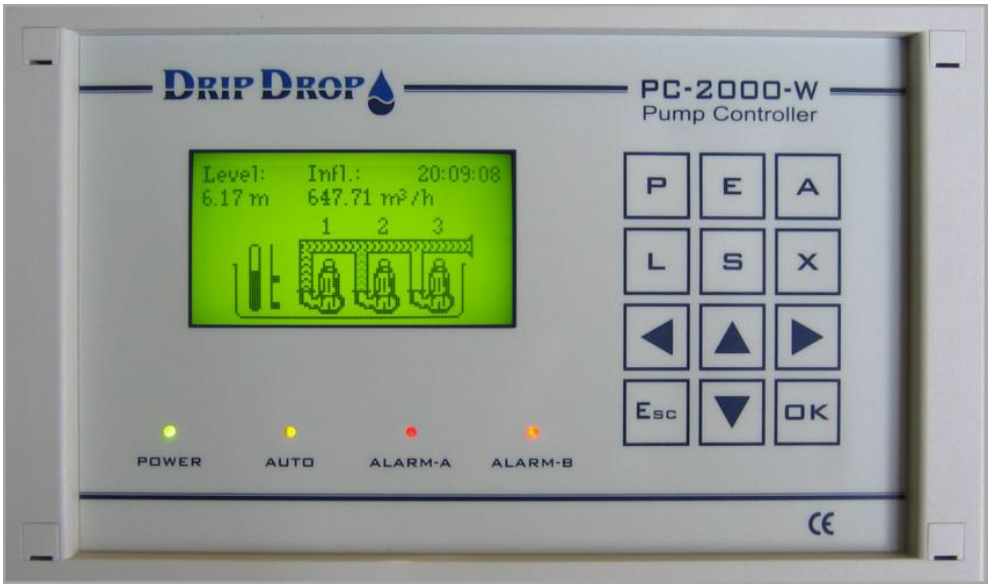
PC-2000-W

Pump controller



User manual

Version 30.56.12/101208-UK

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Changes

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1 Description

1.1 General

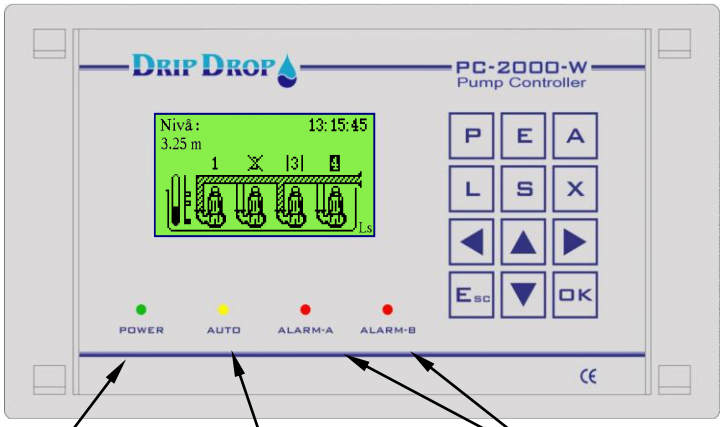
The pump controller **PC-2000-W is** an advanced computer controlled device to control and supervise up to 4 pumps. Containing an operator unit (CPU unit PC-2000-W) and an I/O unit (ADA 2000-E) for connecting digital and analogue signals.

The signals transfer between the units via three flat cables.

The unit has two communication ports RS 232 / 485 for communication with a supervision and SCADA system or for serial communication with other units.

1.2 Operator unit

The operator unit is mounted in the front door of a cabinet and has 12 control keys for configuration and alarm handling. The graphic 64 x 128 dot display shows information, log values and historical log as curves.



Power supply indication
-Fixed green light

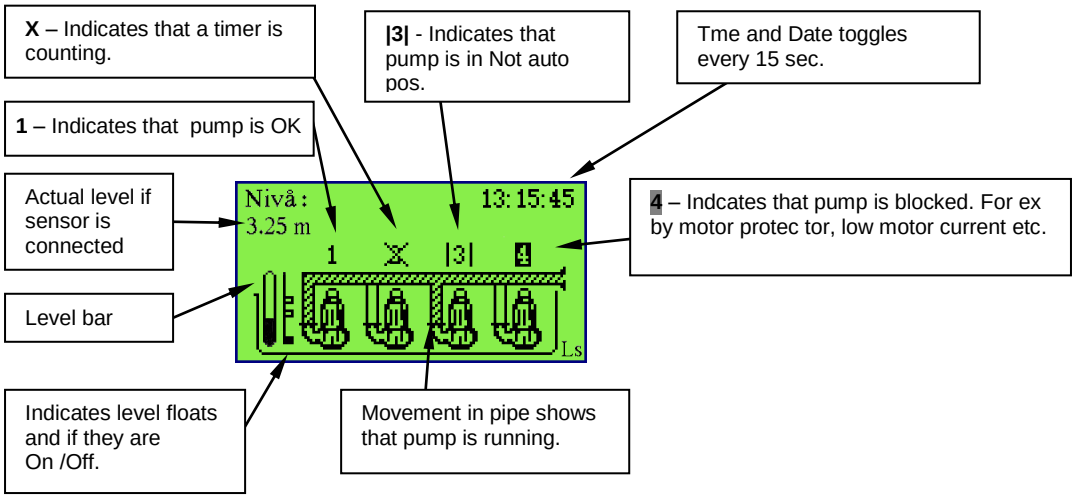
Indication of A-alarm and B-alarm
-Blinking red light : Not ackn. alarms
-Fixed red light: Active ackn. alarms

Indacation Pump in Auto
-Blinking yellow light: Pump or pumps not in Auto.
-Fixed yellow light: All pumps in Auto

P	Shows pump status, actual and accumulated data for the last 7 days.
E	Shows flows and overflows, actual and accumulated values for up to 7 days.
A	Shows unconfirmed, active alarms and alarm history.
L	Shows logged values, numeric and graphic
S	Menu where all basic settings are made for example start- /stop levels, alternation etc.
X	Shows external units that can communicate via RS-485.
OK	Push button used to confirm choice and to enter sub menus.
Esc	Close menus and step backwards.

1.2.1 Description of the display window

The back lit display shows the number of pumps in the pit and their status, water level- graphic and numerical, in- and outflow, date/time, level switch and their status. Normally the display light is off, but will light up when any key is pressed. The display light will shut off after 5 minutes of inactivity



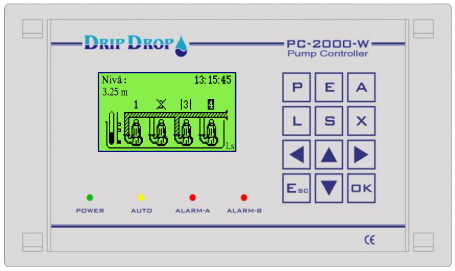
Running Pump – When a pump is running, it is indicated by water running in the pipe.

Waiting mode – if a time delay or another time function is activated, it is shown by an X over the pump number. This is to show that the pump waits for a time function before the pump is ready to restart.

Not in Auto – indicates that pump selector switch is not in Auto position. This is shown by two vertical lines **|3|**, and that the yellow Auto LED starts to blink.

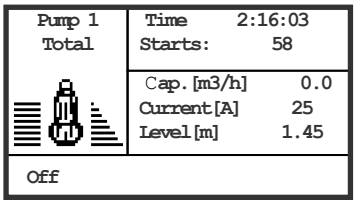
Blocked Pump – certain circumstances blocks the restart of the pumps, for example certain alarms or causes where you choose that the pump will be blocked when an error occurs. A Blocked pump is indicated by a grayed out pump number. The blocking can be lifted by fixing the fault and acknowledge the alarm.

2 Hotkeys and Overview system settings

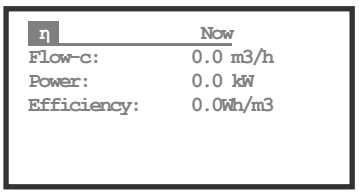


The pumpcontroller PC 2000 W uses an extensive menu to display and handle information as well as configuration of the unit directly from the display panel. In order to get to better understand all menu functions, here follows a brief overwiev of the structure of the different menues for status, information and configuration. Through the P,E,A,L and X keys you will access status and information regarding pumps and the pumping station. The S key is to enter into the menu structure where all configurations are made.

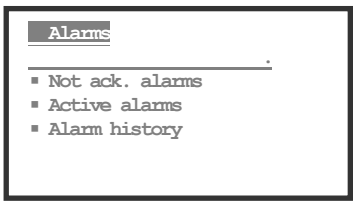
P Shows pump status, actual total values as well as data up to 7 day back. More info in chapter 4.1.

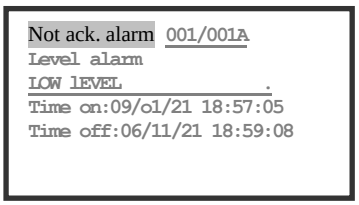


E Shows flows, overflows, power and energy if the corresponding meters are used. Actual and ackumulated values for up to 7 days are shown . More info in chapter 4.2.



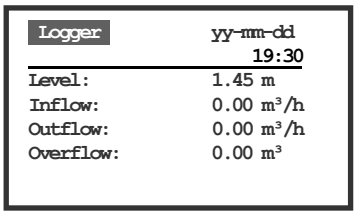
A Shows unconfirmed, active alarms and alarm history. When you enter the alarm menu you can choose to see not acknowledge alarms, active alarms and a alarm history list with up to 200 alarms. More info in chapter 4.3.

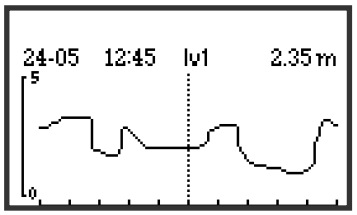




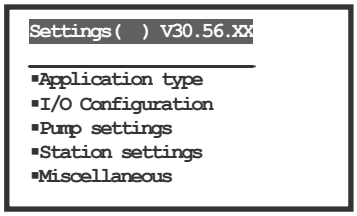
L Shows logged values up to 7 days. There is one display for numeric values, all values can also be displayed as curves in the display window.

More info in chapter 4.4.

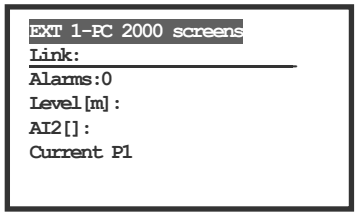




S Menu where all basic settings are made for pumps, station and communication, for example start- /stop levels, alternation a.s.o. More info in chapter 5.



X Shows status and information from external units that are connected via the RS-485 port. Up to 6 units can be connected to one PC 2000 W More info in chapter 4.5.

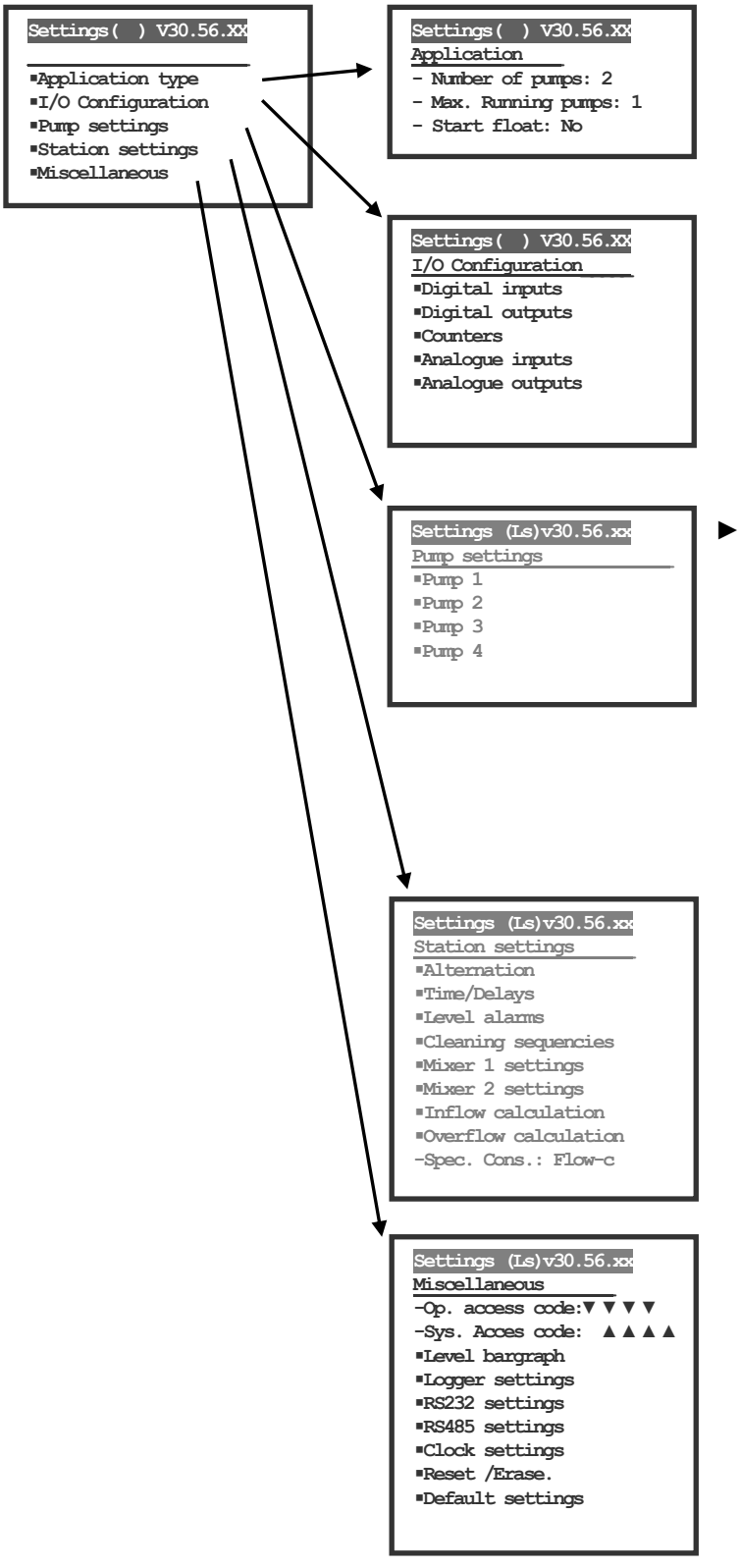


OK Push button used to confirm choice and to enter sub menues.

Esc Close menus and step backwards in the menustructure

Settings menu - overview

The Settings menu is where all the configuration of the unit is made. By pressing the **S** key, you will enter the Settings main menu that consists of five submenus handling different areas in the configuration process. You enter each submenu by moving up and down in the menu options with the ▼▲ key, and enter the corresponding submenu by pressing the OK key.



Application menu – to set how many pumps you have in the station, how many pumps are allowed to run simultaneously and if you use level sensor or level switches to detect operating levels.See chapter 5.2

I/O configuration menu – is where you define how to use all predefined inputs and outputs, digital and analogue.
See chapter 5.3

Pump settings menu- This is where you set all parameters regarding each individual pump, start/stop levels, alternation, current settings etc.
See chapter 5.4

Station setting menu- This is the menu for setting of station specific parameters. Alternation type, timers and delays, alarm levels, mixing and cleaning functions, flowcalculation functions etc.
See chapter 5.5

Miscellaneous menu – In this menu you can make settings for access codes, logger settings, all communication settings, reset/ erase alarmlists/counters and reset the unit to original factory settings.

See chapter 5.6

3 Log in – Access code ▼

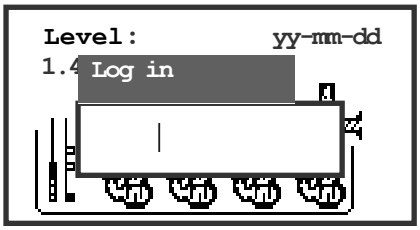
In the information menu, you will find all information about pumps, logged values and alarms. To make changes or to acknowledge alarms you need an access code depending on what you like to do. The unit has two different access levels:

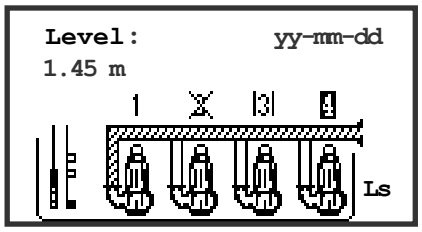
1. Operator code- that allows acknowledgement of alarms.
2. System code –which allows changing of all values and configuration of the unit.

The access codes can be changed under Settings/Miscellaneous

There are two ways to enter the access code:

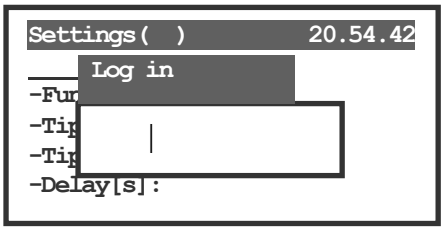
1. From the main display picture by pressing the ▼ key you will enter the access code prompt. Here you can enter the valid code and confirm by pressing the OK key.



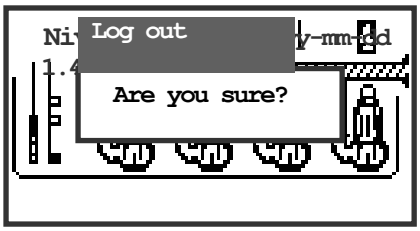


When you are logged in the following will show up in the lower right corner of the display :
Ls (system)
Lo (operator).

