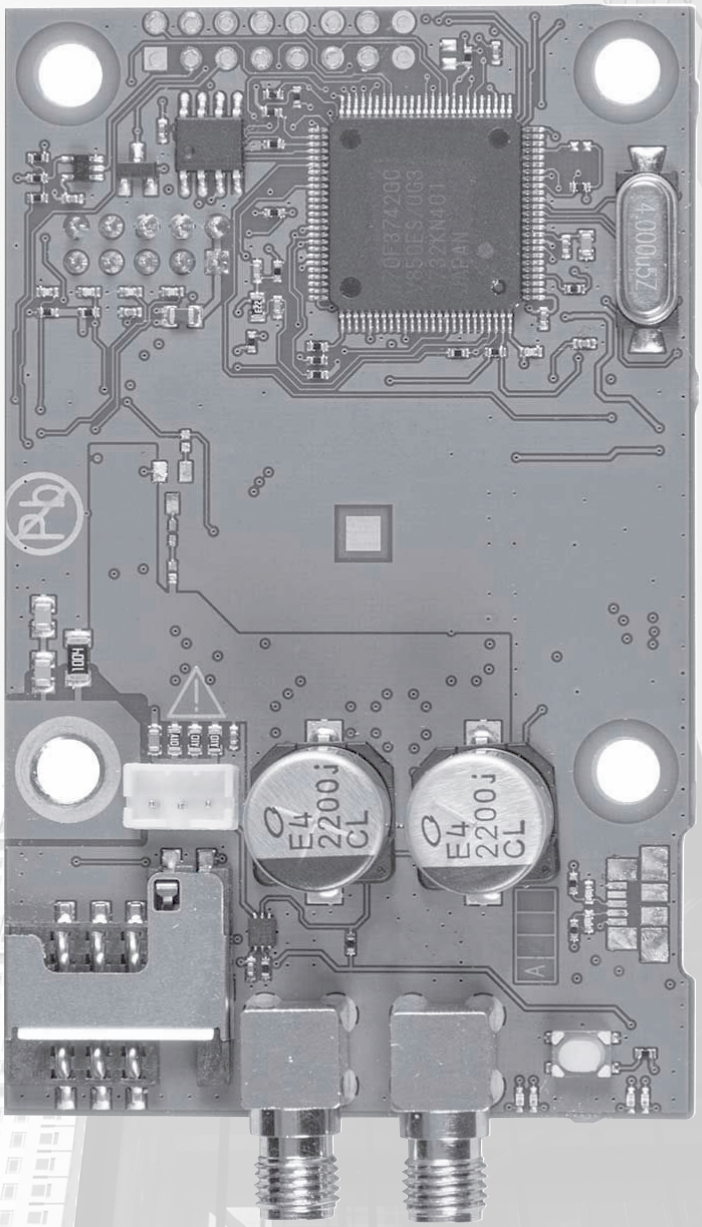
CIM 260 SMS commands

Functional profile and user manual



be
think
innovate

GRUNDFOS

CIM 260 SMS commands

Original functional profile and user manual

Table of contents

1. General information

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

1.1 Hazard statements

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

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

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

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

The hazard statements are structured in the following way:

SIGNAL WORD

Description of the hazard

Consequence of ignoring the warning

- Action to avoid the hazard.

1.2 Notes

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

Observe these instructions for explosion-proof products.

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

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

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

Tips and advice that make the work easier.

2. General description

CIM 260 can be used as an SMS interface for control and monitoring of Grundfos products (for example E-pumps and Hydro MPC booster systems) from a mobile phone.

Using simple SMS messages, it is for instance possible to start and stop the pump or system, change the setpoint and get the status of important pump or system data and alarm or warning messages.

The SMS messages, which can be sent by the user and interpreted by CIM 260, are called commands.

The general syntax of commands is:

- [access code] <command> [parameter, parameter...]

[ ] indicates a field that is only used in certain cases.

< > indicates a mandatory field.

All texts sent to CIM 260 are in English and cannot be changed.

You can configure 10 alarm or warning texts as well as the name and scaling of the CIU 261 input or output signals. All other texts sent from CIM 260 are fixed and written in English.

This manual shows text message communication with mobile phones in bold and with quotation marks.

The following products are supported:

- E-pumps
- Hydro Multi-E
- MAGNA3, MAGNA3-D circulators
- CU 352 Hydro MPC controller
- CU 354 DDD Controller
- LC 2X1 wastewater level control
- LC 2X2 water supply level control
- CIU 262 AUTO$_{ADAPT}$
- MP 204 motor protector.

2.1 CIU 261

CIU 261 consists of a CIM 260 module mounted in a CIU 901 unit. Inside a CIU 901 unit is an IO 270 board, which adds input and output features to the functionality of CIM 260.

Related information

5.1 CIM 260

7.1 Introduction

7.2 Configuration of IO 270 signal names

7.3 Configuration of IO 270 signal scaling

7.7 Configuration of alarm code texts

2.2 Command syntax details

Command	Description	
[access code]	Four numerical characters between 0 and 9. [access code] is used in front of the configuration and control commands if an access code protection is enabled. Numerical characters in front of <command> are generally ignored if the access code is not enabled. A space character after [access code] is optional.	
<command>	A legal command as explained in the following sections. If a parameter is entered after the command, there must be one or more space characters between the command and the parameter.	
[parameter, parameter...]	One or more legal parameters for the command in question. The use of symbolic parameters is explained here:	
	<phone number>:	+XX YYY ZZZ ZZZZ (according to ITU-T E164). For local calls, "+" and the country code XX are not required.*
	<access option>:	LIST | CODE | BOTH | NONE. See section Configuring CIM 260.
	<access code>:	Four numerical characters between 0 and 9 (a four-digit code).
	<alphanumeric string>:	Max. 50 characters: A-Z, a-z, 0-9.
	<APN string>:	Max. 64 characters: A-Z, a-z, 0-9, "-", "@" and ".". Must not begin or end with "-", "@" and ".".
	<day of week>:	ALL, MON, TUE, WED, THU, FRI, SAT, SUN.
	<hour of day>:	OFF, 0, 1, 2, …, 24 (0 = 24).
	<installation name>:	All printable characters except "@" and ":".
	<IP address>:	xxx.xxx.xxx.xxx; xxx = [000; 255].
	<port number>:	1-65535. Default setting: Modbus = 502; GENIpro = 49152.
	<setpoint>:	Decimal number with or without a decimal point.
	<event code>:	Alarm or warning (event) code from connected product.
	<text>:	Max. 50 GSM 3.38 characters except: "@", LF, CR, ESC, ":" (codes 00h, 0Ah, 0Dh, 1Bh, 3Ah). Automatic truncation occurs. It is allowed for <text> to be empty.
	<alpha string>:	Max. 12 ASCII characters: A-Z, a-z. Automatic truncation occurs. It is allowed for <alpha string> to be empty.
	<value>:	Floating point value according to IEEE 754 but limited to 5-digit precision (for example x.xxxx, xxxx.x, etc.). Extra digits are ignored.
	<number>	Positive interger value.
	< >:	Empty field, no argument.

* The number of digits depends on the country.

There is no distinction between lowercase and uppercase letters in the commands.

3. Configuring CIM 260

Before you configure the SMS functions of CIM 260, you must configure CIM 260 using the SMS configuration commands in this section.

The commands are divided into three groups:

One group for basic configuration and two groups for the type of connection to be established.

- Commands for basic configuration are mandatory.
- Commands for configuration of CIM 260 for monitoring and control via SMS.
- Commands for configuration of CIM 260 for a data connection.

First, carry out the basic configuration, as it is common to the two types of connection and required for any installation. Then, carry out the configuration for the type of connection to be established. The default setting works in most cases.

Related information

3.1 Basic configuration

3.2 Configuration for monitoring and control via SMS

3.3 Configuration for a data connection

8.1 Configuration commands for CIM 260

3.1 Basic configuration

Command	Description
INIT <access code>	The first time you use CIM 260, initialise it with this command. The number of the mobile phone used for initialising CIM 260 is added to the internal phone number list of the module. Access via commands can now take place from this number by using the access code which must consist of four digits between 0 and 9. You must follow these rules: • Maximum two of the same digits. • Maximum three consecutive digits. Before carrying on the configuration, wait until CIM 260 acknowledges the change with this message: "**INIT: <phone number> added to the phone number list Access code: <access code>**" If CIM 260 has already been initialised, it sends this message: "**INIT: Already initialised**" Note that when the command "INIT" has been carried out, you can only change the settings from the phone number used for initialising CIM 260 or with the selected access code in front of the command. Access options can be changed with the "ACCESS" command. To prevent an unauthorised user from attempting to access CIM 260 an unlimited number of times, a brute force protection algorithm is used. After three successful attempts, an exponential time back-off scheme is activated during which CIM 260 blocks any control or configuration command access and replies with this negative acknowledgement: "**Time back-off is active. Control or configuration access is blocked for XX min.**" After initialisation, CIM 260 uses the default settings, and in most cases, it is not necessary to change them. However, read the rest of this table, and check that the default settings meet the requirements. If CIM 260 is to be reinitialised at a later time, for instance if you have forgotten the access code, press the reset button on the module for at least five seconds. This resets settings to the default settings. The command "INIT" must be sent to CIM 260 again. For further information about hardware reset, see the installation and operating instructions for the CIM 260 cellular module.
ROAMING <ON | OFF>	With this configuration command, you set whether CIM 260 is to accept roaming or not. CIM 260 acknowledges the change with this message: "**ROAMING: Changed to <ON | OFF>**" If roaming is set to "OFF", this applies to both SMS and data communication. If roaming is set to "ON", this applies only to SMS communication, whereas roaming for data communication is only allowed if "DATAROAMING" has also been set to "ON". Default setting: ON.

