipment status		•	
Control source	•	•	
Operation time	•	• ¹	• ¹
Starts counter (total/average)	•	• ¹	• ¹
Latest continuous operation time		•	•
Max continuous operation time			•
Time to service	•	•	
Flow (actual/latest)		•	
Current (actual/latest)	• ²	•	•
Voltage/frequency		•	•
Current asymmetry		•	
Power/Power factor/Energy consumption	• ³	•	•
Motor temperature		•	•
Insulation		•	
Water in oil		•	
Special			
Hour log (latest 72h of main pit/pump values)		•	
Event log (50 latest alarms/warnings w. time stamp)	• ⁴	•	
User defined data log (40000 registers)		•	

Note 1 Available as 3 datapoints for yesterday, today and total. For information related to Grundfos iSOLUTIONS Cloud please contact Grundfos; **Note 2** LC 2X1 only has actual current; **Note 3** LC 2X1 does not measure power factor; **Note 4** LC 2X1 only has 40 logs

*To create a CIU 152, you order CIU 902 + CIM 150. To create a CIU 202, you order CIU 902 + CIM 200. To create a CIU 502, you order CIU 902 + CIM 500

Cellular Data Connection to SCADA or Operation Via SMS

For pumps and boosters

General CIU 900, CIU 901, CIU 902, CIU 903

Supply voltage	24-240 VAC/VDC, -10 %/+15 %
Frequency	0-60 Hz
Power consumption	Max. 11 W
Cable size	IEC: 0.2-4 mm ² , UL: 24-12 AWG
Enclosure class	IP 54, according to IEC 60529
Cable entry	6 x M16 Ø4 - Ø10
Operating temperatures	-20 °C to +45 °C (-4 °F to +113 °F)
Storage temperatures	-20 °C to +45 °C (-4 °F to +113 °F)
Dimensions (H/W/D)	182 x 108 x 82 mm

CIU 902 is used together with wastewater AUTOADAPT pumps
 CIU 903 is used together with MGEFlex and SQFlex pumps, and only with CIM 280 for Grundfos iSOLUTIONS Cloud

GENIbus Communication

Protocol	GENIbus
Transceiver	RS-485
Recommended cable type	Screened, double twisted-pair
Maximum cable length	1200 m/4000 ft

3G/4G Cellular Communication

Protocol	SMS
	Data connection (Modbus TCP)
3G/4G antenna	Available as an option
Battery	Available as an option
SIM card	To be supplied by user/installer

SMS Features

Read product status	<ul style="list-style-type: none"> E.g. pressure, power, temperature etc. (depends on product type) Request active alarms/warnings Request I/O signal status
Read network status	<ul style="list-style-type: none"> E.g. signal level, battery status, cellular status and data statistics.
Self-triggered messages	<ul style="list-style-type: none"> Alarm/warning event messages Heart beat messages
Control	<ul style="list-style-type: none"> Set operating mode (e.g. Start/stop) Set control mode (e.g. constant pressure) Set setpoint Reset alarms Set analog output
Configuration	<ul style="list-style-type: none"> SMS access control via PIN code Configuration of SMS functions Configuration of cellular connection
CIU 901 I/O board	<ul style="list-style-type: none"> 2 configurable inputs (digital or analog 0/4-20 mA, 0-10 V) 1 Relay output (230 V, 2 A) 1 Analog signal output (0-10 V) 1 Temperature input (Pt100/Pt1000, 2-wire) 2 digital inputs