2. When you are in a sub menu and try to enter the edit position by pressing OK, you will come to the access code prompt. When the prompt shows, you have to enter the valid access code. You can then enter the edit position where you can change the values.



The unit will log out automatically 5 minutes after inactivity.
As an alternative, you can press the ▼key and the log out prompt will show. Press OK .



4 Information menus P , E , A , L , X , ESC , OK , ▲

To access information about pump status, alarms and station values quickly, you use the information hot keys on the front panel.

4.1 Pump status key P

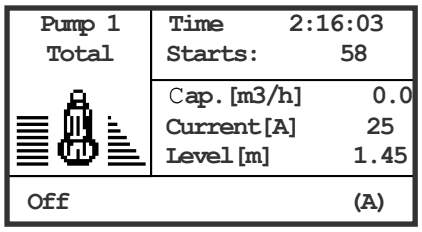
4.1.1 Pump information

The **P** key is used to get information about each pump quickly. You can access three pump information windows by pressing the **P** key

The first window shows total values for running time and number of starts for the pump. This information is given only in this window.

All other information is shown in the two following windows.

Picture 1



You scroll thru pump 1-4
with the ▲▼ keys.
To the right and left, between day1-7,
and total values for each pump with◄►

Information window for Pump 1

Specific information for each pump.

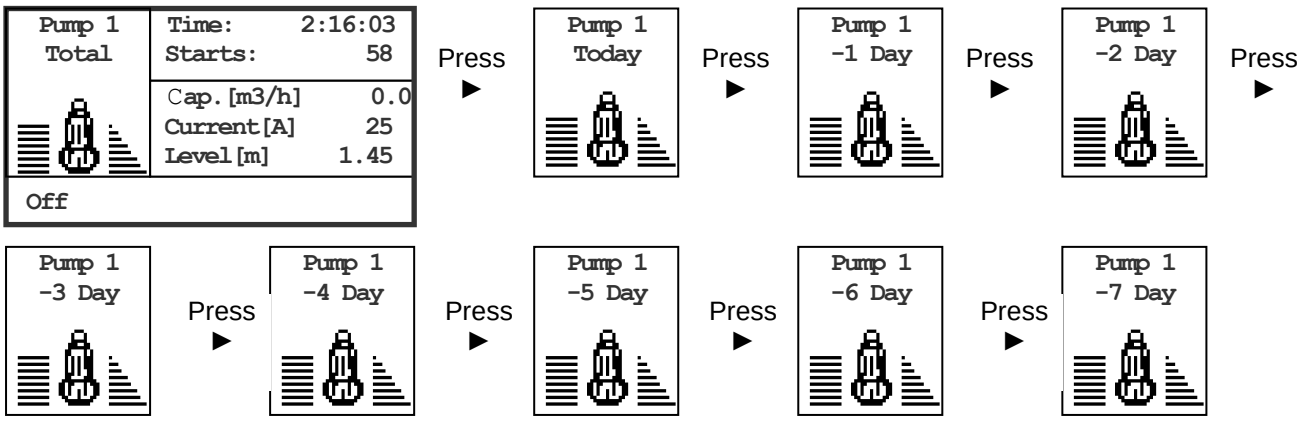
Actual values that are shown in all pump status windows.

Information about if a pump is running or not, if a pump is in automatic mode and if the pump has stopped becaue of an alarm.

When you are in the information window, you scroll thru the information for pump 1-4 with the ▲▼keys.. This stepping between the pumps can be made in all information windows. You will always get into the corresponding window for next pump.

4.1.2 Running time and number of starts for pumps.

To see running time and number of starts for pumps you press the P key. To see the values for the other pumps press the ▲▼ keys. By pressing the ► key, you will see actual running time and number of starts. Pressing the ► key scrolls thru the last seven days. After 7 days, you will get back to total values.



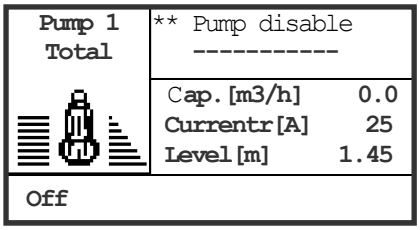
Corresponding information for pumps 1-4 is shown by pressing the ▲▼keys.

4.1.3 Disabling, manual start and stop of pumps.

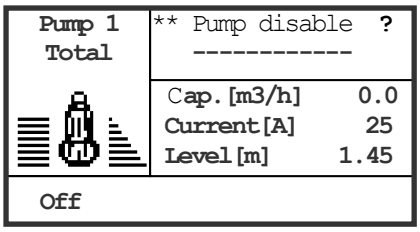
When a pump is removed for service, you can disable the pump in the controller.

When you disable a pump, the pump will disappear from the main picture.
To reach the disabling position you press the **P** key twice.

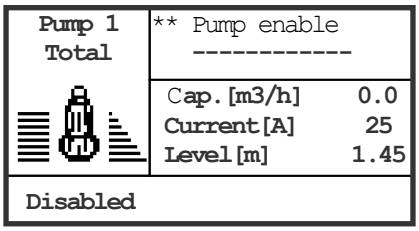
Picture 2



Picture 2 under P key
When you enter this picture the cursor will be in the position ”Pump disable”. If you want to disable the pump press the OK key.



Now a question mark will appear after the disable prompt. Press OK to confirm.

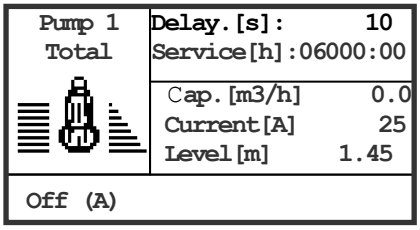


When you have confirmed the text ”Pump enable ” will appear.
If you want to enable the pump press OK as above.

You can see that the pump is disabled in the status window at the bottom of the display.

4.1.4 Display of time delay and service times

In picture 3 under the P key you will see if the unit is counting down on a time delay, for ex. start or stop delay or similar. This is shown by the remaining time that is counting down in the window under Delay. If the counter shows zero, it is not counting. If a time is counting down this may be the reason that a pump does not start until the time is finished. If the function for service time is activated you will see how long time is left until the next scheduled maintenance of the pump.



Picture 3 under P key
In this window you will see if a timer is counting down.
This example shows that it is 10 seconds left until the count down is ended.

You can also see that there are 6000 hours left to the next maintenance check for the pump.

4.2 Summarize key E

4.2.1 Actual values

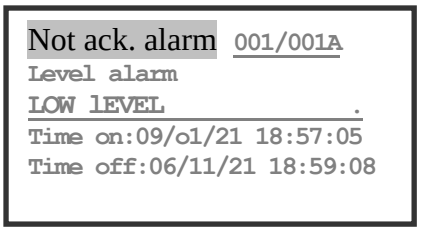
The **E**-key is used to see the actual values, total values and the values for the last 7 days for efficiency, flow and overflow.
When you press the E-key once if energy meter is used you will come to efficiency. If not you will go directly to the flow display. When you press the E-key a second time you will come to flow and when you press the E-key a third time you will come to overflow.

When you are in the Efficiency display, the actual values are shown first. When you press the key ►, you will come to the total values. When you press the ► key once more, you will come to the values for today. In the same way, you continue for the values for 7 days back. This is valid for flow as well as overflow.
If you want to go back to previous values press ◄ key.

4.3 Alarm handling key A

The pump controller PC-2000-W has the capacity to handle a great number of different alarms for pumps, station and even internal alarms. Every alarm generates an information window when activated, with information about which alarm is activated, activation time and if it is an A or B-alarm. At the same time, one or two alarm LEDs is blinking until the alarm is confirmed.
5 minutes after the alarm text is shown on the screen the screen light go off and the alarm text disappears.
The alarms are then indicated via the two alarm LEDs.
Blinking red light indicates a new alarm, which is not confirmed.
Fixed red light indicates that the alarm is confirmed but still active.

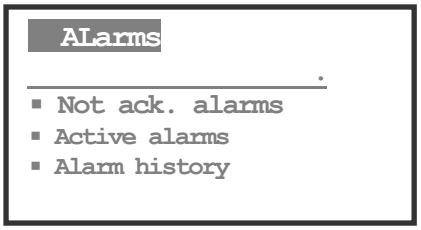
There are two types of alarms. A-alarms and B-alarms.
A-alarm is an alarm that calls a supervision system or sends a text message to a mobile phone.
B-alarm is an alarm that only is registered in the alarm history but is not sent to an external system.



Example of alarm in the text window.
Not ack. alarm 001 of 001 alarms in the alarm list A-larm.
That it is a level alarm (has to do with the level measurement)
The alarm is a low level alarm

Time when the alarm got active started.
Time when alarm got inactive.

This text is shown in the display window when the alarm starts, but will disappear after 5 minutes when the screen light is shut down. When the screen is shut down, you will see that there is an alarm in the alarm list by the two alarm LEDs. To access the alarm you press the A key to enter into the alarm handling menu:

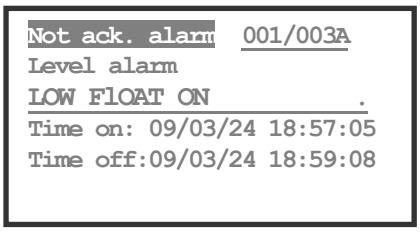


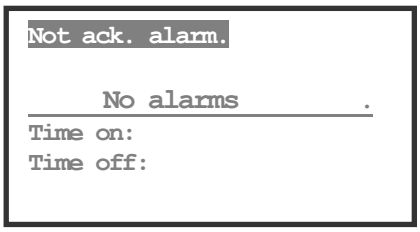
Alarm handling menu – here you can see the different alarms
Not ack. alarms (new) .
Active alarms
Allarm history
With the up and down keys you can chose which type of alarms you want to see and enter the alarm list with the OK key.

4.3.1 Acknowledging new alarms

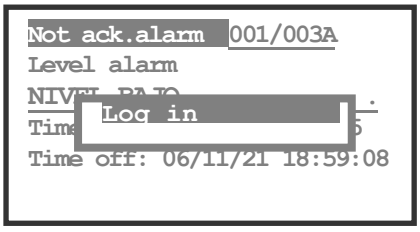
New alarms are indicated by the blinking of one of the red alarm LEDs. To acknowledge the alarms you have to enter *Not ack. alarms* option in the alarm menu.

When you are in the alarm list for Not ack. alarm, you can acknowledge the alarm by pressing the OK key. If there are more Not acknowledged alarms in the list, you can step through the list with the up and down keys.
When all alarms are acknowledged, the red LED stops blinking and the display will show that there are no alarms in the list. If the alarm is still active the LED show a red fixed light.





If you have not logged in the Log In prompt will show when you press the OK key to acknowledge the alarm.

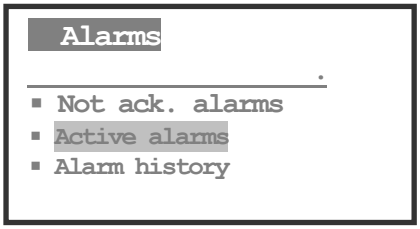


The log in promt will not show up if you are already logged in to the system. .

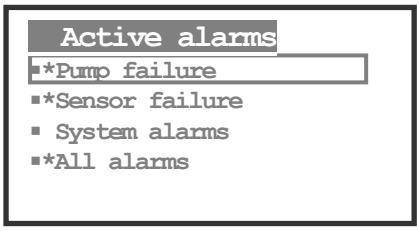
When you have acknowledged all alarms that you want to acknowledge you quit the alarm handling function by pressing the Esc key until you have returned to the main menu.

4.3.2 Active alarms

If you want to see active alarms, you choose active alarms in the alarm handling menu.

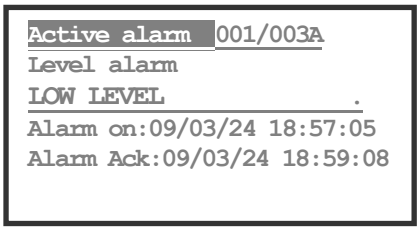


When you enter active alarms you come into a submenu where you can chose to look at all alarms or just pump alarms, sensor alarms or system alarms.



In this menu you can look at all alarms or alarm groups.
Groups with active alarms are indicated with an asterics.
You enter the different alarm groups with the OK key.

When you are in the alarm list for active alarms, you can see information about number of alarms in the list, alarm type and time when the alarm started and when it was acknowledged. The alarm shown when you enter the list is the latest alarm.



Example of active alarms in the alarm list
Shows which alarm is shown, in this case 1 of 3.
Alarm type, A-alarm.
Alarm group – Level alarm
Alarm – Low level alarm
Time when the alarm started.
Time when the alarm was acknowledged.

To step forward backwards in the alarm list use the up and down keys.

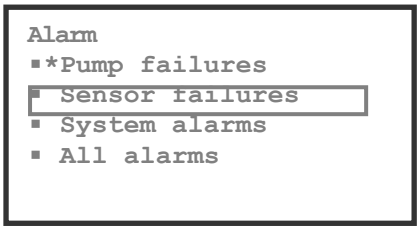
When you are ready with the alarm handling you exit with the **Esc** key.

4.3.3 Alarm history

In the alarm history, all alarms for up to 200 alarms are listed. When the list is full, the oldest will disappear.

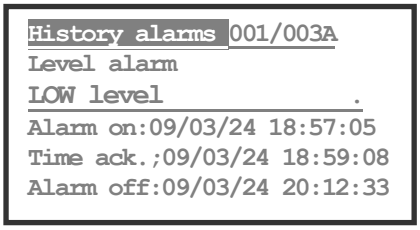
To enter the alarm history you chose alarm history in the alarm-handling menu.

Even in the submenu, you can chose between all alarms or chose alarms in groups the same way as in the active alarms menu.



In this menu you can look at all alarms or look at alarms in different alarm groups.
Groups with stored alarms are indicated with a star.
You enter the alarm groups with the OK key.

In the alarm history list, you will find all registered alarms. The latest alarm is the first in the text window and the oldest is at the bottom, maximum 200 alarms can be stored in the history list.



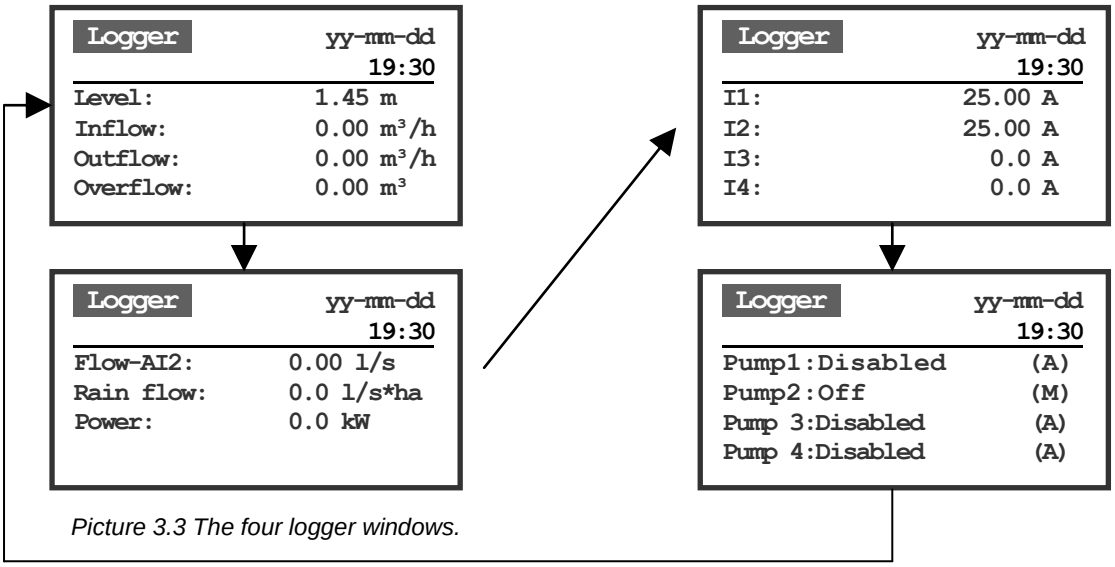
Example of alarm in the alarm history list
Shows which alarm is shown, in this case 1 of 3.
Alarm type, A-alarm.
Alarm group – Level alarm
Alarm – Low level alarm
Time when alarm started .
Time when alarm was acknowledged.
Time when alarm stopped

4.4 Logger key L

Logged values are stored in the PC-2000-W in 1 to 10 minutes intervals and displayed as average values for 7 days. All logged information is found by pressing the logger key L. There are four different windows available by pressing the L key.

Main window for logger

Below you can see the four logger windows.
Each time you press the L key you step to the next window.



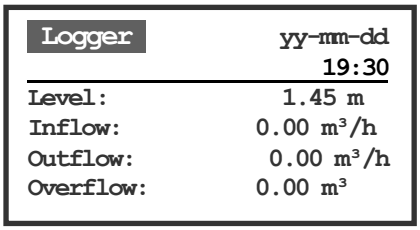
Picture 3.3 The four logger windows.

Time selection for logger values.

In all logger windows, the time is shown in the upper right corner of the logger windows and shows the time for the values. If you press the ◄ key once you will see, the logged values according to the time interval 1-10 minutes for each time you press the◄ key you move one time interval backward in time. If you keep the ◄ key pressed for a couple of seconds you will get intervals of 15 minutes.
If you press the key for more than 10 seconds, the time interval will be 1 hour.
For movement forward you use the ► key the same way.

