

Dedicated Controls

50/60 Hz



1. General description	
Introduction	3
Data communication	4
2. Features and benefits	
Features and benefits	5
3. Type key	
Control cabinet	7
4. Product description	
Product description	8
5. Functions	
Functions	11
6. Pump control overview	
Examples of control variants	13
7. Product range	
Product range	14
DCx 318, single-phase	15
DCx 319, single-phase	16
DCx 318, three-phase	16
DCx 319, three-phase	18
8. Installation	
Examples of control cabinets	20
Environmental conditions	21
Electrical connection	21
9. Accessories	
Accessories	22
Control cabinet accessories	23
10. Approvals and CE mark	
Approvals and CE mark	24
11. Dimensions and weights	
Cabinet dimensions and weights	25
12. Further product documentation	
WebCAPS	26
WinCAPS	27

1. General description

Introduction

Grundfos Dedicated Controls is a control system designed for installation in either commercial buildings or network pumping stations with one or two pumps, an optional mixer or a flush valve. Advanced control and data communication are also possible with the Grundfos Dedicated Controls system.



Fig. 1 Dedicated Controls control cabinet (DCD 318)

Pumps supported

The Dedicated Controls is designed to control and monitor the Grundfos wastewater pumps listed below:

- SEG
- SE
- DP
- EF
- SL
- S.

Similar wastewater pumps of other makes can also be controlled by the Dedicated Controls system.

Dedicated Controls components

Main components of the Dedicated Controls system:

- CU 361 control unit
- IO 351B module (general I/O module)
- IO 111 protection module (optional).

Easy operation

The CU 361 control unit is a combined controller and user-friendly control panel. The control panel consists of nine buttons and a large graphical LCD display. On the CU 361 operator display, the current status of the system is shown. The actual positions of the pumps, mixer and measuring sensors are shown in the display. See fig. 2. The individual displays have explanatory help texts for the settings to be made in the display.



Fig. 2 CU 361 operator display

For further information, see section *Product range*, page 14.

Level measurement

The Dedicated Controls system starts/stops the wastewater pumps by means of

- float switches,
- analog pressure sensor or
- ultrasonic sensor.

Furthermore, it is possible to control the water level by both float switches and/or an analog pressure sensor. See section *Functions*, page 11.

Two additional safety float switches can be installed in the Dedicated Controls system. These are high-level and dry-running float switches.

TM04 6334 0110

High-level and dry-running safety float switches for DCD 319

If the high-level float switch is activated, the float switches take over the level control. When the high-level float switch is activated, the first pump (P1) is started and, if two pumps are installed, the second pump (P2) will be started via a timer relay (x). The pumps will drain the pump pit down to dry-running level. The pumps are stopped by the dry-running float switch, and the CU 361 takes over the level control. See fig. 3.

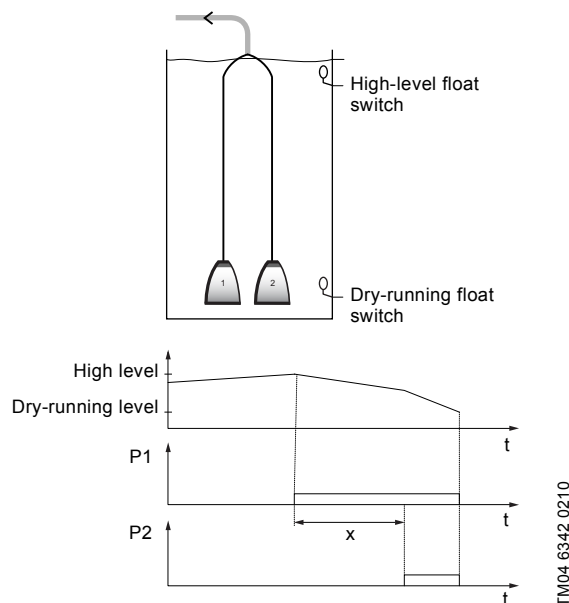


Fig. 3 High-level and dry-running float switches (DCD 319)

This function does not apply to DCD 318 control cabinets.

IO 111 module

The Dedicated Controls system can be extended with an IO 111 module per pump. Via inputs and outputs, the IO 111 allows advanced monitoring functions, such as

- motor temperature
- moisture in motor
- water in oil
- insulation resistance.

For functions, see section *Separate components*, page 8.

Controller-optimised software

Software algorithms for optimisation of the pump operation are based on Grundfos' long experience in pump control systems.

Easy monitoring, control and configuration

Dedicated Controls is easy to configure with the built-in step-by-step configuration wizard or the PC Tool WW Controls available. The wizard helps the user to configure the system during start-up. Afterwards monitoring, control and configuration can be done via

- CU 361
- PC Tool WW Controls
- SCADA system.

Communication

Dedicated Controls can communicate in many different ways. Wireless remote control is available throughout the world, using a PC or mobile phone.

See section *Data communication*, page 4.

PC Tool

Dedicated Controls is easy to configure by use of the Grundfos PC Tool WW Controls. The PC Tool WW Controls is a management and service tool for on-site service and remote preparation, verification and management.

Data communication

Internal communication

Communication between the CU 361, IO 351B and IO 111 is established via Grundfos GENiBus.

External communication

The Grundfos Dedicated Controls system can communicate with external units such as

- PC
- mobile phone
- SCADA/BMS systems.

Communication line and data protocols

Dedicated Controls is ordered either with or without a built-in CIM communication interface module. The communication module to be used depends on the fieldbus protocol and the communication line.

To establish communication between the Dedicated Controls system and a SCADA system, the CIM module must be configured. The configuration of the CIM module is easily carried out via the CU 361 operator display.

Dedicated Controls supports the following Grundfos CIM modules:

CIM module	Protocol	Line carrier
CIM 200	Modbus RTU	Cable, RS-485
CIM 250	Modbus/SMS messaging	GSM/GPRS
CIM 270	GRM*	GSM/GPRS

* GRM = Grundfos Remote Management

Grundfos Remote Management

Grundfos Remote Management is an easy-to-install low-cost solution to monitoring and management of Grundfos products.

Radio modem

Dedicated Controls supports communication via radio modem. The radio modem has to communicate via an RS-485 connection. The CIM 200 Modbus module is used as an interface between the CU 361 and the radio modem. The communication line is established by using an RS-485 serial cable.

Approach

- Centrally hosted database and web server.
- Data collection using SMS/GPRS.
- Users only need an internet connection and a standard web browser to monitor and manage their own pump installation.

2. Features and benefits

Features and benefits

The Grundfos Dedicated Controls system offers the features and benefits below:

Basic features

- Pump start/stop
- alternating operation of pumps
- overflow detection
- overflow measurement
- alarms and warnings
- advanced alarm schedules
- start and stop delays
- free language selection.

Advanced features

- User-defined functions
- alternation between groups
- start level variation (reduced sedimentation)
- combi alarms
- daily emptying
- foam draining
- anti-seizing (limestone)
- safety after-run delay
- mixer or flush valve
- maximum number of started pumps
- pump flow measurement
- system flow measurement
- pump flow calculation
- system flow calculation.

Additional features, IO 111

- Monitoring of insulation resistance
- monitoring of moisture in motor
- monitoring of water in oil.

See section *Functions*, page 12.

Additional features, MP 204

The MP 204 is not part of the standard range of control cabinets.

- Anti-blocking
- monitoring of voltage
- monitoring of current
- monitoring of current asymmetry
- monitoring of phase sequence
- monitoring of $\cos \varphi$ (power factor)
- monitoring of power
- monitoring of energy
- monitoring of insulation resistance
- monitoring of temperature, Pt100/Pt1000
- monitoring of temperature, PTC
- monitoring of temperature, Tempcon.

Additional features, CUE or VFD

The CUE or VFD is not part of the standard range of control cabinets.

- Anti-blocking
- automatic energy optimisation
- specific-energy test
- output frequency
- monitoring of voltage*
- monitoring of current*
- monitoring of phase sequence*
- monitoring of power*
- monitoring of energy*
- monitoring of torque*
- reverse start
- run flushing
- stop flushing
- PID control.

* These functions are only available with a Grundfos CUE.

Communication features

- Complete overview of the pump installation
- setpoint change, resetting of system and start/stop of pumps
- access to complete alarm/warning log
- automatic redirection of alarms and warnings to the on-duty staff
- optimisation of your maintenance and service program
- reduction in energy consumption of the system
- Modbus RTU communication via cable
- Modbus TCP communication via GSM/GPRS
- SMS commands (send/receive)
- SMS schedule
- VNC connection for migration of user interface to a web browser.

