Installation Manual

FGC Communication Module

FLYGT
a xylem brand

Table of Contents

Read This First

Introduction

Before any installation or configuration, read this chapter carefully. It contains general information on documentation, safety and guarantee.

Product Documentation

This manual describes the configuration when the communication module is used in an FGC 313/323.

If the communication module is used in an FGC series I or FGC Series II, there are limitations and differences, see *Appendix C: FGC Versions* (page 27).

For a complete list of FGC menus and their default values, refer to the FGC User manual.

Safety Regulations for Owner/Operator

- All government regulations, local health and safety directives must be observed.
- All danger due to electricity must be avoided.

Guarantee

- Modifications or changes to the unit/installation should be carried out only after consulting Xylem.
- Original spare parts and accessories authorized by the manufacturer are essential for compliance with the terms of the guarantee. The use of other parts may invalidate any claims for warranty or compensation.

This Manual

This manual is applicable to the following versions:

FGC Communication Module:	• Hardware: 1.00 • Software: FC 1.50, or later
FGC:	• Main board: 1.02, 1.03, 2.02, 2.03, 2.04, 2.05, 3.05 • Software: M 1.30, M 2.00 or later, M 3.00 or later

Used Symbols

Special information about a function.

Information relevant when the FGC communicates with a SCADA system.

Information about alarms.

Terminology

The table below describes the terms and abbreviations that are used in this manual.

Table 1

Abbreviation	Full Term	Description
SCADA	**S**upervisory **C**ontrol **A**nd **D**ata **A**cquisition	PC based system aiming to create an overview; the operator can monitor process information and influence and change the process values. The system allows logging, trending and remote commands as well as presenting process data as significant digits, staples, curves, trends, or as symbols varying in colors and sizes.
RTU	**R**emote **T**erminal **U**nit	Unit for controlling a supervising a pump station, for example FGC 313/323.

Communication Options

Introduction

This chapter gives a overview of possible communication options:

- SMS messaging
- Dialled line
- Fixed line
- MTC-COM

SMS Messaging

When the FGC is connected to a GSM modem, the FGC can send alarms as SMS directly to telephones capable of receiving them. Up to three different numbers can be listed. Any SMS will be sent to these numbers in the same order as they are listed.

A SCADA system can still dial the FGC to monitor it.

Dialled Communication

Dialled communication is when the FGC is connected to either a Hayes compatible:

- GSM modem (SMS messaging is a special case, see above)
- PSTN modem

The FGC can dial a SCADA system to report alarms. The SCADA system can dial the FGC to monitor it and collect data.

Figure 1

Fixed Line Communication

Fixed line communication is when the FGC is connected to either:

- Fix line modem
- Radio modem
- Directly to a PC with a serial cable

The FGC and a SCADA system can communicate with each other over the fixed line. There are two options:

- Full duplex (FDX) is used for radio modems, serial cables, and 4-wire fix line modems.
- Half duplex (HDX) is used for 2-wire fix line modems.

Figure 2

MTC-COM

The FGC can communicate with an AquaView SCADA system through a communication unit, MTC-COM. It acts as a telephone exchange or modem selector.

The FGC is connected to the MTC-COM through a GSM modem, PSTN modem, radio modem, or directly with a signal cable.

Figure 3

Installation

Introduction

The FGC communication module enables communication with a SCADA system, for example AquaView.

The module is mounted inside the FGC (Flygt General pump Controller).

Installing the Module

How to install the communication module on the FGC main board is described below.

Mounting the Module

1. Turn off mains power for the FGC.
2. Unscrew the four screws that holds the front lid of the FGC.
3. Remove the front lid.
4. If installed, remove the battery backup module.

5. Place the communication module so that:
   - Connector at the back of the module is in line with the four pins on the FGC main board.
   - Four spacers on the back of the module are in line with the corresponding holes in the FGC main board.

   The figure below shows the connector and spacers on the back of the FGC communication module.

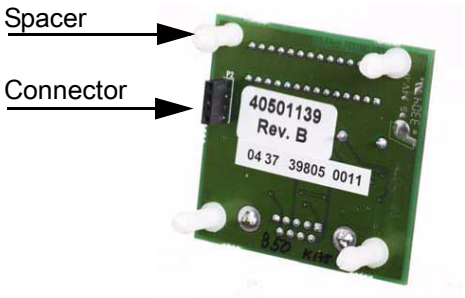


Figure 4

The figure below shows the pins for the connector and holes for spacers on the FGC main board.

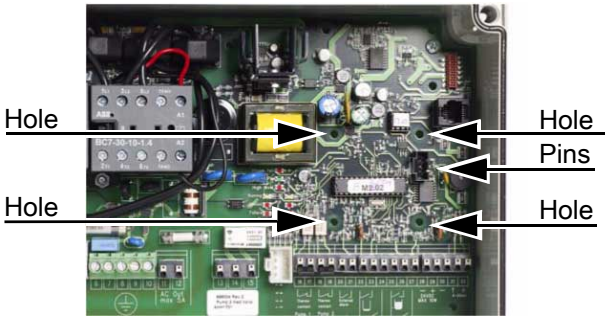


Figure 5

6. Press the communication module gently until the spacers snap into the holes.

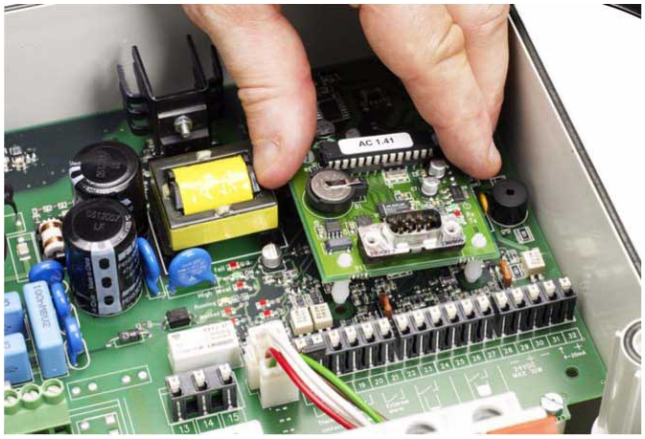


Figure 6

When the communication module is in place, it will receive its power supply from the FGC.