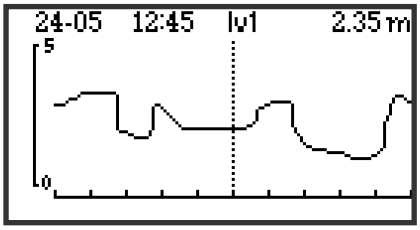
Visualizing of log values in graphic form

All values that are shown in the logger window can be viewed as a graphic curve. This is done by entering the logger window, which holds the information you are interested in and press the OK key.



Enter the logger window by pressing the L key.
Press **OK** key to enter graphic display.

The unit will process the information during a couple of seconds and the display the values as a curve in the logger window, in this case, the level is shown.



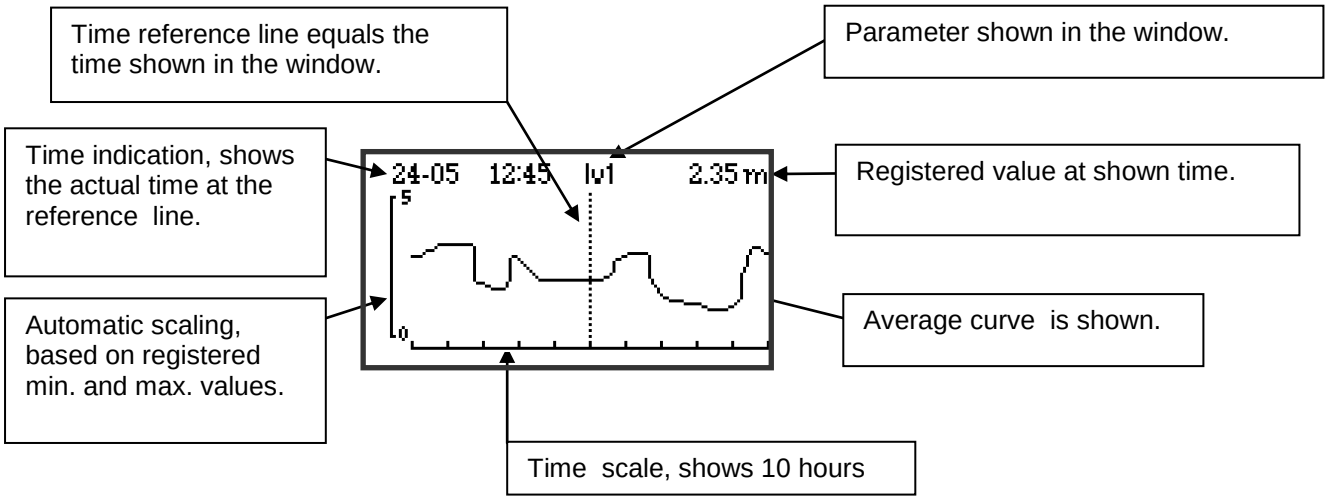
After a couple of seconds the first value in the list, in this case the level, is shown as a curve

To see the other curves in the logger list you use the▼▲ keys to change viewed parameters to the next one in the logger list.

To get back to numeric values you press the Esc key.

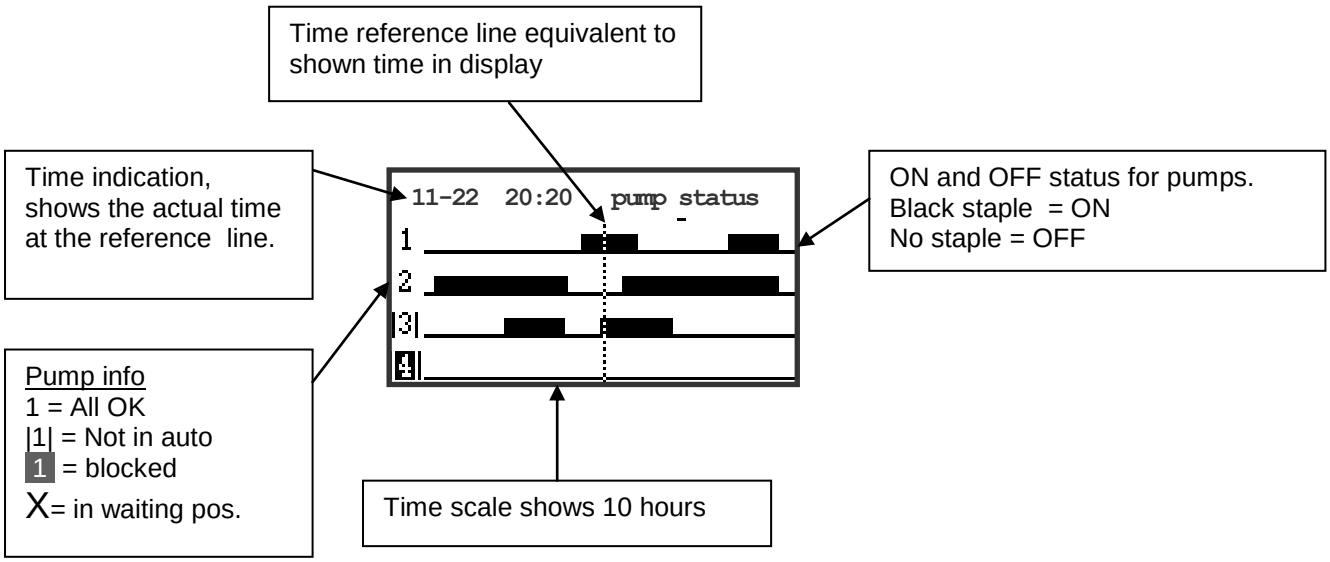
Because you log both analogue and digital values, you will see two different graphic displays, usual curves and bar graphs.

Description of the analogue display window



To move along the time axis use the ◄► keys.

Description of the digital display window



To move along the time axis use the ◄► keys.

4.5 External connected units X

4.5.1 External units that communicate via RS-485

The **X**-key shows the external RS485 connected devices and the values they are set to display.

Device 1

1.PC 2000:2	
Link:	OK
Alarm:	0
Level[m]:	0.00
Current P1[A]:	0.00
Current P2[A]:	0.00

Press ►

Device 2

2.PC 2000:1	
Link:	OK
Alarm:	0
Level[m]:	0.00
Current P1[A]	0.00
Current P2[A]	0.00

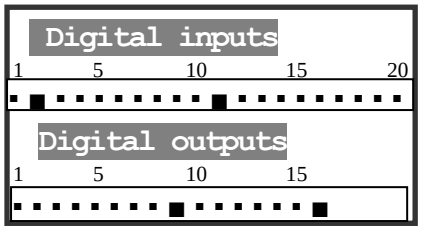
Press ►

Press Esc to return to main menu

By pressing the X key the first 485 device connected will be displayed. If more than one 485 devices are connected, you will see next device by pressing the ►key. By pressing the ▲▼ keys, you can access and look at the whole list of connected 485 devices.

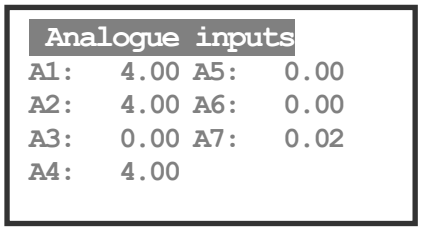
4.6 Quick menu for the Status of I/O-signals Esc

The **Esc**-key is used to see the status of the digital in- and outputs. When the status is active, this is shown with a square instead of a point in the display. There are 20 digital inputs and 16 digital outputs, 7 analogue inputs, 2 analogue outputs and 2 counters.
To change between the different input and output displays with the key ▼.



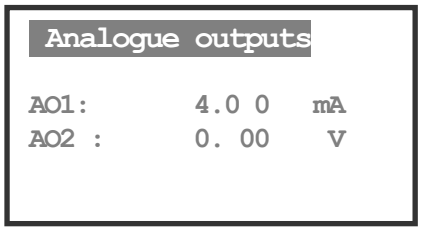
By pressing the Esc key you enter the graphic display mode for the status of digital inputs and outputs.
Active in/outputs are indicated by a dark rectangle at the input/output number.

Press
▼



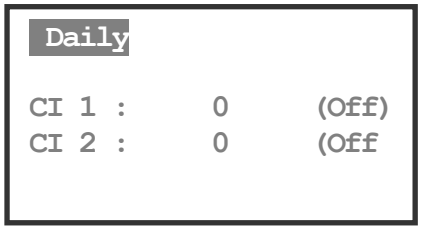
By pressing the ▼key, you will enter the analogue input status window, where the real unscaled mA values will be shown on all analogue inputs.
NOTE! Real mA values

Press
▼



By pressing the ▼once more key, you will enter the analogue output status window, where the real unscaled mA and Voltage values will be shown on the analogue outputs.

Press
▼

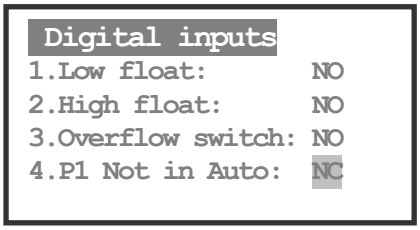


By pressing the ▼key once more, you will enter the daily counter status window, where the daily real pulse number will be shown.
NOTE! Real counted pulses today.
If the pulse counter does not receive any pulses this will be indicaded by the (Off) indication.

4.7 Quick menu for the Status of I/O-signals OK

In this menu you see the actual values and status of the in- and outputs fast, in table format.

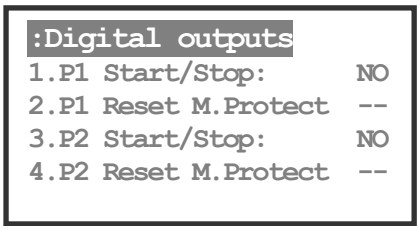
In order to see the status of the in- and outputs fast you press the OK button. You come directly to the menu picture for digital inputs. If you press the OK button once more, the digital outputs will be shown. By pressing the Ok button once more, the analogue inputs will be shown. This is a loop where you go from digital in, digital out analogue in. For analogue inputs, the scaled values are shown.



You move up and down in the menu with the ▲▼ buttons

Menu picture digital inputs
Shows a list with all digital inputs of the unit. If they are used, configured signal type and if they are active or not
--- means that the input is not used.
NO or NC means that the input is used and that it is used as NO (normally open) or NC (normally closed).
If the signal is shown with shaddow NO it means that the input is active.

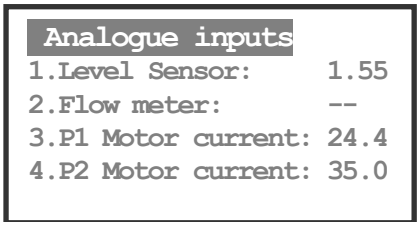
Press **OK** button to go to Digital Outputs.



You move up and down in the menu with the ▲▼ buttons

Menu picture digital Outputs
This list shows all digital outputs, which are used and if they are active or not.
--- means that the input is not used.
NO or NC means that the input is used and that it is used as NO (normally open) or NC (normally closed).
If the signal is shown with shaddow NO it means that the input is active.

Press **OK** button to go to analogue inputs, which shows scaled values.



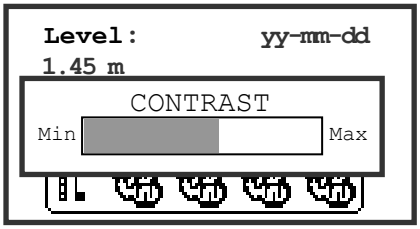
You move up and down in the menu with the ▲▼ buttons

Menu picture analogue inputs
Shows list of all analogue inputs.
Values shown are all scaled according to configuration.

To return to main menu press Esc.

4.8 Display contrast ▲

The ▲ key is used to enter the position where you can change the contrast in the display.
This is done by using the ◄► keys.

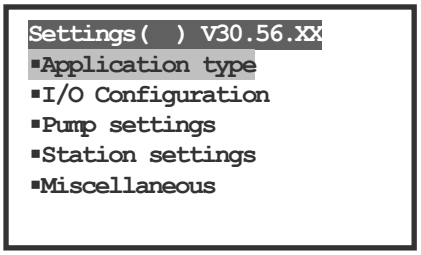


5 System settings S

PC-2000-W has a factory default setting for a quick start with most normally used functions activated. To adapt the PC-2000-W to the actual location you might have to activate more I/Os and configure functions accordingly.

5.1 Main menu

The settings menu is divided into logically grouped submenus. You enter the settings menu by pressing the S key (settings).
Here we will describe how you enter the different sub menus and how you can change the values.
It is convenient when configuring the unit to follow the logic structure of the menus.

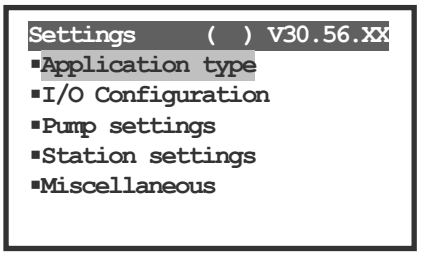


Main menu – description.

Application type – here you set how many pumps the pumpingstation has and how many pumps are allowed to run at the same time.
I/O configuration - here you define how the in and outputs shall be handled.
Pump settings – here all settings for each pump are made, for ex, start and stop levels, alternation etc.
Station settings – here all setting for the station are made, for example alarm levels, mixer functions, in/outflow calculations.
Miscellaneous – here are all other settings made, factory settings, communication settings, resetting of counters etc.

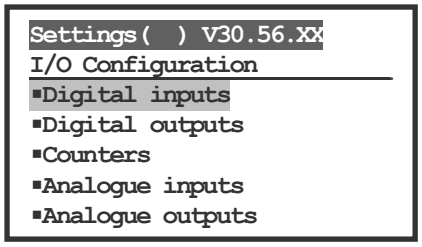
5.1.1 How you change the values in the settings menus.

Here we show how you move in the menus and how you change the values by choosing different alternatives and numeric values.



How you move within the menus?

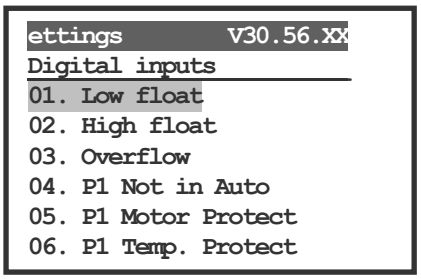
All menu alternatives with a ■ symbol in front have sub menus which you can enter.
Alternatives with a – sign in front means that you have reached the level were settings can be made.
To move in the menus you use the arrow keys up and down ▼▲.
To enter the menu you use the **OK** key.´
To exit the menu you use the Esc key.



Sub menu In- and Outputs

You enter the sub menu by pressing the OK key.

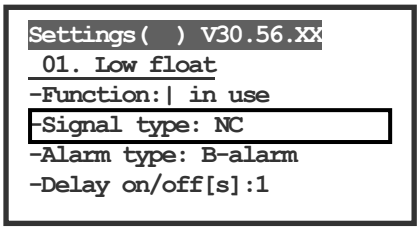
The example shows the sub menu for in and outputs.



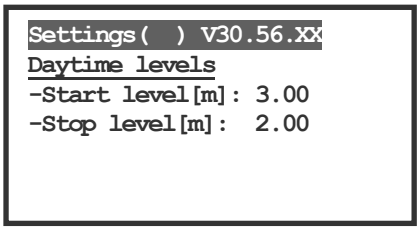
Sub menu digital inputs

You enter the submenu by pressing the OK key.

In the example the digital submenu for digital inputs is shown



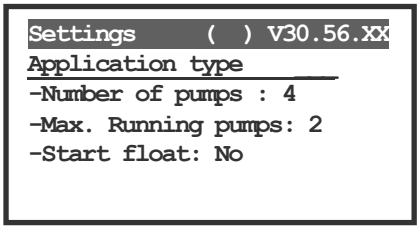
Changing of values – text alternative.
When you have reached the menu were you can change the text (indicated with – symbol) you chose the parameter you want to change and press the OK key.
Now the cursor will blink in front of the value to be changed. Scroll through the alternatives with the ▲ key and accept the desired alternative by pressing the OK key.



Changing of values – numeric values.
When you have reached the menu were you can change the text (indicated with – symbol) you chose the parameter you want to change and press the OK key.
Now the cursor will blink in front of the value to be changed. Put the cursor in front of the value to be changed with the ◄► keys, change the numeric value by using the ▲▼ keys. Accept the change by pressing the OK key.

5.2 Application type

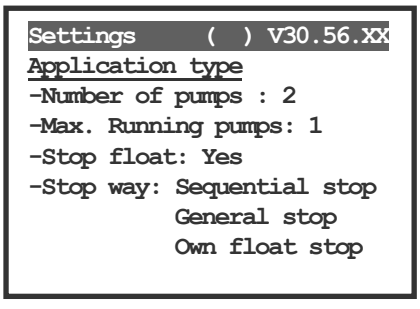
The PC-2000-W can control up to 4 pumps. In the Application type menu you define, number of pumps and how many pumps that are allowed to run at the same time.
The PC-2000-W can also be configured controlling pumps with only float level switches. In this menu, you define this.



Menu – Applications type

←Here you set how many pumps there are in the station
←Here you set how many pumps that are allowed to run at the same time.
<- Here you decide if the station work with floats instead of a level sensor .
No = Function with level sensor 4-20 mA.
Yes = Function with floats.

Float switch control- if you choose to operate the pumps with float switches, the digital inputs DI 7, 11, 15 and 19 must be used.
For stopping of the pumps there are three different way of using the available switches for the stopping of the pumps.