PC-Tool features

Used for

- commissioning
- monitoring pump condition
- adjusting settings
- start/stop of pumps
- acquiring data logs
- creating operation reports
- creating service reports.

Benefits

- Automatically energy-optimised operation.
To ensure the lowest possible specific energy consumption [kWh/m³], Dedicated Controls continuously learns and adapts to the operating conditions in the specific pumping system. The CU 361 immediately adapts the pump speed to data received from the frequency converter (Grundfos CUE) and a flowmeter. Specific energy consumption can also be provided by the electronic motor protector (Grundfos MP 204). This gives a continuous overview of pump efficiency, enabling timely service and maintenance.
- Anti-blocking.
The "flushing and reverse start" function prevents clogging caused by the increasing amount of fibrous components and solids in sewage nowadays. The anti-blocking function acts on any abnormal event to prevent pumps from being blocked, thus avoiding costly downtime.
- Flexibility to local adaptation.
Dedicated Controls has a number of free inputs and outputs for additional sensors (e.g. temperature sensors) or additional relays (e.g. valve operation). Highly intuitive set-up via the large operator display or via Grundfos PC Tools, i.e. without any additional programming.
- Service-cost-optimised installation and operation.
Dedicated Controls can send and receive SMS messages, for example alarms and warnings via SMS. Use the easy-to-configure rotating week schedules to plan ahead.
- Easy installation and configuration.
Dedicated Controls is easy to configure via the configuration wizard, and more installations can be configured by uploading an already configured installation file via Grundfos PC Tool WW Controls.
- Electrical overview for easy maintenance via the CU 361 operator display.
- Help texts for the Status, Operation, Alarm and Settings menus shown on the operator display.
- Advanced data communication.
Dedicated Controls can be monitored and controlled remotely, either via a GSM/GPRS connection or via Grundfos Remote Management web server.
- Advanced alarm and warning priority.
Dedicated Controls supports combi alarms. This means that two alarms have to be active before the system indicates an alarm.
- PC Tool support.
Dedicated Controls supports the Grundfos PC Tool WW Controls and PC Tool Water Utility. Both tools are used to configure the Dedicated Controls system, either on site or remotely.
- VNC (Virtual Network Computing).
In places where an Ethernet connection is available, the CU 361 can be remotely controlled by the VNC solution over Ethernet.
- GSM/GPRS, SMS (transmit and receive), SCADA, BMS and PLC support.
- Data logging such as alarms, runtime, flow, overflow, volume, energy, etc.

3. Type key

Control cabinet

Example	DCD	318	400	3	23		DOL	-IGM
Number of pumps								
DC: 1 pump								
DCD: 2 pumps								
Type number								
318: Control cabinet without main switch								
319: Control cabinet with main switch								
Supply voltage and frequency								
230: 230 V, 50/60 Hz								
400: 400 V, 50/60 Hz								
Number of phases								
1: Single-phase								
3: Three-phase								
Maximum current per pump [A]								
1: 1 - 1.5 A								
30: 10 - 30 A								
2: 1.5 - 2.5 A								
32: 25 - 32 A								
4: 2.5 - 4 A								
40: 32 - 40 A								
5: 1 - 5 A								
50: 40 - 50 A								
6: 4 - 6 A								
57: 40 - 57 A								
10: 6 - 10 A								
58: 50 - 58 A								
12: 5 - 12 A								
59: 15.5 - 59 A								
16: 10 - 16 A								
65: 55 - 65 A								
20: 5.5 - 20 A								
75: 65 - 75 A								
23: 12 - 23 A								
85: 15.5 - 85 A								
25: 20 - 25 A								
100: 70 - 100 A								
Run/starting capacitor [μF] (only 12 A operating current)								
[]: Without capacitor								
30: Run capacitor								
30/150: 30 μF run capacitor and 150 μF starting capacitor								
Starting method								
DOL (Direct On Line): Direct-on-line starting								
SD: Star-delta starting								
SS: Soft starter								
Setup								
S: Standard								
I: IO 111 (both pumps)								
G: GSM module and battery backup								
M: Mixer/flush valve								
IG: IO 111, GSM module and battery backup								
IM: IO 111 and mixer/flush valve								
GM: GSM module, battery backup and mixer/flush valve								
IGM: IO 111, GSM module, battery backup and mixer/flush valve								

4. Product description



Product description





The Dedicated Controls can be supplied in two ways, either as separate components or as a plug 'n' play control cabinet solution. The product numbers of the individual modules can be found in section *Separate components*, page 8.

When the Dedicated Controls is ordered as separate components, the following is supplied together with the components:



- safety instructions
- CD-ROM with installation and operating instructions for Dedicated Controls
- supplement to installation and operating instructions for Dedicated Controls
- installation and operating instructions for each component (software and hardware)
- PC Tool WW Controls
- PC Tool Water Utility
- electrical wiring diagrams (WebCAPS).

Separate components

Component	Description	Functions	Product number
<p>CU 361</p>  <p>GrA6588</p>	<p>The CU 361 is the 'brain' of the Dedicated Controls system and is mounted in the front of the control cabinet.</p> <p>The CU 361 can control and monitor one or two Grundfos wastewater pumps. The pumps can drain a pit using built-in draining algorithms. The algorithms are based on a water level measured by float switches and/or an analog level sensor.</p>	<p>CU 361 inputs and outputs:</p> <ul style="list-style-type: none"> • 3 digital inputs • 3 analog inputs for connection to sensors with current (0-20 mA/ 4-20 mA) or voltage (0-10 V) • 2 digital relay outputs, 240 VAC, 2 A • Connection to battery backup (UPS) (optional) • GENIbus communication (RS-485) • Ethernet connection (VNC) • Connection to fieldbus CIM modules (CIM = Communication Interface Module): <ul style="list-style-type: none"> – CIM 200 (Modbus via RS-485) – CIM 250 (Modbus and SMS via GSM/GPRS) – CIM 270 (GRM) (GRM = Grundfos Remote Management). 	96787482
<p>IO 351B</p>  <p>TM03 2110 3405</p>	<p>The IO 351B is a general I/O module. The IO 351B communicates with the CU 361 via GENIbus. Via the IO 351B inputs and outputs, the CU 361 controls the pumps according to the built-in algorithms.</p>	<p>IO 351B inputs and outputs:</p> <ul style="list-style-type: none"> • 9 digital inputs • 2 analog inputs for connection to sensors with current (0-20 mA/ 4-20 mA) or voltage (0-10 V) • 7 digital outputs, 240 VAC, 2 A • 4 PTC inputs • GENIbus communication (RS-485). 	96161730

Component	Description	Functions	Product number
<p>IO 111</p> 	<p>The IO 111 is a protection module for a Grundfos wastewater pump. The IO 111 has inputs for digital and analog pump sensors and can stop the pump if a sensor indicates a pump fault. The IO 111 is connected to the CU 361 and allows the monitoring of several sensors.</p> <p>TM03 0819 0505</p>	<p>IO 111 inputs and outputs:</p> <ul style="list-style-type: none"> • 1 digital input for moisture in motor • 1 digital input for water-in-oil detection • 1 digital input for high motor temperature • 1 analog input for insulation resistance • 1 analog input for stator temperature • 1 digital output for alarm relay • 1 digital output for warning • 1 digital output for moisture-in-motor alarm • 1 digital output for stator temperature alarm • 1 digital output for insulation resistance alarm. 	96575362
<p>CIM 200</p> 	<p>The CIM 200 is a Grundfos communication interface module used for the fieldbus protocol Modbus RTU. The CIM 200 is to be fitted in the CU 361 control unit. The CIM 200 is used to communicate with a Modbus RTU network.</p> <p>GrA6120</p>	<p>The CIM 200 module has terminals for the Modbus connection. DIP switches are used to set parity and line termination. Two hexadecimal rotary switches are used to set the Modbus address. Two LEDs are used to indicate the actual status of the CIM 200. One LED is used for internal communication, and the other is used to indicate Modbus communication status.</p>	96824796
<p>CIM 250</p> 	<p>The CIM 250 is a Grundfos communication interface module used for GSM/GPRS communication. The CIM 250 is to be fitted in the CU 361 control unit. The CIM 250 is used to communicate via a GSM network.</p> <p>TM04 4029 0609</p>	<p>The CIM 250 module has a SIM-card slot and an SMA connection to the GSM antenna. The CIM 250 also has an internal backup battery. Two LEDs are used to indicate the actual status of the CIM 250. One LED is used for internal communication, and the other is used to indicate GSM/GPRS communication status.</p> <p>Note: The SIM card is not supplied with the CIM 250.</p>	96824795
<p>CIM 270</p> 	<p>The CIM 270 is a Grundfos communication interface module used in Grundfos Remote Management. The CIM 270 is to be fitted in the CU 361 control unit. The CIM 270 establishes communication between the CU 361 control unit and the Grundfos Remote Management system, thereby allowing the CU 361 to be monitored and controlled remotely. The CIM 270 uses GSM/GPRS communication.</p> <p>TM04 4029 0609</p>	<p>The CIM 270 module has a SIM-card slot and an SMA connection to the GSM antenna. The CIM 270 also has an internal backup battery. Two LEDs are used to indicate the actual status of the CIM 270. One LED is used for internal communication, and the other is used to indicate GSM/GPRS communication status.</p> <p>Note: The SIM card is not supplied with the CIM 270.</p>	96898815

