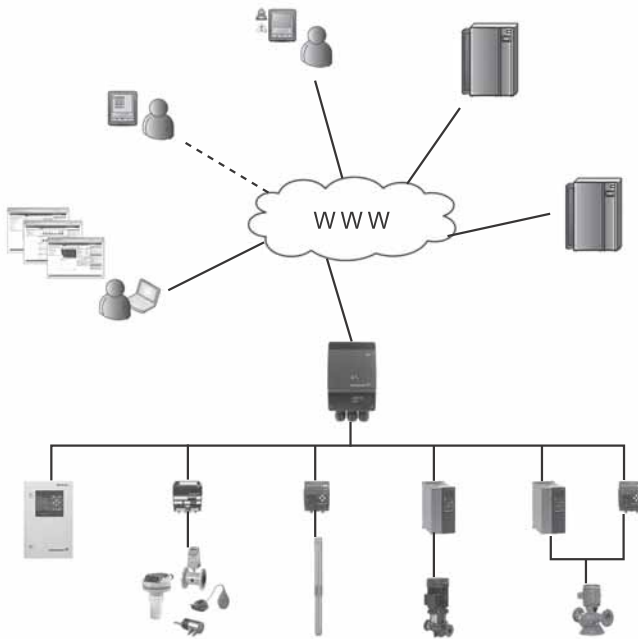


# Grundfos Remote Management (GRM)

CIM 500, CIU 500, CIU 501

Installation and operating instructions



Original installation and operating instructions.

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**1. Symbols used in this document**

Warning

If these safety instructions are not observed, it may result in personal injury.



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



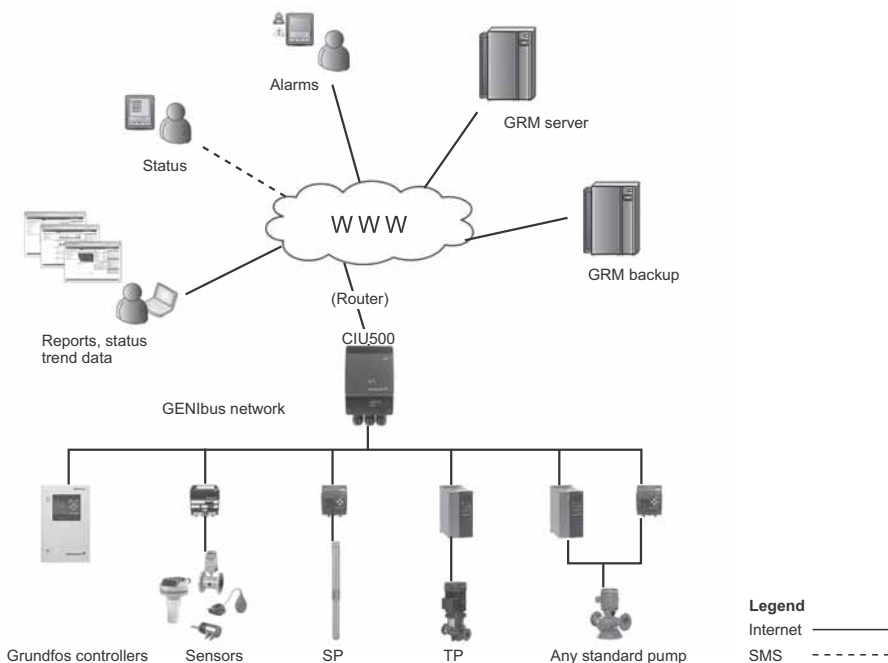
Notes or instructions that make the job easier and ensure safe operation.

**2. Definitions and abbreviations**

CIM	Communication Interface Module (GPRS data logger)
CIU	Communication Interface Unit
GENIbus	Proprietary Grundfos fieldbus standard
GRM	Grundfos Remote Management
IO module	Multi-purpose IO module in CIU 50X unit
LED	Light-Emitting Diode
MAC	Media Access Control
SIM	Subscriber Identity Module

### 3. Introduction

Grundfos Remote Management (GRM) is an internet-based remote monitoring, management and reporting system for pump installations. It provides remote access to data from pumps, pump controllers and auxiliary equipment like sensors and meters. Data from pump installations is transferred to a central database and published to subscribers on a secure web server. Users have access to data from pump installations that are registered to their own Account.