Sub menu – float switch control

When you activate the function float, control the pumps will start with the corresponding start level switch, but you have 3 alternatives on how to use the level switches to stop the pumps.
Sequential stop– If you have more than one working pump each pump will stop when the starting float of the previous pump is reached, the last working pump will stop with the stop (low level) float.
General stop – all pumps will stop with the stop (low level) float they will stop with a short delay between each stop which is set under station settings/times-delays/min time stops.
Own float stop –in this case each pump has one float which starts the pump, when the switch goes inactive, a time starts to run and the pump stops when this time expires. This running time is set under ”Station settings/ Back-up start”.

5.3 Menu – I/O configuration

The unit has the following inputs and outputs.
- 20 digital inputs
- 16 digital outputs
- 2 digital pulse counters
- 7 analogue inputs 4-20 mA
- 1 analogue output 4-20 mA
- 1 analogue output 0-10 V

All In and Outputs have their predefined functions, at delivery they are set to general factory settings for the unit to operate in a basic way, but you may have to configure them if you want them to work differently, if they are going to be used or not, which shall generate an alarm, signal delay etc.
For a complete overview of the in and outputs the complete I/O table in chapter 6.

5.3.1 Digital inputs

There are totally 20 digital inputs 24 VDC according to the list below:

DI1Low float DI2 High float DI3 Overflow float DI4 P1 Not in auto DI5 P1 Motor proptect. DI6 P1 Temp.protect. DI7 Interna/External alarm 1/ (Start switch P1) DI8 P2 Not in auto DI9 P2 Motor protect. DI10 P2 Temp.protect.	DI11 Internal/External alarm 2/ (Start switch P2) DI12 P3 Not in autoo DI13 P3 Motor protect. DI14 P3 Temp.protect. DI15 Internal/External alarm 3/ (Start switch P3) DI16 P4 Not in auto DI17 P4 Motor protect DI18 P4 Temp. protect DI19 Internal/External alarm 4 / Alarm confirmation/ (Start switch P4) DI20 Block all pumps

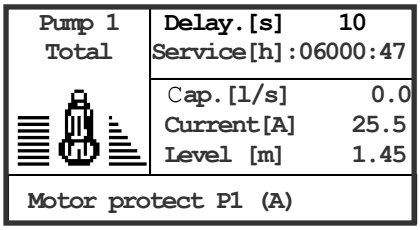
For each of these functions you have following options to configure:

- Function: in use / not in use -	Here you choose if the Input is used or not.
- Signal type : NC/NO	Here you define if the input is NC or **NO**. NC = normally closed and NO = normally open
- Alarm type: Not active/ A-alarm / B-alarm	Here is defined which type of alarm you want to generate[1], or if no alarm is generated[2].
- Block pump - (Only for some inputs)	Here you chose if you want a pump to be blocked[3] or not when a certain signal is activated.
-Signal delay[s]:/Alarm delay[s]:	This is a delay of the activation of a signal (filter). For some inputs, this is a delay to emit the alarm.

Note
[1] **Alarm type A or B** –The meaning of an A- alarm is that these alarm are sent either as a SMS message or to a SCADA supervision system, while B-alarms are only registered on the screen of the PC-2000-W and in the alarm list.

[2] **Alarm type not active –** If you chose not to activate an alarm function on an input, you will not get an alarm when an input is activated. If a signal for example "Motor protection" or "Temperature protection" stops the pump it may be confusing to find that a pump has been stopped /blocked but that there is no alarm.

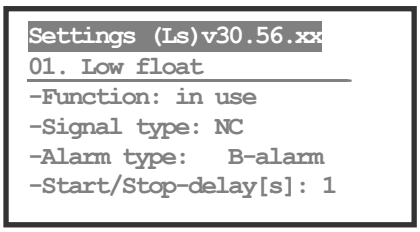
If you have configured an input in this way, you have to go to the pump information (P-Key) window to find the reason why the pump has stopped in the pump status window.



Picture 4.3.1 Shows why a pump har has stopped if you have chosen not to generate an alarm.
In this case the the motor protection of the pump.

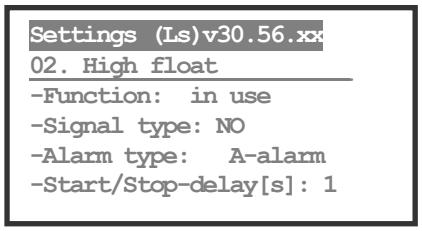
[3] **Block pump –** On some inputs (For ex. temp.protect) you can choose to block the pump when the signal is activated. A blocked pump means that a pump, which has stopped on an alarm, cannot start again until the alarm has been confirmed. If you chose not to block the pump the pump will start again as soon as the alarm has is deactivated.

DI 01. Low level float
-The low float is used to signal low level and to give an alarm.
-If the back-up start function is activated the pump will stop.
-If the unit operates with float switches only, depending on configuration under Applicationtype/floatswitch/stopway, the low level float might or might not stop the pumps



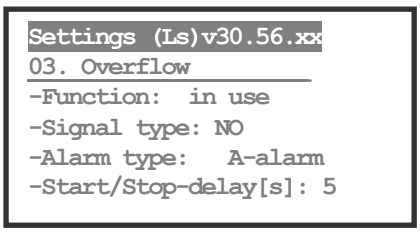
- Here you set if the input is used or not.
- Here you set the signal type NO or NC.
- Here you set the alarm type or no alarm.
- Here you set the signal delay to avoid false signals due to ripple on the surface.

DI 02. High float
- The high float is used to signal high level and to give an alarm.
- If the back-up operation function is activated the pumps will start with this signal.



- Here you set if the input is used or not.
- Here you set the signal type NO or NC.
- Here you set the alarm type or no alarm.
- Here you set the signal delay to avoid false signals due to ripple on the surface.

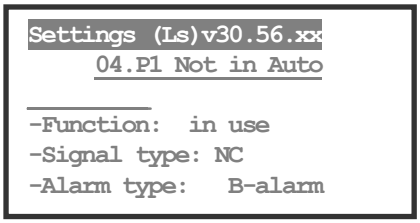
DI 03. Overflow float
- The overflow float is used to show when there is an overflow in the pumpingstation.
In addition to the generation of an alarm the number of overflows and total overflow time is registered.



- Here you set if the input is used or not.
- Here you set the signal type NO or NC.
- Here you set the alarm type or no alarm.
- Here you set the signal delay to avoid false signals due to ripple on the surface.

DI 04. Not in Auto position

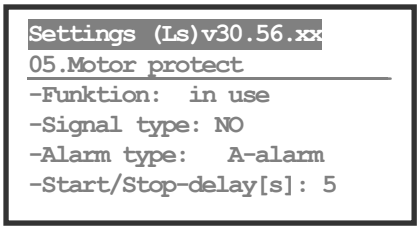
- You use a contact from the manual-0-auto switch to register when the pump is not in auto position. When all pumps are in auto postion the AUTO diod will have a fixed yellow light. If some of the pumps are not in auto the Auto diod will blink, and the pump will be indicated as Not in Auto with | 1 | in the main picture.



- Here you set if the input is used or not.
- Here you set the signal type NO or NC.
- Here you set the alarm type or no alarm.
- Here you set an alarm delay instead of a signal delay .

DI 05. P1 Motor protector

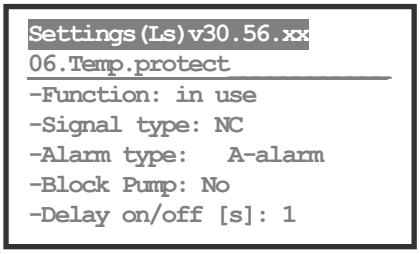
- Signal for tripped motor protector for the pump. This signal does not block the pump because the motor protector has to be reset manually.



-Here you set if the input is used or not.
- Here you set the signal type NO or NC.
- Here you set the alarm type or no alarm.
- Here you set the signal delay.

DI 06. P1 Temperature protector

- Signal for the temperature protector of the pump. If the built –in temperature contacts are used we recommend that these are part of the manouver circuit of the pump (hardwire) and that you use an extra relay for the signal to PC 2000. With this function you can chose to block the pump or not.

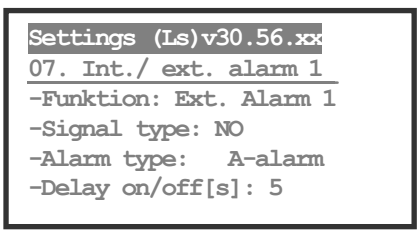


- Here you set the signal type NO or NC.
- Here you set the alarm type or no alarm.
- Here you set if you want the pump to be blocked or not
- Here you set the signal delay.

DI 07. External/External alarm 1 (only available when the controller uses a level sensor for operation)

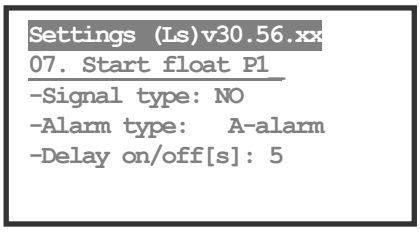
This input can be used either as internal pump alarm or as an external combined alarm.

- Internal alarm pump 1 is the alarm signal from the alarm relay of the pump. If you chose this alternative you have the possibility to block / not block the pump.
- External alarm 1 can be used for external signals which you want to check and generate an alarm for. This function does not block the pumps.



-Here you set if the function is used or not
- Here you set the signal type NO or NC.
- Here you set the alarm type or no alarm.
- Here you set if the pump shall be blocked or not. (Only for internal pump alarm)
- Here you set the alarm delay

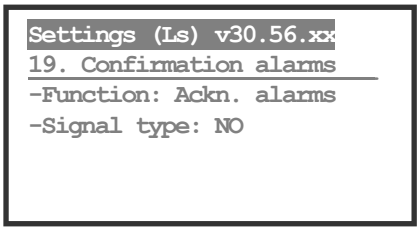
DI 07. Start level switch P1 (only available when the controller uses level switches for operation)
If you have choosen to use the controller to operate with level switches only, for the start and stop of the pumps, this input is the level switch input where you can set the signaltype, alarmtype if used and signal delay for the operating level switches.



- Here you set the signal type NO or NC.
- Here you set the alarm type or no alarm.
- Here you set the signal delay.

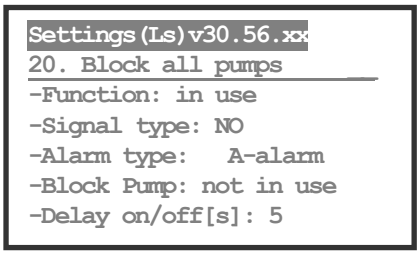
As these pump specific functions are the same for all pumps, we only show examples for Pump 1.

DI 19. Confirmation of all alarms (only available when level sensor is used for operation)
This is a function for quick acknowledgement of all NOT acknowledged alarms, activating DI 19 by the use of an external signal, for example a push button in the panel door.
The settings options for this input is to activate the function or not and to set the signal type to NO or NC.



- Here you set if the function is used or not
- Here you set the signal type NO or NC.

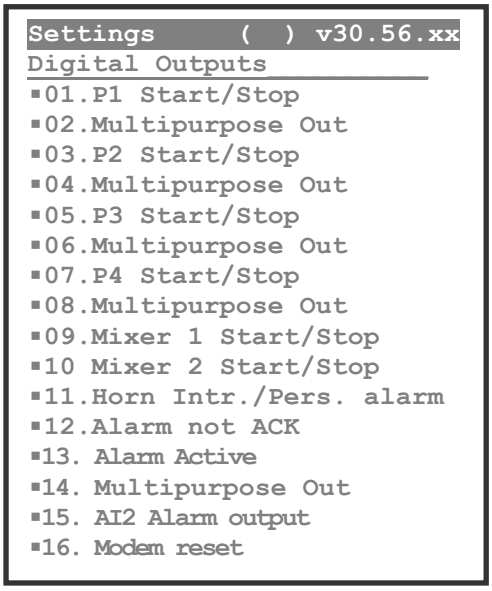
DI 20. Block pumps
-This is a special input which stops all pumps when activated, with a built in delay between each pump. With this function you can choose to block or not block the pumps.



- Here you set if the function is used or not
- Here you set the signal type NO or NC.
- Here you set the alarm type or no alarm
- Here you set if the pump shall be blocked or not.
- Here you set the alarm delay .

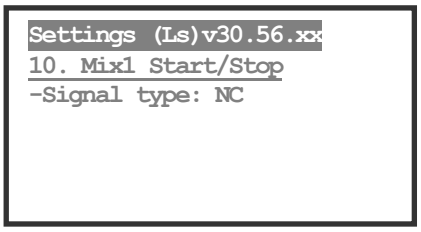
5.3.2 Digital outputs

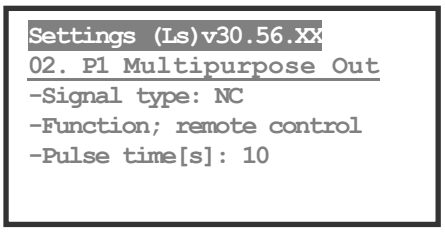
The Pump controller PC-2000-W has 16 digital relay outputs, which handle a load of max. 6A at 250 VAC/30 VDC.
The configuration options for the digital outputs are to set the signal type to NO or NC signal on each output. Digital output 1,3,5, and7 cant be changed
Below you find an overview of the outputs and their predefined function.



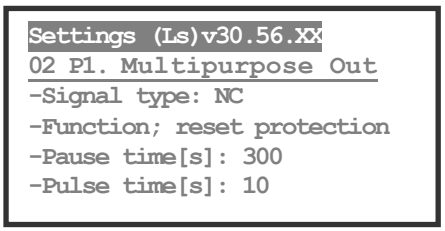
When you are in the menu, you enter the editing mode by pressing the OK key.
Choose alternative with the ▲▼ keys and accept by pressing the OK key.

For the digital outputs 9, 10, 11,12, 13, 15 and 16 only the signal type can be changed

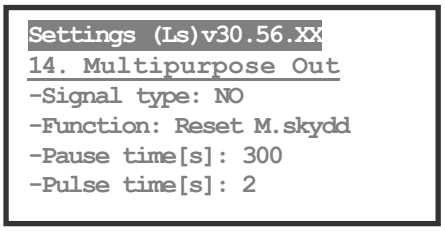




For outputs 2, 4, 6 and 8 following can be changed:
-Signal type: NO or NC
-Function: Choise between remote contol, reset protector and reverse pump.
-Pulse time: setting of time in in seconds



Outputs 2, 4, 6 and 8 show following at reset protector:
-Signal type: NO or NC
-Function: reset protector.
-Pause time[s]: setting of time in in seconds
-Pulse time[s]: setting of time in in seconds

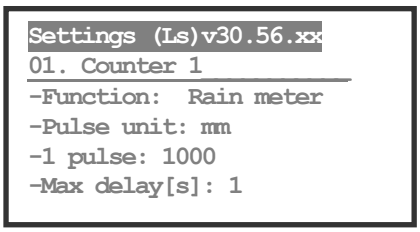


For output 14 following can be changed:
-Signal type: NO or NC
-Function: remote control and reset protector
-Pause time[s]: setting of time in in seconds
-Pulse time[s]: setting of time in in seconds

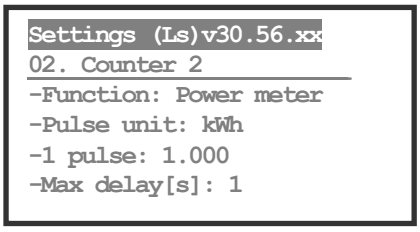
Remote control is shown above as remote control

5.3.3 Counter inputs

The unit has 2 digital pulse counters, one for flow or rain meter and one for energy meter. On these inputs, you have to set the parameters for function, Pulse unit, pulse range and set a pulse delay.



Counter 1
- Here you set function: flow or rain
- Here you set the unit m3/h
- Hre the counter unit is set: m3
- Here you set the range for one pulse means: 1.000.
- Here the pulse delayis set: (s)



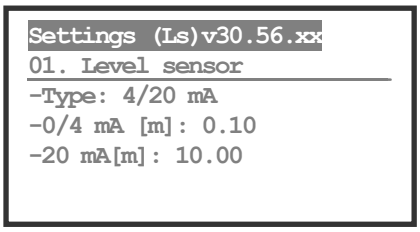
Counter 2
- Hrer you st the function: Flow or energy
- Here you set the unit: kWh
- Here you set the range for one pulse: 1.000.
- Here the pulse delay is set: (s)

5.3.4 Analogue inputs (mA)

The unit has 7 analogue mA signal inputs 0/4 – 20 mA 24 VDC. These are used for following predefined functions:

AI1 Level
AI2 Flow meter
AI3 Motor current P1
AI4 Motor current P2
AI5 Motor current P3
AI6 Motor current P4
AI7Intruder / Pers, alarm

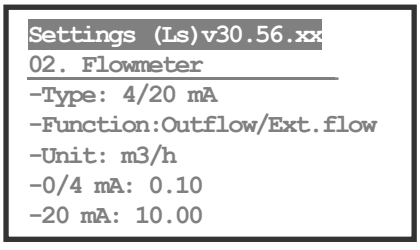
Level sensor - for connecting a level sensor with 0/4 – 20 mA, for example, a DripDrop AB SP-25 submersible pressure sensor.



Setting of sensor input-
-Here the sensor type used is set, 0 -20 mA, 4-20 mA or if none
-Next step is to set the measuring range of the sensor by giving the level corresponding to 0 or 4 mA.
Then you give the level corresponding to 20 mA.