Data Points

CIM 260 3G/4G Cellular								
	MAGNA/UPE	MAGNA3	E-pumps <11 kW E-pumps model J	CUE E-pumps 11-22 kW	Multi-E, TPED	Hydro MPC/ Control MPC	Hydro Multi-B	MP 204
s = if sensor installed s* = available with sensor or TPE 2000 and TPE3 ¹ differential or absolute, depends on sensor ² Not standard for Control MPC ³ Not supported for all pump variants G= only for MGE model G and later H= only for MGE model H and later								
Control								
Operating Mode	•	•	•	•	•	•	•	•
Setpoint	•	•	•	•	•	•	•	•
Control Mode	•	•	•	•	H	•		
Relay Control			•	•				
Tank filling control							•	
Status								
Operating Mode status	•	•	•	•	•	•	•	•
Control Mode status	•	•	•	•	•	•	•	•
Feedback	•	•	•	•	•	•	•	•
Alarm/warning information	•	•	•	•	•	•	•	•
Bearing Service Information			G	•				
Tank filling status information							•	
Measured Data								
Power/Energy Consumption	•	•	•	•	•	•	•	•
Pressure (Head) ¹	•	•	s*	s*	•	• ²	s	
Flow	•	•	s*	s*	H+s	• ²		
Relative Performance	•	•	•	•	•	•	•	
Speed and Frequency	•	•	•	•				
Digital Input/Output		•	•	•	•	•	•	
Motor Current		•	•	•	•			•
DC Link Voltage		•	•	•				
Motor Voltage			G only	•				•
Remote Flow		s	G+s	s	H+s			
Inlet Pressure ¹			G+s	s	H+s	s	s	
Remote Pressure ¹		s	G+s	s	H+s	s		
Level			s	s	H+s	s	s	
Motor Temperature			G+s	s				s
Remote Temperature		s	s	s	H+s	s		
Pump Liquid Temperature	•	•	G+s	s				
Bearing Temperatures			H+s	s				
Auxiliary Sensor Input			s	s	H+s			
Operation Time (Run Time)	•	•	•	•	•	•	•	•
Total on time	•	•	•	•	•	•	•	•
Number Of Starts		•	•	•				•
Volume			H+s	CUE + s				
Ambient Temperature			H+s		H+s	s		
Inlet and Outlet Temperatures						s		
Heat energy meter	•	H						
Outlet Pressure ¹			H+s		H+s	• ²	s	
Feed Tank Level			H+s		H+s	s	s	
Phase Voltages								•
Line Voltages/Currents/Frequency								•
Start/Run Capacitor								•
Voltage Angles + Cos phi								•
Insulation resistance								•
Starts/h and auto restarts/24h								•
Subpump Data								
Alarm/Status information					•	•	•	
Operation Time (Run Time)					•	•	•	
Speed					H	•	•	
Line current/power consumption					H	•	•	
Motor temperature						•	•	
Number of starts						•	•	
Control pump: force to stop/auto						•	•	

Note 1) E-pumps = CRE/CRNE/CRIE, MTRE, CME, TPE2/TPE3, NBE/NKE.
Note 2) TPED twin pump model F or G in range 3-22 kW needs always 2 CIU modules.
Note 3) MAGNA3-D twinpump model D requires 1x CIM interface installed in master head.

Cellular Data Connection to SCADA or Operation Via SMS

For pumps and boosters

General CIU 900, CIU 901, CIU 902, CIU 903

Supply voltage	24-240 VAC/VDC, -10 %/+15 %
Frequency	0-60 Hz
Power consumption	Max. 11 W
Cable size	IEC: 0.2-4 mm ² , UL: 24-12 AWG
Enclosure class	IP 54, according to IEC 60529
Cable entry	6 x M16 Ø4 - Ø10
Operation temperatures	-20 °C to +45 °C (-4 °F to +113 °F)
Storage temperatures	-20 °C to +60 °C (-4 °F to +140 °F)
Dimensions (H/W/D)	182 x 108 x 82 mm

CIU 902 is used together with wastewater AUTOADAPT pumps
 CIU 903 is used together with MGEflex and SQflex pumps, and only with CIM 280 for Grundfos iSOLUTIONS Cloud

GENIbus Communication

Protocol	GENIbus
Transceiver	RS-485
Recommended cable type	Screened, double twisted-pair
Maximum cable length	1200 m/4000 ft

Cellular Communication

Protocol	SMS
	Cellular data connection (Modbus TCP)
3G/4G antenna	Available as an option
Battery	Available as an option
SIM card	To be supplied by user/installer

