User manual

APP 541

895685_APP541_user_eng_rev1_00

Flygt

ITT Industries

This manual is applicable to the following APP 541 versions:

Hardware:

Operator panel:	AFH1801 Rev 1.02
I/O-module:	AHH1801 Rev 1.02
Com-module:	TMX1801 Rev 1.00
System Software:	2.2X
Application:	1.1X

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This document may be changed without any prior notice.

Contents

Contents

1. Read this first

Before starting using the APP 541 read this chapter carefully. It contains general information on documentation, safety and guarantee.

1.1. Product documentation

Documentation delivered with the APP 541. Check that this manual version is applicable to the delivered APP 541 version (see cover inlet).

1.2. Safety rules for the owner/ operator

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

1.3. Guarantee

- Modifications or changes to the unit/installation should be done only after consulting ITT Flygt.
- Genuine 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 the guarantee.

1.4. This manual

In order to avoid repetition of information, this manual describes how one pump P1, should be read or entered. If a second pump or more pumps, are included in the installation, the corresponding steps must be repeated on those too.

1.4.1. Symbols used

Special information about a function.

Information concerning the Central system.

Information about alarms.

1.4.2. Abbreviations

CS = Central system

RTU = **R**emote **T**erminal **U**nit

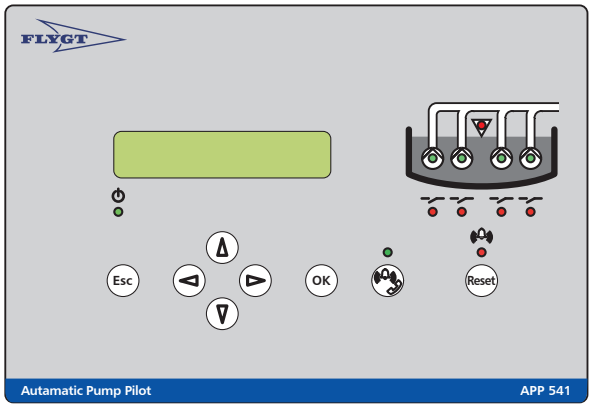
SCADA = **S**upervision **C**ontrol **A**nd **D**ata **A**cqvicition

2. Introduction

The APP 541 is a pump controller that consists of two parts, i.e. a DIN rail-mounted I/O module and a operator panel.

The APP 541 can use a modem, GSM or radio to communicate with a SCADA system e.g. the AquaView. A special communication module is available for this purpose.

2.1. Operator panel



See "Explanation of LEDs" on page 9 for an explanation of the functions.


Power LED


Alarm status LED


Relay status LED


Pump status LED


High level LED

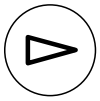

Display

2.2. Push buttons

The push buttons on the panel are used to select different menus and to edit parameter values.

Escape


Left arrow


Right arrow


Up arrow


Down arrow

OK


Remote alarm On/Off

Reset

2.3. Menu groups and menus

- The control parameters and the alarms are shown on the display on the operator panel.
- Every menu has it own name that describes the function.

See **"Appendix A: List of menus" on page 36** for a complete list of menus.

2.3.1. Menu level indicator

In addition to being identified by its name, each menu is also identified by its level and ordinal number (2_1_, 2_2_, 2_3_ etc.). This menu level Indicator is shown for 1 seconds only. If there is an underscore after the number, there is a submenu, e.g. (14_).

2.4. Viewing a menu

- To advance one menu at a time:

Press repeatedly until the desired menu is displayed.

- To scroll backwards one menu at a time:

Press repeatedly until the desired menu is displayed.

- To display the first menu in a submenu group:

Press **OK**.

- To return to the last menu shown in the previous menu group:

Press and release.

2.5. Changing a parameter

- First display the appropriate menu:

Press the **OK** button. A flashing cursor will appear.

If changing of the value is not allowed, the "**Read only**" message will be displayed instead.

If the value is numerical, advance to the required position in the menu window.

Advance with the **Right** arrow

Move cursor backwards with the **Left** arrow.

To select a higher value, press the **Up** arrow button until the required value is displayed.

To select a lower value press the **Down** arrow button until the required value is displayed.

For text menus, the next available alternative is displayed instead of a value.

To save a specified value:

Press the **OK** button.

Depending on the result, one of the following messages will be displayed:

Value stored	The value has been saved.
Low value (xx)	The value is below the permissible range (shown in the display - xx). Enter a higher value.
High value (yy)	The value is above the permissible range (shown in the display - yy). Enter a lower value.

The message **Store failed** may be displayed in exceptional cases if the internal communications circuits are busy. Repeat the procedure until the value is saved.

To exit the menu without saving the value

Press the **Escape** button.

2.6. Show hidden service menus

Menus that are used only during installation are not shown by default.
To show these menus, set the value in the **Show more menus** menu to "**Yes**". If the password function is in use, enter the password instead in the **Show more menus** menu

N.B. The backlight is switched off if the display has been idle for ten minutes. If open, the **Show more menus** menu will close automatically and the **Alarm log** menu ("Home") will be displayed.
If the Show more menus is closed, the present menu will be shown even if the backlight has been turned off.

2.7. Miscellaneous buttons

Shifts to the remote alarm handling state. If remote alarm handling state is on alarms will be transmitted to the central system or to the short message service (SMS).

Acknowledge a new alarm. The alarm is not removed from the alarm log.

2.8. Language

The display language can be selected in the language menu. The following languages are available:

English	German	Dutch
French	Danish	Swedish
Norwegian	Spanish	Hungarian
Finnish	Italian	Polish

A special character will be displayed in the top left corner of the **Language** menu.

2.9. Explanation of LEDs

	LED	ON	Flash	Cause
	Power	Off		The power supply is off or a fuse is blown.
		Green		The power supply is on.
	Alarm reset		Red	A new alarm has occurred.
		Red		The new alarm has been acknowledged but is still active.
	Relay state	Green		The pump relay is activated.
		Red		The pump is blocked. Possible causes: • Auto mode input is passive. • Pump is blocked by software. • Remote blocking is active. • Low level is active. • EX mode blocking is active.
			Red	Power on delay, the pumps are blocked at 230 V power failure.
	Pump status	Green		The pump is running. The feedback signal from the relay is active.
		Red		The pump is faulty. Possible causes: • High temperature. • Motor protection has tripped.
			Red	The power supply phases are connected in the wrong sequence or one phase is dead.
	High level	Red		The level in the sump is high. Possible causes: • The high level float is active. • The analogue sensor value is above the high level alarm limit.
	Local/remote LED	Green		Remote alarm is on and the RTU is ready to dial.
			Green	An alarm is about to be dialled out.

3. Configuration

3.1. Configuration of the I/O-module

The '**Yes**' option must first be selected in the **Show more menus** menu to obtain access to the menus.

3.1.1. Connection

The I/O-module is connected to the operator panel through a cross-over FTP (Foil-shielded Twisted Pair) or an STP (Shielded Twisted Pair) Cat.5 cable.

3.1.2. Mac address

The operator panel communicates with the I/O-module using IP/Ethernet.

1. Go to the **I/O setup** menu (14_) and press **OK**.
2. Proceed to the ***I/O-module*** menu (14_6_) and press **OK**.
3. Continue to the *I/O-module MAC address* menu (14_6_2) and press **OK.**
4. Read the Mac address from the label placed on the I/O board housing e.g. 255.240.17.
5. Enter the Mac address in the *I/O-module MAC address* menu and press **OK.**
6. Value stored.

3.1.3. IP address

The RTU system uses two consecutive IP addresses. Enter the first IP address in the menu **Base IP address**. The second address is automatically assigned to the I/O-module by the display panel.

When the operator panel and I(O unit form a local network, i.e. are connected directly to each other by a cable, any of the following free addresses can be used.

- 10.0.0.0 to 10.255.255.255
- 172.16.0.0 to 172.31.255.255
- 192.168.0.0 to 192.168.255.255

If the units are connected to an intranet, two consecutive addresses must be obtained from your network administrator.

An IP address, the Base IP address, is required for the operator panel. After this address has been entered into the panel, the program will automatically assign the address to the I/O-module connected to the operator panel. All IP addresses must be in a consecutive order.

1. Continue to the *Base IP address* menu (14_6_1).
2. Enter the IP address in the *Base IP address*.
3. Value store.

3.1.4. IP time-out

The communication time-out menu can be adjusted in the menu *IP timeout* (14_6_3). The default value is appropriate for most installations.

3.2. Level control

Pump operation is controlled by level sensor (analogue signal). The level sensor could be a pneumatic sensor or an ultrasonic sensor, both of which deliver a 4 - 20 mA current signal to the RTU.

Level measurement	Settings to be finalized
Level sensor	Sensor range
	Start level 1
	Stop level 1
	High level

3.3. Level sensor control

3.3.1. Setting the level sensor

1. Display the ***Sensor range*** menu (2_12).
2. Press **OK**.
3. Enter the maximum measuring range for the sensor. The maximum permissible value is 20.00 metres.
4. Press **OK**.
5. Value stored.

3.3.2. Calibrating the level sensor

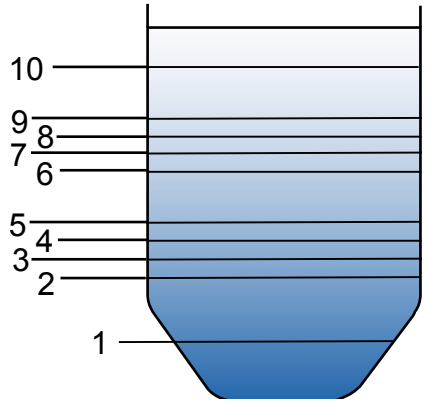
If necessary, the zero point can be adjusted in the ***Calibration*** menu (2_13).

To calibrate, proceed as follows:

1. Raise the sensor out of the water.
2. Adjust the value in the ***Sensor calibration*** menu until the **Level** menu shows +00.00 or some other required value.
3. Press **OK**.
4. Press **ESC** to return to the **Level** menu (2_).

Example: The level shown is +00.20 m.
Set Calibration to -00.20 m. Level will now read +00.00 m.

3.3.3. Start and stop levels



1	Low level	6	Start level 1
2	Stop level 1	7	Start level 2
3	Stop level 2	8	Start level 3
4	Stop level 3	9	Start level 4
5	Stop level 4	10	High level

The start and stop levels determine when a pump starts and stops.