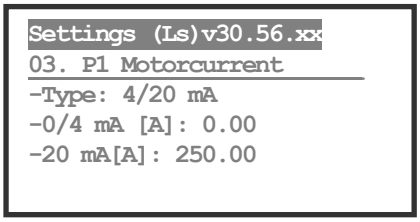
Flow meter – is used to connect external flow meter with 0/4-20 mA signal.
There are three different options to use this signal.

1. Ext. flow – external flowmeter, where the signal is displayed and used for logging.
2. Out flow – external flow meter same as option 1, but the signal is also used for the pump capacity calculation.
3. Overflow – external flow measuring device to read the overflow rates and display them and to register in logger.



Settings flow meter-
-Here the meter type is set 0-20 mA or 4-20 mA. If no meter is connected you specify none.
Here you set what function the meter has Outflow/Overflow/Ext. Flow.
-Set in what unit the flow shall be displayed.
-Set measuring range i.e. the flow at 0/4 mA signal and the flow at 20 mA.

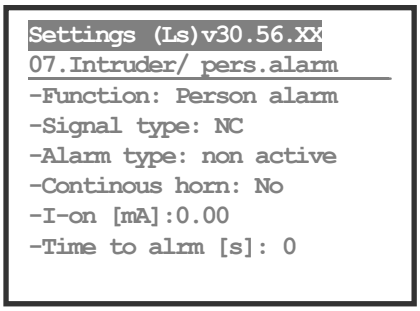
Pump current – you can measure the current of the pumps by using an A/mA converter. By monitoring the pump current, you control if the pump is running or not, and protect the pumps from overloading and low motor current by dry running etc.



Settings motor current P1 – P4 (AI 3 - AI 6)
-Here you set which type of current transformer is used, 0 -20 mA, 4-20 mA or if the input is not used than you set none
-Next step is to set the measuring range of the transformer by giving the current value at 0 or 4 mA.
Than you give the corresponding current value at 20 mA.

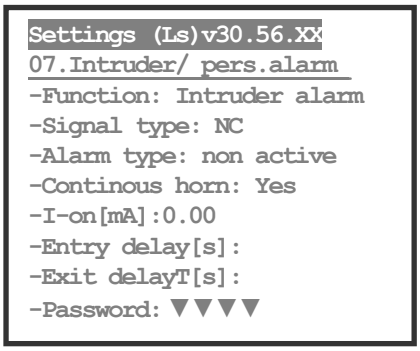
Intruder alarm/ person alarm– for this purpose you use an analogue input in series with a resistance to create a digital signal. This signal indicates that someone is present in the station and can be used for safety alarm or as an intruder alarm.

The function person alarm is activated via a signal wire that is connected to the light switch of the station and starts a time counter, which after a set time activates a relay output. This relay output can be connected to siren or flashing light to tell the operator that the established time for operator work is expiring and has to be extended. If this is not done in time, a person alarm is sent. To avoid that the alarm is sent the light switch has to be switched off and on again.



Menu person alarm
Set function to Person alarm
Set the signal type to NO or NC
Set the alarm type
Set horn/siren to continous or intermittent function
Set mA value to trigger the alarm
Establish the working time before the alarm is generated

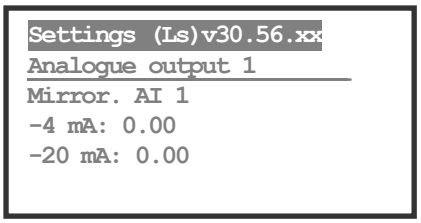
For the function intruder alarm, this input is activated via for ex. a wire to a magnetic switch in the door and starts an internal time counter, which after a set time activates a relay output. This output can be connected to a siren or warning light at the same time that an intruder alarm is sent. To avoid that an alarm is sent, the correct code has to be entered via the keyboard of PC-2000.



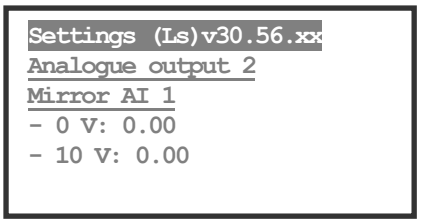
Menu intruder alarm
Set function to intruder alarm
Set the signsl type to NO or NC
Set the alarm type
Set horn siren to cintinous or intermitent
Set mA value to trigger the alarm
Set time span for entering the password
Set time span allowed to exit after entering the exit password

5.3.5 Analogue outputs

The unit has 2 analogue scalable outputs, which mirror an analogue input free of choice.
One is a 4-20 mA output and one is a 0-10 V output.



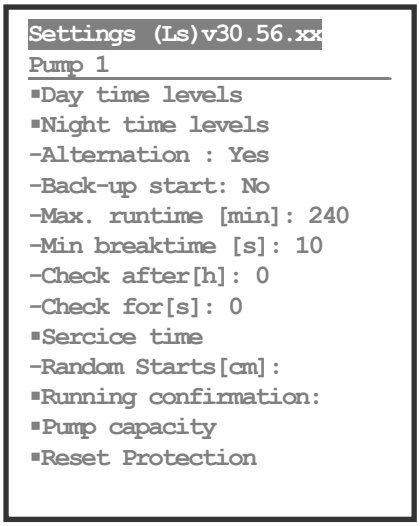
Setting of analogue output 1 (4-20 mA)
- Here you set which one of the analogue inputs you want to mirror.
- Here you set the scale for the analogue 4-20 mA signal.



Setting of analogue output 2 (0 – 10 V)
- Here you set which one of the analogue inputs you want to mirror.
- Here you set the scale for the 0-10 V signal.

5.4 Pump settings

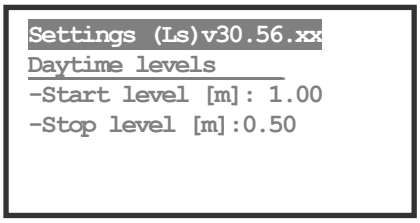
In the pump settings menu you set all the parameters for the pump for example, Start/stop levels, alternation of pumps, current settings etc., These settings have to be made for every activated pump. Only pump 1 is shown in this manual.



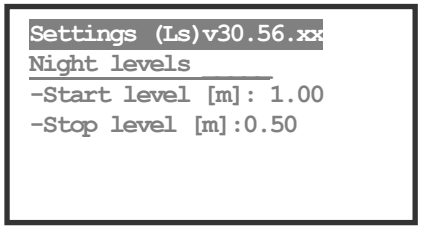
Main menu for pump settings
This menu has sub menues which are indicated with a ▪ symbol. Here you have to enter the sub menu to change and set values. For the functions that have a – symbol you enter the setting mode directly.
You enter all functions by pressing the OK key. By pressing the OK key again you enter the edit mode**.**

5.4.1 Setting of start and stop levels for pumps

In this menu, you set the start and stop levels for the pumps.
You can set different start and stop levels for day and nighttime. If night levels are not used the start and stop, levels for daytime will be valid even for nighttime.



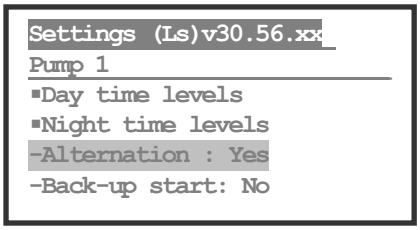
Setting of start and stop levels. (Day levels)
To change values set cursor on the value , start or stop level, and press **OK** key to enter setting mode**.** In setting mode you go to wanted position with the◄►keys, change value with the ▲▼keys and press **OK** key to accept the changes



Setting of start and stop levels. (Night levels)
If needed you can set different levels for night time.The same way as for day time. The definition of day and night is set in ”Station settings –Time/ delays.

5.4.2 Alternation of pumps

Here you set if you want each pump to be in the alternation cycle or not.

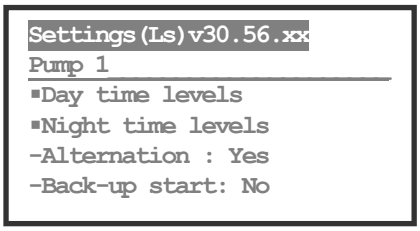


Choices are yes or no.

Pumps that are not included in the alternation cycle will start and stop at its own independent start and stop levels.

5.4.3 Back-up start

If you use a high-level float connected to PC-2000-W, you can use the float as a back-up system if problems occur with the level sensor. If this happens, the float will take over the control and start the pumps that has the back-up start function activated.
Here you activate the function for by choosing Yes or No.

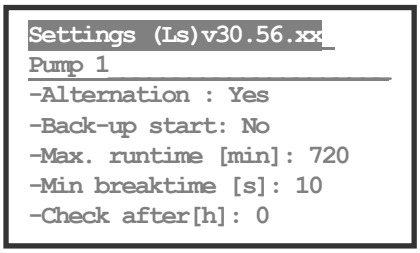


Choices are yes or no.

In this menu you only select which pumps to be included in the back-up function.
The running time for the pumps at Back-up operation is set under Station settings/Times-delays/ back-up time.

5.4.4 Max. Running time

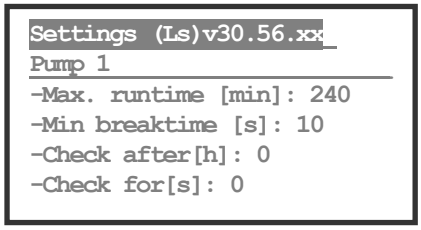
To avoid that a pump runs for a long time in a pump cycle you can limit the time the pump is allowed to run. When this time has expired, the pump will stop and the next pump in the cycle start, this time is factory set to 720 seconds.



Setting range is from 0 to 720 minutes.

5.4.5 Min. pause time

To allow a pump to cool down after running you can set a minimum break time before the pump can start again. This function can seem confusing because a pump will not start when you think it should. It is important to remember that you will have an indication with an X over the pump number in the main window while the timer is active.

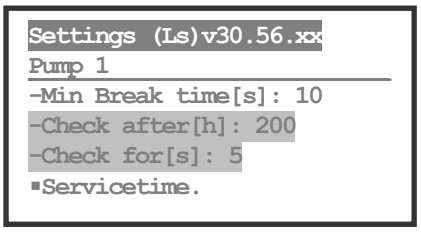


Setting range is from 0 to 5000 seconds.

5.4.6 Check starts

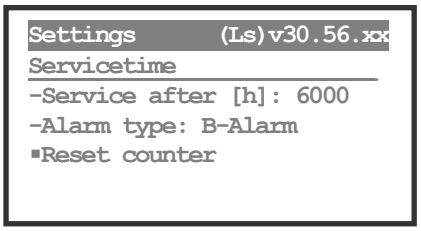
Check after[h]
In applications where all or some of the pumps have long periods without use, we recommend to run the equipment during short periods of time just to maintain them in good conditions. In this menu, you set the interval you want the equipment to start (maximum 1000 hours).

Check for[s]
Here you set for how long the equipment is going to do its maintenance operation at the set maintenance interval.



5.4.7 Service time

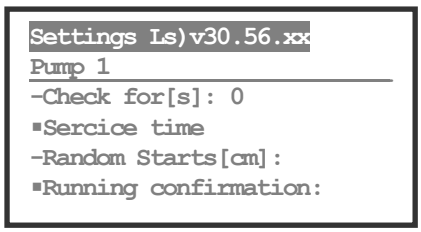
All pumps have to be maintained at a certain time interval due to operation conditions. For an easier control of when to maintain the equipment, the PC-2000-W has a function where you set the time between maintenance operations. When this time expires, an alarm will activate a text indicating that the pump is due for its scheduled maintenance.



Service time settings.
Here you set the time between the programmed maintenance operations for each one of the pumps.
You can define what type of alarm that will be triggered A-alarm, B-alarm or no alarm.
For the counter to start to work you need to load the set service time with the “Reload time” function. Once this is done the counter will start to count down towards “zero” and then trigger the alarm.
Once the alarm is triggered you need to reload the set time again, so the counter can start counting down to next service occasion.

5.4.8 Random starts

When the pumps always starts at the same start level there will be a built-dup of grease and fat on the pit walls at the start level. To avoid this, a random start span can be set. With the random start span the pump will randomly, start somewhere within this set span around the start level. In this way the starts will not always be at the same level, but for example if the random start span is set to 10cm, pump will start somewhere within this 10cm span (5cm above and 5cm below) the set start level.



5.4.9 Running confirmation

The confirmation if the pump actually is running or not is a fundamental function in a pump controller. If the running confirmation is used you will actually know that the pump is running, and if there is no running confirmation the unit will trigger an alarm and try to start next pump in the alternation cycle. The PC-2000-W unit has two different ways to confirm the operation of the pumps:
1. By measuring the pump current (analogue input) by the use of current converters and with the corresponding analogue input activated.
2. Using the analogue input as digital, connect the supplied resistor in series with the input signal from the pumps starting device (contactor, soft starter etc.).

Running confirmation with current transformer

```
Settings (Ls)v30.56.xx
Running confirmation
-Function: In use
-Confirmati0n time[s]: 5
-Block Pump: No
-Alarm type: A-alarm
```

Running confirmation settings (with pump current).
Here you define to use or not to use the function
In use/ not in use
Here you will set an delay time for the alarm
You have the option to have the pump blocked or not blocked.
And finally you decide on what type of alarm to send, A, B or none.
Note! See 5.4.10 setting of motor current next page.

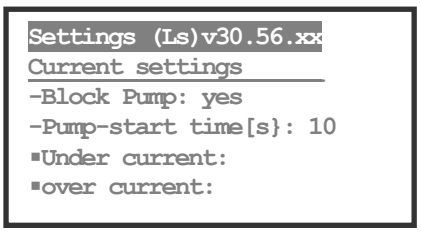
With digital signal (no current measurement)
If your application does not measure the pump current the running confirmation will be done by using the analogue input for the pump as a digital signal input, using the pumps analogue motor current input in series with a resistance. When using this way of confirming the operation of the pump, you have to deactivate the analogue input for pump current, under I/O setting.

```
Settings (Ls)v30.56.xx
Running confirmation
-Function: in use
-I-running[mA]:6.00
-Confirm.time [s]:10
-Block Pump: no
-Alarm type: A-alarm
```

Running confirmation settings (with digital signal)
Here you will define if the function is used or not In use / Not in use
As we are using a resistance to create a fixed mA value, you need to define an mA current value wich will be used as the reference value for the signal. Using the supplied resistances the value is 6 mA. You have the option to have the pump blocked or not blocked. You will set an alarm delay if necessary, for example to allow for the pump to get properly started. And finally you decide on what type of alarm to emitt, A, B or none.

5.4.10 Motor current settings

Measurement of the pump-current consumption is used to check for normal operation. Over and under-current settings will be explained below:

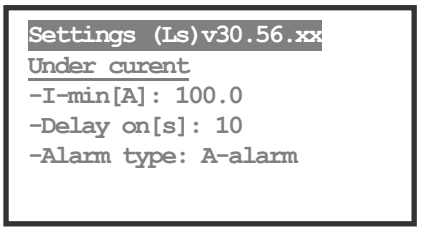


Current settings – main menu.
This menu will only be shown if you have activated the current analogue input for the pump.
Here you will define if the pump will block or not at alarm
Here you will set a time delay that will allow the pump to start properly before the current monitoring starts.

Blocking pumps – when you get an alarm for under or over current, the pumps will always stop. Once stopped, we can choose to block the pump until the operator has confirmed the alarm, or we can choose not to block the pump, allowing it to start again when its turn comes in the alternation cycle, without confirmation of the alarm by the operator.

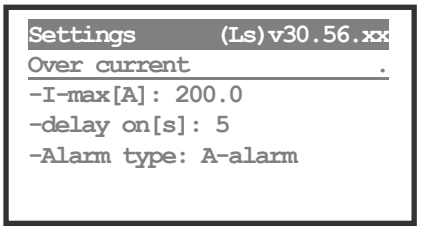
Pump start time – to avoid the generation of current alarms during the start up of the pumps, there is a delay timer that allow the pump to properly start before the generation of alarms, for example while ramping up using a soft starter.

Under current
The undercurrent function is made to protect the pump from operating in undercurrent conditions as for example running without water or clogging of the impeller that prevent the pump to pump but don´t brake the rotation of the impeller.



Under current settings
-Here you will define the minimum value for pumpcurrent, should be equal to dry running current.
- Here you will set an delay time for the alarm
- Here you decide on what type of alarm to trigger, A, B or none.

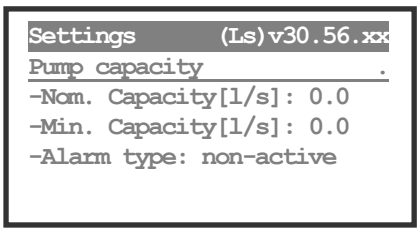
Over current
Over current situations is generally when something is clogged in the pump in a way that blocks the impeller and therefore raises the current consumption.



Over current settings
-Here you will define the maximum value for pump current, should be equal to nominal rated current.
- Here you will set an delay time for the alarm
- Here you decide on what type of alarm to trigger, A, B or none.

5.4.11 Pump capacity

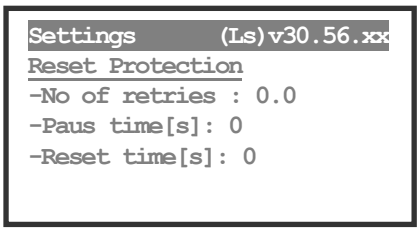
If you have activated the flow calculation function (5.5.6), or uses an external flowmeter (in capacity mode 5.3.4) in the PC 2000-W, one of the functions in the flowcalculation function is to control the capacity of the pump. The function is a useful tool to have an indication when the pumps capacity is decreasing due to wear or simply by clogging of the impeller. Once you have entered the nominal pump capacity, this is merely a reference value, you will set the minimum capacity for the pump. Once this value is reached, an alarm for low pump capacity will be generated.