Related information

3. Configuring CIM 260

8.1 Configuration commands for CIM 260

3.2 Configuration for monitoring and control via SMS

Command	Description
ACCESS <access option>	Select the access option with this configuration command: • LIST: Only numbers in the CIM 260 phone number list can send configuration and control messages. • CODE: The 4-digit access code must be used in front of all configuration and control commands. • BOTH: You have to use both "LIST" (your number must be in the phone number list) and "CODE" (access code) for access control. • NONE: There is no access control. You can send all commands from a mobile phone without access control. Before carrying on the configuration, wait until CIM 260 acknowledges the change with this message: "**ACCESS: Changed to <access option>**" Default setting: BOTH.
CODE <access code>	With this configuration command, you can change the 4-digit access code. Before carrying on the configuration, wait until CIM 260 acknowledges the change with this message: "**CODE: Changed to <access code>**"
ADDNUMBER [phone number]	With this configuration command, you can add a number to the CIM 260 phone number list. The number must be of international format with "+" followed by the country code and the local number. In the case of local numbers, "+" and the country code are not required. Up to four numbers can be stored. When a number has been added, CIM 260 acknowledges the change with this message: "**ADDNUMBER: <phone number> added to the phone number list**" The message will be sent to both the sender of the command and to the phone number which has been added. If the parameter is omitted, the phone number of the sender will be added. When CIM 260 has been initialised, only the number of the mobile phone used for initialisation will be in the internal phone number list of the module. To see the phone number list, use the command "LIST". Note that if all phone numbers are deleted, you should make sure that the access option is not "LIST" or "BOTH", as this would leave CIM 260 unaccessible and require a hardware reset (by pressing the reset button for five seconds) followed by a reconfiguration. For further information about hardware reset, see the installation and operating instructions for the CIM 260 cellular module.
DELNUMBER [phone number | ALL]	With this configuration command, you can delete a number in the CIM 260 phone number list. If the number exists, it will be deleted, and CIM 260 acknowledges the change with this message: "**DELNUMBER: <phone number> deleted from the phone number list**" The message will be sent to both the sender of the command and to the phone number which has been deleted. If the parameter is omitted, the phone number of the sender is deleted. If the parameter is "ALL", all phone numbers are deleted, and CIM 260 sends this message: "**DELNUMBER: Phone number list empty**" To see the phone number list, use the command "LIST". Note that if all phone numbers are deleted, you should make sure that the access option is not "LIST" or "BOTH", as this would leave CIM 260 unaccessible and require a hardware reset (by pressing the reset button for five seconds) followed by a reconfiguration. For further information about hardware reset, see the installation and operating instructions for the CIM 260 cellular module.
NAME <installation name>	With this configuration command, you can give CIM 260 an installation name of maximum 30 characters. The name will then be put in front of all messages from CIM 260. If a name consists of more than 30 characters, it will be shortened automatically. CIM 260 acknowledges the change with this message: "**<Installation name>** **NAME: New installation name stored**" You can delete the installation name by storing an empty installation name. CIM 260 sends this message: "**NAME: Installation name cleared**" Default setting: Empty.

Command	Description
HEARTBEAT <hour of day>, <day of week>, ..., <day of week>	When this function is activated, CIM 260 regularly sends an SMS in the form of a "STATUS1" message to all numbers in the phone number list. For further information about the "STATUS1" message, see the section regarding status commands. "HEARTBEAT" is a CIM 260 configuration command that you can use to set at which hour of the day and on which weekdays the message is to be sent. • <hour of day>: OFF, 0, 1, 2, ... , 24. • <day of week>: ALL, MON, TUE, WED, THU, FRI, SAT, SUN. 1 is 1.00 o'clock AM, 12 is noon, and 0 or 24 is midnight. "OFF" disables the function. If "ALL" is selected, the message will be sent every day. If the hour of day is set to "OFF", the parameter day of week will be ignored and can be omitted. Note that you can select more than one specific day if they are separated by commas. CIM 260 acknowledges the change with this message: "**HEARTBEAT: Changed to <hour of day> o'clock on <day of week>**" or "**HEARTBEAT: Changed to OFF**" Example of command: **"HEARTBEAT 12, MON, THU"** This command will result in a heartbeat message at 12 o'clock Monday and Thursday every week. A heartbeat message contains the same information as a "STATUS1" message and will be sent to all numbers in the phone number list. Example of heartbeat message: "**[Installation name]** **HEARTBEAT:** **Device OK** **Setpoint: 75 %** **Act. setpoint: 6.5 m** **Act. value: 6.2 m** **START from SMS** **CONTROL: Const press**" "Device OK" will be replaced by an alarm or warning text if there is a fault in the device. To perform the function, CIM 260 depends on time information being available. CIM 260 normally gets the time value from the cellular network upon initialisation after a power cut. If this service is not available in the network and the heartbeat function has been activated, CIM 260 sends this message: **NOTICE:** Your network does not support time information. Enter: "TIME yyyy, mm, dd, hh, mm" for the heartbeat function to work. If the message is sent because the heartbeat function was activated, it will only be sent to the phone number that activated the function. If the message is sent because of missing time information at initialisation, it will be sent to all numbers in the phone number list. When the time value has been set either manually with the command "TIME" or automatically from the network service, the internal real time clock of CIM 260 works correctly as long as a power supply is present. To see the settings, use the command "SMSSETTINGS". Default setting: OFF.
TIME <year>, <month>, <day>, <hour>, <minute>	If the cellular network does not support time information for synchronising the internal real time clock of CIM 260, you can use this command to supply the information. Once synchronised, the internal clock will run as long as CIM 260 is powered or connected to its backup battery. Parameters: <year>: 2010-2100 <month>: 1-12 <day>: 1-31 <hour>: 0-23 <minute>: 0-59 If the setting has been done correctly, CIM 260 sends this message: "**TIME: Time has been set to <year> <month> <day> <hour>:<minute>**" <month>: A three-letter truncation of month. Example: The command "TIME 2010, 5, 6, 9, 30" results in this message: "**TIME: Time has been set to 2010 May 6 09:30**" If any of the parameters are outside their specified range or missing, CIM 260 sends this message: "**TIME: Illegal or missing command parameter**" The real time setting influences only the heartbeat function. To see the value of the internal real time clock, use the command "SMSSETTINGS".

Command	Description
SMSALARM <ON | OFF>	With this configuration command, you can enable or disable the transmission of alarm messages from the product in the form of a "STATUS1" message to all numbers in the phone number list. For further information about the "STATUS1" message, see the section regarding status commands. CIM 260 acknowledges the change with this message: "**SMSALARM: Changed to <ON | OFF>**" Example of alarm message for a Hydro MPC booster system: "**[Installation name]** **ALARM APPEARED** **Water shortage (214)** **Setpoint 78 %** **Act. setpoint: 4.2 bar** **Act. value: 4.0 bar** **Stopped due to alarm**" If the function is enabled, a message will also be sent when the cause of the alarm has disappeared and the product has returned to normal state. The message content will be the same, the message will, however, read: "**ALARM DISAPPEARED**" To see the settings, use the command "SMSSETTINGS". Default setting: ON.
SMSWARN <ON | OFF>	With this configuration command, you can enable or disable the transmission of warning messages from the product in the form of a "STATUS1" message to all numbers in the phone number list. For further information about the "STATUS1" message, see the section regarding status commands. CIM 260 acknowledges the change with this message: "**SMSWARN: Changed to <ON | OFF>**" Example of warning message for a Hydro MPC booster system: "**[Installation name] WARNING APPEARED**" **Feedback sensor signal fault (171)** **Setpoint 78 %** **Act. setpoint: 4.2 bar** **Act. value: 4.0 bar** **START from SMS**" If the function is enabled, a message will also be sent when the cause of the warning has disappeared and the product has returned to normal state. The message content will be the same, the message will, however, read: "**WARNING DISAPPEARED**" To see the settings, use the command "SMSSETTINGS". Default setting: ON.
CONNECTIONALARM <ON|OFF>	If CIM 260 has no product connected, an SMS alarm will be generated and the GENIbus LED2 will be blinking red. This default behaviour can be switched on and off with this command. CIM 260 acknowledges the change with the acknowledgement SMS: "**CONNECTIONALARM: Changed to <ON | OFF>**" The intention for switching the alarm off is to use CIM 260 in a CIU 261 without having to connect a GENIbus device, if you only want to use the functionality associated with the built-in IO 270 signals. Default setting: ON.
SMSCONTROL <ON| OFF>	With this configuration command, SMS control of the connected product can be enabled or disabled. In section 5.2, it is described which control actions you can execute for the individual products. The CIM 260 module acknowledges the change with the acknowledgement SMS: "**SMSCONTROL: Changed to <ON|OFF>**" In the special case with a CU 354 DDD controller: If communication setting is set to "CIM 260 installed", the CIM 260 SMS control will be locked to "ON". In this case, the CIM 260 module issues the acknowledgement SMS: "**SMSCONTROL: Cannot be changed. Locked to ON**" If communication setting is set to any other module, the CIM 260 SMS control will be locked to "OFF". In this case, the CIM 260 module issues the acknowledgement SMS: "**SMSCONTROL: Cannot be changed. Locked to OFF**" The actual setting of SMSCONTROL is included in the reply to the status command SMSSETTINGS. Default setting: OFF.