Connecting the Module

1. Connect the module either to a modem or directly to a PC/MTC-COM with a signal cable.
   - Modem: Continue with *List item.* (page 9)
   - PC/MTC-COM: Skip to *List item.* (page 9)

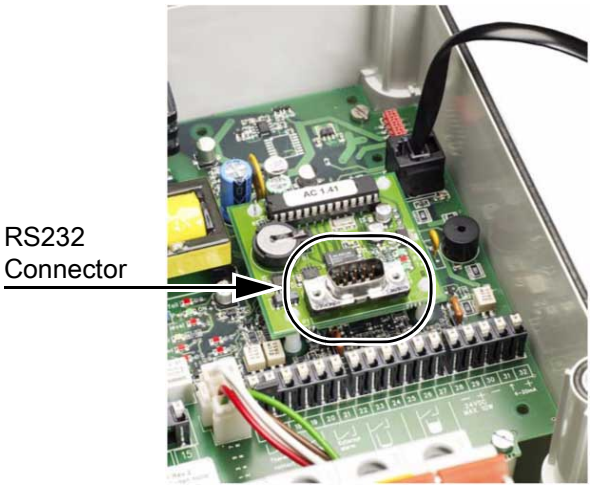


Figure 7

2. To connect the module to a modem:
   1. Read about compatible modems in the separate document **Modem Configuration**.
   2. Make sure there is no power supply for the modem.
   3. Connect a straight serial cable to the modem.
   4. Connect the cable to the RS232 connector on the communication module.
   5. To power the modem, you can use the internal supply from the FGC main board or an external source.

      Connect the modem to its power supply.

      (For information on how to connect to the power supply from the FGC main board, refer to the FGC Installation manual.)
   6. Skip to *List item.* (page 10).
3. To connect the module directly to a PC/MTC-COM with a signal cable:
   1. Connect a serial null-modem cable to the PC/MTC-COM.
   2. Connect the cable to the RS232 connector on the communication module.

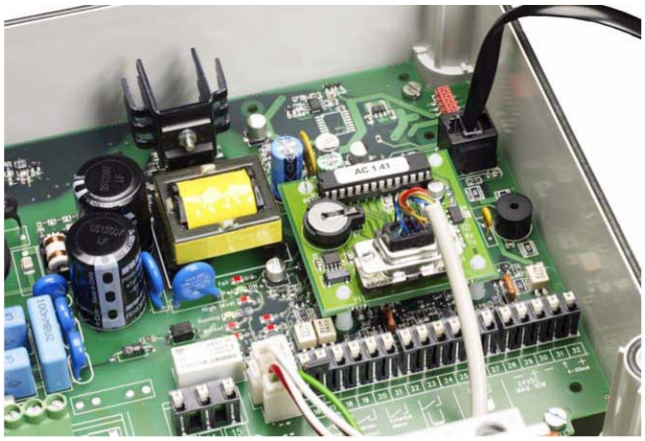


Figure 8

Checking the Module

1. If previously removed, mount the battery backup module in the FGC.
2. Turn on mains power for the FGC.
3. If you use a modem connected to an external power supply, turn on that power supply.
4. If you use a modem, turn it on.
5. Check the LEDs on the module:
   - Power LED indicates if the power supply is ok.
   - RX LED indicates when the module receivers information
   - TX LED indicates when the module transmits information.

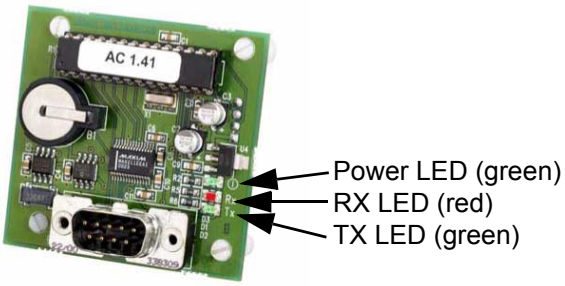


Figure 9

6. Fasten the front lid of the FGC.
7. Fasten the four screws that holds the front lid.

Technical data

Technical data for the FGC communication module:

Table 2

Size	85x64mm.
Connection	Socket to main board. Cable for external device.
Power supply	From FGC main board.
Indications	LED for RX = receive LED for TX = transmit LED for power supply
Real time clock	Date and time (hours, minutes and seconds). The clock has its own battery backup that lasts for more than 5 years.
Protocol	AquaCom, Comli, Modbus, or SMS text.
User interface	Configured through the FGC or FGC-term (a separate, hand-held display-unit).

For technical data on the FGC, refer to its Technical specification.

Communication Configuration

Introduction

This chapter describes communication configuration. For information on available options, see also *Communication Options* (page 5).

Configuring SMS Messaging

SMS messaging only works with GSM modems.