Control cabinet

Cabinet	Description	Functions	Product number
<p>DCx 318</p>  <p>DCx 319</p> 	<p>The DCx 318 and DCx 319 control cabinets are supplied with all necessary components, including battery backup. Different types of control cabinets are available, depending on functions and network. The control cabinet is designed for installation in a control cabinet for outdoor use.</p> <p>The DCD 319 control cabinets have a built-in main switch and a thermal magnetic circuit breaker.</p> <p>Note: The main switch and backup fuses have to be installed externally when a DCD 318 control cabinet is used.</p>	<p>Digital input</p> <ul style="list-style-type: none"> • Energy measurement* • Volume measurement* • Motor protection, pump 1 • Motor protection, pump 2 • Relay resetting • External fault • Common phase error • Alarm relay resetting • Contactor feedback, pump 1 • Contactor feedback, pump 2 • Contactor feedback, mixer • On/Off/Auto, pump 1 • On/Off, pump 1 • On/Off/Auto, pump 2 • On/Off, pump 2 • Float switch 1 • Float switch 2 • Float switch 3 • Float switch 4 • Float switch 5 • Too high motor temperature** • Moisture in motor** • PTC, pump 1 • Klixon, pump 1 • PTC, pump 2 • Klixon, pump 2. <p>Analog input</p> <ul style="list-style-type: none"> • Pressure sensor* • Ultrasonic sensor* • Flow rate* • Motor current, pump 1* • Motor current, pump 2* • Water in oil, pump 1* or ** • Water in oil, pump 2* or ** • User-defined sensor 1* • User-defined sensor 2* • User-defined sensor 3* • Insulation resistance** • Stator temperature** <p>Digital output</p> <ul style="list-style-type: none"> • Pump 1, start • Pump 2, start • Mixer start • User-defined relay • High-level alarm • Urgent alarms • All alarms and warnings • User-defined alarms • Alarm relay** • Warning** • Moisture-in-motor alarm** • Stator temperature alarm** • Insulation resistance alarm** <p>Communication</p> <ul style="list-style-type: none"> • SMS and Modbus GSM/GPRS*** • Modbus-wired**** 	<p>See section <i>Product range</i>, page 14.</p>

GrA6270 - TM04 5776 3909

*	External sensor required
**	Only via the IO 111
***	Via the CIM 250 GSM module
****	Via the CIM 200 Modbus module

5. Functions

Functions

Function level	Feature	Configuration				
		CU 361 + IO 351B = Std.	Std. + IO 111	Std. + MP 204*	Std. + CUE*	Std. + VFD*
Basic	Pit control	•	•	•	•	•
	Overflow level	ZV	ZV	ZV	ZV	ZV
	High-level alarm	•	•	•	•	•
	Alarm level alarm	•	•	•	•	•
	Dry-running alarm	•	•	•	•	•
	Analog level measurement with two safety float switches	V	V	V	V	V
	Conflicting levels alarm	V	V	V	V	V
	Low-flow warning (pump flow is reduced)	ZV	ZV	ZV	ZV	ZV
	System flow calculation	ZV	ZV	ZV	ZV	ZV
	Pump flow calculation	ZV	ZV	ZV	ZV	ZV
	System flow measurement	Y	Y	Y	Y	Y
	Pump flow measurement	Y	Y	Y	Y	Y
	Start/stop of pumps	•	•	•	•	•
	Pump statistics	•	•	•	•	•
	Warning, abnormal operation	•	•	•	•	•
	Alarm, abnormal operation	•	•	•	•	•
	Alternating operation of pumps	> 1 pump	> 1 pump	> 1 pump	> 1 pump	> 1 pump
	Alarm relay	•	•	•	•	•
	Pump overview	•	•	•	•	•
	Configuration wizard	•	•	•	•	•
Advanced	Start/stop delays	> 1 pump	> 1 pump	> 1 pump	> 1 pump	> 1 pump
	After-run delay	•	•	•	•	•
	Maximum start time	•	•	•	•	•
	Safety after-run time	•	•	•	•	•
	Anti-seizing, limestone	•	•	•	•	•
	Daily emptying	•	•	•	•	•
	Foam draining	•	•	•	•	•
	Counter adjustment	•	•	•	•	•
	Maximum number of started pumps	> 1 pump	> 1 pump	> 1 pump	> 1 pump	> 1 pump
	Motor temperature, PTC	•	•	•	•	•
	Contactors feedback	•	•	•	•	•
	Start level variation	ZV	ZV	ZV	ZV	ZV
	User-defined functions	•	•	•	•	•
	Pump groups	> 2 pumps	> 2 pumps	> 2 pumps	> 2 pumps	> 2 pumps
	Combi alarms	•	•	•	•	•
	Pressure measurement in discharge line	W	W	W	W	W
	Mixer or flush valve	•	•	•	•	•
	Moisture in motor	-	•	-	-	-
	Motor temperature sensor	-	•	•	-	-
	Water-in-oil sensor (WIO)	X	X	X	X	X
	Insulation resistance	-	•	•	-	-
	Anti-blocking, overcurrent	-	-	•	•	•
	Reverse start	-	-	U	•	•
	Voltage measurement	-	-	•	•	-
	Current measurement	T	T	•	•	•
	Current asymmetry	-	-	•	•	-
	Cos φ	-	-	•	-	-
	Energy measurement	S	S	•	•	S
	Automatic energy optimisation	-	-	-	ZVY	ZVY
	Specific-energy test	-	-	-	ZVY	ZVY
	Min. and max. frequency	-	-	-	ZV	ZV
	PID control	-	-	-	ZV	ZV
	Linear control	-	-	-	ZV	ZV
	Minimum control	-	-	-	ZV	ZV
	Flush functions (run and stop)	-	-	-	ZV	ZV
	Torque measurement	-	-	-	•	-

Function level	Feature	Configuration				
		CU 361 + IO 351B = Std.	Std. + IO 111	Std. + MP 204*	Std. + CUE*	Std. + VFD*
Communication	Alarms and warnings	•	•	•	•	•
	Current alarms	•	•	•	•	•
	Alarm log	•	•	•	•	•
	Alarm snapshot	•	•	•	•	•
	SCADA communication, GSM	C	C	C	C	C
	SCADA communication, GPRS	C	C	C	C	C
	SMS commands (send/receive)	C	C	C	C	C
	SMS messages, priority and scheduling	C	C	C	C	C
	Interlock	C	C	C	C	C
General	Language selection	•	•	•	•	•
	Safety and access codes	•	•	•	•	•
	Battery backup	C	C	C	C	C

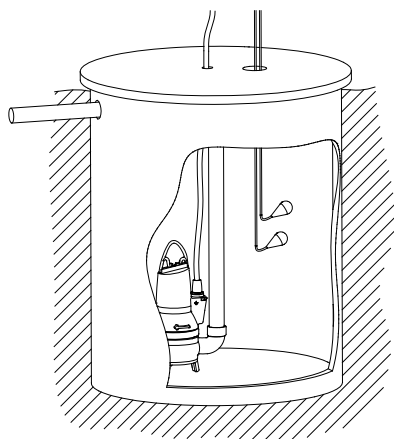
* The MP 204, CUE or VFD can be connected, but must be installed in a separate control cabinet.