**Fig. 1** Grundfos Remote Management

A fully configured system Account contains maps and system drawings that provide an overview of your pump installations. It also has a Schedule to direct alarms to users when they are on duty, and it contains a Service log for all your pumps. This user manual guides you through the process of configuring your Account and connecting pump installations to your Account.

A fully configured Grundfos Remote Management system appears from fig. 2.

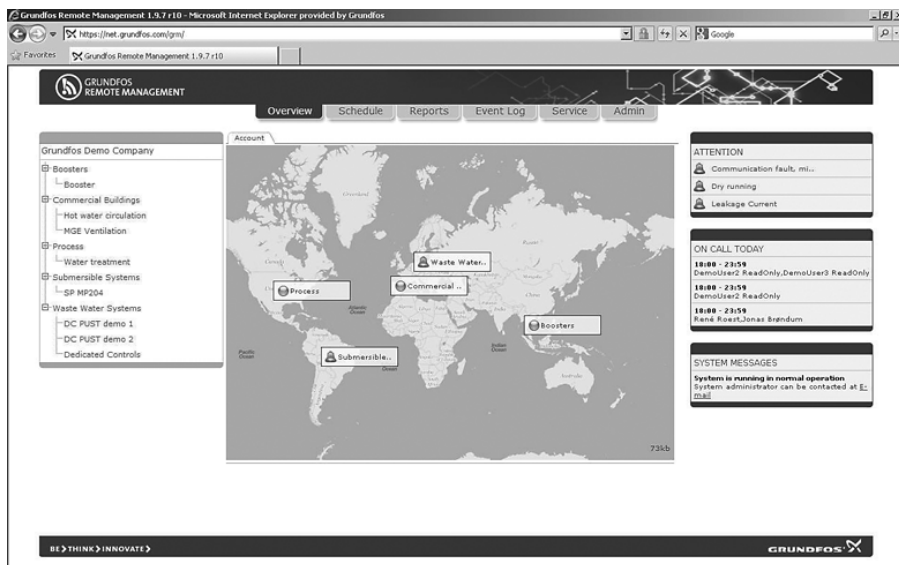


Fig. 2 Example of an Account in Grundfos Remote Management

In the following, the tabs at the top of the user interface will be described in the order that the system is to be set up.

To get started using the system, we recommend you to read these instructions and carefully follow the setup procedure.

#### Other relevant documentation

Separate installation and operating instructions are available for the hardware:

- CIM 500 Ethernet module: <http://net.grundfos.com/qr/i/98407037>
- CIU 500 Communication Interface Unit: <http://net.grundfos.com/qr/i/96846337>
- CIU 500 Communication Interface Unit (quick guide): <http://net.grundfos.com/qr/i/96846333>
- Multi-purpose IO module: <http://net.grundfos.com/qr/i/98470828>

We recommend you not to use Grundfos Remote Management as the only means of monitoring and control in systems where malfunction for a short period of time has severe consequences. The system is never more reliable than the network used for data communication.

#### Note

The functionality of Grundfos Remote Management is continually improved and enhanced. Information about new features is found online in the system. This manual contains all the information you need for initial setup of your user Account in Grundfos Remote Management.

## 4. Preparing for installation

Before setting up your installation on GRM, make sure that you have completed the following steps:

1. Write down the MAC address of the CIM 500.  
**Note:** You can find the MAC address on a sticker on the CIM 500 (the address with the lowest last digit). You can also find it on the package in which your CIM/CIU 500 was delivered in. You will need this address when setting your installation in GRM.
2. Select the GRM IP protocol on the CIM 500: set the rotary switch to position 4.
3. Connect the CIM 500 to your GENIbus network.
4. Connect sensors and other equipment to the multipurpose IO module of the CIU 50X (optional).
5. Connect the CIM 500 to your internet network.  
If you are using a 3G/4G router, insert a SIM card in the router and connect the router to the CIM 500 via an Ethernet cable.
6. Connect and switch on the power supply.
7. Check that the LED to the left on the CIM/CIU 500 change to permanently green, which indicates that a connection to GRM is established. This will take a couple of minutes.