To configure SMS messaging:

Configuring the Modem

1. Configure the GSM modem using a PC, see also *Appendix A: Configuring a Modem* (page 24).

Configuring the FGC

1. Select "GSM/Hayes predef." in the Communication **COM1** menu (18_).
2. Enter the speed used with the modem (2400-57600 bps) in the **Speed COM1** menu (18_1).
3. Select "AquaCom/SMS" in the Protocol COM1 menu (18_2).
4. Enter the current date and time in the Date and Time menu (12_).

   This date and time is included in any sent SMS, but also used when sampling trend and report data.
5. Enter the telephone number to the (first) SMS receiver in the **Tele no. CS/SMS** menu (12_1).
6. To use alarm handling with more than one SMS receiver:
   1. Enter the telephone number to a second SMS receiver in the **Tele no. SMS 2** menu (12_2).
   2. Enter the telephone number to a third SMS receiver in the **Tele no. SMS 3** menu (12_3).

If a space (empty field) in entered as the first part of a telephone number, it will be excluded as SMS receiver.

7. Enter a name for the station in the Station name menu (12_6). This name is included in any SMS sent from the FGC.

If desired, you can also configure alarm options as described in *Configuration Options - Alarms Sent as SMS* (page 14).

Configuring Dialled Line

To configure a dialled line:

Configuring the Modem

1. If you use a Hayes compatible PSTN modem, skip to *List item.* (page 12).

   Otherwise, configure the GSM modem using a PC, see also *Appendix A: Configuring a Modem* (page 24).

Configuring the FGC

1. In the **Communication COM1** menu (18_), select:
   - "GSM/Hayes predef." when you use a GSM modem. (If an MTC-COM unit is included in the system, you have to select this option).
   - "Hayes modem" when you use a Hayes compatible PSTN modem.
2. Enter a speed (2400-57600 bps) in the Speed COM1 menu (18_1).
   - If you use a Hayes compatible PSTN modem, and it supports autobauding, set the speed as high as possible.
   - Otherwise, enter the speed used with the modem.
3. In the **Protocol COM1** menu (18_2), select either:
   - "AquaCom dialled"
   - "Modbus dialled"
   - "Comli dialled".
4. Enter the current date and time in the Date and Time menu (12_).

   This date and time is included as alarm information, but also used when sampling trend and report data.
5. Enter the telephone number to the SCADA system or MTC-COM unit in the Tele no. CS/SMS menu (12_1).
6. Enter a number (0–899) in the **Station no./id** menu (12_7). This number must uniquely identify the FGC within the SCADA system.

If desired, you can also configure alarm options as described in *Configuration Options - Alarms Sent to SCADA System* (page 15).

Configuring Fixed Line

To configure a fixed line:

1. In the **Communication COM1** menu (18_), select:
   - "RS232 FDX" to use Full Duplex
   - "RS232 HDX" to use Half Duplex
2. In the **Speed COM1** menu (18_1), set the speed (2400-57600 bps) to the port baudrate used in the SCADA system.

The FGC uses:

- Data bits = 8
- Parity = None
- Stop bits = 1

3. In the **Protocol COM1** menu (18_2), select either:
   - "AquaCom fixed"
   - "Modbus fixed"
   - "Comli fixed"
4. If you use a fix line modem and the communication is set to "RS232 HDX", enter a time delay (25-1000 ms) in the **RTS delay COM1** menu (18_3).

   Low delay means faster communication:
   - Generally, use the same value as in the SCADA system.
   - Try a higher value if there are problems with the communication.
5. Enter a maximum buffer size (80-4000 bytes) in the **Max buffer size** menu (18_4). The buffer size limits the amount of trend data that can be sent at a time.

   If you use a radio modem with a limited buffer or there are disturbances, try a lower value, for example 200.
6. Enter the current date and time in the Date and Time menu (12_).

   This date and time is included as alarm information, but also used when sampling trend and report data.
7. Enter a number (0–899) in the **Station no./id** menu (12_7). This number must uniquely identify the FGC within the SCADA system.

In an Aquaview SCADA system, the station number and fixed line id must be the same value.

If desired, you can also configure alarm options as described in *Configuration Options - Alarms Sent to SCADA System* (page 15).

Alarm Configuration

Introduction

This chapter describes alarm configuration. It is generally different depending on whether the FGC sends out the alarms as SMS or sends them to a SCADA system.

Configuration Options - Alarms Sent as SMS

Alarm Priority

When sending out alarms as SMS, the alarm priority determines what happens with the alarm.

A Alarm is sent to SMS receivers.

B Alarm is sent to SMS receivers.

C Alarm is not sent out. It is only local in the FGC.

D Alarm is sent to SMS receivers according to the D-alarm time frame in the FGC.

To change the alarm priority for an alarm:

1. If necessary, select "Yes" in the Parameter menu (6).
2. Select the alarm in the Alarm prio.index menu (11_4).
3. Select an alarm priority in the Alarm priority menu (11_5).

D-alarm Time Frame

D-alarms are sent out as SMS only between the specified **D-alarm start time** and **D-alarm end time**. If the alarm occurs at any other time, the FGC will wait until the D-alarm time frame begins and then send the alarm.

Example: Alarms are sent out between 08:00 and 16:30.

To specify the start and end time:

1. If necessary, select "Yes" in the Parameter menu (6).
2. Enter the start time in the D-Alr.start time menu (11_7).
3. Enter the end time in the D-alarm end time menu (11_8).

To inhibit the function, enter **0** in both D-Alr.start time and D-alarm end time menus. Any D-alarm will be treated as an A alarm.