Command	Description
BLOCKING <ON|OFF>	With this configuration command, blocking of negative acknowledgement messages can be enabled or disabled. This can be used to prevent issuing replies to SMS spams (for example commercial messages). When blocking is 'ON', the below three messages, which are the only ones the module can use when it receives unknown or illegal messages, are detained. For SMS spams, this has the same effect as if the messages were completely blocked The users will have to accept the disadvantage that they will not get any negative acknowledgement if they use an unknown command (e.g. due to a misspelling) or if the authentication is failing. <command>: Command unknown <command>: Access denied, illegal phone number used <command>: Access denied, illegal access code used The CIM 260 module acknowledges the change with the acknowledgement SMS: "**BLOCKING: changed to <ON|OFF>**" Information about the actual setting is included in the status command SMSSETTINGS. Default setting: OFF.
STATUSPROTECT <ON | OFF>	As default, access control does not prevent status commands from being executed. Only unauthorised configuration and control commands are blocked. If access control is to be applied for all commands (status protection), use this configuration command to activate status protection. To see the settings, use the command "SMSSETTINGS". Default setting: OFF.
SMSLIMIT <ON | OFF>	The same event message cannot be sent more than 10 times in a row within 24 hours. This prevents the transmission of an unlimited stream of identical messages if the Grundfos product is in a condition where the same event appears and disappears continuously within a short period. The total number of event messages is also limited to 100 within 24 hours. The command activates or deactivates the two limitations. CIM 260 acknowledges the change with this message: "**SMSLIMIT: Changed to <ON | OFF>**" If the limitations are activated and one of the limits is reached, CIM 260 sends this message: "**SMS alarm/warning limit of 10 identical messages per day has been reached**" or "**SMS alarm/warning limit of a total of 100 messages per day has been reached**" To see the settings, use the command "SMSSETTINGS". Default setting: ON.
SETCODETEXT <event code> <text>	Alarms and warnings (events) from a connected product are normally sent to all phone numbers in the phone number list in form of a "STATUS1" message containing the standard English text belonging to the event code in question. The user can configure own texts for up to ten different event codes. This is done one at a time with this configuration command. The event code texts to be changed are changed one by one by repeating the command. Leaving out the <name> argument resets the text of the event code in question to the original text. Leaving out both arguments resets all event code texts to their original text. Parameters: <event code>: The event code in question. <text>: The new text for the event code. If this field is left empty, the text of the event code is reset to its factory default text. If both parameter fields are left empty, all event code texts are reset to their factory default text. Example: SETCODETEXT 3 Alarm button pressed CIM 260 acknowledges the command with this message: "**SETCODETEXT: Text for event code 3 changed to Alarm button pressed**" Example: SETCODETEXT "empty" "empty" CIM 260 acknowledges the command with this message: "**SETCODETEXT: Text for all event codes reset to factory text** The text of any event code can always be requested with this command: "**GETCODETEXT <event code>**"
GETCODETEXT <event code>	This is a status command used to read the text associated with an alarm or warning code (event code). Example: GETCODETEXT 3 CIM 260 acknowledges the command with this message: "**GETCODETEXT: Text for event code 3: Alarm button pressed (user-defined text)**" The last parenthesis tells if the text is a user-defined text or if it is the factory default text.

Related information

3. *Configuring CIM 260*
4. *Status commands*

3.3 Configuration for a data connection

To see the status, use the command "APNSETTINGS" or "SCADASETTINGS".

Command	Description
APN <APN string>	Set the Access Point Name (APN) according to the information from your network service provider. Default setting: Empty.
USERNAME <alpha numeric string>	Set the user name for the APN according to the information from your network service provider. In many cases, a user name is not necessary. Default setting: Empty.
PASSWORD <alpha numeric string>	Set the password for login to the APN according to the information from your network service provider. In many cases, a password is not necessary. Default setting: Empty.
AUTHENTICATION <NORMAL | SECURE>	Select this option for login to the APN according to the information from your network service provider. In many cases, it is not necessary to change the setting. Default setting: NORMAL.
CONNECTION <SERVER | CLIENT | DISABLED>	CIM 260 only supports connection mode "SERVER" or "DISABLED". You can use "DISABLED" as a simple way to disable the APN connection without removing the settings in the APN string. Default setting: SERVER.
DATAROAMING <ON | OFF>	This command makes it possible to specifically enable and disable data roaming if roaming, in general, is enabled with the command "ROAMING". Default setting: OFF.
SETSCADACODE <access code>	Sets a four-digit SCADA access code. If SCADA access code protection is set to "ON", see below, write the SCADA access code in the Modbus register "ScadaPinCode" (Reg. 000011) before data can be written to CIM 260. Use of SCADA access code is subject to brute force protection. For the use of SCADA access code protection, see the functional profile and user manual for the product in question.
SCADACODE <ON | OFF>	Sets SCADA access code protection to "ON" or "OFF". Default setting: OFF.
MODBUSADDR <1-247>	Normally, the Modbus address does not play any role in a data connection, as the assigned IP address replaces the addressing mechanism. The default Modbus address usually works fine, but it can be changed with this command if required. Default setting: 231.
MODBUSPORT <port number>	It is only necessary to change the default setting of the Modbus port number in very special cases. Default setting: 502.
GENIPROPORT <port number>	Used for data connection to a Grundfos PC Tool. It is only necessary to change the default setting of the GENIpro port number in very special cases. Default setting: 49152.

Command	Description
SETAPN <parameters>	It is possible to configure the APN connection with this single multiparameter command. Parameters: <APN>: APN string or IP address <Modbus port>: 1-65535 <GENIpro port>: 1-65535 <user name>: alphanumeric string <password>: alphanumeric string <authentication>: NORMAL | SECURE <connection>: SERVER | CLIENT | DISABLED <data roaming>: ON | OFF <datasilencetimeout>: 1-65535 min Example: "**SETAPN Grundfos.dk2.tdc,502,49152,Grundfos,4321, NORMAL,SERVER,OFF,60**" Example : "**SETAPN Grundfos.dk2.tdc,502,49152,,,NORMAL**" In the second example, some parameters are omitted in the middle and at the end of the parameter string. CIM 260 acknowledges the change with the same message as for the status command "APNSETTINGS".
DATASILENCE <time>	With this configuration command, the timeout time of the CIM 260 data activity monitoring can be changed. <time> is specified in minutes. If CIM 260 does not detect any data communication for the *data silence timeout time,* it will attempt to restart the APN connection. Failing attempts to establish a connection will result in a complete restart of CIM 260. The CIM 260 module acknowledges the change with the acknowledgement SMS: "**DATASILENCE: changed to <xxx min>**" Information about the actual setting is included in the status command APNSTATUS. Default setting: 60 min.
GENIPRO <ON|OFF>	With this configuration command, the GENIpro data port can be enabled or disabled. The CIM 260 module acknowledges the change with the acknowledgement SMS: "**GENIPRO: Changed to <ON|OFF>**" When enabling GENIpro, the acknowledgement SMS will be followed by this warning: "**SECURITY WARNING: Leaving the cellular module with the GENIpro channel enabled is a security hazard. The GENIpro port will stay open until changed to OFF by the user**" Information about the actual setting is included in the status command SMSSETTINGS. Default setting: OFF.
PING <ON|OFF>	With this configuration command, the ability to be pinged can be enabled or disabled. The CIM 260 module acknowledges the change with the acknowledgement SMS: "**Ping changed to <ON/OFF>**" Information about the actual setting is included in the status command NETWORK.

Related information

3. Configuring CIM 260

4. Status commands

You get information about the status of CIM 260 and the Grundfos product by means of status commands. See the table below. Apart from the commands "LIST", "APNSETTINGS" and "SCADA", the commands are not subject to access control, unless "STATUSPROTECT" = "ON", as they do not change anything in the CIM 260 or the Grundfos product.