Z	Analog measurement required
V	Analog measurement and safety float switches required
Y	Flowmeter required
X	WIO sensor required
W	Pressure sensor in the discharge line required
U	Reversing contactors required
T	Current transformer(s) (4-20 mA) required
S	Energy meter required
C	CIM 250 GSM module and backup battery required

6. Pump control overview

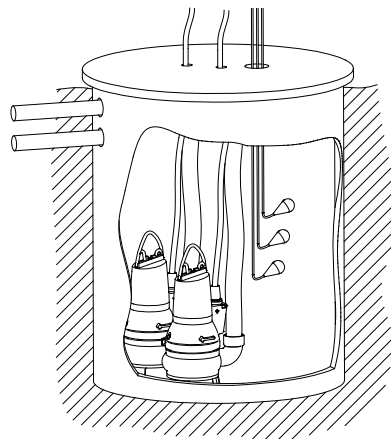
Examples of control variants

One pump with two float switches



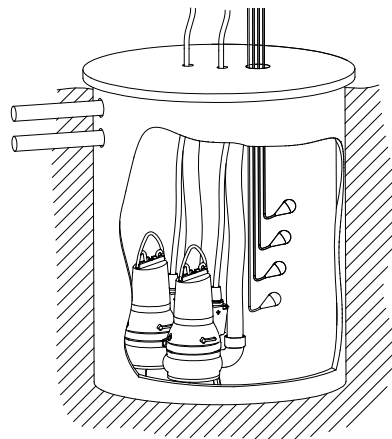
TM02 8114 4703

One or two pumps with three float switches



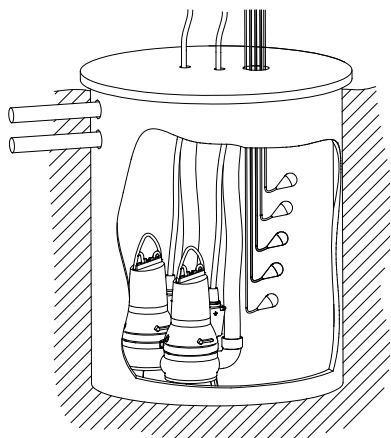
TM02 8299 4903

One or two pumps with four float switches



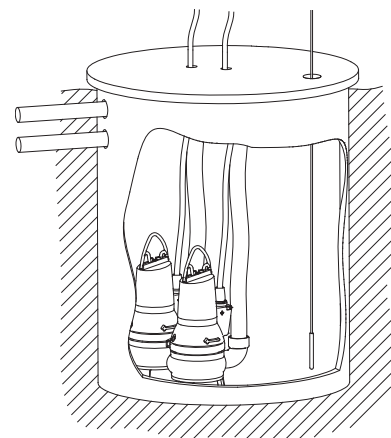
TM02 8300 4903

One or two pumps with five float switches



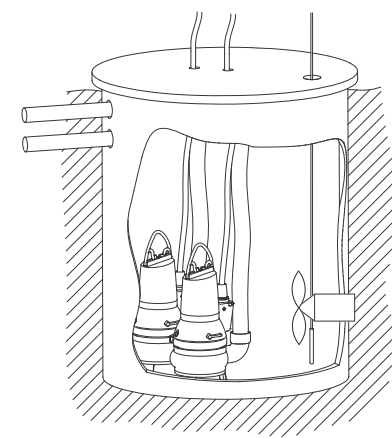
TM02 8301 4703

One or two pumps with analog sensor



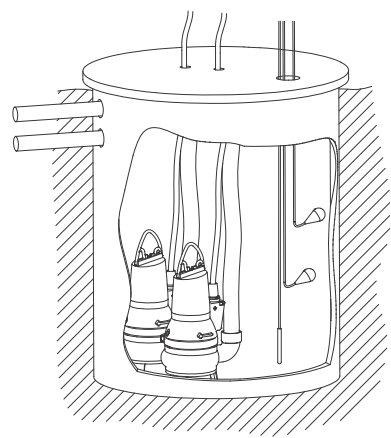
TM02 8305 1704

One or two pumps with analog sensor and mixer



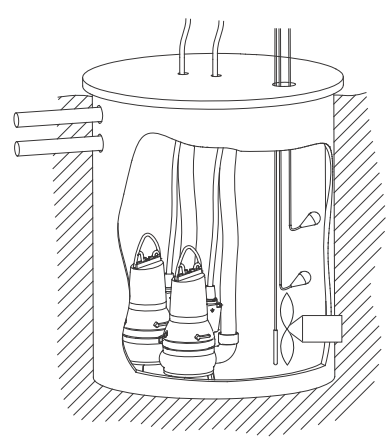
TM04 2955 3408

One or two pumps with analog sensor and safety float switches



TM04 2956 3508

One or two pumps with analog sensor, safety float switches and mixer



TM04 3700 4908

7. Product range

Product range

When you order a control cabinet, please use the relevant product number. See the tables below.

If additional accessories, such as an ammeter or extra indicator lights in the control cabinet front, are needed, please use the product numbers mentioned in section *Control cabinet accessories*, page 23.

We recommend you to choose a control cabinet in the middle of the current range ($I_{1/1}$). This will ensure long service life of the switchgear in the control cabinet.

The rated current is stated on the motor nameplate.

Example 1

Two pumps with the following motor nameplate data are installed in the wastewater pit.

Nameplate data:

Power input	P1	1.8 kW
Rated voltage	-	1 x 230 V, 50 Hz
Rated current	$I_{1/1}$	8 A
Cos φ	-	0.96

Based on a rated current of 8 A ($I_{1/1}$), starting method DOL, number of pumps and the desired configuration, the following should be ordered:

- a DCD 318 control cabinet for two pumps, single-phase, 12 A, DOL, IO 111, mixer/flush valve.
- green and red indicator lights in control cabinet front
- ammeters.

Product	Product number
DCD 318 control cabinet	96890658
Green indicator light	96895389
Red indicator light	96895390
Ammeters, 25 A	96895392

Example 2

Two pumps with the following motor nameplate data are installed in the wastewater pit.

Nameplate data:

Power input	P1	8 kW
Rated voltage	-	3 x 400 V / 50 Hz
Rated current	$I_{1/1}$	12 A
Cos φ	-	0.96

Based on a rated current of 12 A ($I_{1/1}$), starting method DOL, number of pumps, rated current range ($I_{1/1}$) of the control cabinet and the desired configuration, the following should be ordered:

- a DCD 318 control cabinet for two pumps, three-phase, 23 A, DOL, S.
- green and red indicator lights in control cabinet front
- ammeters.

Product	Product number
DCD 318 control cabinet	96890701
Green indicator light	96895389
Red indicator light	96895390
Ammeters, 25 A	96895392

The DCD 318, 23 A, is chosen to ensure long service life of the switchgear in the control cabinet.

DCx 318, single-phase

1 x 230 V, 50/60 Hz

		Starting method										
Number of pumps												
		I _{1/1} [A]	DOL	DOL + 30 µF	DOL + 30 µF + 150 µF	Cabinet type	Standard	IO 111	GSM + battery backup	Mixer/flush valve	IO 111 + GSM + battery backup	IO 111 + mixer/flush valve
1	1-5	•				A	96890485	96890486	96890487	96890488	96890489	96890490
	5-12	•				A	96890509	96890510	96890511	96890512	96890513	96890514
	5-12		•			A	96890533	96890534	96890535	96890536	96890537	96890538
	5-12			•		A	96890541	96890542	96890543	96890544	96890545	96890546
2	1-5	•				A	96890629	96890630	96890631	96890632	96890633	96890634
	5-12	•				A	96890653	96890654	96890655	96890656	96890657	96890658
	5-12		•			A	96890677	96890678	96890679	96890680	96890681	96890682
	5-12			•		A	96890685	96890686	96890687	96890688	96890689	96890690

Note: Mixers in single-phase systems are controlled by the relay output of the CU 361 or IO 351B.

DCx 319, single-phase**1 x 230 V, 50/60 Hz**

Starting method													
Number of pumps													
	I _{1/1} [A]	DOL	DOL + 30 µF	DOL + 30 µF + 150 µF	Cabinet type	Standard	IO 111	GSM + battery backup	Mixer/flush valve	IO 111 + GSM + battery backup	IO 111 + mixer/flush valve	GSM + battery backup + mixer/flush valve	IO 111 + GSM + battery backup + mixer/flush valve
1	4 - 6.3	●			A	97507589	97507590	97507591	97507592	-	-	-	-
	4 - 6.3	●			B	-	-	-	-	97507593	97507594	97507595	97507596
	4 - 6.3		●		A	97507597	97507598	97507599	97507600	-	-	-	-
	4 - 6.3		●		B	-	-	-	-	97507601	97507602	97507603	97507604
	4 - 6.3			●	B	97507605	97507606	97507607	97507608	97507609	97507610	97507611	97507612
	6.3 - 10	●			A	97507613	97507614	97507615	97507616	-	-	-	-
	6.3 - 10	●			B	-	-	-	-	97507617	97507618	97507619	97507620
	6.3 - 10		●		A	97507621	97507622	97507623	97507624	-	-	-	-
	6.3 - 10		●		B	-	-	-	-	97507625	97507626	97507627	97507628
	6.3 - 10			●	B	97507629	97507630	97507631	97507632	97507633	97507634	97507635	97507636
2	4 - 6.3	●			B	97507637	97507638	97507639	97507640	97507641	97507642	97507643	97507644
	4 - 6.3		●		B	97507645	97507646	97507647	97507648	97507649	97507650	97507651	97507652
	4 - 6.3			●	B	97507653	97507654	97507655	97507656	-	-	-	-
	4 - 6.3		●		C	-	-	-	-	97507657	97507658	97507659	97507660
	6.3 - 10	●			B	97507661	97507662	97507663	97507664	97507665	97507666	97507667	97507668
	6.3 - 10		●		B	96895373	96895374	96895375	96895376	96895377	96895378	96895379	96895380
	6.3 - 10			●	B	96895381	96895382	96895383	96895384	-	-	-	-
	6.3 - 10		●		C	-	-	-	-	96895385	96895386	96895387	96895388