Acknowledgement

When the FGC sends an alarm as SMS, the FGC waits a specified time for an alarm acknowledgment. This time is called "alarm acknowledgement time".

If no alarm acknowledgement is received within the acknowledgement time, the FGC will send the alarm to cell phone number 2 in the list.

If there still is no acknowledgment, the FGC will send the alarm to cell phone number 3 in the list.

If all numbers have been dialled, but no alarm acknowledgement has been received, the specific alarm will not be sent again.

If the alarm acknowledgement is received within specified time, the alarm will not be sent out to the following cell phone numbers.

To specify alarm acknowledgement:

1. If necessary, select "Yes" in the Parameter menu (6).
2. In the **SMS Ack. time** menu (12_4), enter either:
   - Alarm acknowledgement time (minutes)
   - "0" to disable the acknowledge request.

If the acknowledge time is set to 0, the FGC will not wait for any acknowledgement. Instead, the alarm is sent out directly as SMS to all listed cell phone numbers.

Passive Alarms

SMS can be sent out when an alarm becomes passive. Such an alarm is called a "P-alarm".

To specify what to do with P-alarms:

1. If necessary, select "Yes" in the Parameter menu (6).
2. In the **SMS P-alarm** menu (12_5), select either:
   - "No" to not send out SMS when an alarm becomes passive.
   - "Yes" to send out SMS when an alarm becomes passive.

Configuration Options - Alarms Sent to SCADA System

Alarm Priority

When communicating with a SCADA system, the alarm priority determines what happens with the alarm.

A Alarm is sent to the SCADA system.

B Alarm is sent to the SCADA system.

C Alarm is not sent out. It is only local in the FGC.

D Alarm is sent to the SCADA system according to the D-alarm time frame in the SCADA system.

To change the alarm priority for an alarm:

1. If necessary, select "Yes" in the Parameter menu (6).
2. Select the alarm in the Alarm prio.index menu (11_4).
3. Select an alarm priority in the Alarm priority menu (11_5).

Alarm Code Filter

Each possible alarm in the FGC has a corresponding alarm code.

When an alarm is sent from the FGC to the SCADA system, the alarm message contains the alarm code for the alarm.

The SCADA system then uses the alarm text that corresponds to the alarm code.

When you change the alarm code for the external alarm in the FGC, the SCADA system will instead use the alarm text associated with the new alarm code.

To change the alarm code for the external alarm:

1. If necessary, select "Yes" in the Parameter menu (6).
2. Enter the new code in the **Code gen. input** menu (11_6).

Alarm codes are normally changed from the SCADA system. The corresponding alarm texts can also be set in the SCADA system.

Alarm Operation

Introduction

Depending on the configuration, the FGC sends a new alarm either to the SCADA system or directly to cell phones as SMS.

When sent to a SCADA system, the sending can fail, for example if the SCADA system is busy. If the sending fails, the FGC will wait for 1 minute before the next attempt. Following each successive failure, the waiting time is increased by 1 minute until 10 successive attempts have failed. The FGC will then wait for 3 hours before the dialling sequence is recommenced.

How the FGC acts when an alarm is sent out as SMS is described in *Configuration Options - Alarms Sent as SMS* (page 14).

Disabling Alarms Temporarily

When working in a pump station, you can temporarily stop any alarms from being sent out, for example to avoid false alarms when cleaning the pump sump.

When the work is finished, you have two options:

- Allow new alarms to be sent out. Any buffered alarm will be sent out as well.
- Clear the alarm buffer from any alarm. When cleared, new alarms will be allowed to be sent out.

To temporarily stop any alarm from being sent out:

1. If necessary, select "Yes" in the Parameter menu (6).
2. Select "Local" in the **Transmit Alarm** menu (11_3).

To allow alarms to be sent out:

1. If necessary, select "Yes" in the Parameter menu (6).
2. In the **Transmit Alarm** menu (11_3), select either:
   - "Clear" to clear the alarm buffer before allowing new alarms to be sent out.
   - "Remote" to allow both buffered and new alarms to be sent out.

Receiving Alarms Sent as SMS

An example of an alarm sent as SMS is shown below:

1 - Kristianstadvägen 2004-06-17

21:45 A High level (A)

The information given in the SMS is:

- Station number. In this example **1**.
- Station name. In this example **Kristianstadvägen**.
- Date and time. In this example **2004-06-17 21:45**.
- Alarm priority. In this example **A**.
- Alarm text. In this example **High level**.
- Active (A) or passive (P) alarm. In this example **(A)**.

Acknowledge Alarms Sent as SMS

To acknowledge an alarm received as SMS, you can either:

- Call the FGC.
- Reply to the SMS (no text is required).

Flygt SCADA System (AquaView)

Status

The status picture shows the momentary status of the station together with daily operating data along with a list of active alarms.