You are now ready to register the CIM 500 on the GRM server and to set up the application you want to have monitored by the GRM system.

## 5. Log-on to the GRM

To log on to the GRM server system, go to <https://remotemanagement.grundfos.com>.

You will be prompted for user name and password.

Current users of the Grundfos Extranet can log on with their Extranet user name and password. New users will receive an e-mail with log-on details.

If you do not have a user name and a password, contact your local Grundfos company, or send an e-mail to [remote-management@grundfos.com](mailto:remote-management@grundfos.com).

When you log on for the first time, a navigation tree will appear. See fig. 3.

The basic steps in setting up an Account are described in the following section.

### 5.1 Navigation

To provide an overview of the installations monitored by the GRM system, a navigation tree is used.

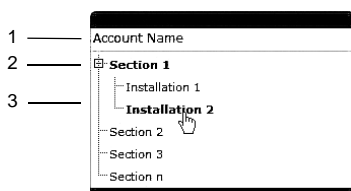


Fig. 3 Navigation tree

The navigation tree is divided into three levels:

Pos.	Level
1	Account
2	Section
3	Installation

#### 5.1.1 Account level

At the Account level, you will find the name and details of your Account.

#### 5.1.2 Section level

At the Section level, it is possible to create several Sections. Sections are logical groups of one or more Installations.

At the Installation level, you will find the devices that are monitored. An Installation is defined by a modem monitoring one or more bus devices or sensors.

**Note**

Sections could, for example, reflect a geographical segmentation of the entire monitored network or segmentation according to area of expertise or responsibility of a group of persons.

#### Adding a Section

Right-click the Account name, and click Add to add a Section.

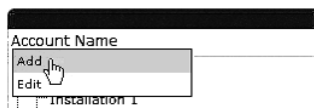


Fig. 4 Adding a Section

When the Section is created, you can add an Installation to the Section.

#### 5.1.3 Installation level

An Installation is always added to a Section and consists of a communication device and a number of monitored devices, normally a CIM 500 and at least one GENibus device (Grundfos pump, pump controller or IO module).

#### Adding an Installation

Right-click the Section name, and click Add to add an Installation.

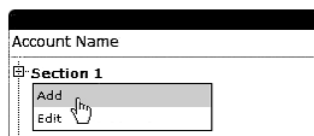


Fig. 5 Adding an Installation

The setup of an Installation is a four-step procedure:

1. Create Installation.
2. Set up Installation.
3. Configure and connect Installation.
4. Configure alarms and warnings.

TM04 7282 2410

TM04 7283 2410

TM04 7284 2410

## Step 1: Create Installation

- Select "Register a new Grundfos CIM 500 or CIU 50X based Communication Device".

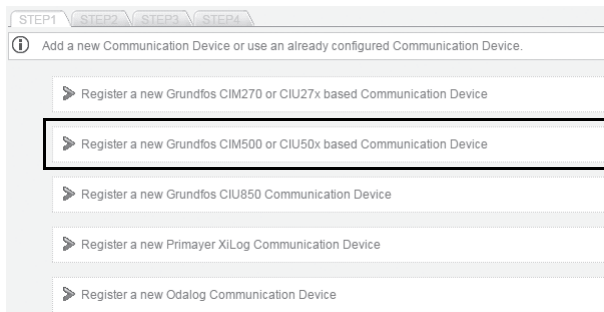


Fig. 6 Registering a communication device

- Enter the MAC address of the CIM 500



Fig. 7 Entering the MAC address

- Click "Test connection". The test will take a few minutes. The server configures the CIM interface for use in the GRM system.

If the server has connected successfully, you are notified and can proceed to [Step 2: Name and type](#).

If the server does not get a response from the CIM interface within two minutes, the attempt to connect will time out, and you will get a fault notification. See section [17. Fault finding](#).

## Step 2: Name and type

Enter a name for your Installation, and select the application type that best characterizes the Installation. This will provide the system with information on, for example, the type of report that is relevant for this Installation.