Note: Mixers in single-phase systems are controlled by the relay output of the CU 361 or IO 351B.**DCx 318, three-phase****3 x 230 V, 50/60 Hz**

Starting method													
Number of pumps													
	I _{1/1} [A]	DOL	SD	SS	Cabinet type	Standard	IO 111	GSM + battery backup	Mixer/flush valve	IO 111 + GSM + battery backup	IO 111 + mixer/flush valve	GSM + battery backup + mixer/flush valve	IO 111 + GSM + battery backup + mixer/flush valve
1	1-5	●			A	96890493	96890494	96890495	96890496	96890497	96890498	96890499	96890500
	5-12	●			A	96890517	96890518	96890519	96890520	96890521	96890522	96890523	96890524
	12-23	●			A	96890549	96890550	96890551	96890552	96890553	96890554	96890555	96890556
2	1-5	●			A	96890637	96890638	96890639	96890640	96890641	96890642	96890643	96890644
	5-12	●			A	96890661	96890662	96890663	96890664	96890665	96890666	96890667	96890668
	12-23	●			A	96890693	96890694	96890695	96890696	96890697	96890698	96890699	96890700

Note: Mixers in single-phase systems are controlled by the relay output of the CU 361 or IO 351B.

DCx 318, three-phase

3 x 380-415 V, 50/60 Hz

		Starting method											
Number of pumps	I _{1/1} [A]	DOL	SD	SS	Cabinet type	Standard	IO 111	GSM + battery backup	Mixer/flush valve	IO 111 + GSM + battery backup	IO 111 + mixer/flush valve	GSM + battery backup + mixer/flush valve	IO 111 + GSM + battery backup + mixer/flush valve
1	1 - 5	•			A	96890501	96890502	96890503	96890504	96890505	96890506	96890507	96890508
	5 - 12	•			A	96890525	96890526	96890527	96890528	96890529	96890530	96890531	96890532
	12 - 23	•			A	96890557	96890558	96890559	96890560	96890561	96890562	96890563	96890564
	5.5 - 20		•		B	96890565	96890566	96890567	96890568	96890569	96890570	96890571	96890572
	10 - 30		•		B	96890573	96890574	96890575	96890576	96890577	96890578	96890579	96890580
	15.5 - 59		•		B	96890581	96890582	96890583	96890584	96890585	96890586	96890587	96890588
	15.5 - 85		•		C	96890589	96890590	96890591	96890592	96890593	96890594	96890595	96890596
	5.5 - 20			•	B	96890597	96890598	96890599	96890600	96890601	96890602	96890603	96890604
	10 - 30			•	B	96890605	96890606	96890607	96890608	96890609	96890610	96890611	96890612
	15.5 - 59			•	B	96890613	96890614	96890615	96890616	96890617	96890618	96890619	96890620
	15.5 - 85			•	C	96890621	96890622	96890623	96890624	96890625	96890626	96890627	96890628
	1 - 5	•			A	96890645	96890646	96890647	96890648	96890649	96890650	96890651	96890652
	5 - 12	•			A	96890669	96890670	96890671	96890672	96890673	96890674	96890675	96890676
	12 - 23	•			A	96890701	96890702	96890703	96890704	96890705	96890706	96890707	96890708
	5.5 - 20		•		B	96890709	96890710	96890711	96890712	96890713	96890714	96890715	96890716
2	10 - 30		•		B	96890717	96890718	96890719	96890720	96890721	96890722	96890723	96890724
	15.5 - 59		•		B	96890725	96890726	96890727	96890728	96890729	96890730	96890731	96890732
	15.5 - 85		•		C	96890733	96890734	96890735	96890736	96890737	96890738	96890739	96890740
	5.5 - 20			•	B	96890741	96890742	96890743	96890744	96890745	96890746	96890747	96890748
	10 - 30			•	B	96890749	96890750	96890751	96890752	96890753	96890754	96890755	96890756
	15.5 - 59			•	B	96890757	96890758	96890759	96890760	96890761	96890762	96890763	96890764
	15.5 - 85			•	C	96890765	96890766	96890767	96890768	96890769	96890770	96890771	96890772

Note: Mixers in single-phase systems are controlled by the relay output of the CU 361 or IO 351B.

Note: Product numbers in bold text are illustrated on page 20.

DCx 319, three-phase

3 x 380-415 V, 50/60 Hz

		Starting method											
Number of pumps	I _{1/11} [A]	DOL	SD	SS	Cabinet type	Standard	IO 111	GSM + battery backup	Mixer/flush valve	IO 111 + GSM + battery backup	IO 111 + mixer/flush valve	GSM + battery backup + mixer/flush valve	IO 111 + GSM + battery backup + mixer/flush valve
1	1 - 1.6	•			A	97506967	97506968	97506969	97506970	-	-	-	-
	1 - 1.6	•			B	-	-	-	-	97507001	97507002	97507003	97507004
	1.6 - 2.5	•			A	97507005	97507006	97507007	97507008	-	-	-	-
	1.6 - 2.5	•			B	-	-	-	-	97507009	97507010	97507011	97507012
	2.5 - 4	•			A	97507013	97507014	97507015	97507016	-	-	-	-
	2.5 - 4	•			B	-	-	-	-	97507017	97507018	97507019	97507020
	4 - 6.3	•			A	97507021	97507022	97507023	97507024	-	-	-	-
	4 - 6.3	•			B	-	-	-	-	97507025	97507026	97507027	97507028
	6.3 - 10	•			A	97507029	97507030	97507031	97507032	-	-	-	-
	6.3 - 10	•			B	-	-	-	-	97507033	97507034	97507035	97507036
	6.3 - 10		•		B	97507037	97507038	97507039	97507040	97507041	97507042	97507043	97507044
	6.3 - 10			•	B	97507045	97507046	97507047	97507048	97507049	97507050	97507051	97507052
	10 - 16	•			A	97507053	97507054	97507055	97507056	-	-	-	-
	10 - 16	•			B	-	-	-	-	97507057	97507058	97507059	97507060
	10 - 16		•		B	97507061	97507062	97507063	97507064	97507065	97507066	97507067	97507068
	10 - 16			•	B	97507069	97507070	97507071	97507072	97507073	97507074	97507075	97507076
	16 - 20	•			A	97507077	97507078	97507079	97507080	-	-	-	-
	16 - 20	•			B	-	-	-	-	97507081	97507082	97507083	97507084
	16 - 20		•		B	97507085	97507086	97507087	97507088	97507089	97507090	97507091	97507092
	16 - 20			•	B	97507093	97507094	97507095	97507096	97507097	97507098	97507099	97507100
	20 - 25	•			B	97507101	97507102	97507103	97507104	97507105	97507106	97507107	97507108
	20 - 25		•		B	97507109	97507110	97507111	97507112	97507113	97507114	97507115	97507116
	20 - 25			•	B	97507117	97507118	97507119	97507120	97507121	97507122	97507123	97507124
	25 - 32	•			B	97507125	97507126	97507127	97507128	97507129	97507130	97507131	97507132
	25 - 32		•		B	97507133	97507134	97507135	97507136	97507137	97507138	97507139	97507140
	25 - 32			•	C	97507141	97507142	97507143	97507144	97507145	97507146	97507147	97507148
	32 - 40	•			B	97507149	97507150	97507151	97507152	97507153	97507154	97507155	97507156
	32 - 40		•		C	97507157	97507158	97507159	97507160	97507161	97507162	97507163	97507164
	32 - 40			•	C	97507165	97507166	97507167	97507168	97507169	97507170	97507171	97507172
	40 - 50	•			B	97507173	97507174	97507175	97507176	97507177	97507178	97507179	97507180
	40 - 50		•		C	97507181	97507182	97507183	97507184	97507185	97507186	97507187	97507188
	40 - 50			•	C	97507189	97507190	97507191	97507192	97507193	97507194	97507195	97507196
	50 - 58	•			C	97507197	97507198	97507199	97507200	97507201	97507202	97507203	97507204
	50 - 58		•		D	97507205	97507206	97507207	97507208	97507209	97507210	97507211	97507212
	50 - 58			•	D	97507213	97507214	97507215	97507216	97507217	97507218	97507219	97507220
	55 - 65	•			C	97507221	97507222	97507223	97507224	97507225	97507226	97507227	97507228
	55 - 65		•		D	97507229	97507230	97507231	97507232	97507233	97507234	97507235	97507236
	55 - 65			•	D	97507237	97507238	97507239	97507240	97507241	97507242	97507243	97507244
	65 - 75	•			D	97507245	97507246	97507247	97507248	97507249	97507250	97507251	97507252
	40 - 57		•		D	97507253	97507254	97507255	97507256	97507257	97507258	97507259	97507260
	65 - 75			•	D	97507261	97507262	97507263	97507264	97507265	97507266	97507267	97507268
	70 - 100	•			D	97507269	97507270	97507271	97507272	97507273	97507274	97507275	97507276
	40 - 57		•		D	97507277	97507278	97507279	97507280	97507281	97507282	97507283	97507284
	70 - 100			•	D	97507285	97507286	97507287	97507288	97507289	97507290	97507291	97507292