<table>
<tr><th>Command</th><th>Description</th></tr>
<tr><td>SMSSETTINGS</td><td>With this status command, you can see the configuration status of CIM 260.
Example of reply:
"[Installation name]
Configuration status:
Access control: CODE
Heartbeat: At 12:00 Wed
Roaming: OFF
SMS alarm: ON
SMS warning: ON
SMS limit: ON TIME: 2010 Mar 29 08:35
Status protection: OFF
Blocking SMS spam: OFF
SMS controls: ON
Connection SMS alarm: ON"</td></tr>
<tr><td>LIST</td><td>With this status command, you can see which numbers are in the CIM 260 phone number list. CIM 260 sends a message with all phone numbers. Each number takes up a line.
Example of reply:
"[Installation name]
LIST:
+4520509988
+4521190627
+4522814495"
If there are no numbers in the phone number list, CIM 260 sends this message:
"[Installation name] LIST: Phone number list empty"
Note that "LIST" is subject to access control if you have selected another access option than "NONE".</td></tr>
<tr><td>SIGNALLEVEL or RSSI</td><td>With this status command, you get information from CIM 260 about the detected signal strength of the cellular network:
Not detected, 0 %, 25 %, 50 %, 75 %, 100 %.
Example of reply:
"[Installation name]
Signal level:
Actual 100 %
Average 50 %
RSSI: 20"
RSSI means Received Signal Strength Indicator and is a value from 0 to 31
The actual value is the value read from CIM 260 right now; the average value is the average of the signal during the last hour.
Note that not all network operators support this service.

<table><tr><th>RSSI</th><th>Mapped to %</th><th>Marks</th><th>Signal</th><th>Communication possible</th></tr><tr><td>0-6</td><td>0</td><td>0</td><td>Very poor</td><td>SMS, Data connection very unstable</td></tr><tr><td>7-13</td><td>25</td><td>1</td><td>Poor</td><td>SMS, Data connection can be unstable</td></tr><tr><td>14-18</td><td>50</td><td>2</td><td>Medium</td><td>SMS, Data connection</td></tr><tr><td>19-21</td><td>75</td><td>3</td><td>Good</td><td>SMS, Data connection</td></tr><tr><td>22.31</td><td>100</td><td>4</td><td>Excellent</td><td>SMS, Data connection</td></tr></table></td></tr>
<tr><td>STATUS1/ STATUS2</td><td>With these status commands, you get information from CIM 260 about the Grundfos product. The values measured are as reported from the Grundfos product. The content of the message depends on the product type.
Example of "STATUS1" message for a pump:
"[Installation name]
Setpoint: 65 % of (0-10 bar)
Act. setpoint: 6.5 bar
Act. value: 5.2 bar
START from SMS
Control: Const. press."
Example of "STATUS2" message for a pump:
"[Installation name]
Head: 8.4 m
Flow: 24 m3/h
Power: 1830 W
Performance 79 %
Energy: 4570 kWh
Hours: 2568 h"</td></tr>
</table>

Command	Description
VERSION	With this status command, you get information, such as the software version of CIM 260 and the type of Grundfos product. Example of reply: "**[Installation name]** **Firmware V01.00.00** **Telit 07.03.101** **Hydro MPC booster** **IMEI: 3570220010091936** **IMSI: 770008945629634**" IMEI is the equipment identity number, and IMSI is the subscriber identity number.
BATTERY	With this status command, you get information about the battery status if CIM 260 is equipped with a battery (optional). Example of reply: "**[Installation name]** **External voltage: Yes** **Battery voltage: 3.5 V** **Battery temp: 37 C** **Battery charging: Yes** **Charging suspended: No**" Battery charging is suspended if the temperature is too high.
NETWORK	With this status command, you get information about the cellular network and the network operator. Example of reply: "**[Installation name]** **Operator: <operator>** **Band: 900 MHz** **Access technology: 4G** **Roaming: On** **Data roaming: OFF** **GENIpro channel: OFF** **PING: OFF** **Power on: 1672:32 h** **Time update: <method>**"
SCADA	With this status command, you get information about the SCADA settings. Example of reply: **[Installation name]** **SCADA code: <access code>** **SCADA code: ON** **Modbus address: 231** Note that "SCADA" is subject to access control if another access option than "NONE" has been selected.

Command	Description
SMSCOUNT	With this status command, you get information about the SMS and call-up data counters. Example of reply: "**[Installation name]** **SMS sent: 4502** **SMS received: 37** **Call-up: 188:22 h** **Call-back: 44:09 h** **Counter time: 1435:43 h** **Counter time in [h:min] since** **Last counter reset.**" The counters can be reset with the command "RESETCOUNT".
APNSETTINGS	With this status command, you get information about the settings of the APN connection. Example of reply: "**[Installation name]**" "**APN: Grundfos.dk2.tdc** **MODBUSPORT: 502** **GENIPROPORT: 49152** **USERNAME: -** **PASSWORD: -** **AUTHENTICATION: NORMAL** **CONNECTION: SERVER** **DATAROAMING: ON SERVER *): 172.16.2.66**" Note that "SCADA" is subject to access control if you have selected another access option than "NONE". *) If connection mode is "CLIENT".
APNDATA	With this status command, you get information about the Modbus TCP status. Example of reply: "**[Installation name]** **Packets: 374021** **Received: 196684 kb** **Sent: 183427 kb** **Counter time: 419:51 h>**" Packets: The sum of Modbus TCP and GENIpro TCP. Counter time: The time since the last APN connection restart. You can reset the counters and restart the connection with the command "RESTARTAPN".
APNSTATUS	With this status command, you get information about the APN connection status. Example of reply: "**[Installation name]** **APN: CONNECTED** **IP: 172.16.1.30** **Modbus Port: 502** **GENIpro Port: 49152** **Modbus addr: 231** **Socket 1: OPEN** **Socket 2: CLOSED** **Socket 3: CLOSED** **Socket 4: CLOSED** **Silence timeout: 60 min.** **APN re-starts 34 "** Socket 1-3: Modbus TCP connection. Socket 4: GENIpro TCP connection.

Related information

3.2 Configuration for monitoring and control via SMS

5. Control commands

5.1 CIM 260

Command	Description
RESETCOUNT	Resets SMS counters. CIM 260 acknowledges the change with this message: "**RESETCOUNT: SMS counters reset**"
RESTARTAPN	Restarts the data connection. CIM 260 acknowledges the change with this message: "**RESTARTAPN: Data connection restarted**"

Related information

2.1 CIU 261

5.2 Grundfos product

By means of the control commands in the table below, you can set the Grundfos product to run in the desired control mode and operating mode and you can change the setpoint. CIM 260 acknowledges the change by sending a "STATUS1" message to the mobile phone from which the command was sent.

Changing the control mode, operating mode or setpoint for a pump automatically sets the pump to remote-controlled operation. These settings are saved in the CIM 260 module in case of power cuts. They can also be changed via a data connection. The latest change of settings applies. However, changes via a data connection are not saved in CIM 260 in case of power cuts. Analogous to how a fieldbus connection works.

The commands depend on the Grundfos product. If the command is not supported by the product, the product ignores the command and CIM 260 sends this message: **<command>: Command not supported by connected device type**.

The commands are all subject to access control if another access option than NONE has been selected.

Control of Hydro MPC and DDD via CIM 260 requires this setting via the operating panel of the CU 352:
Settings > Secondary functions > Control source. Select "From bus". For further information, see the installation and operating instructions for Hydro MPC in Grundfos Product Center.

Command	E-pumps	MAGNA3	Hydro MPC	DDD	Hydro Multi-E	MP 204	CIU 262	LC 2X1/2X2	Description
RESETALARM	•	•	•	•	•	•	•	•	Resets an alarm or a warning in the Grundfos product if the fault no longer exists. The product will try to restart.
REMOTE	•	•	•	•	•	-	-	-	Sets the Grundfos product to remote-controlled operation. The Grundfos product is controlled via CIM 260.
LOCAL	•	•	•	•	•	-	-	-	Sets the Grundfos product to locally controlled operation. The setpoint, operating mode and control mode can be changed on the product or by means of Grundfos Go Remote.
START	•	•	•	•	•	•	-	-	Starts the Grundfos product.
STOP	•	•	•	•	•	•	-	-	Stops the Grundfos product.
MIN	•	•	•	-	G[1]	-	-	-	Changes the operating mode of the Grundfos product to "Min.". It will run according to the min. curve.
MAX	•	•	•	-	•	-	-	-	Changes the operating mode of the Grundfos product to "Max.". It will run according to the max. curve.
SETPOINT <value>	•	•	•	•	•	-	-	-	Sends a new setpoint value to the product. If the setpoint is outside the permissible range, it will automatically be changed to the nearest value within the range. Due to the limited scaling range and the resolution, the resultant setpoint may deviate from the one sent to the product. Closed loop: The setpoint is specified as a decimal point value scaled in the same unit as the feedback sensor. The command "STATUS1" provides information about the sensor scaling. MAGNA3 pumps always use [m]. Units on the MPC display can differ from "unit" if other units than standard SI units have been selected for sensors. Open loop: The setpoint is specified as a decimal point value scaled in %.
CONSTCURVE	•	•	•	-	•	-	-	-	This command sets the Grundfos product to control mode "Constant curve".
CONSTPRESS	•	•	•	•	•	-	-	-	This command sets the Grundfos product to control mode "Constant pressure".