SMS Features

Read product status	<ul style="list-style-type: none"> E.g. pressure, power, temperature etc. (depends on product type) Request active alarms/warnings Request I/O signal status
Read network status	<ul style="list-style-type: none"> E.g. signal level, battery status, cellular status and data statistics.
Self-triggered messages	<ul style="list-style-type: none"> Alarm/warning event messages Heart beat messages
Control	<ul style="list-style-type: none"> Pit interlocking Reset alarms
Configuration	<ul style="list-style-type: none"> SMS access control via PIN code Configuration of SMS functions Configuration of cellular connection
I/O board	<ul style="list-style-type: none"> 2 configurable inputs (digital or analog 0/4-20 mA, 0-10 V) 1 Relay output (230 V, 2 A) 1 Analog signal output (0-10 V) 1 Temperature input (Pt100/ Pt1000, 2-wire) 2 digital inputs

Data Points

CIM 260 3G/4G Cellular *			
	LC 2x1	Dedicated Controls CU 362	Wastewater AUTOADAPT CIU 262
Pit Control			
Reset alarm	•	•	•
Interlock pit		•	
Custom relay control (On/Off/Pulse)		•	
Pump Control			
Pumps On/Off/Auto	•	•	•
Pump down			•
Configuration			
Set pit and pumps control levels	•	•	•
Pit status			
Pit operation mode	•	•	•
Active alarms/warnings	•	•	•
Pit mode (single/multi)			•
Status/function of float switches	•	•	
Presence of sensors	•	•	
Real time clock (read and set)		•	
Pit control source (Manual/Auto)	•	•	•
Pit and pumps control levels	•	•	•
Water level	•	•	•
Water level max			•
In/out flow		•	
Power/Energy consumption	•	• ¹	• ¹
Specific energy		•	
Volume		• ¹	
Overflow volume/time/counter		• ¹	
Operation time	•	•	•
Operation time for simultaneous pumps		• ¹	•
Mixer average starts per hours		•	
3 x user defined sensor inputs	•	•	
Float switches	•	•	
Digital inputs	•	•	•
8 x I/O logic outputs		•	
Digital Outputs	•		
Pump status			
Presence of pump	•	•	•
Pump enabled/disabled		•	
Running/Stopped	•	•	•
Active alarms/warnings	•	•	•
Auxiliary equipment status		•	
Control source	•	•	
Operation time	•	• ¹	• ¹
Starts counter (total/average)	•	• ¹	• ¹
Latest continuous operation time		•	•
Max continuous operation time			•
Time to service	•	•	
Flow (actual/latest)		•	
Current (actual/latest)	• ²	•	•
Voltage/frequency		•	•
Current asymmetry		•	
Power/Power factor/Energy consumption	• ³	•	•
Motor temperature		•	•
Insulation		•	
Water in oil		•	
Special			
Hour log (latest 72h of main pit/pump values)		•	
Event log (50 latest alarms/warnings w. time stamp)	• ⁴	•	
User defined data log (40000 registers)		•	

Note 1 Available as 3 datapoints for yesterday, today and total. For information related to Modbus TCP, PROFINET or Grundfos iSOLUTIONS Cloud please contact Grundfos. **Note 2** LC 2X1 only has actual current **Note 3** LC 2X1 does not measure power factor **Note 4** LC 2X1 only has 40 logs
 * To create a CIU 262, you order a CIU 902 + CIM 260

DDA E-Box Version

For Grundfos digital dosing pumps

The small DDA is mounted directly on top of the E-box, and the bus cable included with the E-box is connected between the small DDA and E-box. The DDA XL uses the CIU unit solution, and the GENIBus cable is ordered separately.