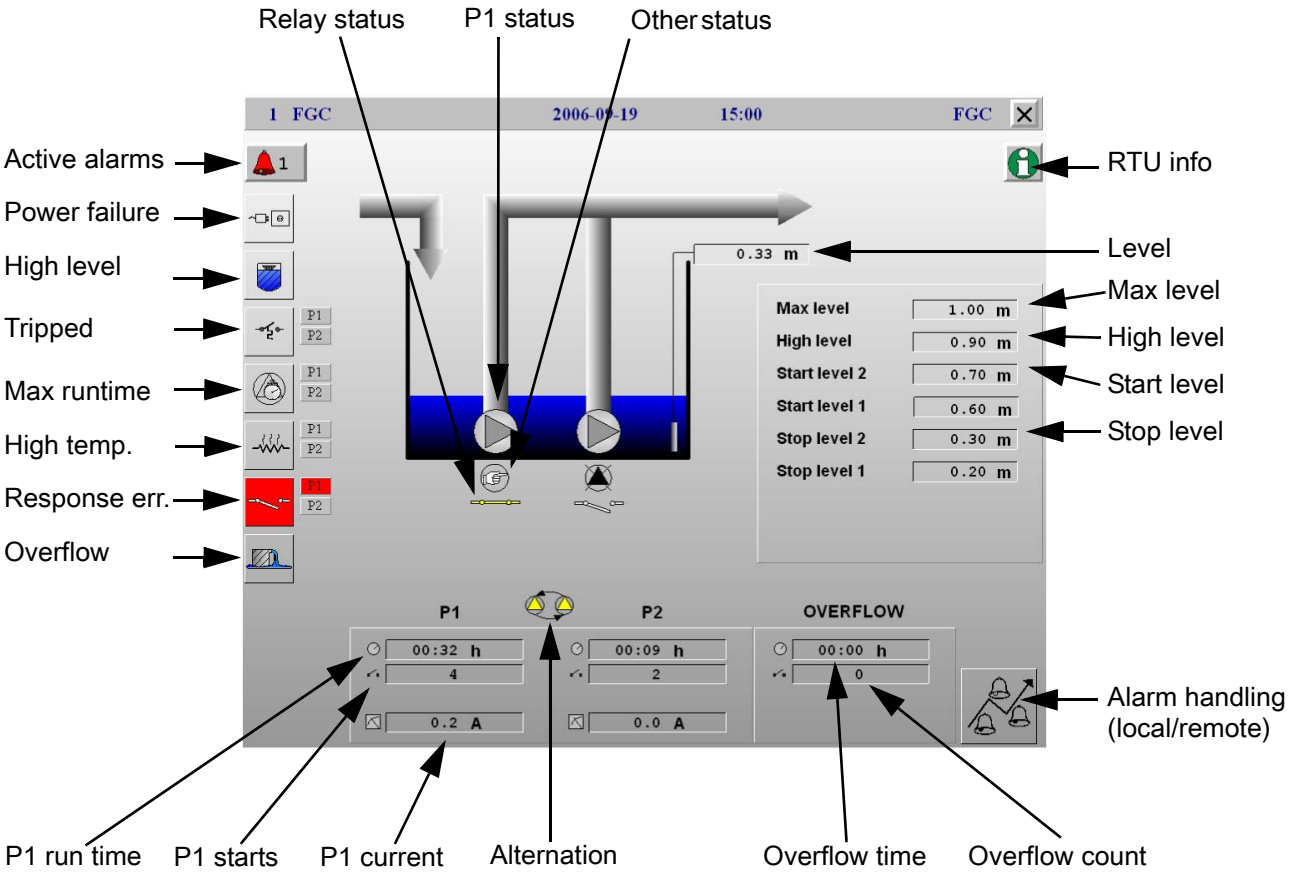


Figure 10

RTU Information

Click **RTU info** to show information on the system and application versions used in the FGC.

Remote Control

As part of the status the FGC can be remotely controlled. Right-click in the status picture to display a dialog box for remote control.

Table 3

Object	Description
P1	F1 = Start pump 1 F2 = Stop and block pumps F3 = Return control to automatic F4 = Reset unit

Object	Description
P2	F1 = Start pump 2 F2 = Stop and block pumps F3 = Return control to automatic F4 = Reset unit

The FGC reverts to the automatic mode within 30 seconds after the modem has hung up.

Set Points

Set Point Values

Set point values can be fetched and sent in random order. Maximum is 250 transmitted characters.

Alarm Code Filter

Alarm code filter can be fetched and sent in random order.

Fetching alarm code filter requires at least AquaView 1.23.01.

Alarm Priority

Alarm priorities can be fetched and sent in random order.

Fetching alarm priorities requires at least AquaView 1.23.01.

Report

The report data consists of daily data divided into 4 segments.

- 00:00 - 06:00
- 00:06 - 09:00
- 09:00 - 16:00
- 16:00 - 24:00

The FGC stores report data for 3 days.

The report data is listed in the table below.

Table 4

Text1	Text2	Text3	Description
Run time	P1	h	Running time Pump 1.
Run time	P2	h	Running time Pump 2.
Starts	P1		Number of starts pump 1.
Starts	P2		Number of starts pump 2.

Trend

The trend data consist of historical data. Possible sample resolution:

- 1-minute average
- 5-minute average

Enter the preferred resolution in the Trend resolution menu (12_8).

The FGC stores trend data for 3 days.

Trend data is listed in the table below.

Table 5

Text1	Text2	Text3	Description
Level		m	Level
Current	P1	A	P1 current. (Maximum value in period)
Current	P2	A	P2 current. (Maximum value in period)

Select the same trend resolution in the FGC settings as in the AquaView.

Other SCADA Systems

Introduction

The FGC supports several communication methods for communicating with other SCADA systems. Below is a list of available connection types and protocols.

Table 6

Protocol:	Connection Type:
Aquacom	Fixed
Aquacom	Dialled
Aquacom	Dialled + SMS Alarms
Comli	Fixed
Comli	Dialled
Modbus	Fixed
Modbus	Dialled

Note: See the Open manual for further information on protocols.