Command	E-pumps	MAGNA3	Hydro MPC	DDD	Hydro Multi-E	MP 204	CIU 262	LC 2X1/2X2	Description
PROPPRESS	G[1]	●	●	●	G[1]	-	-	-	This command sets the Grundfos product to control mode "Proportional pressure".
AUTOADAPT	H[2]	●	-	●	H[2]	-	-	-	This command sets the Grundfos product to control mode "AUTOADAPT".
CONSTTEMP	H[2]	●	-	-	H[2]	-	-	-	This command sets the Grundfos product to control mode "Constant temperature".
FLOWADAPT	H[2]	●	-	-	H[2]	-	-	-	This command sets the Grundfos product to control mode "FLOWADAPT".
CLSENSOR	H[2]	-	-	-	H[2]	-	-	-	This command sets the Grundfos product to control mode "Closed loop sensor".
CONSTFLOW	H[2]	●	-	-	H[2]	-	-	-	This command sets the Grundfos product to control mode "Constant flow".
CONSTLEVEL	H[2]	-	-	-	H[2]	-	-	-	This command sets the Grundfos product to control mode "Constant level".
CONSTDIFFPRESS	H[2]	-	-	-	H[2]	-	-	-	This command sets the Grundfos product to control mode "Constant differential pressure".
CONSTDIFFTEMP	H[2]	-	-	-	H[2]	-	-	-	This command sets the Grundfos product to control mode "Constant differential temperature".
ALARMSIM <event code>	●	●	●	●	-	●	●	●	This command makes the Grundfos product simulate an alarm with an event code. If the product supports the alarm selected and "SMSALARM" is set to "ON", it reacts accordingly, for instance by sending an alarm message.
WARNSIM <event code>	●	●	●	●	-	●	●	●	This command makes the Grundfos product simulate a warning with an event code. If the product supports the warning selected and "SMSWARN" is set to "ON", it reacts accordingly, for instance by sending a warning message.
STARTP <number>	-	-	-	-	-	-	-	●	This command manually forces to start a pump that is otherwise controlled by a local controller.
STOPP <number>	-	-	-	-	-	-	-	●	This command manually forces to stop a pump that is otherwise controlled by a local controller.
AUTOP <number>	-	-	-	-	-	-	-	●	This command is used to release a pump which has been forced to start or stop. It will return to auto mode being controlled by the local controller.

1 Model G or later

2 Model H or later

Example:

CIM 260 is configured to access option "CODE", and the access code is set to "8977". You can reset an alarm with this command:

"**8977 RESETALARM**"

Example:

The number of your mobile phone is in the phone number list of CIM 260, and the access option is "LIST". You can change the setpoint to 4.5 m with this command:

"**SETPOINT 4.5**"

Note that the unit of the setpoint is not to be written as a part of the command parameter, as it is implicitly given by the scaling unit of the feedback value.

6. Messages from CIM 260

CIM 260 sends messages in case of faults or other special conditions in the module itself. These messages do not depend on the Grundfos product. You can enable or disable the messages with the command "SMSALARM <ON | OFF>". If "SMSALARM" is set to "ON", they are sent to all numbers in the phone number list.

No message is sent if the phone number list is empty, for instance, if the module has not been initialised.

The message is triggered by an event. If you switch CIM 260 off and on, you must remove the battery first. It sends the message again if the cause of the message still exists.

6.1 No connection to product

If the communication between CIM 260 and the Grundfos product is interrupted for more than one minute, CIM 260 sends this message to all numbers in the phone number list.

"**Cellular module error: No connection to product**"

If the cause of the interruption is the fact that the power supply to the product was interrupted, CIM 260 sends this message instead:

"**No mains supply, using battery.**"

See the next section.

Related information

6.2 No mains supply, using battery

6.2 No mains supply, using battery

If CIM 260 detects that it is being supplied from the battery, it sends this message to all numbers in the phone number list:

"**Cellular module error: No mains supply, using battery**"

This fault type will probably disappear by itself, as the message is typically triggered by a short power cut. In case of this special fault but not the other ones, CIM 260 sends a message, telling that the fault has disappeared:

"**Cellular module: Mains supply returned**"

If the battery is worn out or CIM 260 has no battery, CIM 260 does not detect if the power supply to the Grundfos product has been interrupted, as it looses power supply itself. It can therefore not send a message. To inform the user that there has been a power cut, CIM 260 always sends a message when the power supply has returned:

"**Cellular module: Power on occurred**"

Related information

6.1 No connection to product

6.3 Change cellular module battery

If CIM 260 detects that the battery is worn out and must be replaced, it sends this message to all numbers in the phone number list:

"**Cellular module error: Change Cellular module battery**"

The CIM 260 cellular module battery is optional.

6.4 Cellular module battery low

If CIM 260 detects that the battery level is low, it sends this message to all numbers in the phone number list:

"**Cellular module error: Cellular module battery low**"

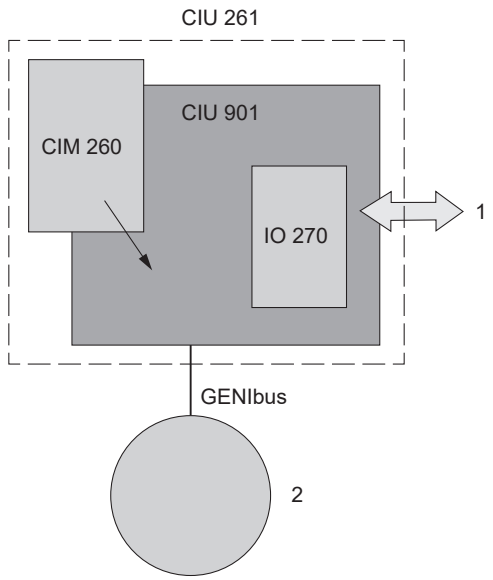
The CIM 260 cellular module battery is optional.

7. Additional SMS functionality of CIU 261

7.1 Introduction

CIU 261 consists of a CIM 260 module mounted in a CIU 901 unit (IO 270 multipurpose I/O module mounted in a CIU box). See the figure below.

The IO 270 adds I/O features to the functionality of the "standard" CIU 260. See the figure below for IO 270 I/O signals.



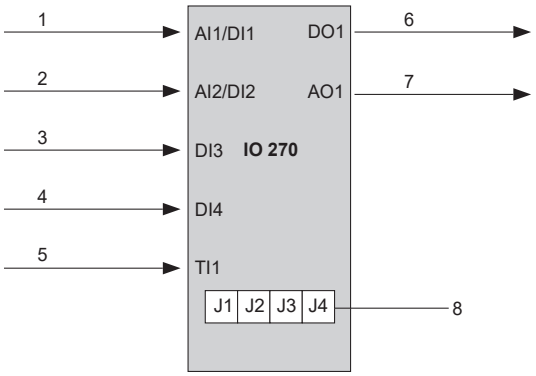
TM057742

CIM 260 and IO 270 built into a CIU 261 and connected to a Grundfos product via GENIbus

Pos.	Description
1	Digital and analog input and output
2	Grundfos product

For more information on additional Modbus registers relating to IO 270, see the functional profile.

Modbus for multi purpose IO module IO 270



TM057743

IO 270 I/O signals. Jumpers are used to configure analog input signal types and selection between AI1/DI1 and AI2/DI2. The digital inputs (DI1-DI4) are normally open (NO) contacts.

Pos.	Description
1	Analog input 1 or digital input 1, depending on jumper J1 + J2 selection.
2	Analog input 2 or digital input 2, depending on jumper J3 + J4 selection.
3	Digital input 3.
4	Digital input 4.
5	Temperature Pt100/Pt1000.
6	Relay output.
7	Analog output, 0-10 V.
8	Jumpers for signal configuration (AI1/DI1, AI2/DI2).

The tables below show how to configure the analog and digital inputs using jumpers J1-J4. It also gives an overview of the options. You find details as to how to connect sensors, relays, etc., and the layout of the terminals in the installation and operating instructions "Multipurpose IO module in CIU 27X", which is the IO 270 hardware manual.