Pump capacity settings
- Here you will define the nominal capacity for the pump.
- Here you will set the minimum capacity for the pump.
- Here you decide on what type of alarm to trigger, A, B or none.

5.4.12 Reset motor protection

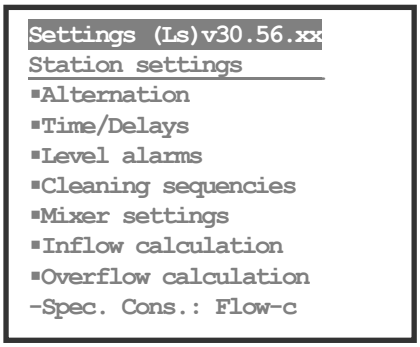
Sometimes when there are long distances to the pumping station it might be useful to have automatic resetting of the motor protection when tripped. The PC-2000-W has this capability and will make a numbers of retries to reset the motor protection before an alarm is generated.
The function is that when the motor protection trips, the PC-2000-W will wait during a pause time, and then generate an output pulse for a numbers of seconds. If the protection keeps tripping the sequence will repeated for a set number of times before an alarm is generated. If the motor protection is reset correctly, the pump will go back to normal operation.



Reset motorprotection settings
- Here you will define number of retries that will be done prior to generating an alarm.
- Here you will set the pause time between retries to reset the motor protection.
- Here you set the length of the resetting pulse (sec.).

5.5 Station settings

In this menu, you do all the settings that has to do with the pump sump and the functions related to general settings in the pumping station.



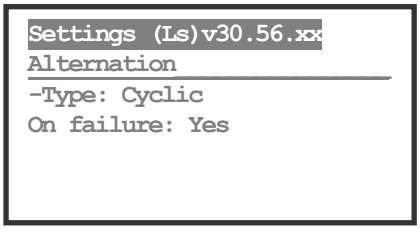
Main menu for Station settings
The functions with a ▪ symbol have a submenu to go into for viewing and adjusting of parameters, you will go into the submenu by pressing the OK key.
The functions with the – symbol don´t have submenues and you will access the setting mode directly by pressing the **OK** key**.**

5.5.1 Alternation

The controller has two different ways to alternate the pumps:

1. Cyclic – meaning that the pumps alternate in a cyclic manner, one after the other, i.e. they start in the first cycle 1,2,3,4 and the next cycle 2,3,4,1 and so on.
2. By running time – meaning that the pump with less running operations always will start first. In this way, the pumps will have an even distribution of the running times between each other.

The second setting in alternation settings (On failure: yes), is to establish if the next pump will start in the alternation cycle, when the running pump fails, or not
- If you set “on failure” to **yes,** the next pump in the cycle will start with a short time delay (see time/delays menu), when the running pump fails.
- If you set “on failure “ to **no,** after failure of the running pump, the next pump will wait to the level in the sump reaches the start level before it starts.

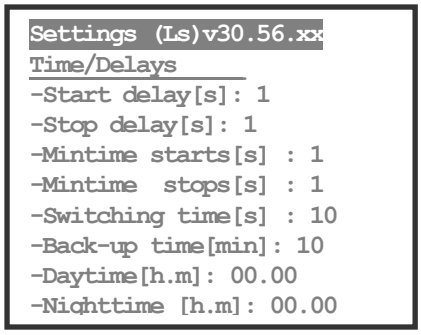


Alternation settings
- Here you define the alternation type, Cyclic or by runningtime..
- Here you define how to act in case of failure of the running pump:

Yes – will alternate to next pump on failure.
No – will wait for start level to start next pump on failure.

5.5.2 Time/delays

In this menu, you set a number of timers and delays that are common to all pumps and some functions in the pumping station.



Timers and delay settings
- Here you will define delays for starts and stop signals.
- Here you will define the minimum elapsed time between starts and stops..
- Here you will define the delay when pumps switch to next pump on failure.
- If emergency operation with high level switch is used, this is where that operation time is set.
- Here is where you define the time of day and night.

Start delay – Is a signal delay for starting the pump when the start level is reached, for example when there is turbulence on the surface in the pump sump.

Stop delay – Is a signal delay for stopping the pump at the stop level.

Min time starts – This is the minimum time allowed between the start of two pumps.

Min time stops – This is the minimum time allowed between the stop of two pumps.

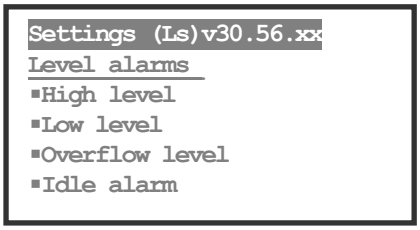
Switching time- When a pump fails, this is the delay between the stop of a pump and the start of next pump in the alternation cycle.

Back-up time – This is the time the pump(s) are going to operate on back-up operation when a single start level switch is used. After start of the pump with the level switch, this time will start to count from the moment that the level switch goes off.

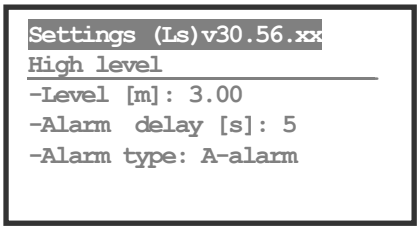
Day /night – if different start/stop levels are used during day and night, this is where the definition of what´s day and what´s night, is made.

5.5.3 Level alarms

In this menu you set the different level alarms related to the level sensor. These alarms are merely indicators of different level conditions, but they don´t control the pumps.

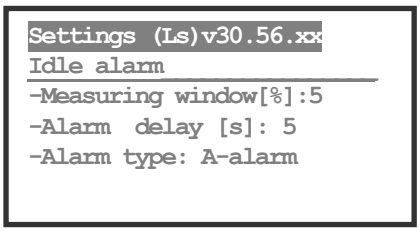


Level alarms settings menu.
Here you will need to go into separate submenues to set High level alarm, Low level alarm and overflow alarm.
The settings are equal for all three levelalarms.



Example of high level alarm setting.

- Here you define the level for the alarm
- Here you define an alarm delay
- Here you define the alarm type A, B, or none.



Example for setting of Idle alarm.

- Setting of measuring range window in % of sensor measuring range
- Here you define an alarm delay in hours
- Here you define the alarm type A, B, or none.

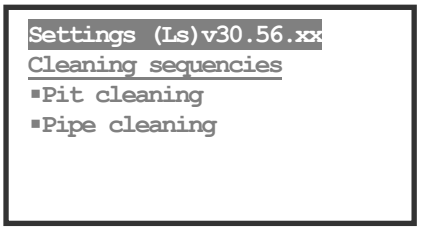
5.5.4 Cleaning sequences

The controller has two different cyclic cleaning functions, one is for cleaning of the pump pit, and one is for the flushing of the pipes.

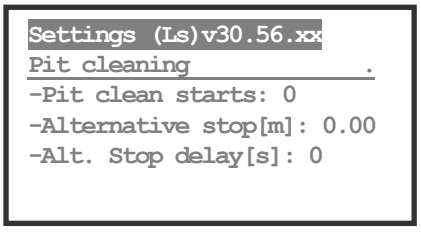
1. **Cleaning of the pump pit.**
   This function will allow for the cleaning of the floating debris and accumulated fats in the pump pit. This will be made by, at a set frequency, bypass the normal stop level and pump down the pit until the pumps starts to snore. At this point the pump will keep snoring during a preset stop delay, thus sucking up all floating material, this snoring action also creates turbulence under the pump so it also will pump out settled sediments around the pump.
   You might set frequency to perform this cleaning by setting how many pump cycles between cleaning sequence, the alternative stop level and the necessary stop delay.
   When in a cleaning cycle this will be indicated by a "C" in the lower right corner of the display.

DripDrop recommends that you always check with the pump supplier if the pumping equipment is suited for this kind of operation.

2. **Pipe cleaning function.**
   In order to avoid solids settling in oversized piping systems, the controller have a function that allow the bypass of the normal start level (to create a larger volume to pump), and start more pumps than normal to create a flushing effect that flush out sediments in the piping system. Also in this function, you can set at which frequency you want the system to be flushed by setting number of pump cycles between flushing sequences, you will set the alternative start level and how many pumps to be included in the flushing sequence.
   When in a flushing sequence this will be indicated by a "P" in the lower right corner of the main display.

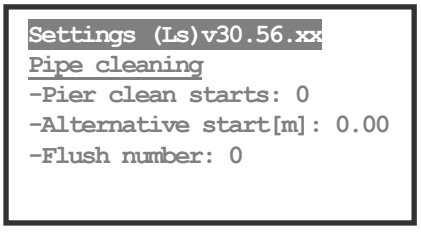


Cleaning sequency settings menu
You will go into each of the pitcleaning or pipe flushing sub menues to set the function.



Pit cleaning settings

- First you will define with which frequency you want the cleaning to be done by setting number of pump cycles between cleaning. When set to 0 the function is off
- Then you define the alternative stop level i.e. , when the pump starts to snore. This is normally at the inlet level of the pump housing, where it starts to snore airr.
- Finally you define the stop delay, i.e. the time the pump will keep working when it reaches the snoring level, and thus allow it to extract the floating debris from the pit.



Pipe flushing settings menu.

- First you will define with which frequency you want the flushing of the pipes done.
  When set to 0 the function is off
- Then you will define the alternate start level i.e. the maximum level that pit can be filled up.
- And finally you need to define how many pumps to be included in the flushing sequence.

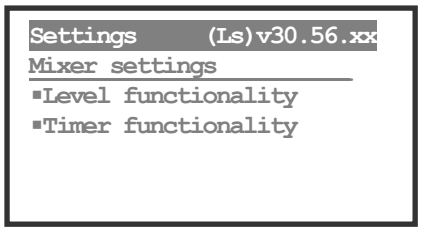
5.5.5 Mixer settings

For larger pump pits or dry installed pump pits, the use of a mixing device is recommended to keep the pump sump clean. For this, it is recommendable to install a mixing or flushing device inside the pump pit. The controller has two (2) independent mixing device outputs, with individual settings.

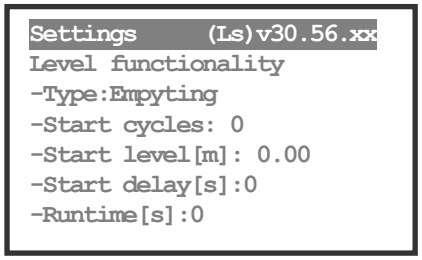
Always check with the supplier of the mixing device if it is designed to operate in your type of application.

For the mixing function, the controller has two separate forms of controlling the mixing device.

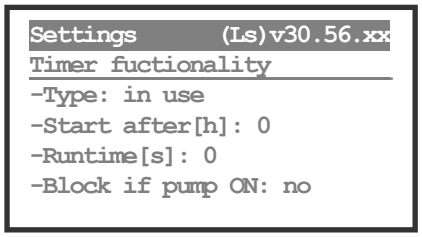
1. **Start by level and stop by timer** - during filling or emptying of the pit and stopping by a timer. With this option, you might set the function to start during filling phase (before pumping) or the emptying phase (while pumping). The criteria of the frequency of the mixing is by setting number of pump cycles between mixing starts. The stopping of the mixing is made by setting the running time by a timer.
2. **Start and stop by timer** – in this option you will set an idle time and a running time for the mixing device. It will start at the elapsed idle time and keep running for the set operation time. With this option, the mixing will operate independent of the level in the pit. To avoid the mixing while pumping (important at large flows) there is a function where you can block the mixing while the pump is running.



Mixing function menu
You need to get into one of the separate sub menues to be able to view and make settings.



Level operation menu.
- First you need to define if you want the mixing done during filling or emptying of the pit or none if the function is not used.
- Then you will set at what interval the mixing will be done i.e. how many pump cycles between mixing cycles.
-Then define at what level you want the mixing to start, and possible start delay.
-Finally you need to define for how long you want the mixer to work.



Timer operation menu
-First you need to define if the function is used or not..
-Then you need to set the idle time between mixing operations.
- Then you will set the operation time for the mixer.
-Finally you will define if you want the mixing to be blocked while the pumps are running or not.

5.5.6 Flow calculation

The controller has the capability to calculate the incoming and outgoing flow as well as monitoring the pumps capacity. This is done by monitoring the changes in the level, timing these changes and applying these level changes to the geometry of the pump pit, by entering dimensions of the pump pit.

This function is basically a tool to monitor and control the pumps capacity and to be able to monitor the pump efficiency.

Above a minimum level for flow calculation level in the pit, the inflow is calculated at all times, and shown in the display.

When a pump starts, the inflow is locked at its value at the moment the pump starts. After an adjustable start delay, the outflow and pump capacity is being calculated, and also shown in the display window.

The calculated inflow and the pumped volume/time unit results in the pump capacity and outflow.

In the flow calculation menu you will set the time span during which the in and out calculations are made, delays for starting and stopping the calculations as well as correction factors when more than one pump is running in the system. In this menu, you also enter into a submenu where you define the geometry of the pump pit.

```
Settings (Ls)v30.56.xx
InFlow calculation
-Inflow calc. time[s]: 0
-Capac.Calc.time[s]: 0
-Start dalay [s]: 3
-Stop delay [s] :
-Inflow level[m]:0.50
-2-pumps comp. [%]:
-3-pumps comp. [%]:
-4- pumps comp. [%]:
▪Pit description
```

Inflow calc time – here you set the time span for which the inflow calculation is done. Can be set between 0 and 99 sec. With the time set to 0 the flow calculation function is off.

Cap. calc time - here you set the time span for which the capacity calculation is done. Can be set between 0 and 99 sec.

Start delay – Here you define a start delay to allow for the pump to start properly before starting the capacity calculation. Can be set between 0 and 99 seconds.

Stop delay – Here you define a delay to allow the calculation to stop before the pump stops. Can be set between 0 and 99 seconds.

Inflow level – Here you define the minimum level at which the inflowcalculation is done. This level has to be set below the start level of the pumps to be able to calculate the inflow.

Flow compensation for more than one pump in the system.
Due to the characteristics of the losses in the piping, the losses are not linear and when a second and a third pump is started a correction to the pump flow has to be done. This is done by entering the individual flow of each pump as a percentage to the nominal flow of one pump running. This percentage is a function of the system curve, and have to be calculated by timing the pumps during operation of 2,3 and 4 pumps running in the system.

```
-2-pumps comp. [%]:90
-3-pumps comp. [%]:85
-4.pumps comp. [%]:80
```

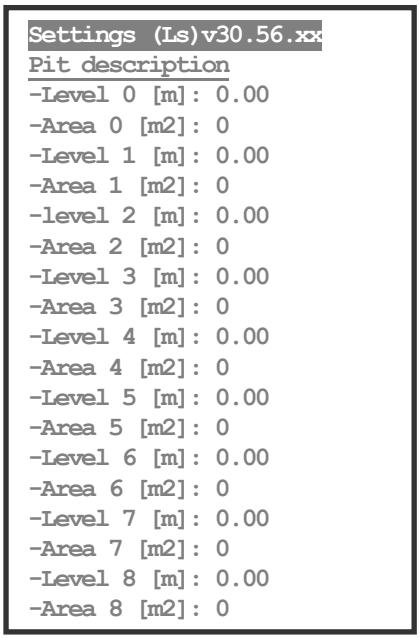
The example above shows the compensation settings for a 4 pump station.

2 pumps comp:
Here you define the compensation factor for 2 pumps running
3 pumps comp:
Here you define the compensation factor for 3 pumps running
4 pumps comp:
Here you define the compensation factor for 4 pumps running

.

Pit description

In order to calculate the flow rates it is necessary to define the geometry of the pump pit in the controller. This is done by dividing the pit up to 8 different levels and introducing each corresponding area at each level.
The bottom of the pump pit is always level 0, if the pit has vertical walls it will suffice to give two levels, for example level 0 and level 1. If there are changes in the geometry of the pit, it is necessary to give one separate level at each change of area, covering the total volume of the pit.



Pit description menu.
Here you define as many levels with its corresponding area as necessary to cover all the active volume of the pit.

The pit can be defined with up to 9 different levels starting at level 0 by the bottom, and going up level-1, level-2 etc.

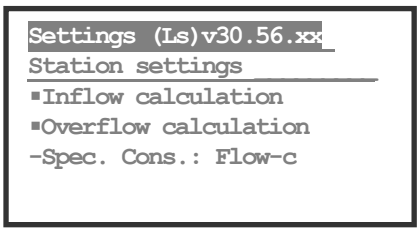
5.5.7 Overflow calculation

In this menu, you set the values for the overflow calculation and volume.

For more information, please contact your DripDrop AB representative.

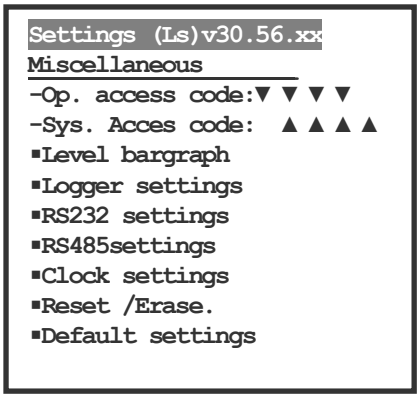
5.5.8 Specific energy calculation type

If there is a power meter connected to the controller, and the flow is registered, the specific energy can be calculated and shown in a window under the E key.
In this menu, you can choose which flow measuring type to use in the specific energy calculation.
The options are Flow-p (pulse), Flow-a (analogue flow signal) and Flow-c (computed flow)



5.6 Miscellaneous

In the miscellaneous menu you will find the settings for access codes, some system specific settings, communications and factory settings for example.