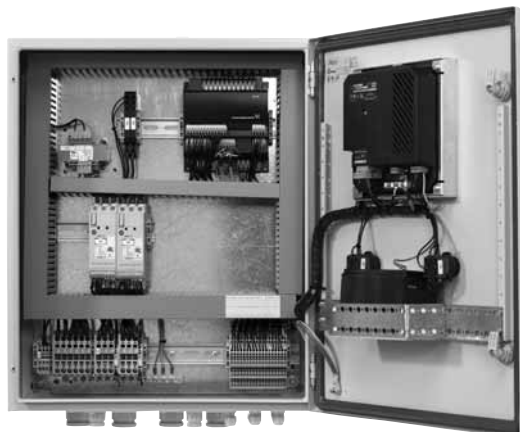
Number of pumps	Starting method				Cabinet type	Standard	IO 111	GSM + battery backup	Mixer/flush valve	IO 111 + GSM + battery backup	IO 111 + mixer/flush valve	GSM + battery backup + mixer/flush valve	IO 111 + GSM + battery backup + mixer/flush valve
	I _{1/1} [A]	DOL	SD	SS									
2	1 - 1.6	●			B	97507293	97507294	97507295	97507296	97507297	97507298	97507299	97507300
	1.6 - 2.5	●			B	97507301	97507302	97507303	97507304	97507305	97507306	97507307	97507308
	2.5 - 4	●			B	97507309	97507310	97507311	97507312	97507313	97507314	97507315	97507316
	4 - 6.3	●			B	97507317	97507318	97507319	97507320	97507321	97507322	97507323	97507324
	6.3 - 10	●			B	97507325	97507326	97507327	97507328	97507329	97507330	97507331	97507332
	6.3 - 10		●		C	97507333	97507334	97507335	97507336	97507337	97507338	97507339	97507340
	6.3 - 10			●	C	97507341	97507342	97507343	97507344	97507345	97507346	97507347	97507348
	10 - 16	●			B	97507349	97507350	97507351	97507352	97507353	97507354	97507355	97507356
	10 - 16		●		C	97507357	97507358	97507359	97507360	97507361	97507362	97507363	97507364
	10 - 16			●	C	97507365	97507366	97507367	97507368	97507369	97507370	97507371	97507372
	16 - 20	●			B	97507373	97507374	97507375	97507376	97507377	97507378	97507379	97507380
	16 - 20		●		C	97507381	97507382	97507383	97507384	97507385	97507386	97507387	97507388
	16 - 20			●	C	97507389	97507390	97507391	97507392	97507393	97507394	97507395	97507396
	20 - 25	●			B	97507397	97507398	97507399	97507400	97507401	97507402	97507403	97507404
	20 - 25		●		C	97507405	97507406	97507407	97507408	97507409	97507410	97507411	97507412
	20 - 25			●	C	97507413	97507414	97507415	97507416	97507417	97507418	97507419	97507420
	25 - 32	●			B	97507421	97507422	97507423	97507424	97507425	97507426	97507427	97507428
	25 - 32		●		C	97507429	97507430	97507431	97507432	97507433	97507434	97507435	97507436
	25 - 32			●	D	97507437	97507438	97507439	97507440	97507441	97507442	97507443	97507444
	32 - 40	●			C	97507445	97507446	97507447	97507448	97507449	97507450	97507451	97507452
	32 - 40		●		D	97507453	97507454	97507455	97507456	97507457	97507458	97507459	97507460
	32 - 40			●	D	97507461	97507462	97507463	97507464	97507465	97507466	97507467	97507468
	40 - 50	●			C	97507469	97507470	97507471	97507472	97507473	97507474	97507475	97507476
	40 - 50		●		D	97507477	97507478	97507479	97507480	97507481	97507482	97507483	97507484
	40 - 50			●	D	97507485	97507486	97507487	97507488	97507489	97507490	97507491	97507492
	50 - 58	●			D	97507493	97507494	97507495	97507496	97507497	97507498	97507499	97507500
	50 - 58		●		D	97507501	97507502	97507503	97507504	97507505	97507506	97507507	97507508
	50 - 58			●	E	97507509	97507510	97507511	97507512	97507513	97507514	97507515	97507516
	55 - 65	●			D	97507517	97507518	97507519	97507520	97507521	97507522	97507523	97507524
	55 - 65		●		D	97507525	97507526	97507527	97507528	97507529	97507530	97507531	97507532
	55 - 65			●	E	97507533	97507534	97507535	97507536	97507537	97507538	97507539	97507540
	65 - 75	●			E	97507541	97507542	97507543	97507544	97507545	97507546	97507547	97507548
	40 - 57		●		E	97507549	97507550	97507551	97507552	97507553	97507554	97507555	97507556
	65 - 75			●	E	97507557	97507558	97507559	97507560	97507561	97507562	97507563	97507564
	70 - 100	●			E	97507565	97507566	97507567	97507568	97507569	97507570	97507571	97507572
	40 - 57		●		E	97507573	97507574	97507575	97507576	97507577	97507578	97507579	97507580
	70 - 100			●	E	97507581	97507582	97507583	97507584	97507585	97507586	97507587	97507588

Note: Mixers in single-phase systems are controlled by the relay output of the CU 361 or IO 351B.
Note: Product numbers in bold text are illustrated on page 20.

8. Installation

Examples of control cabinets

Two pumps, 10-30 A, SS, GSM module and battery backup
DCD318.400.3.30.SS.G
Product number: 96890751



TM04 3632 4708

Two pumps, 10-30 A, SS, IO 111 and mixer/flush valve
DCD318.400.3.30.SS.IM
Product number: 96890754



TM04 3629 4708

Two pumps, 5-12 A, DOL, IO 111 and mixer/flush valve
DCD318.400.3.12.DOL.IM
Product number: 96890674



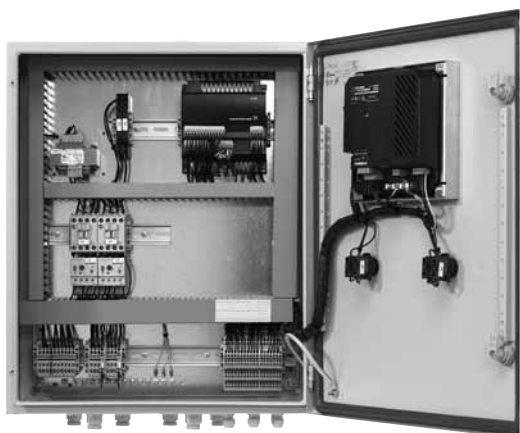
TM04 3630 4708

Two pumps, 10-30 A, SD, standard
DCD318.400.3.30.SD.S
Product number: 96890717



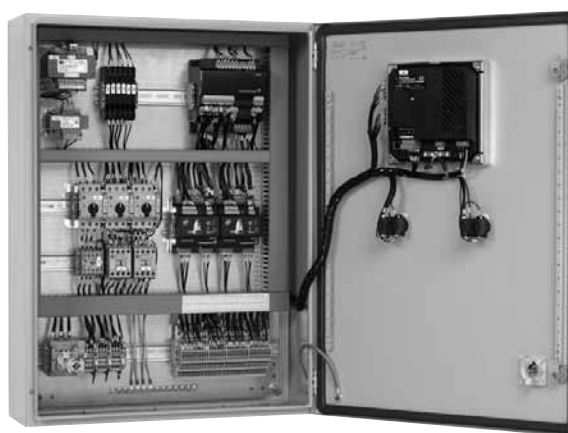
TM04 3631 4708

Two pumps, 5-12 A, DOL, standard
DCD318.400.3.12.DOL.S
Product number: 96890669



TM04 3628 4708

Two pumps, 10-30 A, DOL, IO 111 and mixer/flush valve
DCD319.400.3.30.DOL.IM
Product number: 97507426



TM04 5777 3909

Environmental conditions

The Dedicated Controls cabinet is intended for installation in a control cabinet suitable for outdoor use.