Selection AI1/DI1		
J1	**J2**	**Signal**
Open	Open	Analog 0-10 V
Open	Closed	Analog 0-20 mA
Closed	Open	Analog 4-20 mA
Closed	Closed	Digital (default)

Selection AI2/DI2		
J3	**J4**	**Signal**
Open	Open	Analog 0-10 V
Open	Closed	Analog 0-20 mA
Closed	Open	Analog 4-20 mA
Closed	Closed	Digital (default)

Related information

2.1 CIU 261

7.2 Configuration of IO 270 signal names

You can change the default signal names "Analog input 1 (AI1)", "Digital input 1 (DI1)", etc. The table below shows the commands for this purpose.

Command	Description
AI1NAME <text>	Naming of AI1
AI2NAME <text>	Naming of AI2
TI1NAME <text>	Naming of TI1
DI1NAME <text>	Naming of DI1
DI2NAME <text>	Naming of DI2
DI3NAME <text>	Naming of DI3
DI4NAME <text>	Naming of DI4
AO1NAME <text>	Naming of AO1
DO1NAME <text>	Naming of DO1

Example: To change the name of AI1, use the command "AI1NAME" followed by the new name in < >.
If the < > field is left empty, the user name will be cleared and reset to the factory default name.
CIM 260 sends one of these messages:

Positive acknowledgement of name change	AI1NAME: Changed to <name>
Positive acknowledgement of name clearing	AI1NAME: User-defined name cleared
Negative acknowledgement	AI1NAME: Illegal name format See the symbolic parameters in the section about CIU 261.
Negative acknowledgement if used as DI1	AI1NAME: AI1 not available

The text configuration of signals is accepted whether the IO 270 module is present or not, as long as the command syntax is correct. Seeing the status of configured signal texts is possible with the command "IOSTATUS" if there is an IO 270.

Related information

2.1 CIU 261

7.4 IO 270 operation

7.7 Configuration of alarm code texts

7.3 Configuration of IO 270 signal scaling

The default scale of the analog readings of IO 270 is 0-100 %. You can adjust the scaling of each analog signal to the actual sensor using the commands in the table below.

Command	Description
AI1SCALE [<value> <value> <alpha string>]	Scaling of AI1
AI2SCALE [<value> <value> <alpha string>]	Scaling of AI2
AO1SCALE [<value> <value> <alpha string>]	Scaling of AO1

Temperature input TI1 has a fixed scaling of [-50; 204] °C according to the scaling in the corresponding Modbus register 01222 IO270_Temperature.

Leaving out all arguments to one of these commands resets the scaling of the input in question to its factory setting [0; 100] %.
An acknowledgement SMS is sent to the phone. This is shown below for command "AI1SCALE".

Positive acknowledgement (changed scaling)	AI1SCALE: Changed to range: <value> to <value> <alpha string>
Positive acknowledgement (reset to default)	AI1SCALE: Scaling reset to factory scaling [0; 100] %
Negative acknowledgement	AI1SCALE: Illegal or missing command parameter See the symbolic parameters in the section about CIU 261.
Negative acknowledgement if used as DI1	AI1SCALE: AI1 not available

The negative acknowledgement appears if one or more command parameters are missing or have a syntax error, or if the scaling range is inconsistent.
The configuration of signal scaling is accepted whether IO 270 is present or not, as long as the command syntax is correct. To see the status, use the command "IOSCALING".

Related information

2.1 CIU 261

7.4 IO 270 operation

7.5 Self-triggered IO event messages

7.4 IO 270 operation

IOSTATUS

Command to request status. The CIM 260 module replies with information about the status of IO 270. The measured values are as reported by the IO 270 device.

Reply to IOSTATUS	Explanation to each line
AI1: 87.1 %	[-] if used as DI1, [sensor error] if sensor signal fault (Reg. 01211).
AI2: -	[-] if used as DI2, [sensor error] if sensor signal fault (Reg. 01212).
TI1: 48.4 C	[sensor error] if sensor signal fault (Reg. 01213).
DI1: -	[-] if used as AI1.
DI2: On	[-] if used as AI2.
DI3: Off	-
DI4: On	-
AO1: 55.6 %	Using default 0-100 % scaling in this example.
DO1: On	Terminal NO = closed, terminal NC = open.
IOSMS: On	IO event-triggered SMS is enabled.

A closed digital input is named "Off" and an open digital input is named "On".

This example assumes that user-defined signal names or analog signal scaling has not been configured.

Since digital inputs (DI1-DI4) are normally open, an open contact is named "Off" and a closed contact is named "On".
If signal names or analog signal scaling has been configured, the reply to "IOSTATUS" could, for example, look like this:

Reply to IOSTATUS	Explanation to each line
AI1: Tank pressure: 4.59 bar	[-] if used as DI1, [sensor error] if sensor signal fault (Reg. 01211).
AI2: Tank outlet: 34.2 m3/h	[-] if used as DI2, [sensor error] if sensor signal fault (Reg. 01212).
TI1: Air temperature: -5.6 °C	TI1 scaling is always [-50; 204] °C.
DI1: -	[-] if used as AI1.
DI2: -	[-] if used as AI2.
DI3: Burglar alarm: Off	-
DI4: Door switch: Off	-
AO1: Cooling fan: 55.6 %	Using default 0-100 % scaling in this example.
DO1: Light switch: On	Terminal NO = closed, terminal NC = open.
IOSMS: On	IO event-triggered SMS is enabled.

If there is no IO 270 or the connection to it is faulty, CIM 260 sends a negative acknowledgement:
"**IOSTATUS: IO 270 module not present**"

IOSCALING

Command for status of signal scaling. The CIM 260 module replies with information about the status of the analog signal scaling of IO 270.

Reply to IOSCALING	Explanation to each line
AI1: [0.0; 10.0] bar	[-] if used as DI1.
AI2: [-20.0; 80.0] °C	[-] if used as DI2.
TI1: [-50; 204] °C	This scaling is fixed and cannot be changed by the user.
AO1: [0; 100] %	The example shows the default (factory) scaling.

User-defined signal scaling is used by the SMS interface, but the Modbus register scaling is as seen in the below comparison.

Signal	Modbus register	Modbus scaling	SMS scaling
AI1	10223 IO270_AnalogInput1	0.1 %	[$AI1_{min}$; $AI1_{max}$]
AI2	10224 IO270_AnalogInput2	0.1 %	[$AI2_{min}$; $AI2_{max}$]
AO1	01201 SetAnalogOutput1	0.1 %	[$AO1_{min}$; $AO1_{max}$]

ANALOGOUT <value>

Control command for setting the value of AO1. The argument "value = [0.0; 100.0] %" is default if no user-defined scaling is used. "value" is written to Modbus register 01201: IO270_SetAnalogOut.

If analog signal scaling is used for AO1, it must also be used when specifying the signal value to send to AO1. See the section about the configuration of IO 270 signal scaling.

Example

The analog output signal range has been configured to [-20; 40] °C.
"**ANALOGOUT -5.8**"

The resulting voltage at AO1 will be: (-5.8 - $range_{min}$) / ($range_{max}$ - $range_{min}$)* 10 V = 2.36 V.

Taking the scaling range and resolution into consideration, the value is mapped as precisely as possible and sent to the analog output of IO 270. A small rounding deviation may occur.

CIM 260 sends an acknowledgement in the form of an "IOSTATUS" message to the phone from which the SMS command was sent.

If <value> is not a legal floating point number, for instance if it contains illegal characters, CIM 260 sends a negative acknowledgement:

"**ANALOGOUT: Illegal command parameter. Must be a number**"

If <value> is outside the scaling range, CIM 260 sends a negative acknowledgement:

"**ANALOGOUT: Illegal command parameter. Must be inside scaling range**"

If an IO 270 is incorrectly installed or the connection is faulty, CIM 260 sends a negative acknowledgement:

"**ANALOGOUT: IO 270 module not present**"

RELAYOUT <ON | OFF>

Control command for the output relay.

"ON" means that the relay is in its activated state. Terminal NO = closed, terminal NC = open.

The "ON" or "OFF" value is written to Modbus register 01202 SetRelayOut with the values "ON = 1" and "OFF = 0".

CIM 260 sends an acknowledgement in the form of an "IOSTATUS" message to the phone from which the SMS command was sent.

If the argument differs from "ON" or "OFF", CIM 260 sends a negative acknowledgement:

"**RELAYOUT: Illegal command parameter. Must be ON or OFF**"

If there is no IO 270 or the connection is faulty, CIM 260 sends a negative acknowledgement:

"**RELAYOUT: IO 270 module not present**"

Related information

7.2 Configuration of IO 270 signal names

7.3 Configuration of IO 270 signal scaling

7.5 Self-triggered IO event messages

The event that a digital input changes its state from "Off" (low) to "On" (high) or from "On" (high) to "Off" (low) can be configured to trigger an SMS informing the user about the event. Similarly, when an analog input becomes higher or lower than a configurable monitor level, this can also trigger an SMS.

We refer to such an SMS as a self-triggered IO event message. This function can be enabled or disabled.

IOSMS <ON | OFF>

Configuration command for enabling or disabling the transmission of self-triggered IO event messages. Factory setting: OFF.