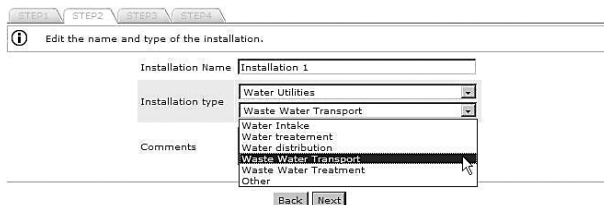
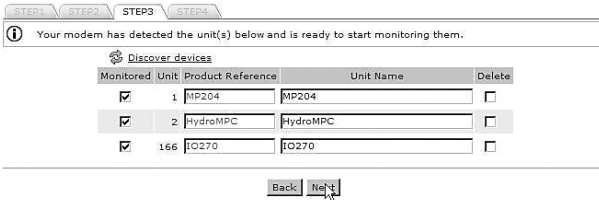


Fig. 8 Name and type of installation

**Step 3: Configure and connect Installation**

Click "Discover devices" to initiate a scan of the network of GENibus devices connected to the CIM 500.

Once the scan is completed, you will see a list of connected devices (pumps, controllers or modules) together with their address in the network.

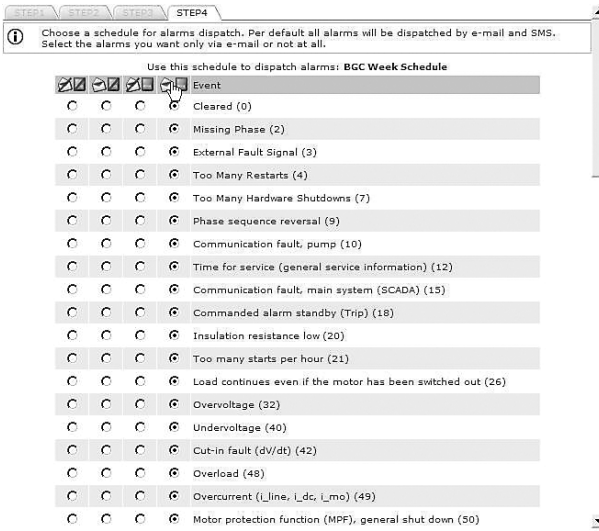


**Fig. 9** Discovering GENibus devices

**Step 4: Configure alarms and warnings**

Alarms and warnings that can be received from each type of device on the monitored network will be listed. It is possible to select which alarms you want to receive and how they should be sent.

Icon	Description
	Both e-mail and SMS alarms have been disabled.
	An e-mail will be sent to the user when the alarm or warning is active.
	An SMS will be sent to the user when the alarm or warning is active.
	An e-mail and an SMS will be sent to the user when the alarm or warning is active.



**Fig. 10** Selecting dispatch mode for alarms and warnings

When you click [Finish], the server will transmit your monitoring configuration to the CIM 500, and the installation is completed.



## 6. GRM data communication

This section describes how data communication and data collection work in Grundfos Remote Management.

We distinguish between four different types of data:

Data type	Description
Sample Data	Sample data is used to create trend curves and reports. It is stored in the CIM 500 and sent every 30 minutes to the server. Sample data can be minimum, maximum and average value of system characteristics, such as flow, head, temperature, etc.
Event Data	Event Data is real-time data. This data tells you what is going on in the installation right now. Event Data is collected and displayed when you establish a connection to the installation. It is updated approximately every 5 minutes.
Alarm Data	Alarm Data is a special type of Event Data. When a CIM 500 sends an alarm to the central server, it will also deliver a snapshot of Event Data present for that installation at the time the event occurred.
Manage Commands	You can send configuration and control commands to a GENIbus device directly via the GRM user interface.

## 7. Overview



Fig. 11 Overview

In this view, it is possible to insert images at Account and Section levels, for example maps and system drawings displaying the location and layout of pump installations.

Supported formats are \*.png, \*.jpg and \*.gif. We recommend file sizes below 250 kb to optimize the performance of the web server. Largest permissible file size is 10 Mb.