PROFIBUS -DP Communication (E-box 150)

Protocol	PROFIBUS DP
Implementation Class	DP-V0
Transmission speeds	9600 bits/s to 12 Mbits/s
Slave address	1-126, set via DDA display

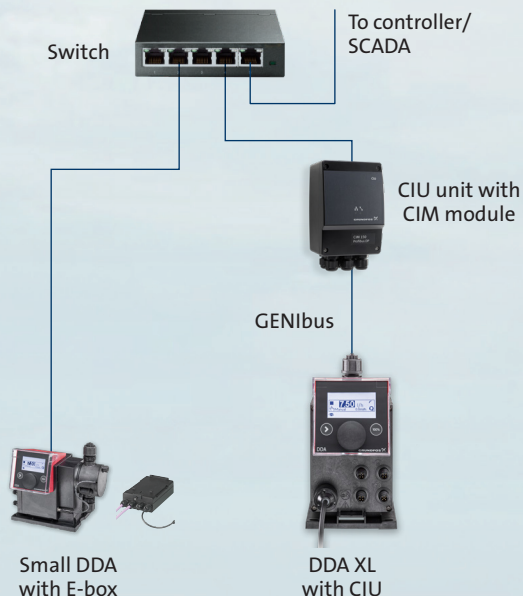
Modbus RTU Communication (E-box 200)

Protocol	Modbus RTU
Transceiver	RS-485
Transmission speeds	1.2, 2.4, 4.8, 9.6, 19.2, 38.4 kbits/s
Parity settings	Even, Odd or No parity
Stop bits	1 or 2
Slave address	1-247, set via DDA display

CIM 500 PROFINET IO, Modbus TCP, EtherNet/IP Communication

Protocol	PROFINET IO (rotary switch position 0) Modbus TCP (rotary switch position 1) EtherNet/IP (rotary switch position 3)
Transmission speed	10/100 Mbits/s
Ports	2 x RJ45
PROFINET conformance class	B

Network Example with CIM 500 Ethernet



DataPoints

DDA E-box 150, E-box 200 or E-box 500

	Control variant - FCM	Control variant - FC	Control variant - AR
Control			
Operating Mode (Start, Stop, Service, Calibrating), Functions (Slow mode, Viscosity selection), Deaerating mode	•	•	•
Function Enable/Disable (AutoDeaerating, FlowMonitor, Profibus Watchdog, AutoFlow, PulseMemory)	•	•	•
Pulse signal from bus	•	•	•
Reset Fault and Volume Counter	•	•	•
Control Mode (Manual, Pulse, Analogue, Timer, Batch)	•	•	•
Set Manual Flow Setpoint	•	•	•
Set Pulse Volume	•	•	•
Set Batch Volume	•	•	•
Set Batch Dosing Time	•	•	•
Set Flow Monitor Pressure Alarm Limit	•	•	•
Relay Control of Relay 1 and 2	•	•	•
Set Analog Output	•	•	•
Set Date & Time	•	•	•
Status			
Operating Mode Status	•	•	•
Control Mode Status	•	•	•
Alarm/warning/dosing (running) Status	•	•	•
Actual Manual Flow Setpoint	•	•	•
Actual Pulse Volume Setting	•	•	•
Actual Batch Dosing Volume Setting	•	•	•
Actual Batch Dosing Time Setting	•	•	•
Actual Flow Monitor Pressure Alarm Limit Setting	•	•	•
Control Source (HMI, External, Bus)	•	•	•
Fault & Warning Code	•	•	•
Warning Status Bits	•	•	•
Actual Date & Time	•	•	•
Max Dosing Pressure	•	•	•
Max Dosing Capacity	•	•	•
Resulting Dosing Capacity Setpoint	•	•	•
Remaining Dosing Volume	•	•	•
Total Dosed Volume	•	•	•
Volume Trip Counter	•	•	•
Actual Analog Output Signal	•	•	•
Digital Outputs	•	•	•
Number Of Starts	•	•	•
Run Time	•	•	•
Total On Time	•	•	•
Stroke Counter	•	•	•
Time To Next Dosing	•	•	•
Measured Data			
Digital Inputs	•	•	•
Analog Input Signal	•	•	•
Pulse Input Frequency	•	•	•
Measured Dosing Capacity	•	•	•
Measured Dosing Pressure	•	•	•