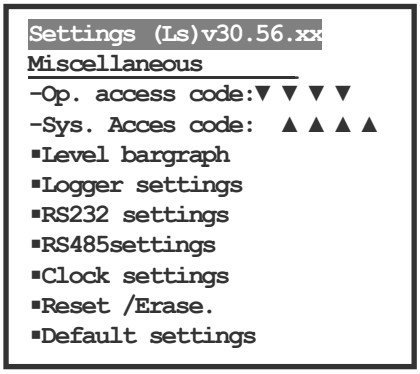


Miscellaneous menu
This menu is made up of a number of submenues, where we will describe each one individually.

5.6.1 Operator access code,

To be able to view the different access codes and change them it is necessary to first have logged in with system access code.

In this menu you can view and change both factory defined access codes, Operator and System codes. To define a new code you can use a combination of the four-arrow keys ◄▼▲► and the six letter keys P,E,A,L,S y X to create the desired new access code.



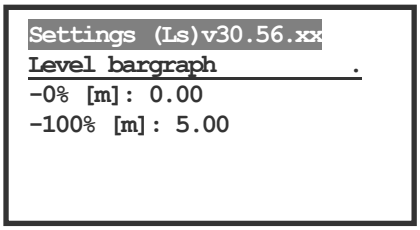
Access code menu
Operator access code – needed to confirm alarms by the operator.

System access code – needed to change settings and configuration of the controller.

In this menu you can change the accesscodes, but you need to logg wit h the system code to maka any changes.

5.6.2 Level bar graph

This function is to scale the level bar graph on the main display for a better resolution in the display window.

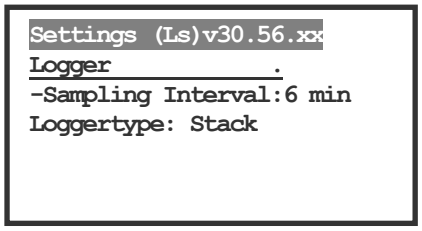


Bargraph
-0% - Enter the corresponding level to 0 % of the bar.

-100% - Enter the corresponding level at 100 % on the graph (normally the maximum level in the pump pit).

5.6.3 Logger

This menu is to set the sample interval of the logger and the principle of how to save the logger data to fit different SCADA systems



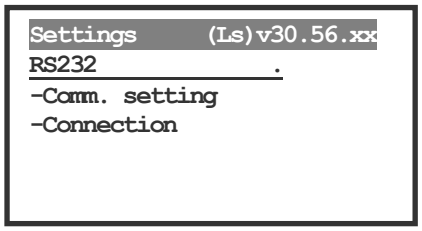
Logger setting menu
-Here you define the interval to take samples for the logger from 1 to 10 minutes.

-Here you tell the controller how to save the data in the logger to better adapt to different Scada systems. The options are ring registers and stack registers.

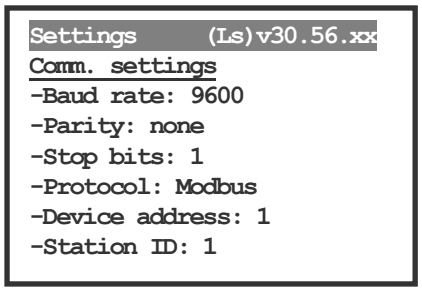
5.6.4 RS232 settings

The communication settings menus consists of two different submenus where the first deals with the communication settings and the second one with connection settings.

5.6.4.1 Communication settings



In the submenu for RS232 settings you will select the communication settings menu to define different communication parameters.



First you will set the communication velocity for the communication. Maximum is 115200 Baud.
Factory setting is 9600.

Then you will set the parity. Factory setting is None.

Then you will set the stop bits. The factory setting is set to 1.

If you are to communicate to a supervision system you need to define what type of communication protocol to use.

And finally you will need to give the controller the unit direction and unique station ID.

5.6.4.2 Connection settings

Once you have defined the parameters for the communication next step is how to carry out the connection, which communication device to use and the settings you need for that device to work properly. The connection alternatives are:
1. Direct communication – meaning communication that is always open from point to point.
2. Dial-up communication – where the communication is established by dialling from one device to another, for example fixed telephone line or GSM telephone.
3. GSM-SMS communication – which is the sending of SMS messages over the GSM network.

5.6.4.2.1 Direct communication

The direct communication is the easiest way to communicate, as it is a transparent communication that is open at all time. This communication type is used for example for radio communication.

```
Settings (Ls)v30.56.xx
Connection
-Link: Direct
-Remote acknowledge: no
```

For this communication type you can only choose how to acknowledge alarms, locally in the unit or remotely from a supervision system.

5.6.4.2.2 Dial-up communication.

The dial-up communication is based on that a dial-up is realized in order to establish the contact between the two points of connection. This is made by the use of a PSTN telephone connection or a GSM telephone system.
The use of this type of communication require a PSTN telephone modem or a GSM modem.
Once chosen the modem type to use, you will set some parameters on how the modems will work.

```
Settings (Ls)v30.56.xx
Connection
-Link: dial up
-Reset modem t. [m]:0
-Pulse duration[s]:0
-H:
-Modem typ: PSTN
-PIN code:
-N1:
-Idc:
-Answer after:
-Alarm resend no.:
-Retry time[s]: 0
-Call on alarm Off: no
-Remote acknowledge: yes
```

There is a modem re-init function for the modem, using the Digital output 07 in the powersupply circuit to the modem. You can set an re-init interval for the modem as well as the pulselenght for the initialization pulse.

In case you choose a modem that needs a Hayes comand to establish a connection, here you can put the string. You should consult the modem manual.

In this position the type modem e must be choosen: PSTN or Mobile GSM.

If a GSM modem is used you will be given the possibility of using the PIN code for the SIM card. DripDrop AB does NOT recommend to use it.

This data is the phone number of the GSM modem that connects with the SCADA system.

Here we can define if we want the unit to retry the dial up, and how many times. In this case, there is a defined time between each retry.

In some applications, you want to know when an alarm goes off, here you can activate the function to call in when the alarm goes off.

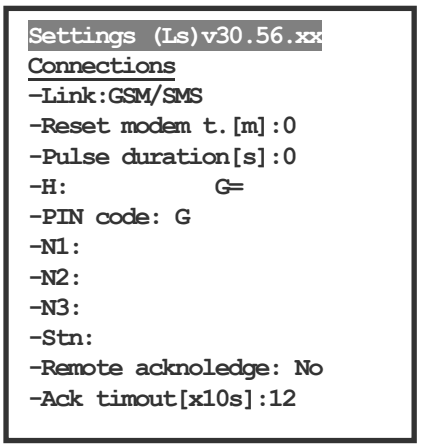
Here you can define if you want the alarms to be acknowledged remotely or not.

5.6.4.2.3 GSM-SMS Communication

This communication option is used for sending and receiving of SMS messages by a GSM mobile phone. DripDrop recommends the use of a Westermo GDW-11 modem for this.
You will need a normal SIM card with the SMS function activated.

Even though you can use a SIM card with a PIN code, DripDrop recommends deactivating the PIN code from the SIM card.

The function permit to send SMS text alarms to three different mobile phones and depending on the settings in the menu the SMS message can be sent to all three at the time or they can be sent to one at a time, with a time delay before the next number in the list is called.



There is a reset function for the modem, using DO7 in line with the main supply for the modem.
There is a time interval for each resetting, and a duration for the pulse.

In case you choose a modem that needs a Hayes comand to establish a connection, here you can put the string. You should consult the modem manual.

You will be given the possibility of using the PIN code for the SIM card. DripDrop does recommend NOT to use it.

Here you set the three possible telephone numbers to receive the SMS messages.

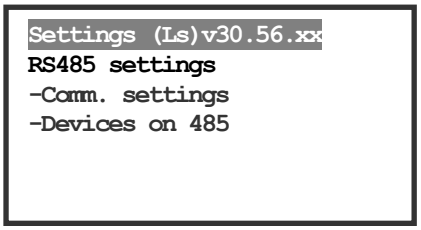
This is the name of the station, so that when the user receives a message he can identify which station sent it.

Here you define if you want the alarms to be acknowledged remotely or not

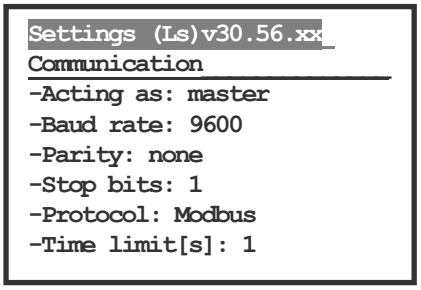
If you choose to acknowledge the alarms remotely, here you define the time limit for the alarms to be acknowledged. If the alarm is not acknowledged within this time, the unit will send the alrm to the next mobile in the list.

5.6.5 Setting of RS485-port

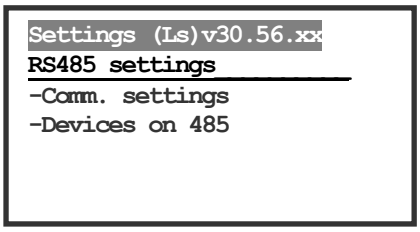
In addition the RS 232 communication port for remote communication the unit has a RS485 communication port to connect one or various (up to 6) devices, such as other PC 2000 power analyzer units, PLC´s etc., that will operate as modbus/comli slaves to the Main PC 2000. The master PC 2000 will read all the needed information and relay is as alarms or information to a supervising Scada system.
Once in the RS 485 settings menu you will need to define communication parameters and define what devices are connected to the PC 2000.



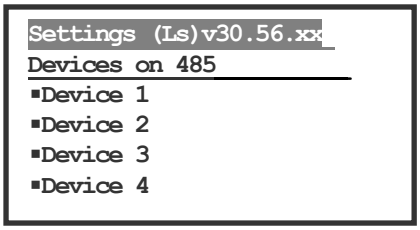
Once in the RS485 settings menu you need to set the communication parameters under Comm.settings.



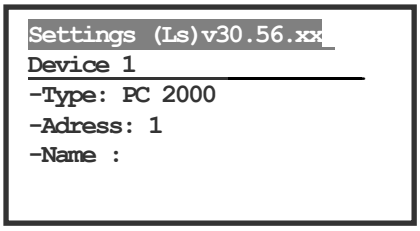
In the communication settings menu you will set the following parameters:
-how will the unit act as master or as slave (referring to the external device.
-You wil set the communication velocity.
-Stop bits
-Communication protocol, Modbus or Comli.
-And you will need to set a time limit for the communication to be established.



Once the communication settings are made, you need to go into the device definition menu.



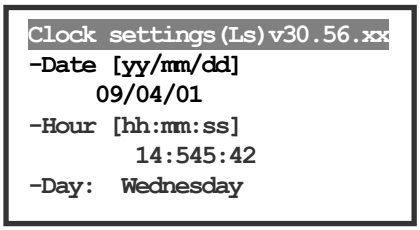
You will find a list of 6 devices to choose between.
Device 1 to 6.



Start by defining the first device as Device 1.
-Once in the settings menu you will have to pick what type of device are to connect to the PC 2000. At the moment there are only another PC 2000 defined as device types.
-You will give the device an address.
-Finally you will define a device name.

5.6.6 Clock settings

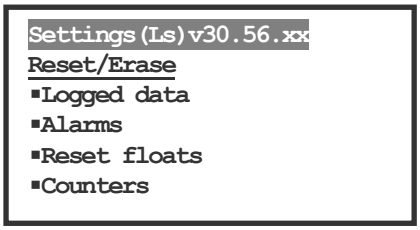
Menu for setting the internal clock and the date.

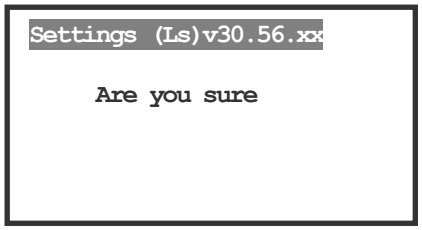


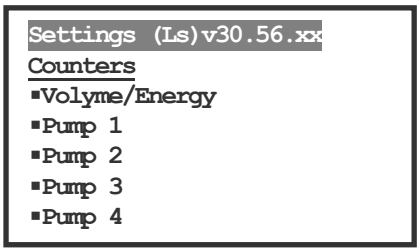
In this menu you move to the desired position with the ◄► keys and you change the value with the ▲▼ keys. When you have made the modifications, go out of the menu with the Esc key.

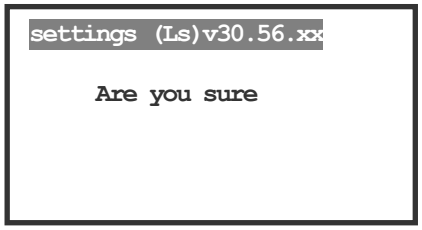
5.6.7 Reset/Erase

The controller has a menu where you can erase all the data in the logger, the alarm history list, you can reset the level switches and you can reset the counters to 0.







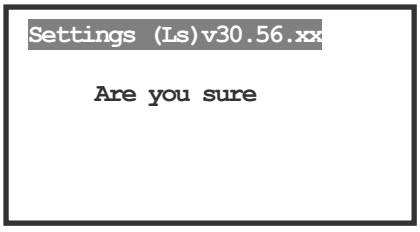


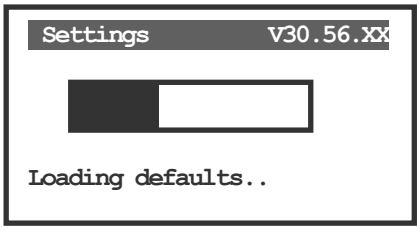
For the logger, alarms and reset of the levelswitches you select the option you want to reset. You will then get"are you sure" security prompt.
Accept by pressing the OK key.

For the counters you will enter a submenu with the option to reset the pulse input channels or the pump counters separately.
Select an option and accept by pressing the key OK key.

5.6.8 Factory settings

Factory settings menu is used to reset the controller to original factory settings. The default factory setting is used to quickly start up an application with the most basic functions in use only.
This can be very helpful if you get problems during the configuration and wish to start freshly with only the basic functions in use.





Note!
This means that all present settings are erased and replaced with the factory settings.

Look at the configuration table in the manual

6 SMS functions – using mobile phone

With the GSM-SMS function activated, you can receive SMS-messages to up to three different mobile telephones. You will receive the alarms as clear alarm texts, identifying the station name and the alarm text. You can also confirm each alarm remotely from the mobile phone.
There is also a function where you can request information packages from the controller, including information of pump status, level, flows and occurred alarms.

6.1 Alarm by SMS messages

When an A type alarm is generated in the PC-2000-W, a text message is sent by the connected GSM modem to the established phone list. The modem will send an SMS text alarm to the first mobile phone in the telephone number list (maximum 3 numbers), the message will have the following format:

(005)
Main Station
Alarm pump 1
Over current
(1)

In the mobile phone you will see the following about the alarms:
-The internal alarm number
-Pumpstation name
-There is an alarm for pump number 1
-Alarm name.

6.2 Remote confirmation of the alarms

Once you have received an alarm message on your phone and you have activated the remote confirmation function, you will confirm the alarm remotely by returning the same alarm text to the PC-2000-W. Depending on the mobile phone, there are different ways of doing this. However, it is important to send back the same message that you have received on the phone.
Once the PC-2000-W receive your return SMS message, the blinking A-alarm lamp will stop blinking as an indication of that the alarm is confirmed.

(005)
Main Station
Alarm pump 1
Over current
(1)

When receiving an alarm sent by the PC 2000, return the same message to the PC 2000, and the alarm will be confirmed remotely

6.3 Sending inquiries to the station by mobile phone.

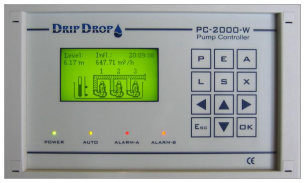
In addition to receive SMS alarms from the controller, you can send inquiries for information to the unit. The information that you can ask for is divided into three different pre-established information groups:

1. Information for active alarms
2. Operation hours and number of starts today (from midnight)
3. Information on actual values in the station, level, in/outflow and on/off status of pumps.

1. Information group (Alarms)

To receive information about active alarms –
Send following message

Get a



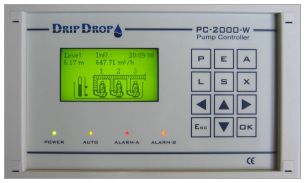
Received message is an answer with a list of active alarms…

Alarms occured:
1. Alarm pump 1
Over current
2. Alarm pump 2
NOT in AUTO

2. Information group (Status)

To receive information about the pump status--
Send following message

Get s



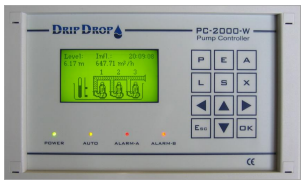
Received message of the status of the pumps, how many starts of the pumps and operation time today.

Pump status:
P1 No of starts: 10
P1 Operation time: 5.25
P2 o of tarts: 9
P2 Operation time: 5.10

3. Information group (Station data)

To receive information about the actual values –
Send following message

Get d



Received message with actual level, in and outflow and overflow and if pumps are running or not.