1. Display the **Level** menu (2_).
2. Press the **OK** button to display ***Start level* 1** (2_1).
3. Press **OK**.
4. Enter a start level and press the **OK** button.
5. Advance to **Stop *level* 1.**
6. Press **OK**.
7. Enter a stop level and press the **OK** button.
8. Repeat step 5 - 7 for ***Start level* 2,** **Stop *level* 2, *Start level* 3, Stop *level* 3,** ***Start level* 4** and **Stop *level* 4.**

N.B!:

The ***Start level* 1** and **Stop *level* 1** control the starting and stopping of the first pump. Setting both values to **0** disables the pump.

The ***Start level 2*** and **Stop *level* 2** control the starting and stopping of the second pump. Setting both values to **0** disables the pump.

The ***Start level* 3** and **Stop *level* 3** control the starting and stopping of the third pump. Setting both values to **0** disables the pump.

The ***Start level* 4** and **Stop *level* 4** control the starting and stopping of the fourth pump. Setting both values to **0** disables the pump.

The application is 'emptying' i.e.
Stop level < Start level < High level

If the measured level is below the value in the ***Low level*** menu, the pumps are blocked.
The value **0** disables this function.

Which pump is the first and which is the second, third or fourth depends on the pump alternation setting.

If the level settings are outside the sensor range or are mutually incorrect a parameter error alarm will be generated.

If the measured level is above the value in the ***High level*** menu, a high level alarm will be generated.

If the measured level is below the value in the ***Low level*** menu, a low level alarm will be generated.

3.3.4. Stop delay

Stopping of the first pump is delayed by the time entered in the ***Stop delay*** menu.

The value **0** disables the calculation.

1. Display the **Pump control** menu (10_).
2. Press the **OK** button to display the ***Stop delay* time** menu (10_5).
3. Press **OK.**
4. Enter a stop delay time and press the **OK** button.

3.4. Current measurement and alarms

One or two separated 0 - 1A AC current transformers is used for current measurement and for the current alarms.

N.B. The current is measuring of pair, P1/P3 and P2/P4.

3.4.1. Current measurement

Connect the current transformer to the current input terminals.

1. Display the **P1 Current** manu (3_) and press the **OK** button.
2. Display the **P1/P3 Current range** menu(3_4).
3. Press **OK**.
4. Enter the rating of the current transformer and press **OK**.

If P1 and P3 are of different sizes, specify an cross-over factor in the menu **Current factor P1/P3**.

Eg. If P1 draws 5,5 A and P3 draws 8 A, then the factor will be 5,5 divided 8 = 0,63.
Do the same with P2 and P4.

5. Go to the menu **P2 Current** (4_).
6. Press the **OK** button.
7. Display the **P2/P4 Current range** menu (4_4).
8. Press **OK**.
9. Enter the rating of the current transformer and press **OK**.

If P2 and P4 are of a different sizes, specify an cross-over factor in the menu **Current factor P2/P4**.

3.4.2. High current and low current

The alarm functions activate an alarm when the current exceeds any of the limitations represented by the set points.

1. Display the **P1 current** menu (3_).
2. Press the **OK** button.
3. Display the **P1 high current** menu.
4. Press **OK**.
5. Enter the value and press the **OK** button.
6. Repeat step 3-5 for the **P1 low current** menu.
7. Repeat for the menus **P2 current**, **P3 current** and **P4 current**.

To disable the functions enter '**0**' in each menu.

The alarms are delayed by the general alarm delay.

3.5. General purpose inputs

Eight inputs are available for external functions, i.e. General-Purpose 1 input to General-Purpose 8 input.

The following functions can be selected:

- None
- P1 manual, P2 manual, P3 manual and P4 manual.
- P1 auto, P2 auto, P3 auto and P4 auto
- Power failure
- External alarm
- Blocking
- Personnel alarm
- Rain meter
- Overflow sensor
- Low level float
- High level float
- P1 High temp, P2 High temp, P3 High temp and P4 High temp.
- P1 Spare alarm, P2 Spare alarm, P3 Spare alarm and P4 Spare alarm.

3.5.1. General inputs functions 1 - 8

Select the required function in each of the General-Purpose menus.

1. Display the ***General inputs*** menu (14_5_).
2. Press the **OK** button.
3. Display the *Function gen. input 1* menu (14_5_1).
4. Press **OK**.
5. Select the required function and press the **OK** button.
6. For ***Function gen. input*** **2** menu to ***Function gen input*** **8** menu, repeat step 3 - 5.

3.5.2. P1 Manual - P4 Manual

Select this function if the RTU is to control the manual mode of the pumps.

In EX-mode the general inputs 1 to 4 are automatically assigned as P1 manual, P2 manual, P3 manual and P4 manual.

3.5.3. Power failure

Select this function when the input is connected to an external device for supervising the power supply e.g. Phase control.

When the signal is active the pumps will be blocked to prevent starting.

3.5.4. External alarm

An external unit can be connected to a Function gen. input. When the circuit is closed, an external alarm will be generated and recorded in the alarm log.

When a general input is configured as an External alarm the following will apply:

Function gen. input 1	becomes	External alarm 1
Function gen. inpu 2	becomes	External alarm 2
Function gen. inpu 3	becomes	External alarm 3
Function gen. inpu 4	becomes	External alarm 4
Function gen. inpu 5	becomes	External alarm 5
Function gen. inpu 6	becomes	External alarm 6
Function gen. inpu 7	becomes	External alarm 7
Function gen. inpu 8	becomes	External alarm 8

Each extern alarm can have a customized alarm text. The texts must be entered in the **A**larm **text input 1-8** menus (11_13)**.** If the first character of the alarm text is left blank, the standard alarm text will be used instead. The alarm text can contain extended ASCII characters. e.g. öøé

N.B. The local alarm texts can be changed from the central system.
The corresponding alarm texts can be set in the central system, using the alarm code filter function.

3.5.5. Blocking

When the General-Purpose is active, the pumps will be blocked to prevent them from starting.

The pumps are blocked directly by this signal. The alarm is delayed by the General alarm delay

1. Display the **Alarm setup** menu (11_).
2. Press the **OK** button.
3. Display the ***General alarm delay*** menu.
4. Press **OK**.
5. Set the required value (range 0 to 2 min) and press the **OK** button.

3.5.6. Personnel alarm

The alarm is designed to give warning of the risk of an accident that may occur in a risk area, e.g. a pump station, if a certain defined working time has been exceeded.

The function involves a selector switch, usually a switch for the lighting in the pump station, being connected to a General-Purpose input. By turning on the lights when the work begins the selector switch will be activated.

When the circuit has been closed for the time specified in the ***Work time*** (11_4) menu, the common alarms output will be activated and the Warning time set in the ***Warning time*** **(11_5)** menu will begin to run.

If everything is OK the personnel can extend the Working time by briefly opening the General-Purpose input (by switching the lighting off and on) or by pressing the **Reset** button on the RTU panel, and the counting of the Working time will then be restarted.

1. Display the Work time menu (11_4).
2. Press the **OK** button.
3. Set the required maximum working time for the personnel, before the personnel alarm is activated.
4. Press **OK**.
5. Display the ***Warning time*** menu (11_5).
6. Press **OK**.
7. Set the warning time for the personnel, before alarm is sending out.
8. Press **OK**.

At the end of the preset Warning time, the personnel alarm will be sent out to the central system or the SMS. (Provided the RTU is equipped with a Communication module.)

The personnel alarm always has alarm priority **A** and cannot be prevented from being activated.

3.5.7. Rain meter

The input is connected to a rain meter.

Enter the scale factor for your particular rain meter. If, e.g. a rain meter is specified to give 0.2 mm/pulse, enter 0.2 in the Rain scale factor menu (9_3).

The daily value can be read in the display.

When the 5 minute average value exceeds the value in the ***Rain alarm 5 minute*** menu an alarm will be generated.

When the daily rain value exceeds the value in the ***Rain alarm 24 hour*** menu an alarm will be generated.

The rain 5 minute average value is available as a trend.
The actual daily value can be read in the central system status.
The rain alarm state is indicated in the central system status.

1. Display the ***Rain*** menu (9_).
2. Press the **OK** button.
3. Display the ***Rain alarm 5min*** menu (9_1).
4. Press **OK**.
5. Set the required value (range 0 and 99,9/5 minute).
6. Press **OK**.
7. Display the ***Rain alarm 24h*** menu (9_2).
8. Press **OK**.
9. Set the required value (range 0 and 999,9/24h).
10. Press **OK.**
11. Display the ***Rain scale factor*** menu (9_3). and press OK.
12. Set the scale factor for your particular rain meter .
13. Press **OK.**

3.5.8. Overflow sensor

The General-Purpose serves as the input for an overflow sensor. The accumulated overflow time and the number of overflow occasions are recorded and can be read in the ***Overflow count (8_1)*** and ***Overflow* time *(8_2)*** menus.

The recorded values in the two menus can be reset.

N.B. The daily number of overflows and the overflow time values can be read in the central system status. The number of overflows and the overflow times are available as reports.

3.5.9. Low level float

Select this function when the input is connected to a low level switch.

The pumps are blocked directly by this signal. The alarm is delayed by the Low level alarm delay

1. Display the **Alarm setup** menu (11_).
2. Press the **OK** button.
3. Display the ***Low lev. alarm delay*** menu.
4. Press **OK**.
5. Set the required value (range 0 to 2 min) and press the **OK** button.

3.5.10. High level float

Select this function when the input is connected to a high level switch.

The pumps are blocked directly by this signal. The alarm is delayed by the General alarm delay.

1. Display the **Alarm setup menu** (11_).
2. Press the **OK** button.
3. Display the ***General alarm delay*** menu.
4. Press **OK**.
5. Set the required value (range 0 to 2 min) and press the **OK** button. The input activates the back run function. See “High level float - backup control” on page 19

3.5.11. High temp P1 - P4

Select this function when the input is connected to a thermal overload switch.

The pumps are blocked by this signal. The alarm is delayed by the General alarm delay

3.5.12. P1 - P4 Spare alarm

Select this function when the input is connected to an external device that supervises the pump.

3.6. Miscellaneous

3.6.1. Power failure

The power supply is supervised by the MIO501, which results in 2 signals.

Signal	24 V unit	230 V unit with 24 V battery.
230 V fail	A 230V unit can be supplied through the 24V supply. In that case the 230 V fail signal must be inverted in order to avoid the 230 V failure alarm.	The supply is dead.
24 V fail	24 V supply is low or dead.	The battery is low.

3.6.2. Emergency operation output

When the RTU is in normal operation the emergency operation output disconnects the emergency operation circuit. If the RTU fails to operate correctly, the output will be closed and the emergency circuit will take over control of the pumps.

3.6.3. Selectable function for digital output 4

When 3 or less pumps are used, the digital output 4 can be configured to be used by one of the following functions:

- Reset motor protection
- Cleaning valve
- General output

The function is chosen in the Output 4 mode menu.