Product Numbers of Grundfos CIM/CIU Communication Interfaces

For pumps and boosters

Interface Name	Product No.	Comment
CIM 040 GENI TTL	98415941	For CU 354 DDD
CIM 050 GENIbus	96824631	
CIM 060 GlowPan	98778356	Require 98778357 Antenna kit for CIM 060
CIM 100 LON	96824797	LON for pumps
CIM 110	96824798	LON for boosters and twin pumps. Install CIM in master head in twin pumps and Multi-E
CIM 150 PROFIBUS DP	96824793	
E-box 150 PROFIBUS DP	97513994	For small DDA pumps
CIM 200 Modbus RTU	96824796	
E-box 200 Modbus RTU	98563350	For small DDA pumps
CIM 260-EU 3G/4G cellular	99439302	For European frequency bands. Requires 99518079 antenna kit. 3G/4G SIM card
CIM 260-US 3G/4G cellular	99439306	For North America frequency bands. Requires 99518079 antenna kit. 3G/4G SIM card
CIM 280-EU Grundfos iSOLUTIONS Cloud/GRM 3G/4G 1)	99439724	For European frequency bands. Requires 99518079 antenna kit. 3G/4G SIM card must have additional international PDU SMS roaming active.
CIM 280-US Grundfos iSOLUTIONS Cloud/GRM 3G/4G 1)	99439725	For North America frequency bands. Requires 99518079 antenna kit. 3G/4G SIM card must have additional international PDU SMS roaming active.
CIM 300 BACnet MS/TP	96893770	
CIM 500 Ethernet 1)	98301408	For Industrial Ethernet protocols PROFINET, Modbus TCP, BACnet IP, EtherNet/IP and for GRM IP
E-box 500 Ethernet 1)	99171932	For Industrial Ethernet protocols PROFINET, Modbus TCP, EtherNet/IP and for GRM IP for small DDA pumps
CIU 900	99448387	Empty CIU unit. For all CIM modules
CIU 901	99448389	Empty CIU unit with built-in IO board (IO 270). For CIM 200, CIM 260 and CIM 500
CIU 902 AUTOADAPT	97644690	Empty CIU unit with built-in SEG AUTOADAPT board for interface to 1-4 SEG AUTOADAPT pumps. For CIM 150, CIM 200, CIM 260 and CIM 500.
CIU 903 MGEFlex/SQFlex	98106399	Empty CIU unit with interface for MGE Flex and SQ Flex. Only used for CIM 280.
CIM 060 antenna kit	98778357	Antenna required only in case of no sight view
CIM 260/280 puc antenna kit (1.5 m cable)	99518079	
CIM 260/280 optional battery	99499908	
CIM500 RJ45 Field plugs kit	98471752	
DDA GENIbus cable (3 m)	98589048	For connection to CIU unit
Robustel R3000-L3H, 3G router	99043055	For use with CIM 500
Robustel R3000-L4L, 4G router	99043057	For use with CIM 500
3G/4G rod antenna for Robustel Router (5 m cable)	99043061	
External power supply 12 V for Robustel Router	99043052	



Note: To create a CIU xxx version you need to order a CIU 900 + CIM xxx interface, similar for a CIU xx1 or CIU xx2 or CIU xx3

1) Additional GRM contract needed for data hosting in Grundfos iSOLUTIONS Cloud/GRM

WE ARE IN THE WATER BUSINESS WITH YOU

As a pioneer and global leader in water pump technology, Grundfos creates intelligent, sustainable solutions to help solve the world's water and climate challenges. Through our heritage, we have the experience and innovative capabilities to help our partners, customers and communities move water in an increasingly energy and water efficient manner. We see this as not only a great business opportunity, but as an obligation to ensure the world heads toward a more sustainable tomorrow. Our complete portfolio of pumps and solutions are designed for commercial, residential, groundwater, municipal and industrial applications with emphasis in trendsetting, energy efficient technologies such as permanent magnet motors and advanced pump controls and monitoring. Because water matters, and so does your business.

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