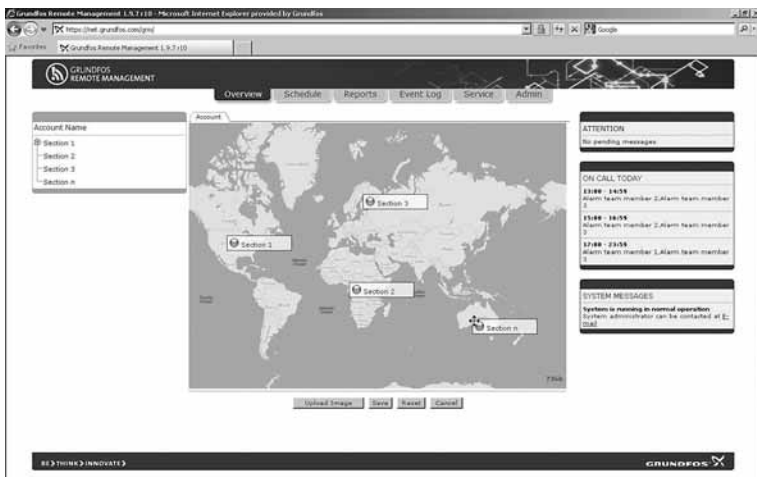


Fig. 12 Uploading an image and placing Sections on the image

## 8. Schedule for alarm distribution



Fig. 13 Schedule

One of the key features of GRM is the ability to distribute alarms from monitored pumps and controllers according to a centrally maintained Schedule.

The distribution of alarms from the GRM server is based on Week Schedules and alarm teams. It is possible to create any number of Week Schedules in the system.

**Note** A Week Schedule is not active until it has been assigned to a Section.

Once the Week Schedule has been assigned to a Section, all alarms and warnings from Installations in that Section will be distributed to users according to the assigned Schedule.

The first thing to do is to create your alarm team(s).

A screenshot of a web application interface for creating an alarm team. At the top, there are three tabs: 'Alarm schedule list', 'Active Schedule', and 'Alarm team list', with the last one selected. Below the tabs is a message box with an information icon and the text: 'Create or change an alarm team. Add or remove team members from the list by clicking on their name.' The main area is divided into four sections: 1. 'Team Name' with a text input field containing 'My first alarm team'. 2. 'Comments' with an empty text area. 3. 'Select Team Color' with a 10x10 grid of color swatches. 4. 'Available Personnel' and 'Selected Personnel' sections. The 'Available Personnel' list contains: 'John Doe', 'Rene Arenshøj Petersen', 'Thomas Morrison', and 'Alarm team member 2'. The 'Selected Personnel' list contains: 'Alarm team member 1' and 'Alarm team member 3'. An arrow button points from the available list to the selected list. At the bottom, there are three buttons: 'Delete', 'Cancel', and 'Submit', with a mouse cursor over the 'Submit' button.

Fig. 14 Alarm team

To assign a Week Schedule to a Section, right-click the Section name, and select the Week Schedule from the drop-down list.

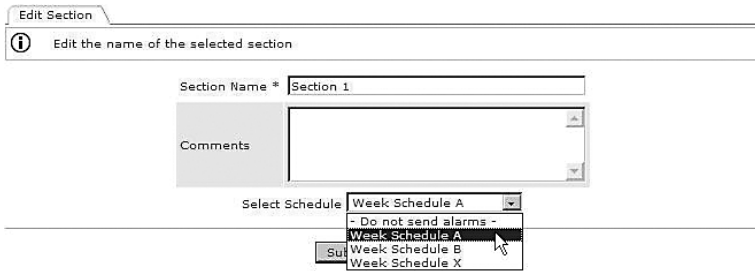


Fig. 15 Assigning a Week Schedule

Alarm schedule list		Active Schedule		Alarm team list				
Name	Comments	Installations using this schedule						
Week Schedule A		Installation 1, Installation 2						
Timezone								
GMT+02:00								
		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
00:00 - 00:59								
01:00 - 01:59								
02:00 - 02:59								
03:00 - 03:59								
04:00 - 04:59								
05:00 - 05:59								
06:00 - 06:59								
07:00 - 07:59								
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18:00 - 18:59								
19:00 - 19:59								
20:00 - 20:59								
21:00 - 21:59								
22:00 - 22:59								
23:00 - 23:59								
		= - (None) = Night shift (Alarm team member 1, Alarm team member 3) = Team 1 (Alarm team member 1, Alarm team member 2) = Team 2 (Alarm team member 2, Alarm team member 3) = Team 3 (Alarm team member 2, Alarm team member 3) = Team 4 (Alarm team member 1, Alarm team member 3)						

Fig. 16 Example of Week Schedule

All GRM users are potential members of an alarm team. Users that have entered a mobile phone number on their Account details are able to receive alarms via SMS.