1. Display the ***Outputs menu*** (14_7)
2. Press OK.
3. Display the *Function output 4* menu (14_7_1).
4. Press OK.
5. Select the required function and press the OK button.

3.6.3.1. Reset motor protection

The following applies only when the function reset motor protection is chosen.

When a motor protection trips and the automatic reset function is enabled in the Automatic reset menu, the RTU will first wait for 3 minutes for the protection to cool and will then try to reset the motor protection.

The motor protection can be reset from the operator panel, by pressing the Reset button or reset from the central system by sending the Reset remote control command.

Reset can only be done when the pumps is standing still.

To activated the Automatic reset of reset motor protection do as follows:

1. Display the **General** menu (13_).
2. Press **OK**.
3. Display the ***Auto reset*** menu (13_3) and select "Yes".
4. Press **OK**.

3.6.3.2. Cleaning valve

The following applies only when the function cleaning valve is chosen.

After a number of pump cycles the valve will be open at chosen for a preset time.

To activated the sprinkler function.

1. Display the **Pump control** (10_) menu and press **OK**.
2. Display the ***Flushing interval*** menu (10_17) and enter the number of pump cycles between each flushing.
3. Press **OK**.
4. Display the Flushing, time menu and enter the time during which the flushing valve will be open. The function is disabled by entering 0 in the menu.
5. Press **OK**.

3.6.3.3. General output

The following General output menu is only visible when the function general output is chosen. Choose between a combination of following functions signals.

- Power failure
- High level
- P1 failure
- P1 blocked
- P2 failure
- P2 blocked
- P3 failure
- P3 blocked

1. Display the ***Output. 4 config*** menu (14_7_2).
2. Press **OK**.
3. Select the required function and press the **OK** button.

3.6.3.4. Flygt default set points

This function resets the RTU to a known default status (14_9).

The initial status is:

- Language: English

Measurement range: 1 metre and with appropriate starting and stopping levels.

- Extra functions: Shut off

1. Display I/O setup menu (14_).
2. Press **OK**.
3. Proceed to the ***Flygt default*** menu (14_9).
4. Press **OK**.
5. Shift to "Yes" and press OK.
6. Wait until the RTU has restarted.

4. Pump control functions

4.1. Pump control

The pump control is designed for 3 or 4 pumps, but can also be used in installations with 1 or 2 pumps.
In addition to the parameters described in the previous chapter, a number of other set points can be specified. These and the related parameters are described below.

Note that the '**Yes**' option must first be selected in the **Show more menus** menu to gain access to these menus.

4.2. Manual/Auto control

Pump operation is in the automatic mode when the inputs P1 Auto to P2 Auto are active.

The automatic mode also requires the ***P1 State, P2 State, P3 State*** and ***P4 State*** menus to be set to Automatic.

1. Display the **Pump control** menu (10_).
2. Press the **OK** button to display the ***P1 State*** menu.
3. Press **OK**.
4. Select "Auto" and press the **OK** button.
5. Display the ***P2 State*** menu and press **OK**.
6. Select "Auto" and press the **OK** button.
7. Continue with P3 State menu and P4 State menu.

The RTU can also control the manual mode of a pump. Select the function P1 Manual, P2 Manual, P3 Manual or P4 Manual in four of the functions.

1. Display the **I/O setup** menu (14_), and press **OK**.
2. Advance to the ***General input***s menu /14_5).
3. Press the **OK** button.
4. Display ***Function gen. input 1*** menu.
5. Press **OK**.
6. Select the required function and press the **OK** button.
7. For ***Function gen. input 2*** menu to ***Function gen. input 8***, repeat steps 4 - 6.

Function gen. input 1-8 menus. Selection of the four manual functions is mandatory when the EX-mode is On, in which case the Function gen. inputs 1 to 4 are automatically assigned this function.

The pumps can be started from the central system by the remote control commands Start P1. Start P2, Start P3 and Start P4.

4.3. Blocking

When a pump is neither in the automatic or in the manual mode the state of the pump will be blocked. This state is indicated by the Pump blocked LED on the operator panel. In this state no attempt will be made to start the pump.

The pumps can be blocked in the program by setting the **P1** to **P4** ***State*** menus to Blocked.

See "Manual/Auto control

A low level condition will temporarily block the pumps.

The pumps can be blocked externally by selecting the Blocking function in one of the Function gen. input 1-8. This affects all pumps in the station.

The pumps can be blocked from the central system through the remote control command Stop and block pumps. This affects all pumps in the station.

4.4. EX mode

The EX function should be enabled when the RTU is used in an EX classified environment.

The RTU blocks the pumps from starting when no liquid is detected in the sump. To enable the function, select **On** in the ***EX mode*** menu.

1. Display the **General** menu (13_) and press the **OK** button.
2. Display the ***EX mode*** **menu (13_2)** and press **OK**.
3. Select "**On**" and press the **OK** button.

This also automatically assigns the functions:

Function. gen. input 1	P1 manual
Function. gen. input 2	P2 manual
Function. gen. input 3	P3 manual
Function. gen. input 4	P4 manual

4.5. Power on delay

A power on delay of 10 seconds is applied when the power supply is restored after power failure. During this time, the pumps are blocked and the pump blocked LEDs on the panel will show a flashing red light.

4.6. Start delay

The function prevents both pumps from starting simultaneously. The second pump will start 5 seconds after the first pump has started.
N.B. The time is adjustable for each pump individually, default value is 5 seconds.

The time adjusting can be done in ***Time betw. starts P1*** menu from (10_9) to (10_12).

4.7. Minimum pause time

A minimum delay of 5-second is applied before a pump can be restarted after a stop.

4.8. Number of pumps

In the Number of pumps menu (14_1) the number of pumps connected in the station (normally 4) is specified.

If 3 pumps or less are connected, the signals below get alternative use functions of digital input:

- Digital input 7 is used for Low level float.
- Digital input 8 is used for High level float

Digital output 4 can be reconfigured as one of the following function: Reset motor protection, Sprinkler or General output.

See"Selectable function for digital output 4" on page 15.

4.9. Max. number running pumps

The ***Max. no. run. pumps*** menu can be used to limit the maximum number of pumps running at the same time.

1. Display the ***Max. no. run. pumps*** menu (10_6).
2. Press ***OK***.
3. Enter the maximum number of pumps that are allowed to run at the same time.
4. Press ***OK***.

4.10. Pump alternation

Normally the pump 1 starts at start level 1, pump 2 starts at start level 2, the pump 3 starts at start level 3 and the pump 4 starts at start level 4.

To make the pumps start alternating, select the choice "On" in Pump alternation menu. This will decide the starting order by the pumps. Alternation will decide starting order of the number of pump to use in Pump alternation menu. The RTU will decide the start order of the alternating pumps. The others will start at they normal start level.

1. Display ***Pump alternation*** menu (10_7)
2. Press OK.
3. Select the choice "On".
4. Press **OK**
5. Specify the ***Alternating pumps*** menu.
6. Press **OK**
7. Specify the number of pump to use in the alternation (2 - 4).
8. Press **OK**.

.

The number of alternating pumps.	Alternating pumps	Reserve pumps
2	P1 and P2	P3 and P4
3	P1, P2 and P	P4
4	P1, P2, P3 and P4	

The pumps which start alternating on other start levels.

Example with 3 pumps alternation.

Alternating	Permission
1	P1 starts at Start level 1 P2 starts at Start level 2 P3 starts at Start level 3
2	P2 starts at Start level 1 P3 starts at Start level 2 P1 starts at Start level 3
3	P3 starts at Start level 1 P1 starts at Start level 2 P2 starts at Start level 3

The Alternating starts after the pump cycle has finished and the pumps stand still.

4.10.1. The order of alternating at pumps during pump faults

When a pump can't start for example due to a fault or it is shut off, the next alternating pump will start.

Example with 3 pumps alternation:

Alternating	Permission
1	P1 starts at Start level 1 P2 faults P3 starts at Start level 2 No pump starts at Start level 3
2	P3 starts at Start level 1 P2 faults P1 starts at Start level 2 No pump starts at Start level 3

If a fault occurs during operation, the spare pump will only start if the start level condition has been fulfilled.

4.10.2. Pumps which are not part of alternation

Pumps which are not part of alternation start at their own start level.
Eg. P4 starts at Start level 4.

4.11. Maintenance run

If the pump has not been started by the normal control system within the number of hours specified in the **Autostart int** (interval) menu, it will be started automatically by the RTU. The pump will be run for the time specified in the ***Auto start time*** menu.

1. Display the ***Auto start time*** menu (10_14).
2. Press **OK**.
3. Set the required value (range 0 to 2 minutes) and press the **OK** button.

This function is disabled by entering 00:00 in the ***Auto start time*** menu.

4.12. High level float - backup control

When the high level switch is activated, a backup function will start the pumps. The pumps will run for the time specified in the ***High lev run time*** menu. Time counting starts when the high level signal becomes passive.

1. Display the ***High lev run time*** menu (10_15) and press **OK**.
2. Set the required value (range 0 to 10 minutes) and press the **OK** button

4.13. Pump faults

Pump faults that prevent the pump from running are:

- High temperature.
- Motor protection tripped.

This is indicated by the Pump fault LED on the display panel.

Pump faults that temporarily stop the pump are:

- Max run time.

Pump faults that only initiate an alarm are:

- Feedback error.

4.14. High temperature

The high temperature input is normally closed (NC).

A high temperature state prevents the pump from running. When the temperature reverts to normal, the pump will again be allowed to run.

4.15. Motor protection tripped

The pump tripped input indicates to the RTU that the motor protection has tripped. The pump is prevented from starting.

When a motor protection trips and the automatic reset function is enabled in the ***Automatic reset*** menu, the RTU will first wait for 3 minutes for the protection to cool and will then try to reset the motor protection.

Should the next pump cycle result in a new tipped condition no further attempts will be made and the pump fault will persist.

Tripped motor protection can be reset from the operator panel, by pressing the **Reset** button.

Press the **Reset** button on the front panel to manually reset the motor protection.

The motor protection can be reset from the central system by sending the Reset remote control command.
N.B This applies only when output 4 is chosen as motor protection reset.

See "Reset motor protection" on page 15.

4.16. Max. run time

The maximum permissible pump running time can be limited to a preset value.

1. Display the ***Pump control*** menu (10_).
2. Press the **OK** button
3. Display **the *Max. run time*** menu (10_16).
4. Press **OK**.
5. Set the required value (0 to 50 minutes) and press the **OK** button.

The function can be disabled by entering **0** in the menu i.e. there is no limit for the maximum pump running time.

After the time has elapsed an alarm will be generated and the pump will be stopped.