Status

The status view shows:

Table 7

Category:	Example:
Status	Pump status
Operating data	Run time (daily value)
Active alarms	High level
Parameters	Level range

Category:	Example:
Remote Control	Start/Stop P1

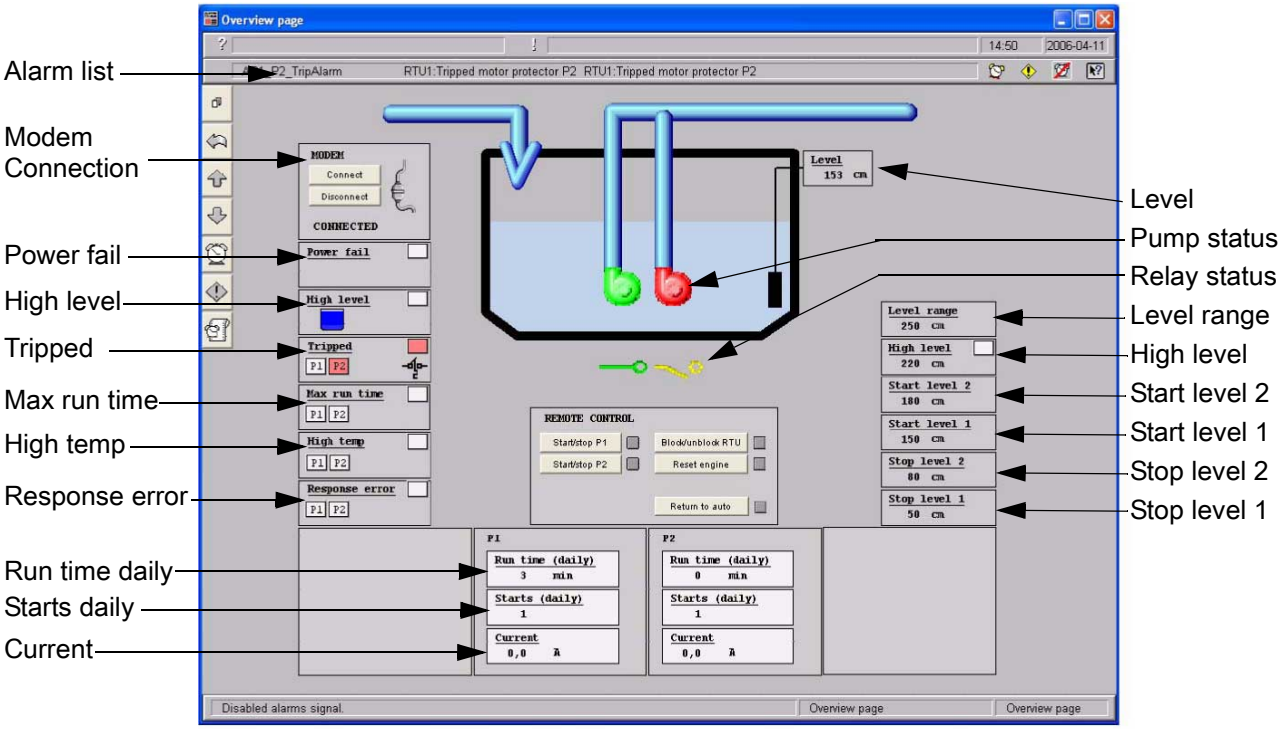


Figure 11: Example using Citect

Additional parameters, alarms, and values supported by the FGC can be added to the status view, see also *Appendix B: Tag List* (page 25).

Remote Control

The following functions can be remotely controlled:

Table 8

Start P1	Start Pump 1/Stop Pump 1
Start P2	Start Pump 2/Stop Pump 2
Block	Block all pumps
Reset	Reset motor protection
Resume to auto	Functions will no longer be controlled remotely

Note: If the communication to the FGC is lost, the pump will return to automatic mode after 30 seconds.

Parameters

The parameters shown in the SCADA status view can be altered by the operator and changes the conditions under which the FGC operates. See list below for examples of parameters that can be altered.

Example of parameters:

1. Level Range
2. High Level
3. Start Level 2
4. Start Level 1
5. Stop Level 2
6. Stop Level 1

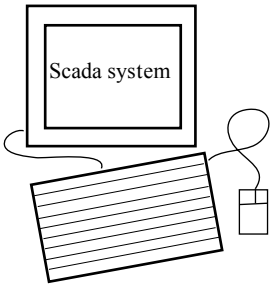
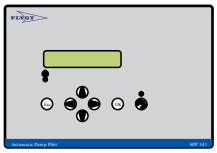
For a complete parameter list, see also *Appendix B: Tag List* (page 25).

Alarm Handling (Dialup)

When an alarm is triggered in the FGC, it will call the SCADA system in order to be polled by the SCADA system for the alarm list. For the SCADA system to recognize which FGC that is making the call, a caller id is sent to the SCADA system.

The table below shows an outgoing alarm call from the FGC to the SCADA system.

Table 9

Phase		
1	-	The alarm is triggered and the FGC calls the SCADA system
2	-	The FGC sends its **caller id**, see also *Alarm Handling (Dialup)* (page 22). The caller id field in the SCADA system must correspond to the sent caller id.
3	If **caller id** is not supported by the SCADA system it will request a PLC_ID from the FGC.	-
4	The SCADA system shall poll for active alarms.	-
5	-	The FGC acknowledges the alarm.
6	The SCADA system shall terminate the connection	-

To prevent the FGC from sending alarms not included in the SCADA system, change the alarm priority to "C" for relevant alarms in the FGC.

Caller Id

The **caller id** is automatically generated by the FGC.