CIM 260 acknowledges the change with this message:

"**IOSMS: changed to <ON | OFF>**"

Changing the status of "IOSMS" is possible whether IO 270 is present or not, as long as the command syntax is correct. Seeing the status of "IOSMS" is only possible with the "IOSTATUS" command though, and only if IO 270 is present.

If the command parameter is illegal or missing, CIM 260 sends a negative acknowledgement:

"**IOSMS: Illegal command parameter. Must be ON or OFF.**"

When self-triggered IO event messages are enabled, messages like the examples below are sent when a digital input changes its state or an analog input value crosses the monitor level:

IO event message example	Description
DI1: → On	DI1 is now "On" (high).
DI3: → Off	DI3 is now "Off" (low).
DI4, Door switch: → Off	DI4 is now "Off" (low).
AI1, Tank pressure: → High	AI1 exceeds level.
AI2: → High	AI2 exceeds level.
TI1, Water temperature: → Low	TI1 falls below level.

The event latching time is the time that the event condition must be kept for the event to be triggered.

It works as a time hysteresis.

If the condition changes do not last as long as the event latching time, it is not triggered.

The event latching time is 3 seconds.

SETAI1LEVEL <value | "empty">

This is a configuration command for the cellular module which is used to configure the monitor level for AI1.

A similar command exists for AI2 and TI1. The three monitor level values are not available on Modbus.

"value = [0.0; 100.0] %" as default if no user-defined scaling is used. See the section about configuration of IO 270 signal scaling.

If analog signal scaling is used for AO1, the scaling must also be used when specifying the signal value to send to AO1.

Example

The analog output signal range is configured to [0; 50] m^3/h.

To get a monitor level of 35 m^3/h, write:

"**SETAI1LEVEL 35**"

CIM 260 sends this message to the phone from which the SMS command was sent:

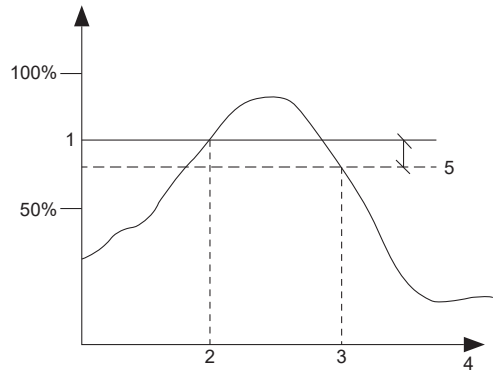
"**SETAI1LEVEL: Analog input 1 level set to <value> <alpha string>**"

The alpha string represents the unit.

If <value> is not a legal floating point number (for instance if it contains illegal characters), CIM 260 sends a negative acknowledgement:
"**SETAI1LEVEL: Illegal command parameter. Must be a number**"
If <value> is outside the scaling range, CIM 260 sends a negative acknowledgement:
"**SETAI1LEVEL: Illegal command parameter. Must be inside scaling range**"
If an empty argument is used, the monitor level is reset to the factory-set default value equal to the maximum range of the input, 100 %.
You can configure monitor levels whether IO 270 is present or not, as long as the command syntax is correct.

GETLEVELS

Status command for displaying the monitor values of AI1, AI2 and TI1. Below is an example of a reply:
"**[Installation name]**
Monitor level AI1: 8 bar
Monitor level AI2: 35 m^3/h
Monitor level TI1: -3.5 °C"
The levels are shown as scaled (as above) if they have been given a scaling.



TM057990

Event messages triggered by the monitor level of an analog input

Pos.	Description
1	Monitor level, as set with associated level setting command, for example, SETAI1LEVEL.
2	Send SMS, AI1: → High
3	Send SMS, AI1: → Low
4	Time axis
5	Hysteresis limit, fixed to -10 %.

Related information

7.3 Configuration of IO 270 signal scaling

7.6 Digital input naming relations

DI contact	DI status name	Associated Modbus bit (IO270_DigitalInputs)	M2M triggered SMS
Open	Off	0	DI#LOW
Closed	On	1	DI#HIGH

7.7 Configuration of alarm code texts

Alarms and warnings from connected devices, GENIpro device events, are normally sent as STATUS1 messages to all phone numbers in the phone number list. The messages contain the standard English text description that belongs to the event code in question.
You can configure your own text description for up to 10 different event codes. You do it one at a time with the cellular module configuration command:

SETCODETEXT <event code> <name>

You change the code texts one at a time by repeating the command.
If you leave out the <name> argument, you reset the code of the text to the original description. If you leave out both arguments, you reset all code texts to the original description. Below you find the possible combinations and their acknowledgements:

Command	SETCODETEXT <event code> <name>	
Positive acknowledgement	SETCODETEXT: Text for event code <event code> changed to: <name>	
Negative acknowledgement	SETCODETEXT: Illegal command parameter	If the syntax of a parameter is illegal.

Command	SETCODETEXT <event code> <"empty">	
Positive acknowledgement	SETCODETEXT: Text for event code <event code> reset to factory text	
Negative acknowledgement	SETCODETEXT: Illegal command parameter	If the syntax of a parameter is illegal.

Command	SETCODETEXT <"empty"> <"empty">
Positive acknowledgement	SETCODETEXT: Text for all event codes reset to factory text
Negative acknowledgement	- None -

You can have maximum 10 user-defined event code texts. If the maximum number of texts is exceeded, the negative acknowledgement appears:

"**SETCODETEXT: Limit of max. 10 user-defined event code texts is reached**"

GETCODETEXT <event code>

Use the GETCODETEXT to read the text descriptions in an event code. Below you find the possible acknowledgements:

GETCODETEXT: Text for event code <event code>: <name> (factory text).

<name> is the description you have configured.

The parenthesis (factory text) is added if the text is the factory-set default text.

GETCODETEXT: Text for event code <event code>: <name> (user-defined text).

<name> is the description you have configured.

The parenthesis (user-defined text) is added if the text is defined by the user.

GETCODETEXT: Event code <event code> is unknown.

If the specified <event code> is unknown to the CIM 260 module. Self-triggered IO event messages for machine-to-machine interfacing.

You can use the self-triggered IO event messages as control/status commands to control or monitor another controller. In that case, another text format, which is totally configurable, is needed instead of the relatively inflexible and human-oriented text format explained in the previous chapter.

Below is each IO event listed with the particular command that defines the event text for it.

Signal	Event	Command to define event text	Default
AI1	Above monitor level	AI1HIGH <name | "empty">	Empty
	Below monitor level	AI1LOW <name | "empty">	Empty
AI2	Above monitor level	AI2HIGH <name | "empty">	Empty
	Below monitor level	AI2LOW <name | "empty">	Empty
TI1	Above monitor level	TI1HIGH <name | "empty">	Empty
	Below monitor level	TI1LOW <name | "empty">	Empty
DI1	Opened	DI1HIGH <name | "empty">	Empty
	Closed	DI1LOW <name | "empty">	Empty
DI2	Opened	DI2HIGH <name | "empty">	Empty
	Closed	DI2LOW <name | "empty">	Empty
DI3	Opened	DI3HIGH <name | "empty">	Empty
	Closed	DI3LOW <name | "empty">	Empty
DI4	Opened	DI4HIGH <name | "empty">	Empty
	Closed	DI4LOW <name | "empty">	Empty

An acknowledgement SMS is sent to the phone. This is shown below for command AI1HIGH.

Positive acknowledgement (changed naming)	AI1HIGH: New event text defined <name>
Positive acknowledgement (reset to "empty")	AI1HIGH: User defined event text cleared
Negative acknowledgement	AI1HIGH: Illegal event text format See the symbolic parameters in the section about CIU 261.
Negative acknowledgement if used as DI1	AI1HIGH: AI1 not available

A negative acknowledgement appears if the command parameter is missing or has a syntax error or if the signal is not available.

Whenever an IO event text is defined for a particular IO, the name it is associated with will not be used in SMS messages but is still preserved. Instead the event text will be used. See the section about configuration of IO 270 signal names.

An example illustrates this for AI1.

Command example	Description
AI1NAME Water level	Gives AI1 the name "Water level"
AI1SCALE 0 10 m	Scales "Water level" (AI1) to [0; 10] m
SETAI1LEVEL 5	Sets the "Water level" (AI1) monitor level to 5 m

With this setting, IO event messages triggered by AI1 are:

"**AI1, Water level: -> High**"

"**AI1, Water level: -> Low**"
Now defining event texts for these events:
"**AI1HIGH STOP**"
"**AI1LOW START**"
With this setting, IO event messages triggered by AI1 are substituted by the event texts:

Substituted event text	Description
START	For "Water level" (AI1) going low
STOP	For "Water level" (AI1) going high

Clearing the event texts makes the standard, human-oriented messages active again.
Only IO events with a defined event text use this event text. The rest uses the standard format.