The value set in the ***Max. run time*** menu must exceed a pumping cycle. When estimating the length of a pumping cycle, also consider any additions made for the following functions:

- Stopping delay (when analogue control is used).
- Run time (when digital control is used and the Stop condition is Run on time).
- High level run time (backup control).

4.17. Pump feedback

The pump feedback input indicates to the RTU that the pump relay is activated. The signal is expected as a feedback to activating the pump relay.

In addition to the general alarm delay, the alarm is delayed by a fixed 5 second start-up delay.

A pump response error alarm will be generated.

5. Pump operating data

5.1. Running hours and numbers of starts

Pump operating information is displayed in the **Operating data** submenu. The following information is recorded:

- Running hours for P1, P2, P3 and P4.
- Number of starts for P1, P2, P3 and P4.

5.1.1. Resetting the operating data

To reset a stored value:

1. Display the **Operating data** menu (7_) and press **OK**.
2. Display appropriate menu.
3. Press the OK button. The text "**Reset value? No**" will be displayed.
4. Shift between "**No**" and "**Yes**" using the **Up** arrow or **Down** arrow button.
5. To set the value to zero, press the **OK** button while the '**Yes**' option is on. The message "**Value stored**" will be displayed.
6. To cancel, press the **Esc** button.
   Pressing the **OK** button while the "**No**" option is on will have the same effect.

5.2. Current

The pump current can be read in the **P1 current** (3_)**, P2 current** (4_)**, P3 current** (5_) and **P4 current** (6_) menus.

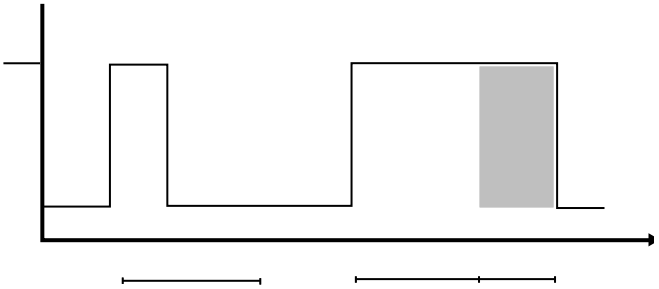
5.3. Level

In the analogue control mode, the actual level is shown in the **Level** menu (2_).

6. Alarms

6.1. General alarm delay

Alarms are delayed by the time set in the **General alarm delay** menu (11_1).



A separate alarm delay is used for the Power failure alarm and the Low level alarm.

A power failure alarm can be delayed for a maximum of 2 minutes, provided that an external battery is connected and can supply the unit. The delay is set in the ***Pow.fail alarm delay*** menu.

1. Display the **Alarm setup (11_)** menu and press OK.
2. Scroll to the menu for the ***Pow.fail alarm delay.***
3. Press **OK**.
4. Enter the time for the delay and press **OK**.
5. Repeat steps 2 to 4 for ***Low level alarm delay***.

6.2. Common alarm output

In the event of an alarm, the '**Common alarm**' output will be activated. The output can be connected to various types of audible or visual devices (lamps, sirens and the like) to indicate a fault condition in the unit.

1. Display the ***Common alarm*** menu (14_4_1) and press the **OK** button.
2. Switch between Continuous and Intermittent indication.
3. Make your choice and press the **OK** button
4. Display the *Com. alarm active 1* menu (14_4_2) and press the **OK** button.
5. Select the alarms that are to activate the output.

   0 = passive and **1** = active
6. Press the **OK** button.
7. Display the *Com. alarm active 2* menu (14_4_3) and press the **OK** button.
8. Select the alarms that are to activate the output.
9. Press the **OK** button.
10. Display the *Com. alarm active 3* menu (14_4_4) and press the **OK** button.
11. Select the alarms that are to activate the output
12. Press the **OK** button.

To deactivate the common alarm output:

Press the **Reset** button.


The alarm output will be activated again when a new alarm has occurred

6.3. Alarm logging

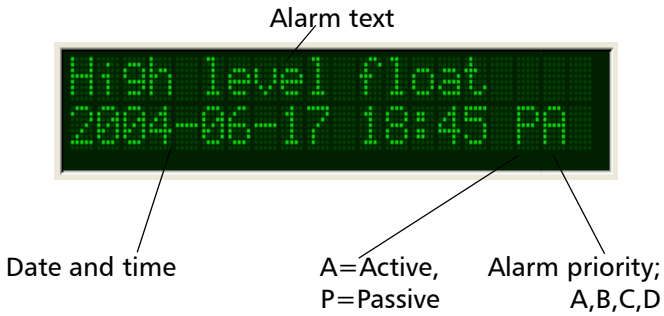
Alarms are recorded in the alarm log. The last 100 alarms are saved.

6.3.1. Viewing alarms

The number of active alarms is displayed in the **Alarm log** menu (1).

OK Press the **OK** button to open the log.

The first alarm will be displayed.



Example: High level float alarm

- Browse the log by repeatedly pressing the **Down** button.
- To move instead directly to the latest alarm, press the **Up** button.

1. Display the **Alarm log** menu.
2. Press the **OK b**utton to open the log. The first alarm will be displayed in the menu window.
3. Press the **Up/down** button to scroll to the required alarm.
4. Press the **OK** button.
   A "Delete alarm?" message will appear and ***Current alarm*** will be displayed.
5. Choose between "Current alarm" and "All alarms" by pressing the **Down** button and then press the **OK** button.
6. The alarm will be cleared and the text "Log cleared" message will be displayed.

To exit the log without changing the log:

Press the **Esc** button.

 Active alarms are not removed from the log.

6.4. Alarm handling

The **Alarm handling** menu is used to determine whether the RTU will send alarms to the central system or the SMS.

Local	No alarms are sent.
Remote	Alarms are sent.
Clear	The alarm buffer is cleared and the Alarm handling mode then is set to Remote.

If the sending fails, e.g. if the recipient is busy or does not reply, the RTU will wait for 1 minute before the next attempt. Following each successive failure the waiting time will be increase by 1 minute until 10 attempts have failed. The RTU will then wait for 3 hours before then dialing sequence is recommenced.

6.4.1. Alarm priority

The alarm priority of an alarm determines what happens with the alarm.

A	The alarm is sent to the central system and then on to paging.
B	The alarm is sent to the central system.
C	The alarm is local in the RTU.
D	The alarm is sent to the central system and then on to paging according the D-alarm time frame of the central system. If SMS is used the alarm is sent according the D-alarm time frame in the RTU.
F	The alarm is not recorded.
H	The alarm is recorded in a separate event log, if available. This is not available in the RTU.

6.4.2. Times for D-alarms

D-alarms are distributed to paging only during the period between **D-alarm start time** and **D-alarm end time**. If the alarm occurs at any other time, the central system/RTU will wait until the D-alarm time frame begins and will then send the alarm.

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

1. Display the ***D-alarm start time*** menu (11_8).
2. Press **OK**.
3. Enter the time when **D-alarms** should begin to be sent to the central system or the SMS.
4. Press the **OK** button when the cursor is in the last position.
5. Display the ***D-alarm end time*** menu (11_9).
6. Press **OK**.
7. Enter the time when D-alarms should cease to be sent to the central system or the SMS.
8. Press the **OK** button when the cursor is in the last position.

To inhibit the D alarm function, enter **0** in both menus. An D alarm will be treated as an A alarm.

6.4.3. Customized alarm texts

The alarm text of external alarms can be changed in the Alarm text ipnput 1-8 menus. Extended ASCII characters can be used e.g. öøé.

The texts are used in the alarm log and in SMS. If the first character of the text is left blank, the standard alarm text will be used instead.

1. Display the ***Alarm text*** **menu** (11_13_).
2. Press the OK button to display Alarm text input 1.
3. Press OK.
4. Enter the new text with using the arrow up button or arow down button.
5. Advance the cursor using with the Right arrow button.
6. Press the **OK** button.
7. Repeat step 2-4 for every text for Alarm text input 2 to Alarm text input 8.

6.4.4. Alarm code filter

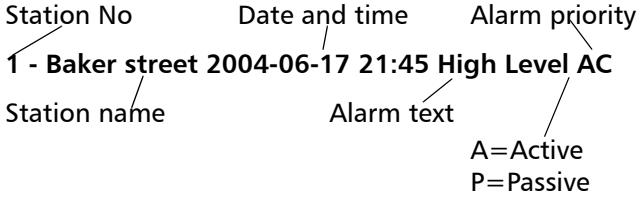
The code of the external alarms can be changed in the Alarm code input 1-8 menus. Changing the alarm code enables a general alarm to become a specific alarm with a clearly defined alarm text, appropriate to a particular station.

The alarm code filters are normally changed from the central system.

1. Display the ***Alarm code filters*** menu (11_14_).
2. Press the **OK** button to display ***Alarm code input*** 1.
3. Press **OK**.
4. Enter a new code and press the **OK** button.
5. Repeat step 2-4 for every new code for ***Alarm code input*** 2 - 8.

6.4.5. SMS

The RTU can send alarms directly to a mobile phone using SMS. The information given in the SMS is:



Alarms
The APP 541 generates alarms in various situations as part of pump monitoring.

Alarm code	Default priority	Local text	Central system text	Description
1	A	High level	High level	High level in pump sump. Alarm from the level sensor.
2	C	Low level	Low level	Low level in pump sump. Alarm from the level sensor.
3	B	Mains error	Mains error	The main power has been disrupted or the phase sequence is incorrect or one phase is missing.
4	A	High level float	High level float	The level in the sump has reached the high level switch. The pumps will be started.
5	A	Pers. alarm	Personnel alarm	Personnel alarm warning time has run out without having been reset. Personnel in danger !
11	B	Tripped motor P1	Tripped motor protector P1.	The Pump 1 has a tripped motor protection. The pump is blocked by this alarm.
12	B	Tripped motor P2	Tripped motor protector P2	The Pump 2 has a tripped motor protection. The pump is blocked by this alarm.
13	B	Tripped motor P3	Tripped motor protector P3	The Pump 3 has a tripped motor protection. The pump is blocked by this alarm.
14	B	Tripped motor P4	Tripped motor protector P3	The Pump 4 has a tripped motor protection. The pump is blocked by this alarm.
15	B	High current P1	High current P1	High current pump 1. Alarm from the analogue current measurement.
16	C	Low current P1	Low current P1	Low current pump 1. Alarm from the analogue current measurement.
17	B	High current P2	High current P2	High current pump 2. Alarm from the analogue current measurement.
18	C	Low current P2	Low current P2	Low current pump2. Alarm from the analogue current measurement.
19	B	High current P3	High current P3	High current pump 3. Alarm from the analogue current measurement.
20	B	Low current P3	Low current P3	Low current pump3. Alarm from the analogue current measurement.
21	B	High current P4	High current P4	High current pump 4 Alarm from the analogue current measurement.
22	B	Low current P4	Low current P4	Low current pump3. Alarm from the analogue current measurement.