Syntax: FLYGT_<protocol>_<station number>

Example: FLYGT_MODBUS_31

In previous example, the protocol is Modbus and the station number is 31.

If the station number is changed in the FGC, the caller id will change accordingly. For example, if the station number is changed from 31 to 32 in the FGC, the FGC will generate another caller id: **FLYGT_MODBUS_32**.

Max Buffer Size (Advanced Settings)

The information provided below is intended for integration purposes and should be used together with the Open manual.

The SCADA system must not exceed the Max buffer size in the FGC when requesting registers or other data.

Table 10

Protocol	Max No. of registers in one reply	Max No. of digital I/O in one reply.
Modbus	57	920
Comli[1]	32	512

Note: The max reply Buffer Size is 120 bytes.

When a GSM modem is used, GSM-network delays may cause the SCADA system to timeout. To solve this, either:

- Increase the timeout setting in the SCADA system.
- Decrease the number of registers/IO in each request.

[1] The limitation is in Comli, where the data bytes are limited to 64.

Appendix A: Configuring a Modem

Introduction

When you use a modem, you may need to configure it. If you want to use:

- Default factory settings, there is no need to configure the modem.
- Other settings, you need to configure the modem.

With an MTC-COM unit in the system, you also need to configure the modem. The factory settings cannot be used in this case.

To configure a modem:

1. Read about compatible modems and initialization strings in the separate document **Modem Configuration**.
2. Configure the modem using the relevant initialization strings, see also below for an example.

Example of a TD-33 Modem

To configure the modem:

1. Start the program Windows Hyperterminal.
2. In the displayed dialog box, enter a name for the connection, and click **OK**.
3. Select the COM-port used for the modem, for example, COM1. Click **OK**.
4. Configure the COM-port:
   - Bits per second: 9600 (or another speed you want to use)
   - Data bits: 8
   - Parity: none
   - Stop bits: 1
   - Flow control: Hardware

   When ready, click **OK**.
5. In the displayed terminal window, type "AT&F" and click **Enter**.

   This will load the factory default configuration. When ready, the modem will answer "OK".
6. Type in the initialisation string, for example: AT&FE0V1\N0W2 S0=0&W.

"&W" is part of listed initialization strings. As a result, a string is permanently stored in the modem.

7. When ready, click **Enter**.

Appendix B: Tag List

Appendix B: Tag List

Addr	Object name	Type	Raw min	Raw max	Scale			RW	Description
					Unit system	Multiply by…	…to get unit		
207	ALR_DigitalAlarmDelay	UNSIGNED INT	0	600	SI	1	s	RW	Alarm delay.
208	ALR_Mode	UNSIGNED INT	0	2	SI	1		RW	Alarm distribution mode: 0 = local, 1 = remote and 2 = clear.
98	LEV1_HighAlarmLimit	SIGNED INT	-9999	9999	SI	0,01	m	RW	High level alarm limit.
2	LEV1_Percent	UNSIGNED INT	0	100	SI	1		R	Level in percent.
92	LEV1_Range	UNSIGNED INT	0	9999	SI	0,01	m	RW	Measure range for the level sensor.
1	LEV1_Value	SIGNED INT	-9999	9999	SI	0,01	m	R	Level in meters.
58	OF1_ActiveCountTotal	UNSIGNED INT	0	65535	SI	1		R	Total number of overflows.
56	OF1_ActiveTimeTotal	UNSIGNED INT	0	65535	SI	60	s	R	Total time in minutes of overflowing.
6	P1_Current	UNSIGNED INT	0	9999	SI	0,1	A	R	Current pump 1.
121	P1_HighCurrent	UNSIGNED INT	0	9999	SI	0,1	A	RW	High current alarm limit pump 1.
34	P1_RunTimeDaily	UNSIGNED INT	0	65535	SI	60	s	R	Run time in minutes of pump 1 in the present day.
36	P1_StartCountDaily	UNSIGNED INT	0	65535	SI	1		R	Number of starts on pump 1 in the present day.
111	P1_StartLevel	SIGNED INT	-9999	9999	SI	0,01	m	RW	Start condition 1.
112	P1_StopLevel	SIGNED INT	-9999	9999	SI	0,01	m	RW	Stop condition 1.
8	P2_Current	UNSIGNED INT	0	9999	SI	0,1	A	R	Current pump 2.
141	P2_HighCurrent	UNSIGNED INT	0	9999	SI	0,1	A	RW	High current alarm limit pump 2.
38	P2_RunTimeDaily	UNSIGNED INT	0	65535	SI	60	s	R	Run time in minutes of pump 2 in the present day.
40	P2_StartCountDaily	UNSIGNED INT	0	65535	SI	1		R	Number of starts on pump 2 in the present day.
131	P2_StartLevel	SIGNED INT	-9999	9999	SI	0,01	m	RW	Start condition 2.
132	P2_StopLevel	SIGNED INT	-9999	9999	SI	0,01	m	RW	Stop condition 2.
217	PF_AlarmDelay	UNSIGNED INT	0	600	SI	1	s	RW	Power failure alarm delay.
192	S1_AllowedPumpToRun	UNSIGNED INT	0	10	SI	1		RW	Number of allowed pump to run.
50	S1_AlternationType	UNSIGNED INT	0	3	SI	1		RW	Alternation type.
197	S1_DigitalRunTime	UNSIGNED INT	0	600	SI	1	s	RW	Digital run time.
200	S1_HourRunInterval	UNSIGNED INT	1	200	SI	3600	s	RW	Forced pump start '96'-hour, interval 1 - 200 hours.
201	S1_HourRunTime	UNSIGNED INT	0	120	SI	1	s	RW	Forced pump start '96'-hour, run time.
202	S1_MaxRunTime	UNSIGNED INT	0	3000	SI	1	s	RW	Max Run time, Max: 50 min (30000).
204	S1_MinRunFloatHigh	UNSIGNED INT	0	3000	SI	1	s	RW	High level float minimum run time sump.
196	S1_StopDelay	UNSIGNED INT	0	600	SI	1	s	RW	Stop delay.