If there is no mobile phone number registered for a user, the e-mail address is the only way of delivering alarms.

You can make as many Week Schedules as you like. They are not activated until you assign them to a Section.

**Note**

Different Sections may operate on different Week Schedules.

## 9. Reports



Fig. 17 Reports

The system contains a report engine that will automatically generate summation reports. The contents of the reports depend on the application. The reports will typically run on a monthly basis and deliver an output which can be downloaded to a spreadsheet.

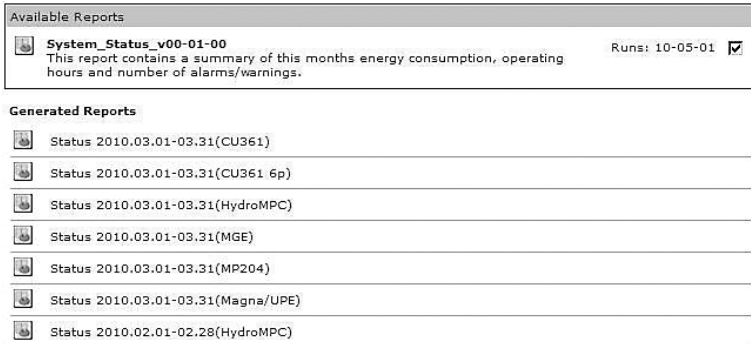


Fig. 18 Example of generated reports

## 10. Event log



Fig. 19 Event log

The Event log provides a full history of events and interactions related to each monitored device.

The Event log provides a record of the following:

- alarms
- warnings
- cleared alarms and warnings
- user acknowledgement of alarms and warnings
- remote-control commands issued by a user
- service warnings
- comments entered manually by a user.

All events are time-stamped when they are received by the server, and user-initiated events are stamped with the user's system ID. The Event log can be downloaded to a spreadsheet.

 The screenshot shows the 'Event Log' interface. At the top, there is a search filter with 'From' and 'To' date pickers (2010-03-18 and 2010-04-17), a 'Submit' button, and a download icon. An 'Add entry' link is on the right. Below is a table with columns: Date, Event, Section, Installation, and Unit. The table contains six rows of event data. At the bottom, it says 'Now showing 21-26 of 26 hits' and 'Previous page 3 of 3 Next'.
 

Date [+]	Event	Section	Installation	Unit
<u>2010-03-23 13:48:36</u> Cleared 2010-03-23 13:48:43	Motor bearing temperature high (PT100), drive-end (DE) (Pump 2)	Waste Water Systems	DC PUST demo 1	CU361
<u>2010-03-22 23:31:26</u> Cleared 2010-03-23 09:23:20	Communication fault, missing heartbeat	Waste Water Systems	DC PUST demo 1	CU361
<u>2010-03-22 15:28:42</u> User 35033	Timeout waiting for connection, please try again and/or inspect GSM connection	Waste Water Systems	DC PUST demo 1	CU361
<u>2010-03-22 05:31:26</u> Cleared 2010-03-22 09:26:42	Communication fault, missing heartbeat	Waste Water Systems	DC PUST demo 1	CU361
<u>2010-03-21 20:22:12</u> Cleared 2010-03-22 12:44:41	Phase sequence reversal (Pump 1)	Waste Water Systems	DC PUST demo 1	CU361
<u>2010-03-21 20:22:12</u> Cleared 2010-03-22 12:44:41	Phase sequence reversal (Pump 2)	Waste Water Systems	DC PUST demo 1	CU361

Now showing 21-26 of 26 hits  
[Previous](#) [page 3 of 3](#) [Next](#)

Fig. 20 Event log

## 11. Service



Fig. 21 Service

The Service tab provides a tool to manage service of pump installations. The basic functionality keeps track of the total number of operating hours for each of the pumps monitored by the system. For some products, the number of starts is also monitored.