Alarm code	Default priority	Local text	Central system text	Description
27	H	Setpoint changed	Setpoint changed	At least one menu has been changed on the local display. The alarm reverts when new set points are sent to the RTU.
30	C	No response P1	No response P1	There is no feedback signal from pump 1. The pump has probably not started despite activation of the power relay.
31	C	No response P2	No response P2	There is no feedback signal from pump 2. The pump has probably not started despite activation of the power relay.
32	B	No response P3	No response P3	There is no feedback signal from pump 3. The pump has probably not started despite activation of the power relay.
33	B	No response P4	No response P4	There is no feedback signal from pump 3. The pump has probably not started despite activation of the power relay.
34	A	Overflow	Overflow	Overflowing. The station is now overflowing.
35	A	High temp. P1	High temperature P1	High temperature in pump 1.
36	A	High temp. P2	High temperature P2	High temperature in pump 2.
37	B	High temp. P3	High temperature P3	High temperature in pump 3.
38	B	High temp. P4	High temperature P4	High temperature in pump 4.
40	C	Low level float	Low level float	Low level. The pumps will be stopped.
41	C	Inval.setpoints	Invalid setpoints	The level setpoints are incorrect. The specified setpoints for Start, Stop or High level is either outside the calibration range or they are mutually not corresponding, i.e. the high level setpoint is lower than the start level setpoint.
81	C	Alarm input 1	Alarm digital input 1	Alarm from digital input 1. The alarm is user defined.
82	C	Alarm input 2	Alarm digital input 2	Alarm from digital input 2. The alarm is user defined.
83	C	Alarm input 3	Alarm digital input 3	Alarm from digital input 3. The alarm is user defined.
84	C	Alarm input 4	Alarm digital input 4	Alarm from digital input 4. The alarm is user defined.
85	C	Alarm input 5	Alarm digital input 5	Alarm from digital input 5. The alarm is user defined.
86	C	Alarm input 6	Alarm digital input 6	Alarm from digital input 6. The alarm is user defined.
87	C	Alarm input 7	Alarm digital input 7	Alarm from digital input 7. The alarm is user defined.
88	B	Alarm input 8	Alarm digital input 8	Alarm from digital input 8. The alarm is user defined.

Alarm code	Default priority	Local text	Central system text	Description
8214	B	Low 24 V Supply	Low 24 V external supply	Low 24 V Supply.
8460	C	P1 Spare alarm	P1 Spare alarm	P1 Spare alarm
8461	C	P2 Spare alarm	P2 Spare alarm	P2 Spare alarm
8462	B	P3 Spare alarm	P3 Spare alarm	P3 Spare alarm
8463	B	P4 Spare alarm	P4 Spare alarm	P4 Spare alarm
8484	B	P1 max. run time	P1 max. run time	The pump 1 has exceeded the maximum allowed run time. The pump is blocked by this alarm. See also the Max run time set-point.
8485	B	P2 max. run time	P2 max. run time	The pump 2 has exceeded the maximum allowed run time. The pump is blocked by this alarm. See also the Max run time set-point.
8486	B	P3 max. run time	P3 max. run time	The pump 3 has exceeded the maximum allowed run time. The pump is blocked by this alarm. See also the Max run time set-point
8487	B	P4 max. run time	P4 max. run time	The pump 4 has exceeded the maximum allowed run time. The pump is blocked by this alarm. See also the Max run time set-point
8505	C	Sensor fault	Sensor fault	A fault in the analogue sensor has been detected. The measured level is outside the sensor range.
8538	B	I/O-mod not resp	I/O module(s) not responding	Communication problem with I/O-moduleule. The I/O-moduleule is not responding.
8539	C	Wrong I/O module	Wrong type of I/O module	Communication problems with I/O units. Wrong unit type.
8602	B	High level+pfail	High level+pumpfailure	The level is high and in the same time there is a failure on at least one pump
8606	B	P1 switched off	P1 switched off	Pump 1 is switched off. i.e. not in auto mode.
8607	B	P2 switched off	P2 switched off	Pump 2 is switched off. i.e. not in auto mode.
8608	B	P3 switched off	P3 switched off	Pump 3 is switched off. i.e. not in auto mode.
8609	B	P4 switched off	P4 switched off	Pump 4 is switched off. i.e. not in auto mode.
8615	B	Failure 2 pumps	Failure on two pumps	There are failures on 2 or more pumps.
8630	B	Test call !	Test call !	A test alarm is sent in order to verify that the RTU and its communication are working properly. The alarm is sent at a regular interval, which is configurable..

Alarm code	Default priority	Local text	Central system text	Description
8652	C	High rain 5 min	High rainfall 5 min	The RTU has calculated a rainfall higher than the high alarm limit.
8653	C	High rain 24 h	High rainfall 24 h	The counter has reached the maximum value for 24 hours.

7. Communication

7.1. Systems

7.1.1. Direct communication with the central system

In this system the RTU communicates directly with the central system.

A modem, a radio or a signal cable is used for the transmission of information between the units in the system.

Either the factory settings or the first user profile of the modem (profile 0) can be used. In the first case no special configuration of the modem is required but in the second case the user profile has to be configured prior to use with the RTU.

7.1.2. Communication via MTC-COM

In this system the RTU communicates with the central system, via the communication unit, MTC-COM.

A modem, a radio or a signal cable is used for the transmission of information between the units in the system.

Prior to use with the RTU the first user profile of the modem (profile 0) has to be configured.

Note! The factory settings of the modem cannot be used in this case.

7.1.3. Modems

Communication is possible using:

- GSM-modem.
- Hayes-modem.
- Radio in transparent mode.

The modem can either use factory settings or user profile 0, which must then be pre-configured.

7.2. Connection

7.2.1. Connection to a modem or radio

Connect a straight serial cable from the modem/radio to the RS232 connector on the COM1.

Connect the modem/radio to its own supply.

7.2.2. Connection to a PC using fixed line

Connect a straight serial null-modem cable from the PC to the RS232 connector on the COM1.

7.3. Configuration

7.3.1. Fixed line FDX

Can be used for:

- Communication directly to a PC.
- Communication using a fix line modem.
- Communication using radio.

Menu	Values	Description
Communication COM1	RS232 FDX	Normally FDX can be used if the central system has not specially been set-up to use HDX.
Protocol COM1	AquaCom Fix	
Speed COM1	2400-57600 bps	Set this value to the same as the port baudrate in the central system.
Max buffer size	80-4000	Normally 2000 is used. If your radio has a limited buffer or there are disturbances decrease this value. e.g. 500.

7.3.2. Fixed line HDX

Can be used for:

- Communication directly to a PC.
- Communication using a fix line modem.
- Communication using radio.

Menu	Values	Description
Communication COM1	RS232 HDX	Will work with normal settings in the central system.
Protocol COM1	AquaCom Fix	
RTS delay COM1	25-1000 ms	Low delay means faster communication. Use higher value if required by the radio, i.e. if there are problems with the communication.
Speed COM1	2400-57600 bps	Set this value to the same as the port baudrate in the central system.
Max buffer size	80-4000	Normally 2000 is used. If your radio has a limited buffer or there are disturbances decrease this value. e.g. 500.

7.3.3. Dialed up modem

Can be used for:

- Communication using a Hayes compatible telephone modem.
- Communication using a GSM modem.

Note: Please observe the limitation in combinations of modems and their configuration strings.

Menu	Values	Description
Communication COM1	Hayes modem GSM/Hayes predef.	Select Hayes modem when using TD33 for communication directly to the central system. In all other cases configure the modem using a PC and select GSM/ Hayes predefined. See appendix on preconfiguration of modems. Select this option if an MTC-COM is included in the system.
Protocol COM1	AquaCom dialled	
Speed COM1	2400-57600 bps	If your modem supports autobauding, set this as high as possible to get the best communication performances. Otherwise set this value to the same as the value used in the preconfiguration of the modem.
Telephone no. CS/SMS		Enter the telephone number to the Central system or MTC-COM.

7.3.4. GSM modem

Can be used for:

- Communication using a GSM modem.

Note: Please observe the limitation in combinations of modems and their configuration strings.

Menu	Values	Description
Communication COM1	GSM/Hayes predef.	Configure the modem using a PC and select GSM/Hayes predefined. See appendix on pre-configuration of modems.
Protocol COM1	AquaCom dialled	
Speed COM1	2400-57600 bps	If your modem supports autobauding, set this as high as possible to get the best communication performances. Otherwise set this value to the same as the value used in the pre-configuration of the modem.
Telephone no. CS/SMS		Enter the telephone number to the SMS recipient, i.e. the personnel.

7.3.5. GSM modem and SMS

Can be used for:

- Communication using a GSM modem or a telephone modem.

Note: Please observe the limitation in combinations of modems and their configuration strings.

Menu	Values	Description
Communication COM1	GSM/Hayes predef.	Configure the modem using a PC and select GSM/Hayes predefined. See appendix on pre-configuration of modems.
Protocol COM1	AquaCom/SMS	
Speed COM1	2400-57600 bps	If your modem supports autobauding, set this as high as possible to get the best communication performances. Otherwise set this value to the same as the value used in the pre-configuration of the modem.
Telephone no. CS/SMS		Enter the telephone number to the SMS recipient, i.e. the personnel.
Station name		Enter a name that will be sent in the SMS alarm message.

8. Fault tracing

8.1. Status of inputs

The MIO501 has 16 digital inputs plus 2 internal inputs for supervising the power supply.

The status of the signals can be viewed in the ***Status inputs*** menu (14_2) (0 = non-active, 1 = active).

8.2. Inversion of inputs

The digital input signals can be inverted to change the operating mode from closing to opening, or vice versa. **0** indicates no inversion. This is the default state.

8.3. Diagnostic functions

The diagnostic menu is used to test the hardware. When it is activated the normal pump control operation is deactivated.

Select the desired diagnostic function in the ***Diagnostic*** menu (14_8):

Menu value	Function	Result
Off	None	The RTU is in normal operation.
10	Digital inputs	The states of the digital inputs are displayed e.g. 1001100100000000
11	LED output Common alarm output	Flashes at 1 second interval.
20	Analogue input	Shows the raw input values (0-16383.
24	P1 current input	Shows the raw input values (0-16383). This starts P1.
25	P2 current input	Shows the raw input values (0-16383). This starts P2.

After 10 minutes the unit will automatically revert to normal operation.