Note: The CU 361 control unit must not be exposed to direct sunlight.

Ambient temperature

-20 °C to +50 °C.

Relative air humidity

Maximum 95 %.

Electrical connection







The electrical connection must be carried out by authorised personnel in accordance with local regulations.



- The electrical connection of Dedicated Controls must be carried out according to enclosure class IP5X.
- Make sure that the Dedicated Controls is suitable for the power supply to which it will be connected.
- Make sure that the conductor cross-section meets the specifications in the wiring diagram.

Note: The mains and signal cables must be connected according to the wiring diagram supplied with the product.

9. Accessories

Accessories

Component	Description	Functions	Product number
 <p>TM03 2029 3605</p>	<p>GSM antenna</p> <p>An antenna must always be connected to the CIM 250 GSM module in order to receive a proper GSM signal.</p>	<p>Frequency (Quadband)</p> <ul style="list-style-type: none"> • 850 MHz • 900 MHz • 1800 MHz • 1900 MHz. <p>Typical amplification: 1.0 dB. Cable length: approx. 1 m.</p>	96095288
 <p>TM02 7169 2703</p>	<p>UPS battery for CU 361 (7 Ah)</p> <p>The battery is connected to the CU 361 as backup in case of power cuts.</p>	CU 361 backup time: approx. 24 hours.	96079948
 <p>TM03 2967 5005</p>	<p>IO 111</p> <p>The IO 111 module forms an interface between a Grundfos wastewater pump with analog and digital sensors and the CU 361. The most important sensor data are indicated on the front panel. One pump can be connected to an IO 111 module. Together with the sensors, the IO 111 forms a galvanic separation between the motor voltage in the pump and the CU 361. The IO 111 can communicate with Dedicated Controls via GENIbus.</p>	<p>Combined motor thermal protection (digital) and temperature measurement (analog). Communication interface: RS-485. Communication protocols: GENIbus and Modbus. Monitoring sensors for analog measurement of</p> <ul style="list-style-type: none"> • motor temperature • water-in-oil content [%] • stator insulation resistance • bearing temperature • digital measurement of moisture in motor. <p>Protects the pump against overheating. Stops the pump in case of an alarm.</p>	96575362
 <p>TM03 2969 5005</p>	<p>Analog level sensor with cable hanger</p> <p>The sensor enables constant water level detection. The sensor is installed in the wet well, inside a protective tube. The lower end of the tube must be approx. 20 cm above the bottom of the well. The sensor is supplied with a cable hanger in which it can be attached at the upper end of the wet well.</p>	<ul style="list-style-type: none"> • Hydrostatic pressure transmitter. • Supply voltage: 10-36 VDC. • Output signal: 4-20 mA. • Measuring range: 0-500 mbar (0-5 m). • Material: stainless steel. • 10 m cable. • Sensor diameter: 27 mm. 	96377410
 <p>TM03 2968 5005</p>	<p>Junction box for sensor cable</p> <p>Sensor cable junction box with built-in screw terminals and vent valve to balance the ambient pressure.</p>	<p>Enclosure class: IP54. Size: 65 x 94 x 57 mm.</p>	96377411
 <p>TM03 9157 3507</p>	<p>Ultrasonic level transmitter</p> <p>The ultrasonic level transmitter is a loop-powered continuous level transmitter. The level transmitter enables constant level detection.</p> <p>Note: The level transmitter must be set up via a hand-held programmer.</p>	<ul style="list-style-type: none"> • Ultrasonic level transmitter. • Supply voltage: 24-30 VDC. • Output signal: 4-20 mA. • Measuring range: 0-6 m or 0-12 m. • Material: PVDF Copolymer. • Sensor diameter: 51.1 mm. 	<p>96693767 (transmitter)</p> <p>96693768 (programmer)</p>

Component	Description	Functions	Product number
Float switch  TM01 6982 3805	Float switch with 10 m cable.	<ul style="list-style-type: none"> Potential-free float switch with 3 wires which can be used either as an NC or an NO contact. 	96003332
	Float switch with 20 m cable.		96003695
Float switch with cable and bracket  TM02 0670 3805	Standard float switches with 10 m cable and bracket.	• 1 pump without alarm (2 float switches).	62500013
		• 1 pump with alarm (3 float switches).	62500014
		• 2 pumps without alarm (3 float switches).	62500015
		• 2 pumps with alarm (4 float switches).	62500015
Bracket	Bracket for float switch.		96003338

Control cabinet accessories

Component	Description	Functions	Product number
Green indicator light (operation)	Green indicator light to be placed in control cabinet front.	• Green indicator light (one for each pump and mixer, if needed).	96895389
Red indicator light (alarm)	Red indicator light to be placed in control cabinet front.	• Red indicator light (one for each pump and mixer, if needed).	96895390
Ammeter	Ammeter to be placed in control cabinet front.	• Ammeter 10 A (one for each pump).	96895391
		• Ammeter 25 A (one for each pump).	96895392
		• Ammeter 50 A (one for each pump).	96895393
		• Ammeter 100 A (one for each pump).	96895394

10. Approvals and CE mark

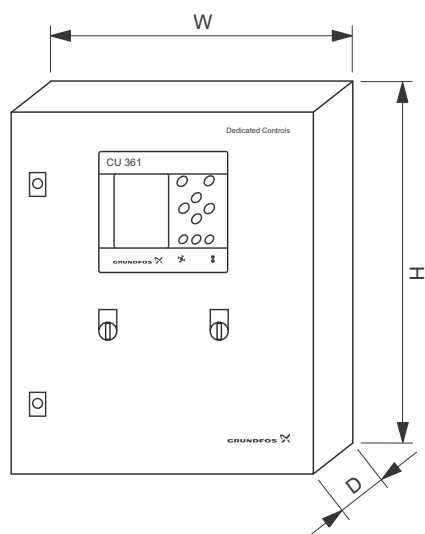
Approvals and CE mark

Approvals		
Product	Authority	Standard
CU 361 and IO 351B	CB certificate	IEC 61010-1, C-tick.
	UL	UL 61010-1 (2nd release 2004-07-12).
IO 111	UL	UL listed.
CE mark of conformity		
Product	CE mark	Standard
CU 361	CE mark	Low Voltage Directive (2006/95/EC). <ul style="list-style-type: none">Standard used: EN 61010-1: 2001. EMC Directive (2004/108/EC). <ul style="list-style-type: none">Standard used: EN 61326-1: 2006. Emission/immunity <ul style="list-style-type: none">Standards used: EN 261326-1 and EN 61010-1 (2nd release 2001-12-07).
IO 351B	CE mark	Low Voltage Directive (2006/95/EC). <ul style="list-style-type: none">Standard used: EN 61010-1: 2001. EMC Directive (2004/108/EC). <ul style="list-style-type: none">Standard used: EN 61326-1: 2006.
IO 111	CE mark	Low Voltage Directive (2006/95/EC). <ul style="list-style-type: none">Standard used: EN 61010-1: 2001. EMC Directive (2004/108/EC). <ul style="list-style-type: none">Standards used: EN 61000-6-2 and EN 61000-6-3.
Control cabinet	CE mark	Machinery Directive (2006/42/EC). <ul style="list-style-type: none">Standard used: EN 60204-1: 2006. Low Voltage Directive (2006/95/EC). <ul style="list-style-type: none">Standard used: EN 60439-1: 2002. EMC Directive (2004/108/EC). <p>Direct-on-line and star-delta starting:</p> <ul style="list-style-type: none">Standard used: EN 61326-1: 2006. <p>Soft starter:</p> <ul style="list-style-type: none">Standard used: EN 61326-1: 2006, class A.
Enclosure	CE mark	Low Voltage Directive (2006/95/EC). <ul style="list-style-type: none">Standard used: EN 61010-1: 2001.