You can set thresholds for each service parameter and be notified automatically via e-mail when a threshold is met. It is also possible to set a date on which you want to be notified if your service strategy is based on a time interval.

When a new pump is detected by the CIM interface, an entry for that pump is automatically created under the Service tab.

If you enter the product number of the monitored Grundfos pump, you will have direct online access to documentation, including service videos, pump curves, etc.

A screenshot of a table titled 'Service' showing a log of service events. The table has columns for Photo, Name, No., Product Number, Notes, and Next scheduled service. There are four rows of data, each with a small pump icon in the Photo column.





Photo	Name	No.	Product Number	Notes	Next scheduled service
	Pump 1	1	96566095	Change shaft seal	2012-11-12
	Pump 1	1	96566095	Change shaft seal	2012-08-06
	Pump 2	2	96566095	Inspect	2012-08-06
	Pump 1	1	96566095	Inspect	2012-04-17

Fig. 22 Example of a Service log entry

## 12. Admin, user administration



**Fig. 23** Admin

Under the Admin tab, you will find the functionality to create new users and to maintain the data of each registered user of the system.

To create a new user, fill in the following:

- name
- surname
- e-mail.

This is the minimum information required to create a new user in Grundfos Remote Management.

The field "Mobile" is optional. This number will be used to send SMS alarms to the user, if registered as an alarm recipient on a Schedule.

 A web form titled 'Personnel' with a tabbed interface. The form contains the following fields:
 

Account		Account Name
Name*	<input type="text" value="John"/>	
Surname*	<input type="text" value="Doe"/>	
Email*	<input type="text" value="grm-demo@grundfos.com"/>	
Mobile	<input type="text" value="+1 555 555 4321"/>	
User Level		<input type="text" value="Read only"/>
Language	<input type="text" value="English"/>	
Timezone		<input type="text" value="GMT+05:00"/>

\* Required Input

Submit Cancel

**Fig. 24** Creating a new user

Now select the appropriate user access level. Users can be assigned different access levels, depending on their intended use of the system.

There are three different access levels:

- full access
- operator access
- read-only access.



**Full access**

A full-access user has access to all features of the system, for example to view the following:

- current status of the system
- trend curves
- reports
- event log
- service log.

A full-access user can operate the system via remote access, i.e.

- reset the system
- perform remote start/stop
- change settings
- manage administration rights.

A full-access user can create, change or delete a Section, an Installation, a user Account, etc.

We recommend you only to have one or two full-access users.

**Operator access**

An operator is able to remote-control installations, for example perform the following:

- remote resetting
- remote start/stop of a pump
- change of setpoint for system pressure.

Operators are users that you would normally also trust with physical access to the monitored systems.

**Read-only access**

Read-only users can view the following:

- current status of the system
- trend curves
- reports
- event log
- service log.

This group of users cannot change settings and affect the operation of an installation.

Read-only users would normally access the system in order to analyze the performance. Users who are intended to receive SMS alarms only, not to access the system, should be created as read-only users.

**Language**

Select the user's preferred language from the list of available languages.

**Time zone**

Enter the time zone in which an alarm schedule is used. This feature of the system makes it easy to work with alarm teams in different time zones.

Observe the following:

- Place Installations in the same time zone in the same folder.
- Set the right time zone for the alarm schedule you assign to the Section.

If you do not operate with service teams across different time zones, just use the default setting.

**13. Alarms**

By default the CIM interface will transmit alarms generated by a monitored GENIbus device to the central server. There are, however, also some other alarms available.

**13.1 Heartbeat**

The alarm text "Communication fault, missing heartbeat" is a server-generated alarm message that informs you that a CIM interface has failed to routinely contact the central server.

Recommended actions to take when this alarm is received:

1. Log on to the GRM, and attempt to connect to the Installation.
2. Check the status of the Ethernet connection on the port of your CIM 500 and any connected router or network device.
3. Check the power supply to the installation.

## 14. Multi-purpose IO module

The multi-purpose IO module in the CIU 50X is designed especially for use in Grundfos Remote Management.

Pumps without GENibus connection are connected and monitored via the IO module. When a digital input is specified to monitor a pump during configuration of the IO module, a pump log will be created under the Service tab.

The IO module enables you to monitor sensors, meters, standard pumps, etc. and to remote-control a relay and an analog output (0-10 V) from your internet browser.