9. Central system

9.1. Status

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

P1 running
P1 remote ctrl
P1 relay On

P2 stop
P2 relay Off

P3 stop
P3 relay Off

P4 stop
P4 relay Off

Active alarms

Power failure

High level

Low level

Tripped

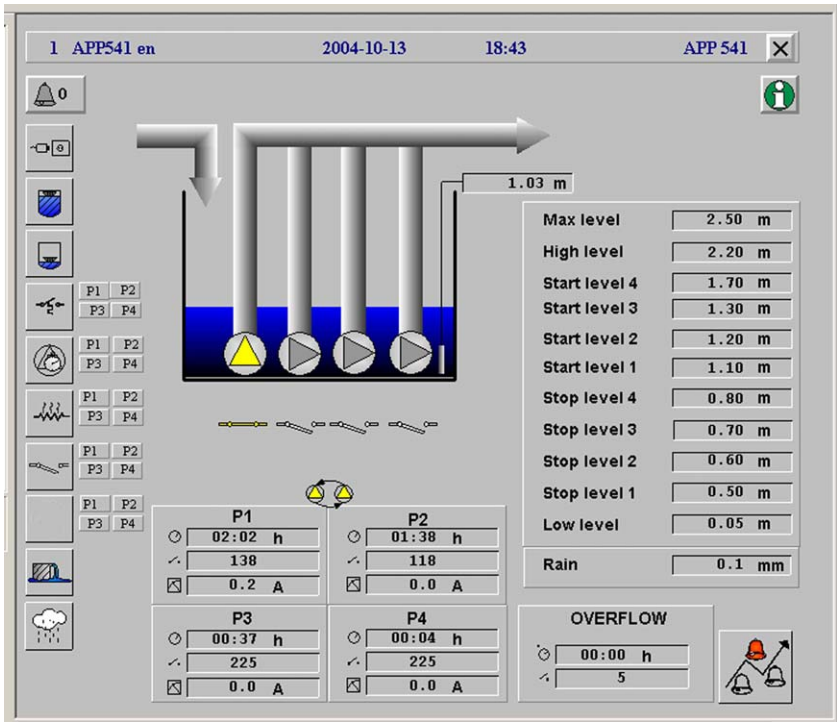
Max runtime

High temp.

Response err.

Overflow

Rain alarm



RTU info

Level

Sensor range

High level

Start levels

Stop levels

Low level

Rain

Alternation

P1 run time
P1 starts
P1 current

P2 run time
P2 starts
P2 current

Overflow time
Overflow count

Remote alarming

P3 run time
P3 starts
P3 current

P4 run time
P4 starts
P4 current

9.1.1. Remote control

As part of the status the RTU can be remotely controlled.

Object	Description
P1	F1 = Start pump 1. F2 = Stop and block pumps. F3 = Return control to automatic. F4 = Reset unit.
P2	F1 = Start pump 2. F2 = Stop and block pumps. F3 = Return control to automatic. F4 = Reset unit.
P3	F1 = Start pump 3. F2 = Stop and block pumps. F3 = Return control to automatic. F4 = Reset unit.
P4	F1 = Start pump 4. F2 = Stop and block pumps. F3 = Return control to automatic. F4 = Reset unit.

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

9.2. Set points

9.2.1. Set point values

Set point values can be fetched and sent in random order.

9.2.2. 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.

9.2.3. Alarm priority

Alarm priorities can be fetched and sent in random order.

Fetching alarm priorities requires at least AquaView 1.23.01.

9.3. 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 RTU stores report data for 31 days.

Report

Text1	Text2	Text3	Description
Run time	P1	h	Pump 1 running time.
Run time	P2	h	Pump 2 running time.
Overflow		h:min	Overflow time.
Starts	P1		Number of pump 1 starts.
Starts	P2		Number of pump 2 starts.
Rain		mm	Rain.
Overflow			Number of overflows.

9.4. Trend

The trend data consist of historical data with selectable sample resolution:

- 1-minute average
- 5-minute average

Enter the preferred resolution in the ***Trend resolution*** menu (13_4).

The RTU stores trend data for 7 days.

Trend

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).
Rain		mm	Rain 5min average.

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

10. Appendix A: List of menus

No	Menu name	Specification	Description
1	Alarm log	Writable	Alarm log
2_	Level m	Read only	Level indication
2_1	Start level 1 m	Writable Interval -99.99 - 99.99 Central system text Start level 1 (m)	Start level for first pump
2_2	Stop level 1 m	Writable Interval -99.99 - 99.99 Central system text Stop level 1 (m)	Stop level for first pump
2_3	Start level 2 m	Writable Interval -99.99 - 99.99 Central system text Start level 2 (m)	Start level for second pump
2_4	Stop level 2 m	Writable Interval -99.99 - 99.99 Central system text Stop level 2 (m)	Stop level for second pump
2_5	Start level 3 m	Writable Interval -99.99 - 99.99 Central system text Start level 3 (m)	Start level for third pump
2_6	Stop level 3 m	Writable Interval -99.99 - 99.99 Central system text Stop level 3 (m)	Stop level for third pump
2_7	Start level 4 m	Writable Interval -99.99 - 99.99 Central system text Stop level 4 (m)	Start level for fourth pump
2_8	Stop level 4 m	Writable Interval -99.99 - 99.99 Central system text Stop level 4 (m)	Stop level for fourth pump
2_9	High Level m	Writable Interval -99.99 - 99.99 Central system text High level (m)	High level alarm limit
2_10	Low Level m	Writable Interval -99.99 - 99.99 Central system text Low level (m)	Low level alarm limit. 0 - disables the funtion
2_11	Random start range m	Writable Interval 0.00 - 99.99 Central system text Randomstartrange (m)	Random start range

No	Menu name	Specification	Description
2_12	Sensor range m	Writable Interval 0.00 - 20.00 Central System Text Sensor range (m)	Sensor range
2_13	Sensor calibration m	Writable Interval -20.00 - 20.00 Central System Text Sensor calibration (m	Sensor calibration offset.
3_	P1 current A	Read only	Measured current for first pump
3_1	P1 high current A	Writable Interval 0.0 - 99.9 Central system text P1 high current (A)	High current alarm limit for first pump
3_2	P1 low current A	Writable Interval 0.0 - 99.9 Central system text P1 low current (A)	Low current alarm limit for first pump
3_4	P1/P3 Current range A	Writable Interval 0 - 999	Current transformer range for pump 1and 3.
3_5	Current factor P1/P3	Writable Interval 0 - 99.9	Current factor for P1 versus P3. Used when P1 and P3 are difference sizes. Default is 1.0.
4_	P2 current A	Read only Interval 0.0 - 999.9	Measured current for second pump.
4_1	P2 high current A	Writable Interval 0.0 - 999.9 Central system text P2 high current (A)	High current alarm limit for second pump.
4_2	P2 low current A	Writable Interval 0.0 - 999.9 Central system text P2 low current (A)	Low current alarm limit for second pump.
4_4	P2/P4 Current range A	Writable Interval 0 - 999	Current transformer range for pump 2 and 4.
4_5	Current factor P2/P4	0 - 99.9	Current factor for P2 and P4. Used when P2 and P4 are difference sizes. Default is 1.0.
5	P3 current A	Read only Interval 0.0 - 99.9	Measured current for pump 3.
5_1	P3 high current A	Writable Interval 0.0 - 99.9 Central system text P3 high current (A)	High current alarm limit for pump 3.
5_2	P3 low current A	Writable Interval 0.0 - 99.9 Central system text P3 low current (A)	Low current alarm limit for pump 3.
6	P4 current A	Read only Interval 0.0 - 99.9	Measured current for pump 4.

No	Menu name	Specification	Description
6_1	P4 high current A	Writable Interval 0.0 - 99.9 Central system text P4 high current (A)	High current alarm limit for pump 4.
6_2	P4 low current A	Writable Interval 0.0 - 99.9 Central system text P4 low current (A)	Low current alarm limit for pump 4.
7_	Operating data	Read only	Menu group for operating data.
7_1	P1 start counter	Writable	Number of start for first pump.
7_2	P1 run hour h:min	Writable	Run hour for first pump
7_3	P2 start counter	Writable	Number of starts for second pump
7_4	P2 run hour h:min	Writable	Run hour for second pump
7_5	P3 start counter	Writable	Number of starts for third pump
7_6	P3 run hour h:min	Writable	Run hour for third pump
7_7	P4 start counter	Writable	Number of starts for fourth pump
7_8	P4 run hour h:min	Writable	Run hour for fourth pump
8_	Overflow	Writable	Menu group for overflow.
8_1	Overflow count	Writable	Number of overflows.
8_2	Overflow time h:min	Writable	Overflow time.
9_	Rain mm	Read only	Rain daily value.
9_1	Rain alarm 5min mm/5min	Writable Interval 0 - 99.9	Rain limit for 5 minute period.
9_2	Rain alarm 24h mm/24h	Writable Interval 0 - 999.9	Rain alarm limit for 24 hours.
9_3	Rain scale mm/pulse	Writable Interval 0 - 99.9	Rain meter scale factor.
10_	Pump control	Read only	Pump control group.
10_1	P1 state	Writable Alternative Auto Blocked	Program controlled automatic or blocked state for first pump.
10_2	P2 state	Writable Alternative Auto Blocked	Program controlled automatic or blocked state for second pump.
10_3	P3 state	Writable Alternative Auto Blocked	Program controlled automatic or blocked state for third pump.
10_4	P4 state	Writable Alternative Auto Blocked	Program controlled automatic or blocked state for fourth pump.
10_5	Stop delay time min:s	Writable Interval 00:00 - 10:00 Central system text Stop delay time (min:s)	Delays stopping of the pump by the preset time. Applicable to stop level 1 only.