GETEVENTTEXTS
Status command to display the event texts of AI1, AI2, TI1 and DI1 to DI4.
Below is an example of a reply:

Reply to GETEVENTTEXTS	Explanation to each line
AI1HIGH: Level alarm	[-] if used as DI1
AI1LOW: Level ok	[-] if used as DI2
AI2HIGH: Overflow alarm	-
AI2LOW: Overflow ok	-
TI1HIGH: -	No event text defined
TI1LOW: -	No event text defined
DI1HIGH: P1 alarm	[-] if used for AI1
DI1LOW: P1 ok	[-] if used for AI1
DI2HIGH: P2 alarm	[-] if used for AI2
DI2LOW: P2 ok	[-] if used for AI2
DI1HIGH: P3 alarm	-
DI1LOW: P3 ok	-
DI2HIGH: P4 alarm	-
DI2LOW: P4 ok	-

Related information

2.1 CIU 261

7.2 Configuration of IO 270 signal names

8. Overview of commands

8.1 Configuration commands for CIM 260

Command	Description	Default setting
Basic configuration		
INIT <access code>	Initialising CIM 260	-
ROAMING <ON | OFF>	Enabling or disabling roaming	ON
Monitoring and control via SMS		
ACCESS <LIST | CODE | BOTH | NONE>	Changing the access option	BOTH
STATUSPROTECT <ON | OFF>	Enabling the status protection	OFF
CODE <access code>	Changing the access code	-
ADDNUMBER [phone number]	Adding a phone number	-
DELNUMBER [phone number | ALL]	Deleting a phone number	-
NAME <installation name>	Setting the installation name	No name
HEARTBEAT <hour of day>, <day of week>, <day of week>	Setting the heartbeat value	OFF
TIME <year>, <month>, <day>, <hour>, <minute>	Setting the time	-
SMSALARM <ON | OFF>	Enabling the SMS alarms	ON
SMSWARN <ON | OFF>	Enabling the SMS warnings	ON
SMSLIMIT <ON | OFF>	Enabling the event message limit	ON
SMSCONTROL <ON | OFF>	Enabling the SMS control of the product	OFF
BLOCKING <ON | OFF>	Enabling the SMS spam blocking	OFF
CONNECTIONALARM <ON | OFF>	Enabling the product connection alarm	ON
SETCODETEXT <event code> <text>	Setting the user-defined code texts	Default texts

Command	Description	Default setting
Data connection		
APN <APN string>	Setting the APN	-
USERNAME <alpha numeric string>	Setting the APN login user name	-
PASSWORD <alpha numeric string>	Setting the APN login password	-
AUTHENTICATION <NORMAL | SECURE>	Setting the APN authentication	NORMAL
CONNECTION <SERVER | CLIENT | DISABLED>	Setting the connection mode	SERVER
DATAROAMING <ON | OFF>	Enabling the data roaming	OFF
SETSCADACODE <access code>	Setting the SCADA access code	-
SCADACODE <ON | OFF>	Enabling the SCADA access code	OFF
MODBUSADDR <1-247>	Setting the Modbus address	231
MODBUSPORT <port number>	Setting the Modbus port number	502
GENIPROPORT <port number>	Setting the GENIpro port number	49152
GENIPRO <ON | OFF>	Enabling the GENIpro port	OFF
PING <ON | OFF>	Enabling support of ping command	OFF
DATASILENCE <time>	Setting the data silence time (min)	60 min
SERVER <APN string | IP address>	Setting the subsystem server	-
SETAPN <APN>, <Modbus port>, <GENIpro port number>, <user name>, <password>, <authentication>, <connection>, <Data roaming>, <data silence>	Complete setting of APN connection	-

Related information

3. Configuring CIM 260

3.1 Basic configuration

8.2 Status commands for CIM 260

Command	Description
Basic status	
SMSSETTINGS	Status of basic configuration
LIST	Phone number list
SIGNALLEVEL	Cellular network signal level
RSSI	Radio Signal Strength Indicator
VERSION	Version information
BATTERY	Battery status
NETWORK	Cellular network status
SMSCOUNT	SMS statistics
GETCODETEXT <event code>	Reading the user-defined event code text
APN status	
APNSETTINGS	APN connection settings
APNSTATUS	APN connection status
APNDATA	Modbus TCP status
SCADA status	
SCADA	SCADA settings

8.3 Control commands for CIM 260

Command	Description
RESETCOUNT	Resetting the SMS counters
RESTARTAPN	Restarting the APN connection

8.4 Status commands for the product

Command	Description
STATUS1	Primary status of the Grundfos product
STATUS2	Secondary status of the Grundfos product

8.5 Control commands for the product

Command	Description
RESETALARM	Resetting alarms and warnings
REMOTE	Setting to remote control
LOCAL	Setting to local control
START or NORMAL	Setting to operating mode "Start"
STOP	Setting to operating mode "Stop"
MIN	Setting to operating mode "Min."
MAX	Setting to operating mode "Max."
SETPOINT <value>	Setting the setpoint
CONSTCURVE	Setting to control mode "Constant curve"
CONSTPRESS	Setting to control mode "Constant pressure"
PROPPRESS	Setting to control mode "Proportional pressure"
$AUTO_{ADAPT}$	Setting to control mode "$AUTO_{ADAPT}$"
CONSTTEMP	Setting to control mode "Constant Temperature"
$FLOW_{ADAPT}$	Setting to control mode "$FLOW_{ADAPT}$"
CLSENSOR	Setting to control mode "Closed loop sensor"
CONSTFLOW	Setting to control mode "Constant flow"
CONSTLEVEL	Setting to control mode "Constant level"
CONSTDIFFPRESS	Setting to control mode "Constant differential pressure"
CONSTDIFFTEMP	Setting to control mode "Constant differential temperature"
STARTP <number>	Setting to force a pump to start that is otherwise controlled by a local controller
STOPP <number>	Setting to force a pump to stop that is otherwise controlled by a local controller
AUTOP <number>	Setting to release a pump that is forced to start or stop. It returns to auto mode and is controlled by the local controller.
ALARMSIM <event code>	Simulating an alarm with event code
WARNSIM <event code>	Simulating a warning with event code

8.6 IO 270-related configuration commands

Configuration		
Command	**Description**	**Default setting**
AI1NAME <text>	Naming of analog input 1 (AI1)	Empty
AI2NAME <text>	Naming of analog input 2 (AI2)	Empty
TI1NAME <text>	Naming of temperature input (TI1)	Empty
DI1NAME <text>	Naming of digital input 1 (DI1)	Empty
DI2NAME <text>	Naming of digital input 2 (DI2)	Empty
DI3NAME <text>	Naming of digital input 3 (DI3)	Empty
DI4NAME <text>	Naming of digital input 4 (DI4)	Empty
AO1NAME <text>	Naming of analog output (AO1)	Empty
DO1NAME <text>	Naming of relay output (DO1)	Empty
AI1SCALE [<value> <value> <alpha string>]	Scaling of analog input 1 (AI1)	[0; 100] %
AI2SCALE [<value> <value> <alpha string>]	Scaling of analog input 2 (AI2)	[0; 100] %
AO1SCALE [<value> <value> <alpha string>]	Scaling of analog output (AO1)	[0; 100] %
IOSMS <ON | OFF>	Enabling or disabling self-triggered IO event messages	OFF
SETAI1LEVEL <value>	Monitor level for analog input 1 (AI1)	100 %
SETAI2LEVEL <value>	Monitor level for analog input 2 (AI2)	100 %
SETTI1LEVEL <value>	Monitor level for temperature input 1 (TI1)	100 %
AI1HIGH <name | "empty">	AI1 → above monitor level	Empty
AI1LOW <name | "empty">	AI1 → below monitor level	Empty
AI2HIGH <name | "empty">	AI2 → above monitor level	Empty
AI2LOW <name | "empty">	AI2 → below monitor level	Empty
TI1HIGH <name | "empty">	TI1 → above monitor level	Empty

Configuration		
Command	**Description**	**Default setting**
TI1LOW <name | "empty">	TI1 → below monitor level	Empty
DI1HIGH <name | "empty">	DI1 → High	Empty
DI1LOW <name | "empty">	DI1 → Low	Empty
DI2HIGH <name | "empty">	DI2 → High	Empty
DI2LOW <name | "empty">	DI2 → Low	Empty
DI3HIGH <name | "empty">	DI3 → High	Empty
DI3LOW <name | "empty">	DI3 → Low	Empty
DI4HIGH <name | "empty">	DI4 → High	Empty
DI4LOW <name | "empty">	DI4 → Low	Empty
MAINSOFF <name | "empty">	No mains supply, using battery	Empty
MAINSRET <name | "empty">	Mains supply returned	Empty

8.7 IO 270-related status commands

Status	
Command	**Description**
IOSTATUS	Status of values measured by IO 270
IOSCALING	Status of the IO 270 analog signal scaling
GETLEVELS	Displaying monitor values of AI1, AI2 and TI1

8.8 IO 270-related control commands

Control	
Command	**Description**
ANALOGOUT <value>	Setting the value of analog output AO1
RELAYOUT <ON|OFF>	Operating the value of relay output DO1

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