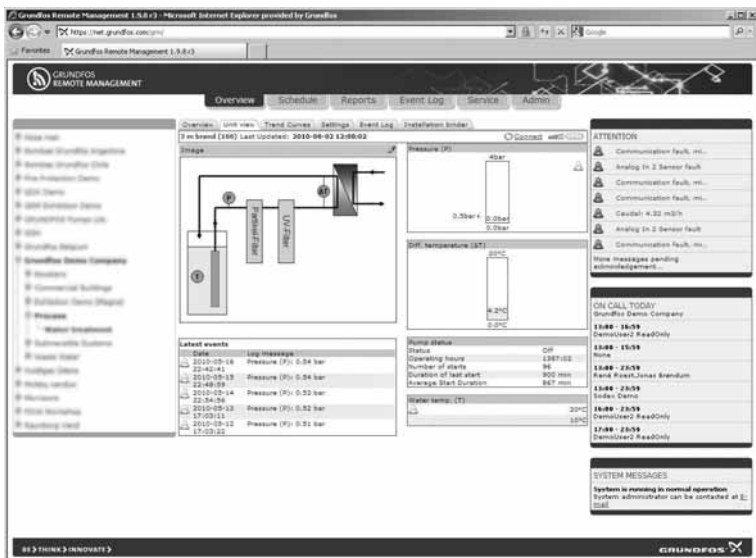


Fig. 25 Example of graphical display of monitored sensors

The IO module has two configurable inputs (analog/digital) set by use of jumpers.

The configurable inputs can be set as the following:

- digital signal
- analog signal (0-10 V)
- analog signal (4-20 mA)
- analog signal (0-20 mA).

The IO module has one Pt100/Pt1000 sensor input and one analog output.

For further information about the IO module, see installation and operating instructions for Multi-purpose IO module in CIU 50X.

Once you are online with your application, you can perform the following actions:

- Set up names for all input types.
- Scale information for the analog inputs.
- Set alarm thresholds for analog inputs.
- Define digital inputs for alarm detection.
- Define digital inputs to count pulse signals.
- Define digital inputs to monitor operations, i.e. log operating hours and number of starts of a connected pump.





On the basis of the above definitions, a graphical user interface is generated complete with the option of seeing trend data for the monitored I/O devices.






Fig. 26 Example of graphical display of data from monitored sensors

GENibus I/O modules are available from Grundfos if you should need additional I/O functionality.

## 15. Ethernet LED on CIM/CIU 500 (left)

LED status	Location	Description
Flashing red		No connection to GRM.
Flashing green		Startup period (120 sec). The CIM 500 initiates communication with GRM.
Permanently green		Connection to GRM established.
Flashing green ... * ... * ... * ... (3-second intervals)		Data transmitting to GRM server.

## 16. GENIbus LED of the CIM/CIU500 (right)

LED status	Location	Description
CIM 500 (factory default). Permanently red LED.		<ul style="list-style-type: none"> <li>The CIM 500 has not been connected to any GENIbus device yet.</li> </ul>
The CIM 500 has loaded a GENIbus device, but there is a problem on the GENIbus network. Red LED: . ✱ . ✱ . ✱ . (1-second intervals)		<ul style="list-style-type: none"> <li>A GENIbus device expected by the CIM 500 has been removed, switched off or its address has been changed.</li> <li>There is a cable or connector problem on the GENIbus network.</li> <li>The device detected is not supported by the CIM 500.</li> </ul>
The GENIbus network is configured correctly. Permanently green LED.		GENIbus status OK.

## 17. Fault finding

Fault	Possible cause	Remedy
1. No response from the CIM 500	a) The CIM 500 is not connected to a 3G/4G Router	Check Cables, Router, power supply
	b) The 3G/4G Router is not configured	Check 3G/4G Router setup
	c) The SIM card is not put into Router	Check that SIM card is put in proper into Router and PIN code is empty
	d) You have not entered a correct MAC address	You can find the MAC address on a sticker on the CIM 500 (the address with the lowest last digit).
	e) No communication	Follow instruction manuals of CIM 500 and your Router

## 18. Disposal

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.

Subject to alterations.



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