No	Menu name	Specification	Description
10_6	Max. no. run. pumps	Writable Alternative 1 2 3 4 Central System Text Max. number of pumps	Specifies maximum number of pumps running at the same time. 1 pump 2 pumps 3 pumps 4 pumps
10_7	Pump alternation h	Writable Interval On Off Central System Text Pump alternation	The Alternation menu specifies the pump operating sequence.
10_8	Alternating pumps	Writable Interval 2 - 4 Central System Text Number of alternating pumps	Specifies the number of pump to use in the alternation.
10_9	Time betw. starts P1 min:s	Writable Interval 00:00 - 02:00 Central System Text Time between starts, P1 (min:s)	Delay between two pump starts, counted from when P1 started.
10_10	Time betw. starts P2 min:s	Writable Interval 00:00 - 02:00 Central System Text Time between starts, P2 (min:s)	Delay between two pump starts, counted from when P2 started.
10_11	Time betw. starts P3 min:s	Writable Interval 00:00 - 02:00 Central System Text Time between starts, P3 (min:s)	Delay between two pump starts, counted from when P3 started.
10_12	Time betw. starts P4 min:s	Writable Interval 00:00 - 02:00 Central System Text Time between starts, P4 (min:s)	Delay between two pump starts, counted from when P4 started.
10_13	Auto start interval. h	Writable Interval 1 - 200 Central System Text Auto start interval (h)	If a pump has not been started within the set interval, the function will start the pump for a maintenance run, The running time is set in the Auto start time menu.
10_14	Auto start time min:s	Writable Interval 00:00 - 02:00 Central System Text Auto start time (min:s)	The running time when started by the auto start function. 0 - disables the function
10_15	High lev. run time min:s	Writable Interval 00:00 - 10:00 Central System Text High Level run time (min:s)	Backup control activated when there is a level sensor failure. The high level switch activates the start of a pump (or two), which will then run for the period set in this menu
10_16	Max. run time min:s	Writable Interval 00:00 - 50:00 Central System Text Max. run time (min:s)	The maximum time the pumps are allowed to run continuously. 0 - disables the function
10_17	Flushing interval h	Writable Interval 00:00 - 200	Enter the number of pump cycles between each flushing.

No	Menu name	Specification	Description
10_18	Flushing time min:s	Writable Interval 00:00 - 02:00	Enter the time for which the flushing valve will be open 0 - disables the function.
11_	Alarm setup	Read only	Menu group for alarm
11_1	General alarm delay min:s	Writable Interval 00:00 - 02:00 Central System Text General alarm delay (min:s)	Delays the recording of an alarm. Used for all alarms except power failure alarm and low level.
11_2	Pow. fail alarm delay min:s	Writable Interval 00:00 - 02:00 Central System Text Power failure alarm delay (min:s)	The delay of a Power failure alarm before it is recorded
11_3	Low lev. alarm delay min:s	Writable Interval 00:00 - 02:00 Central System Text Low level alarm delay (min:s)	The delay of a Low level alarm before it is recorded
11_4	Work time min	Writable Interval 0 - 240	Work time before an acknowledgement is required from the personnel.
11-5	Warning time min	Writable Interval 1 - 15	Warning time, during which an acknowledgement from personnel is requested, before the personnel alarm is sent.
11_6	Transmit alarm	Writable Alternative Local Remote Clear Central System Text Transmit alarm	Alarm transmission. Local. Alarms are not transmitted. Remote. Alarms are transmitted to the Central system/SMS receiver. Clear. Clears the alarm buffer and changes to Remote.
11_7	Auto remote mode min:s	Writable Interval 00:00 - 50:00	The time after which the controller will revert to remote alarming mode. 0 - disables the function
11_8	D-alarm start time	Writable Interval 00:00 - 23:59	The start time for dialling out alarms with priority D.
11_9	D-alarm end time	Writable Interval 00:00 - 23:59	The stop time for dialing out alarms with priority D

No	Menu name	Specification	Description
11_10	Alarm priority 1	Writable Alternative Mains error Low 24V Supply Sensor Fault Invalid setpoints High level float High level Low level float Low level High level+pfail Failure 2 pumps Tripped motor P1 Tripped motor P2 Tripped motor P3 Tripped motor P4 No response P1 No response P2 No response P3 No response P4	Alarm priorities
11_11	Alarm priority 2	Writable Alternative High current P1 High current P2 High current P3 High current P4 Low current P1 Low current P2 Low current P3 Low current P4 P1 max run time P2 max run time P3 max run time P4 max run time P1 switched off P2 switched off P3 switched off P4 switched off High temp. P1 High temp. P2 High temp. P3 High temp. P4	Alarm priorities. Continuation

No	Menu name	Specification	Description
11_12	Alarm priority 3	Writable Alternative P1 Spare alarm P2 Spare alarm P3 Spare alarm P4 Spare alarm Alarm input 1 Alarm input 2 Alarm input 3 Alarm input 4 Alarm input 5 Alarm input 6 Alarm input 7 Alarm input 8 Pers. Alarm Overflow High rainfall 5 min High rainfall 24 h Test call! I/O-mod not resp. Wrong I/O module Set-point change	Alarm priorities. Continuation
11_13	Alarm texts	Read only	Menu group for alarm texts.
11_13_1	Alarm text input 1	Writable Central system text Alarm text input 1	Alarm text to use for general input 1.
11_13_2	Alarm text input 2	Writable Central system text Alarm text input 2	Alarm text to use for general input 2
11_13_3	Alarm text input 3	Writable Central system text Alarm text input 3	Alarm text to use for general input 3.
11_13_4	Alarm text input 4	Writable Central system text Alarm text input 4	Alarm text to use for general input 4.
11_13_5	Alarm text input 5	Writable Central system text Alarm text input 5	Alarm text to use for general input 5.
11_13_6	Alarm text input 6	Writable Central system textt Alarm text input 6	Alarm text to use for general input 6.
11_13_7	Alarm text input 7	Writable Central system text Alarm text input 7	Alarm text to use for general input 7.
11_13_8	Alarm text input 8	Writable Central system text Alarm text input 8	Alarm text to use for general input 8.
11_14	Alarm code filter	Read only	Menu group for alarm code filter.
11_14_1	Alarm code input 1	Writable Interval 0 - 9999	Alternative alarm code to use for input 1.
11_14_2	Alarm code input 2	Writable Interval 0 - 9999	Alternative alarm code to use for input 2.
11_14_3	Alarm code input 3	Writable Interval 0 - 9999	Alternative alarm code to use for input 3.

No	Menu name	Specification	Description
11_14_4	Alarm code input 4	Writable Interval 0 -9999	Alternative alarm code to use for input 4.
11_14_5	Alarm code input 5	Writable Interval 0 - 9999	Alternative alarm code to use for input 5.
11_14_6	Alarm code input 6	Writable Interval 0 - 9999	Alternative alarm code to use for input 6.
11_14_7	Alarm code input 7	Writable Interval 0 - 9999	Alternative alarm code to use for input 7.
11_14_8	Alarm code input 8	Writable Interval 0 - 9999	Alternative alarm code to use for input 8.
11_15_	Test alarm	Read only	Menu group for test alarm.
11_15_1	Test alarm interval days	Writable Interval 0 - 99	Test alarm interval. How often the test alarm shall be sent.
11_15_2	Test alarm time	Writable Interval 00:00 To 23:59	Test alarm time The time of the day, at which the test alarm is sent
11_15_3	Test alarm state	Writable On Off	Manual activation of test alarm. Also reflects the current state of the test alarm.
12_	Communication	Read only	Menu group for communication with the Central system/SMS.
12_1	Station number / id	Writable 1 - 999	The unique number of the station within the system.
12_2	Station name	Writable Central System Text Station name	Enter the station name. This name will be used in SMS calls to a GSM telephone.
12_3	Telephone CS/SMS	Writable Central System Text Telephone number to Central system / SMS	Telephone number to central system or SMS receiver. T=Tone dial. The telephone number is required for alarm handling to the central system or SMS receiver
12_4	Communication COM1	Writable Alternative None Hayes modem GSM/Hayes predefined RS232 HDX RS232 FDX User modem	Type of communication to use for the communication with the Central System.
12_5	Modem init 1	Writable	Initialization string for the modem. (part 1) Applies only when 'User modem' is selected as communication
12_6	Modem init 2	Writable	Initialization string for the modem. (part 2) Applies only when 'User modem' is selected as communication

No	Menu name	Specification	Description
12_7	Speed COM1 bps	Writable Alternative 200 2400 4800 9600 19200 38400 57600 115200	Speed to use for the communication with the Central System.
12_8	Protocol COM1	Writable Alternative AquaCom fixed AquaCom dialled AquaCom/SMS	Choice of transmission protocol to use for the communication with the Central System.
12_9	RTS delay COM1 ms	Writable Interval 25 To 1000	Delay for the RTS signal (request to send) in the communication with the Central System. Only in choice of RS 232 HDX.
12_10	Max. buffer size bytes	Writable Interval 80 - 4000	Limits the data size when collecting trend.
13_	General	Read only	Menu group for general set-points.
13_1	Date and time	Writable	Settings of date and time.
13_2	Ex mode	Writable Alternative Off On	When EX-mode is on, the pumps are not allowed to start unless water can be detected in the sump. The function is used primarily in explosive environment.
13_3	Auto reset	Writable Alternative No Yes Central System Text Tripped auto reset	Automatic reset of the motor protection in the case of an overcurrent failure. No. Inactivated function. The RTU blocks the pump. Yes. Activated function. The RTU will make a second attempt to start the pump. This function is only available when 'digital output 4' is configured as 'motor protection reset
13_4	Trend resolution	Writable Interval 1 - 60	Trend resolution The granuality with which the trend data is stored and transmitted to the Central System. 1 minute or 5 minute periods
13_5	System version	Read only	The RTU system version. Please have this number ready when calling Flygt support.
13_6	APP 541 version	Read only	The RTU program version. Please have this number ready when calling Flygt support.