11. Dimensions and weights

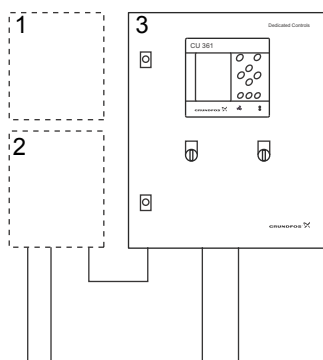
Cabinet dimensions and weights

DCx 318



TM04 4173 0909

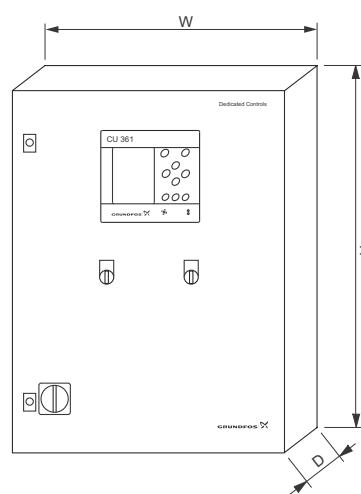
Cabinet type	H [mm]	W [mm]	D [mm]	Weight [kg]	Material
A	600	500	200	28-35	Metal
B	800	600	200	35-40	Metal
C	900	700	200	35-40	Metal



TM04 5844 4109

Pos.	Description
1	<ul style="list-style-type: none"> Auto fuses Earth leakage circuit breaker Power outlet
2	Electricity meter
3	<ul style="list-style-type: none"> CU 361 IO 351B IO 111 (optional) CIM 250 (optional) Transformer (galvanic separation) Fuse for control power Contactor for up to two pumps Contactor for mixer (optional) Electronic overload relays (pumps/mixer) Switches for manual/auto in cabinet front DOL, star-delta, soft starter Terminals for <ul style="list-style-type: none"> signal input/output power supply to pumps

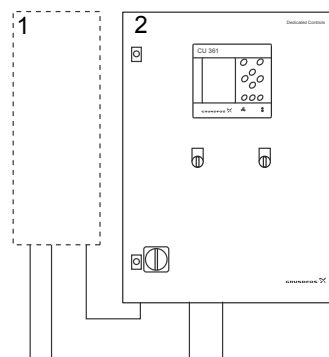
DCx 319



TM04 5775 3909

Cabinet type	H [mm]	W [mm]	D [mm]	Weight [kg]	Material
A	600	380	200	25-30	Metal
B	600	600	200	37-56	Metal
C	760	760	200	63-84	Metal
D	1000	800	200	90-119	Metal
E*	1200	800	200	135-169	Metal

* Floor installation

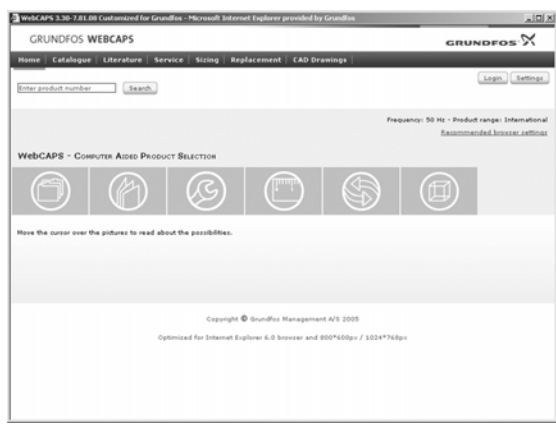


TM04 5845 4109

Pos.	Description
1	<ul style="list-style-type: none"> Auto fuses Earth leakage circuit breaker Power outlet Electricity meter
2	<ul style="list-style-type: none"> CU 361 IO 351B IO 111 (optional) CIM 250 (optional) Transformer (galvanic separation) Fuse for control power Main switch Contactor for up to two pumps Contactor for mixer (optional) Electronic overload relays (pumps/mixer) Switches for manual/auto in cabinet front DOL, star-delta, soft starter Terminals for <ul style="list-style-type: none"> signal input/output power supply to pumps

12. Further product documentation

WebCAPS

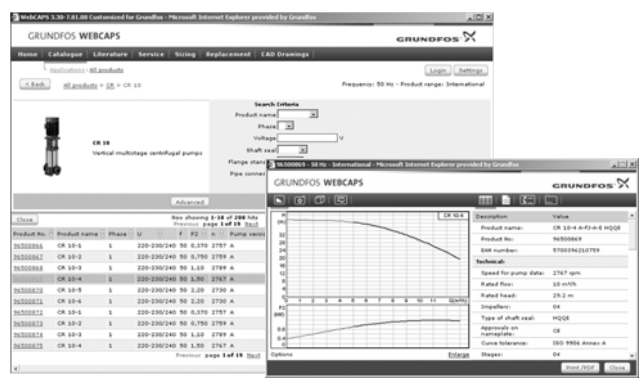


WebCAPS is a **Web**-based **C**omputer **A**ided **P**roduct **S**election program available on www.grundfos.com.

WebCAPS contains detailed information on more than 185,000 Grundfos products in more than 20 languages.

In WebCAPS, all information is divided into six sections:

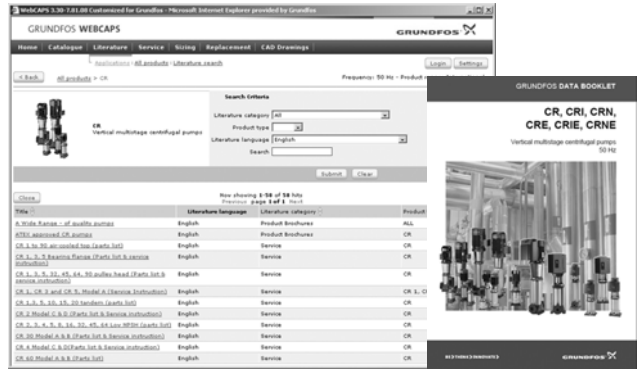
- Catalogue
- Literature
- Service
- Sizing
- Replacement
- CAD drawings.



Catalogue

This section is based on fields of application and pump types, and contains

- technical data
- curves (QH, Eta, P1, P2, etc.) which can be adapted to the density and viscosity of the pumped liquid and show the number of pumps in operation
- product photos
- dimensional drawings
- wiring diagrams
- quotation texts, etc.



Literature

In this section you can access all the latest documents of a given pump, such as

- data booklets
- installation and operating instructions
- service documentation, such as Service kit catalogue and Service kit instructions
- quick guides
- product brochures.



Service

This section contains an easy-to-use interactive service catalogue. Here you can find and identify service parts of both existing and discontinued Grundfos pumps. Furthermore, this section contains service videos showing you how to replace service parts.



Sizing

This section is based on different fields of application and installation examples, and gives easy step-by-step instructions in how to

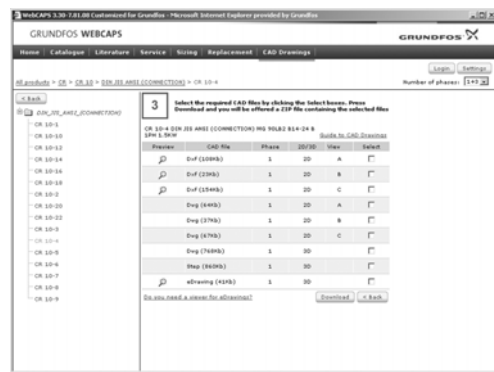
- select the most suitable and efficient pump for your installation
- carry out advanced calculations based on energy consumption, payback periods, load profiles, life cycle costs, etc.
- analyse your selected pump via the built-in life cycle cost tool
- determine the flow velocity in wastewater applications, etc.



Replacement

In this section you find a guide to selecting and comparing replacement data of an installed pump in order to replace the pump with a more efficient Grundfos pump. The section contains replacement data of a wide range of pumps produced by other manufacturers than Grundfos.

Based on an easy step-by-step guide, you can compare Grundfos pumps with the one you have installed on your site. When you have specified the installed pump, the guide will suggest a number of Grundfos pumps which can improve both comfort and efficiency.



CAD drawings

In this section it is possible to download 2-dimensional (2D) and 3-dimensional (3D) CAD drawings of most Grundfos pumps.

These formats are available in WebCAPS:

2-dimensional drawings:

- .dxf, wireframe drawings
- .dwg, wireframe drawings.

3-dimensional drawings:

- .dwg, wireframe drawings (without surfaces)
- .stp, solid drawings (with surfaces)
- .eprt, E-drawings.

WinCAPS



Fig. 4 WinCAPS CD-ROM

WinCAPS is a **Windows-based Computer Aided Product Selection** program containing detailed information on more than 185,000 Grundfos products in more than 20 languages.

The program contains the same features and functions as WebCAPS, but is an ideal solution if no Internet connection is available.

WinCAPS is available on CD-ROM and updated once a year.

Subject to alterations.

96932407 1110
Repl. 96932407 0210

GB

ECM: 1066791

The name Grundfos, the Grundfos logo, and the payoff Be-Think-Innovate are registered trademarks owned by Grundfos Management A/S or Grundfos A/S, Denmark. All rights reserved worldwide.