Figure 12

Addr	Object name	Type	Raw min	Raw max	Scale			RW	Description
					Unit system	Multiply by…	…to get unit		
226	SYS_AppVerAqv	UNSIGNED INT	0	65535	SI	1		R	Version of the AquaView application.
225	SYS_Language	UNSIGNED INT	0	12	SI	1		RW	Chosen language.
584	SYS_PlantNo	UNSIGNED INT	0	65535	SI	1		R	Plant identifier number
295	SYS_Version	UNSIGNED INT	0	65535	SI	1		R	System version.
101	D01_Alarm	DIGITAL	0	1				R	Alarm on digital input 1 is active.
5	LEV1_DigHighAlarm	DIGITAL	0	1				R	Digital high level sensor alarm after delay.
2	LEV1_HighAlarm	DIGITAL	0	1				R	High level alarm is active.
10	LEV1_SensorAlarm	DIGITAL	0	1				R	Sensor failure alarm.
99	OF1_Alarm	DIGITAL	0	1				R	Overflow alarm is active.
15	P1_Blocked	DIGITAL	0	1				R	Pump 1 is blocked.
14	P1_Error	DIGITAL	0	1				R	Pump 1 has an error.
22	P1_ErrorResponseAlarm	DIGITAL	0	1				R	No responce alarm is active on pump 1.
26	P1_MaxRunAlarm	DIGITAL	0	1				R	Max run alarm is active on pump 1.
18	P1_RemoteRun	DIGITAL	0	1				RW	Manual or remote start of pump 1.
13	P1_Respons e	DIGITAL	0	1				R	Responce from pump 1.
12	P1_Run	DIGITAL	0	1				R	Pump 1 is running.
23	P1_ThermAlarm	DIGITAL	0	1				R	High temperature alarm is active on pump 1.
19	P1_TripAlarm	DIGITAL	0	1				R	Tripped alarm on pump 1.
31	P2_Blocked	DIGITAL	0	1				R	Pump 2 is blocked.
30	P2_Error	DIGITAL	0	1				R	Pump 2 has an error.
38	P2_ErrorResponseAlarm	DIGITAL	0	1				R	No responce alarm is active on pump 2.
42	P2_MaxRunAlarm	DIGITAL	0	1				R	Max run alarm is active on pump 2.
34	P2_RemoteRun	DIGITAL	0	1				RW	Manual or remote start of pump 2.
29	P2_Respons e	DIGITAL	0	1				R	Responce from pump 2.
28	P2_Run	DIGITAL	0	1				R	Pump 2 is running.
39	P2_ThermAlarm	DIGITAL	0	1				R	High temperature alarm is active on pump 2.
35	P2_TripAlarm	DIGITAL	0	1				R	Tripped alarm on pump 2.
87	PALR_PersonnelAlarm	DIGITAL	0	1				R	Personnel alarm.
88	PF_Alarm	DIGITAL	0	1				R	Power failure alarm is active.
79	S1_AutoResetEnable	DIGITAL	0	1				RW	Over current auto reset function enable.
77	S1_RemoteBlock	DIGITAL	0	1				RW	P1/P2 Remote block pump.
78	S1_RemoteReset	DIGITAL	0	1				RW	Remote reset (resets alarms and pump errors).
200	S1_RevertToAuto	DIGITAL	0	1				RW	Revert to automatic control of the pumps.
97	SYS_ParamErrorAlarm	DIGITAL	0	1				R	Parameter error alarm.

Figure 13

Appendix C: FGC Versions

Introduction

This manual describes the configuration when the communication module is used in an FGC 313/323. If the communication module is used in an FGC series I or FGC Series II:

- Menu names and indications may be different. For more information on menus names and indications in FGC Series I or II, refer to its User manual.
- All communication functionality is not available. The differences are listed below.

Differences in Communication Functionality

Table 11

Functionality	FGC series I	FGC series II	FGC 313/323	Functionality described for FGC 313/323
Telephone numbers for SCADA system and SMS	1	1	3	*Communication Configuration* (page 11)
Alarm acknowledgement time	Not available	Not available	Available	*Configuration Options - Alarms Sent as SMS* (page 14)
Sending SMS when alarms become passive	Always sent	Always sent	Sending can be enabled or disabled	*Configuration Options - Alarms Sent as SMS* (page 14)
Alarm code filter	Not available	Not available	Available	*Configuration Options - Alarms Sent to SCADA System* (page 15)
Service alarm Pump 1 ("Service P1")	Not available	Not available	Available	Alarm list in FGC User manual
Service alarm Pump 2 ("Service P2")	Not available	Not available	Available	Alarm list in FGC User manual
Test alarm ("Test call!")	Not available	Not available	Available	Alarm list in FGC User manual

Xylem |ˈzīləm|

1) The tissue in plants that brings water upward from the roots
2) A leading global water technology company

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Visit our Web site for the latest version of this document and more information

The original instruction is in English. All non-English instructions are translations of the original instruction.

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