No	Menu name	Specification	Description
13_7	Program mode	Writable Alternative Run Remote COM1	Run - The controller is in normal operation controlling the pumps. Remote - The controller is waiting for a remote connection to be established, in order to perform some management activity. E.g. loading a new applicatin program.
13_8	New password	Writable	Activates the service password, which prevents unauthorized access to service menues. The password is disable by the value 0000
14_	I/O setup	Writable	Menu group for I/O setup
14_1	Number of pumps	Writable Alternative 1 - 4	Specifies the number of pumps connected in the station.
14_2	Status input	Read only Alternative 1 = 24V fail 2 = 230V fail 3 = P1 trip 4 = P1 resp 5 = P2 trip 6 = P2 resp 7 = P3 trip 8 = P3 resp 9 = P4 trip 10 = P4 resp 11 = General input 1 12 = General input 2 13 = General input 3 14 = General input 4 15 = General input 5 16 = General input 6 17 = General input 7 18 = General input 8	Status of the digital inputs
14_3	Invert inputs	Writable Alternative 1 = 24V fail 2 = 230V fail 3 = P1 trip 4 = P1 resp 5 = P2 trip 6 = P2 resp 7 = P3 trip 8 = P3 resp 9 = P4 trip 10 = P4 resp 11 = General input 1 12 = General input 2 13 = General input 3 14 = General input 4 15 = General input 5 16 = General input 6 17 = General input 7 18 = General input 8	Inverts an input from being NO (normally open) to NC (normally closed). 0 =not inverted 1 = inverted

No	Menu name	Specification	Description
14_4_	Common alarm	Writable	Menu group for common alarm output.
14_4_1	Common alarm	Writable Alternative Continuous Intermittent	Type of common alarm output. Continuous or pulsating.
14_4_2	Com. Alarm activ 1	Writable Alternative 1 = Mains error 2 = Low 24V Supply 3 = Sensor Fault 4 = Invalid setpoints 5 = High level float 6 = High level 7 = Low level float 8 = Low level 9 = High level+pfail 10 = Failure 2 pumps 11 = Tripped motor P1 12 = Tripped motor P2 13 = Tripped motor P3 14 = Tripped motor P4 15 = No response P1 16 = No response P2 17 = No response P3 18 = No response P4	Selects which alarms that activate the common alarm output. (part 1
14_4_3	Com. Alarm activ 2	Writable Alternative 1 = High current P1 2 = High current P2 3 = High current P3 4 = High current P4 5 = Low current P1 6 = Low current P2 7 = Low current P3 8 = Low current P4 9 = P1 max run time 10 = P2 max run time 11 = P3 max run time 12 = P4 max run time 13 = P1 switched off 14 = P2 switched off 15 = P3 switched off 16 = P4 switched off 17 = High temp. P1 18 = High temp. P2 19 = High temp. P3 20 = High temp. P4	Selects which alarms that activate the common alarm output. (part 2

No	Menu name	Specification	Description
14_4_4	Com. Alarm activ 3	Writable Alternative 1 = P1 Spare alarm 2 = P2 Spare alarm 3 = P3 Spare alarm 4 = P4 Spare alarm 5 = Alarm input 1 6 = Alarm input 2 7 = Alarm input 3 8 = Alarm input 4 9 = Alarm input 5 10 = Alarm input 6 11 = Alarm input 7 12 = Alarm input 8 13 = Pers. Alarm 14 = Overflow 15 = High rainfall 5 min 16 = High rainfall 24 h 17 = Test call! 18 = I/O-mod not resp. 19 = Wrong I/O module	Selects which alarms that activate the common alarm output. (part 3)
14_5_	General inputs...	Writable	Meny group for general inputs
14_5_1	Function gen.input 1	Writable Alternative None P1 hand Power failure External alarm Blocking Personnel Rain meter Overflow Low level float High level float High temp P1 P1 Spare alarm Central System Text Function general input 1	Select function for general input 1.
14_5_2	Function gen.input 2	Writable Alternative None P2 hand Power failure External alarm Blocking Personnel Rain meter Overflow Low level float High level float High temp P2 P2 Spare alarm Central System Text Function general input 2	Select function for general input 2.

No	Menu name	Specification	Description
14_5_3	Function gen.input 3	Writable Alternative None P3 hand Power failure External alarm Blocking Personnel Rain meter Overflow Low level float High level float High temp P3 P3 Spare alarm Central System Text Function general input 3	Select function for general input 3.
14_5_4	Function gen.input 4	Writable Alternative None P4 hand Power failure External alarm Blocking Personnel Rain meter Overflow Low level float High level float High temp P4 P4 Spare alarm Central System Text Function general input 4	Select function for general input 4.
14_5_5	Function gen.input 5	Writable Alternative None P5 auto Power failure External alarm Blocking Personnel Rain meter Overflow Low level float High level float High temp P5 P5 Spare alarm Central System Text Function general input 5	Select function for general input 5.

No	Menu name	Specification	Description
14_5_6	Function gen.input 6	Writable Alternative None P6 auto Power failure External alarm Blocking Personnel Rain meter Overflow Low level float High level float High temp P6 P6 Spare alarm Central System Text Function general input 6	Select function for general input 6.
14_5_7	Function gen.input 7	Writable Alternative None P7 auto Power failure External alarm Blocking Personnel Rain meter Overflow Low level float High level float High temp P7 P7 Spare alarm Central System Text Function general input 7	Select function for general input 7.
14_5_8	Function gen.input 8	Writable Alternative None P8 auto Power failure External alarm Blocking Personnel Rain meter Overflow Low level float High level float High temp P8 P8 Spare alarm Central System Text Function general input 8	Select function for general input 8.
14_6	I/O module	Read only	Menu group for I/O-module.
14_6_1	Base IP address	Writable	Base IP address for the controller and the I/O board. 2 consecutive addresses are required. The second address is automatically assigned within the system and does not have to be entered.
14_6_2	I/O-mod MAC address	Writable	The MAC address of the I/O board.

No	Menu name	Specification	Description
14_6_3	IP timeout	Writable	The timeout for the IP communication with the I/O-moduleule.
14_6_4	I/O-Module type	Read only	Type of I/O-module.
14_6_5	I/O-Module version	Read only	I/O-module versionon. The value is fetch from the I/O-moduleule.
14_7_	Outputs...	Read only	Menugroup for Outputs.
14_7_1	Function output 4	Writable Alternative Motorprotect. reset Cleaning valve General output	Select if the output is to be used as motor protection reset, Cleaning valve or General purpose output.
14_7_2	Output 4 config.	Writable Alternative Power failure High level P1 failure P1 blocked P2 failure P2 blocked P3 failure P3 blocked	Select which signals that shall activate the output 4. Applies only if general purpose outputs have been selected.
14_8	Diagnos. program	Writable Alternative Off 1-39	Diagnostic program for test of the RTU.
14_9	Flygt default	Writable Alternative No Yes	Resets all settings to default.
15	Show more menus	Writable Alternative No Yes	Opens the service menus
16	Show more menus password	Writable	Shows hidden menus when password function is enabled. Enter password!
17	Language	Writable Alternative English Deutsch Nederlands Français Dansk Svenska Norsk Español Magyar Suomi Italiano PycckNN Polski	Select display language

11. Appendix B: Configuring a modem

11.1. Example of a TD-33 modem

Start Windows Hyperterminal program.

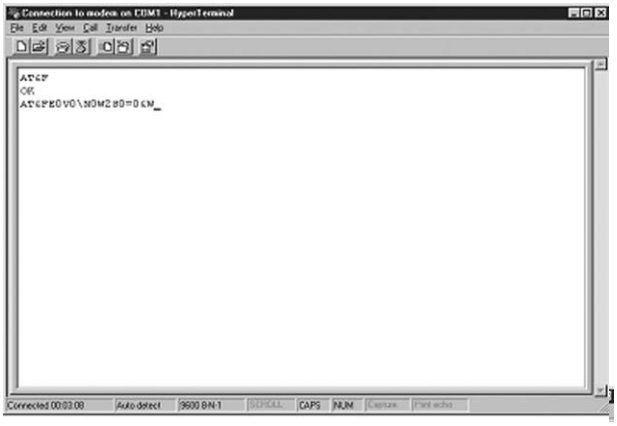
Select and configure the COM port to which the modem is connected:

- Bits per second: 9600 (or some other speed you want to use).
- Data bits: 8
- Parity: none
- Stop bits: 1
- Flow control: Hardware

Type "AT&F" and press Enter. The modem will answer "OK".

Type in the initialization string: E.g. AT&F E0V0 &K3 &D2

\N3 %E0 S36=3 S0=0 and press Enter.



The initialization string must be permanently stored in the modem: To do this:

- Append "&W" to your initialization string or
- type "AT&W" after entering the initialization string.

12. Appendix C: Modems and initialization strings

12.1. RTU versus MTC-COM

The following modem combinations and configurations can be used. Pre-configured modems must use initialisation strings as listed below:

Modem in RTU	**MTC-COM Baudrate**	**Modem in MTC-COM**				
		CourierV90 Pre-config.	**TDK 2814 Pre-config.**	**TDK 5660 Pre-config.**	**TD22 Pre-config.**	**TD33 Pre-config**
Westermo TD-33	4800	OK	OK	OK	OK	OK
Siemens TC35	4800	OK	NOT POSSIBLE TO USE	OK	OK	OK

12.2. RTU versus AquaView

The following modem combinations and configurations can be used. Pre-configured modems must use initialization strings as listed below:

Modem in RTU	**AquaView Baudrate**	**Modem in AquaView**		
		TD-33 Pre- configured	**TD-33 Factory settings**	**CourierV. Everything Factory settings**
Westermo TD-33 Factory Settings	2400	Not tested since factory settings is ok	OK	OK
	4800	Not tested since factory settings is ok	OK	OK
	9600	Not tested since factory settings is ok	OK	OK
	19200	Not tested since factory settings is ok	OK	OK
Siemens TC35	2400	OK	NOT RECOMMENDED	NOT RECOMMENDED
	4800	OK	OK	OK
	9600	OK	OK	OK
	19200	OK	OK	OK

12.3. Initialization strings

Modem	in RTU	in MTC-COM
TD-33 Westermo With errorcontrol	AT&F E0V0 &K3 &D2 \N3 %E0 S36=3 S0=0	AT&F E0V0 &K3 &D2 \N3 %E0 S36=3 S0=0 +MS=V32,1,300,4800,300,4800 Preselection 35 in MTC-COM O6.02.06
TD-33 Westermo Without errorcontrol	AT&F E0V0 \N0 &D2 &K3 S0=0 S36=3 %E0	AT&F E0V0 \N0 &D2 &K3 S0=0 %E0 S36=3 +MS=V34,1,300,4800,300,4800
GD-01 Westermo Autobauding	AT&F AT+IPR=9600 AT+CBST=0,0,1 AT&S0 AT&D2 ATE0V1	
TC-35 Siemens Autobauding	AT&F AT+CBST=0,0,1 AT+IPR=9600 ATE0V1	
Courier V. Everything Dipsw 1,2,3,4,5,8=on 6,7,9,10=off		AT&F1 E0V0 B0 F1 Q0 X4 &A3 &B1 &C1 &D2 &H1 &I0 &K1 &L0 &M4 &N0 &R2 &S0 S27=1 With errorcontrol.
Courier V. Everything Dipsw 1,2,3,4,5,8=on 6,7,9,10=off		AT&F1 E0V0 X4 Preselection 15 in MTC-COM O6.02.06 Without errorcontrol.
Courier V. Everything Dipsw 1,2,3,4,5,8=on 6,7,9,10=off		AT &F1 E0 V0 &B1 &N4 &M0 &K0 X4 Only in combination with TC-35
TD-22 Westermo Dipsw3-1=on		AT&F E0V0 F5 &C1 &D2 \N0 S0=0 Preselection 14 in MTC-COM O6.02.06
TDK 5660		AT&F E0V0 %C0 \N0 W0 S0=0 +MS11,1,300,4800,0,0 Preselection 13 in MTC-COM O6.02.06
TDK DF2814		AT&F E0V0 \N0 %G0 %E0 %C0 -K0 S0=0 Preselection 11 in MTC-COM O6.02.06

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