Valores actuales:
Level (m):
Q in (l/s):
Q out (l/s):
Qoverflow(l/s)
B1 = OFF
B2 = ON
B3 = OFF
B4 = OFF

7 I/O-list, Signal table

I/O No.		Signal type	Signal function	Notes
AI	1	Level signal	4-20 mA	
AI	2	Flow signal	4-20 mA	
AI	3	P1 Motor current / Running confirm.	4-20 mA	
AI	4	P2 Motor current / Running confirm.	4-20 mA	
AI	5	P3 Motor current / Running confirm.	4-20 mA	
AI	6	P4 Motor current / Running confirm.	4-20 mA	
AI	7	Attendance alarm/ Intruder alarm	4-20 mA	Works like DI, with resistor.

DI	1	Low level switch	NO	mostly NC
DI	2	High level switch	NO	
DI	3	Overflow switch	NO	
DI	4	P1 Not in auto (H-0-A)	NO	mostly NC
DI	5	P1 Motor protection	NO	
DI	6	P1 Thermo protection	NO	mostly NC
DI	7	Internal alarm 1 / Extern block. P1	NO	
DI	8	P2 Not in auto (H-0-A)	NO	mostly NC
DI	9	P2 Motor protection	NO	
DI	10	P2 Thermo protection	NO	mostly NC
DI	11	Internal alarm 2 / Extern block. P2	NO	
DI	12	P3 Not in auto (H-0-A)	NO	mostly NC
DI	13	P3 Motor protection	NO	
DI	14	P3 Thermo protection	NO	mostly NC
DI	15	Internal alarm 3 / Extern block. P3	NO	
DI	16	P4 Not in auto (H-0-A)	NO	mostly NC
DI	17	P4 Motor protection	NO	
DI	18	P4 Thermo protection	NO	mostly NC
DI	19	Internal alarm 4 / Extern block. P4 Alarm confirmation.	NO	
DI	20	Block all pumps / Phase failure	NO	

CI	1	Flow meter / Rain meter (Pulses)	--	
CI	2	Energy meter / Flow meter (Pulses)	--	

AO	1	Analoge Out (4-20 mA)	4-20 mA	Mirror of AI 1-7
AO	2	Analoge Out (0-10 V)	0-10V	Mirror of AI 1-7

DO	1	ND1	C1	P1 Start/Stop	NO	
DO	2	ND2	C2	P1 Reset Motor Prot.	NO	
DO	3	ND3	C3	P2 Start/Stop	NO	
DO	4	ND4	C4	P2 Reset Motor Prot.	NO	
DO	5	ND5	C5	P3 Start/Stop	NO	
DO	6	ND6	C6	P3 Reset Motor Prot.	NO	
DO	7	ND7	C7	P4 Start/Stop	NO	
DO	8	ND8	C8	P4 Reset Motor Prot.	NO	
DO	9	ND9	C9	Mixing/Flushing 1	NO	
DO	10	ND10	C10	Mixing/Flushing 2	NO	
DO	11	ND11	C11	Attendance alarm	NO	For alarm horn – Alarm is sent.
DO	12	ND12	C12	Alarm (not ackn.)	**NC**	
DO	13	ND13	C13	Alarm (Active)	**NC**	
DO	14	ND14	C14	Not used	NO	
DO	15	ND15	C15	Not used	NO	
DO	16	ND16	C16	Modem reset	**NC**	Interrupts power to GSM-modem.

8 Tecnical information

8.1 Specification PC-2000-W

Powersuply	24 VDC (19,2 -30 VDC)
Power consumption	0.15 A
Mounting cut out	Panelmounted (203.5 mm x 115 5 mm)
Outer dimensions	213 x 125 x54 mm (B x H x Dj)
Temperature range	-5 to +55 °C
Housing	IP 54 (IP 65 from front)
Weight	0,6 kg
Processor	AMTEL ATMAGA 128
Memory	SRAM, E2PROM,FEPROM
Graphic display	128 x 64 dots
Operator keys	12
LED´s	1 green, 1 yellow, 2 red.
Internal battery (Litium)	CdLi, for real tim clock and settings
Signal connections	Band cable 1x26, 1x 20,1x14
Digital outputs	16DO, 24 VDC open colector Max. load 50 mA at 30 VDC
Digital inputs	20DI, 24 VDC Optoisolated max. 500 V (1 min)
Counter inputs	2, 24 VDC Optoisolated max. 500 V (1 min) Max frequency 500 Hz
Analogue inputs	7 AI 0/4-20 mA at 24 VDC Max impedance 100 ohm
Analogue current output	1 AO, 4-20 mA at 24 VDC Max load 500 ohm
Analogue voltage output	1 AO, 0-10 V Min Load 1000 ohm
Communication port 1	1 , RS232, 57600 BAUD
Communckation port 2	1 ,RS485, 57600 BAUD

8.2 Electromagnetic compatibility (EMC)

Electromagnetic compatibility (EMC)					
Description	Standard	Class	Level	Remarks	Test
Network frequencymagnetioc fields	CEI 61000-4-8		30A/m		A
Immunity to radiated RF - fields	CEI 61000-4-3	3	10V/m	26MHz-1GHz	A
Electostatic discharge immunity	CEI 61000-4-2	4	± 8kV	Air discharge	C
			± 4kV	Cont. discharge	C
Radiated emission	EN 52022:2004	A		26MHz-1GHz	A

9 Configuration table

Application type	No. Of pumps	
	Max No of working pumps	
	Start float	
	Stop way:	

Digital inputs

No	Type	Function	Signal type	Alarm type	Block	Delay [s]
DI1	Low level switch	In use	NC	B-alarm		1
DI 2	High level switch	In use	NO	A-alarm		1
DI 3	Overflow switch	In use	NO	A-alarm		1
DI 4	P1 Not in Auto(H-0-A)	In use	NC	B-alarm		1
DI 5	P1 Motor protection	In use	NO	A-alarm		1
DI 6	P1 Thermo protection	In use	NC	A-alarm	no	1
DI 7	Int./Ext. alarm 1/ Ext.block.P1	Not used	NO	A-alarm	no	1
DI 8	P2 Not in Auto(H-0-A)	In use	NC	B-alarm		1
DI 9	P2 Motor protection	In use	NO	A-alarm		1
DI 10	P2 Thermo protection	In use	NC	A-alarm	no	1
DI 11	Int./Ext. alarm 2/ Ext.block.P2	Not used	NO	A-alarm	no	1
DI 12	P3 Not in Auto (H-0-A)					
DI 13	P3 Motor protection					
DI 14	P3 Thermo protection					
DI 15	Int./Ext. alarm 3/ Ext.block.P3	Not used	NO	A-alarm	no	1
DI 16	P4 Not in Auto (H-0-A)					
DI 17	P4 Motor protection					
DI 18	P4 Thermo protection					
DI 19	Int./Ext. alarm 4/ Ext.block.P4 Gral. Alarm confirmation	Not used	NO	A-alarm	no	1
DI 20	Block all pumps/ Phase failure	Not used	NO	A-alarm	Not used	

Digital outputs

		Signal
DO2	P1 Reset M. Protection	
DO4	P2 Reset M. Protection	
DO6	P3 Reset M. Protection	
DO8	P4 Reset M. Protection	
DO9	Mixer 1 Start / Stop	
DO10	Mixer 2 Start / Stop	
DO11	Horn Inter. / Pers, Alarm	
DO12	Alarm Not Ack.	
DO13	Alarm (Active)	
DO14	Not in Use	
DO15	Not in Use	
DO16	Modem reset	

Counters

		Function	1 Puls	Max delay
CI1	Counter 1	Rainmeter (Water flow)	1 mm	1
CI2	Counter 2	Power meter (Water flow)	1 kWh	1

Analogue inputs

		Signal	Range 0/4 mA	Range 20 mA
AI1	Level sensor	4-20 mA	0,00 m	10 m
AI2	Flow meter			
AI3	P1 Motor current	4-20 mA	0,0 A	250.0 A
AI4	P2 Motor current	4-20 mA	0,0 A	250.0 A
AI5	P3 Motor current			
AI6	P4 Motor current			
AI7	Intruder/ pers. alarm			

Analogue outputs

		Mirror	Range
AO1	Analogue output 1	AI1	
AO2	Analogue output 2	AI1	

Setting of pumps

		Pump 1	Pump 2	Pump 3	Pump 4
Daytime levels	Start[m]:	1.00 m			
	Stopp[m]:	0.50 m			
Nighttime levels	Start:				
	Stopp[m]:				
Alternation :	Yes / No				
Back-up starr:	Yes / Noj				
Max.runtime:	[min]:	240			
Min. breaktime:	[sek]:	10			
Check after:	[h]				
Check for:	[s]				
Service time:	Service after [h]:				
	Alarm type:				
	Reload time:				
Random starts.	[cm]:	10			
Running confirmation	Function	In use			
	Confirm. time [s]	5			
	Block pump	No			
	Alarm type	A-Alarm			
Current settings	Block pump	Yes			
	Pump start time [s]	10			
Low current	I-min[A]	100.0			
	Delay on [s]	5			
	Alarm type	A-alarm			
High current	I-max[A]	200.o			
	Delay on[s]	5			
	Alarm type	A-alarm			
Pump Capacity	Nom.cap.[l/s]	0			
	Min. cap.[l/s]	0			
	Alarmtype	Not act.			
Reset protection	No of retries				
	Pause time [s]				
	Reset time[s]				

Station settings

Alternation	Type:		
	Alt.at failurel:		
Time / delays	Start delay: [s]:		
	Stop delay:[s]		
	Min.- time starts [s]:		
	Min.- time stops [s] :		
	Switching time [s]:		
	Back-up time [min]:		
	Daytime [h.m]:		
	Nighttime [h.m.]:		
Level alarm	High level	Level[m] :	
		Alarm delay [s]:	
		Alarm type:	
	Low level	Level[m] :	
		Alarm delay [s]:	
		Alarm type:	
	Overflow level	Level[m] :	
		Alarm delay [s]:	
		Alarm type	
	Idle Alarm	Measuring window%	
		Alarm delay[h]	
		Alarm type	
Cleaning sequencies	Pit cleaning	Pit clean starts:	
		Alt. Stop level[m]:	
		Alt. stopdelay [s]:	
	Pipe cleaning	Pipe clean starts:	
		Alternative start.[m]:	
		Flush number:	
Mixer 1	Level functionality	Type:	
		Startcycles:	
		Startlevel[m]:	
		Startdelay[s]:	
		Runtime[s]:	
	Timer functionality	Type:	
		Starta after[h]:	
		Runtime[s]:	
		Block if pump ON:	
Mixer 2	Level functionality	Type:	
		Startcycles:	
		Startlevel[m]:	
		Startdelay[s]:	
		Runtime[s]:	
	Timer functionality	Type:	
		Starta after[h]:	
		Runtime[s]:	
		Block if pump ON:	

Station settings- cont.

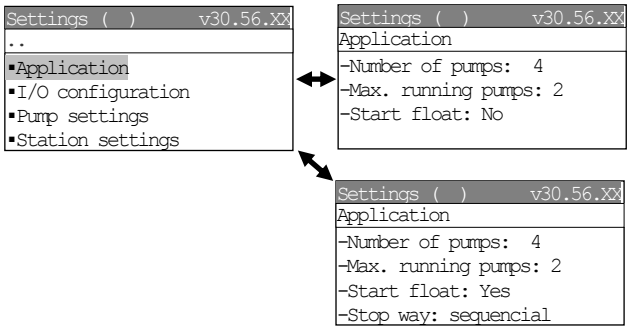
Inflow calculation	Inflow calc.time. [s]:		
	Cap. Calc. Time [s]:		
	Start delay [s]::		
	Stop delay [s]::		
	Inflow level. [m]:		
	2 pumps comp.[%]		
	2 pumps comp.[%]		
	2 pumps comp.[%]		
	Pit desciption	Level 0 [m]	
		Area 0[m]	
		Level 1[m]	
		Area 1 [m2]	
		Level 2 [m]	
		Area 2 [m2]	
		Level 3 [m]	
		Area 3 [m2]	
		Level 4 [m]	
		Area 4 [m2]	
		Level 5 [m]	
		Area 5 [m2]	
		Level 6 [m]	
		Area 6 [m2]	
		Level 7 [m]	
		Area 7 [m2]	
		Level 8 [m]	
		Area 8 [m2]	
Spec.cons.:			

Miscellaneous

Op. access code:	▲▲▲▲		
Syst, access code	▼▼▼▼		
Level bargraph	0% [m]: 0.00		
	100% [m]: 5.00		
Logger settings	Sample interval:	5 min	
	Logger type:	Stack, Ring or Fixed	
Settings RS 232	Comm.settings	Baud rate:	
		Parity:	
		Stop bits:	
		Protocol:	
		Device address:	
		Station ID:	
	Connection.	Link:	GSM (Direct, dial up)
		Reset modem [min]:	0
		Pulse duration[s]:	0
		Hayes:	
		PIN kod:	
		N1:	
		N2:	
		N3:	
		Stn:(Station name):	
		Remote acknowledge:yes/ no	no
		Ack. timeout[x10s]:	12
		*Idc: (Station name)	
		*Answer after:	2
		*Alarm resend No:	
		*Retry time[s]:	0
		*Call on alarm OFF: no	
Settings RS485	Comm settings		
		Acts as:	nothing
		Baud rate	1200
		Parityt:	none
		Stop bits:	1
		Protocol:	COMLI
		Time out[s]:	
	Ext.units type 485	Type:	
		Address:	
		Name:	
Reset/ Erase			
	Logged data		
	Alarm		
	Reset floats		
	Counters	Volume/Energy	
		Pump 1,2,3,4	

10 Menu structure – System settings

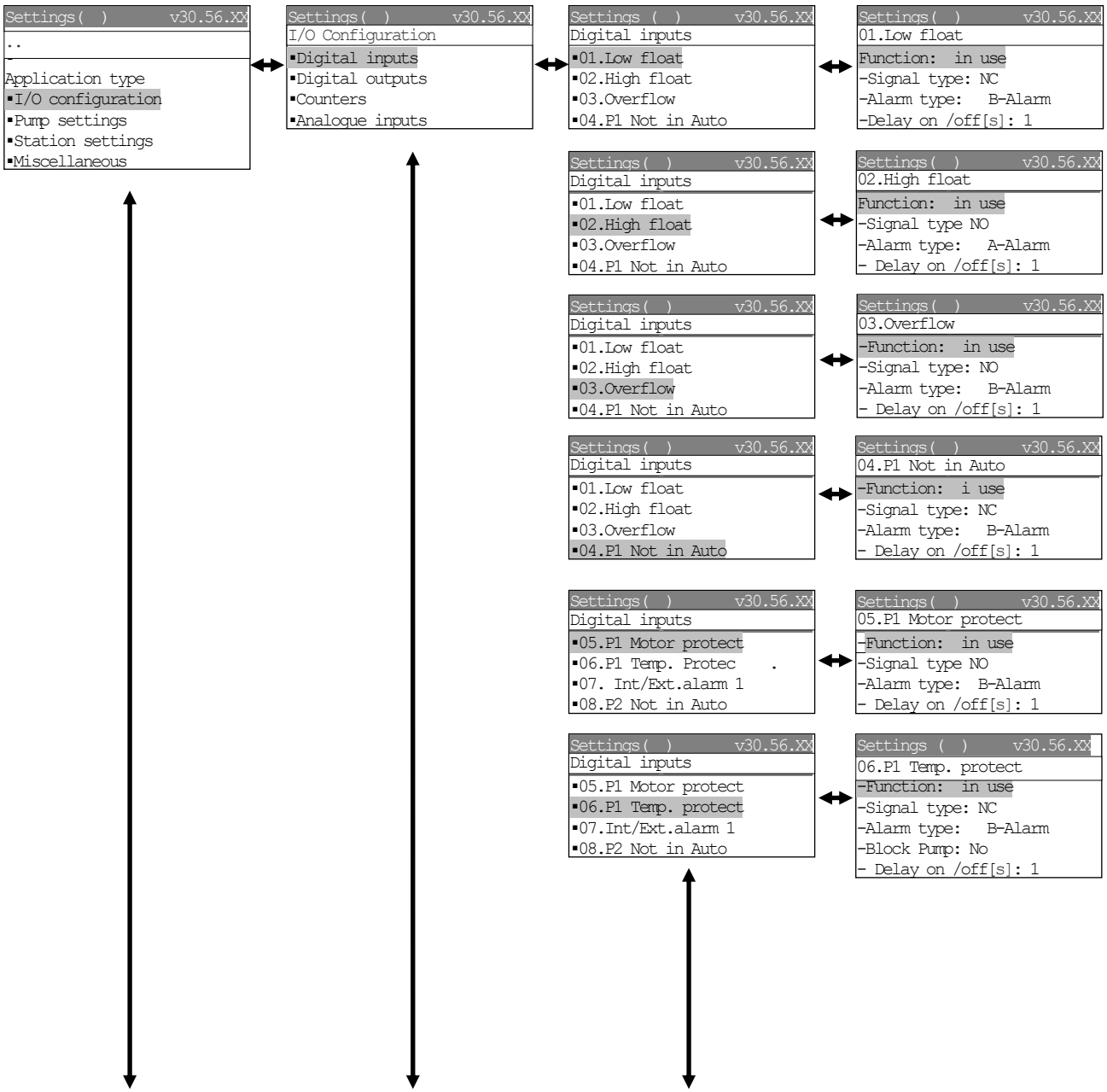
Application



If the start floats option is set to YES, an additional setting line will appear to choose how to stop the pumps with the levelswitches.
- sequencial
- general stop
- own stop

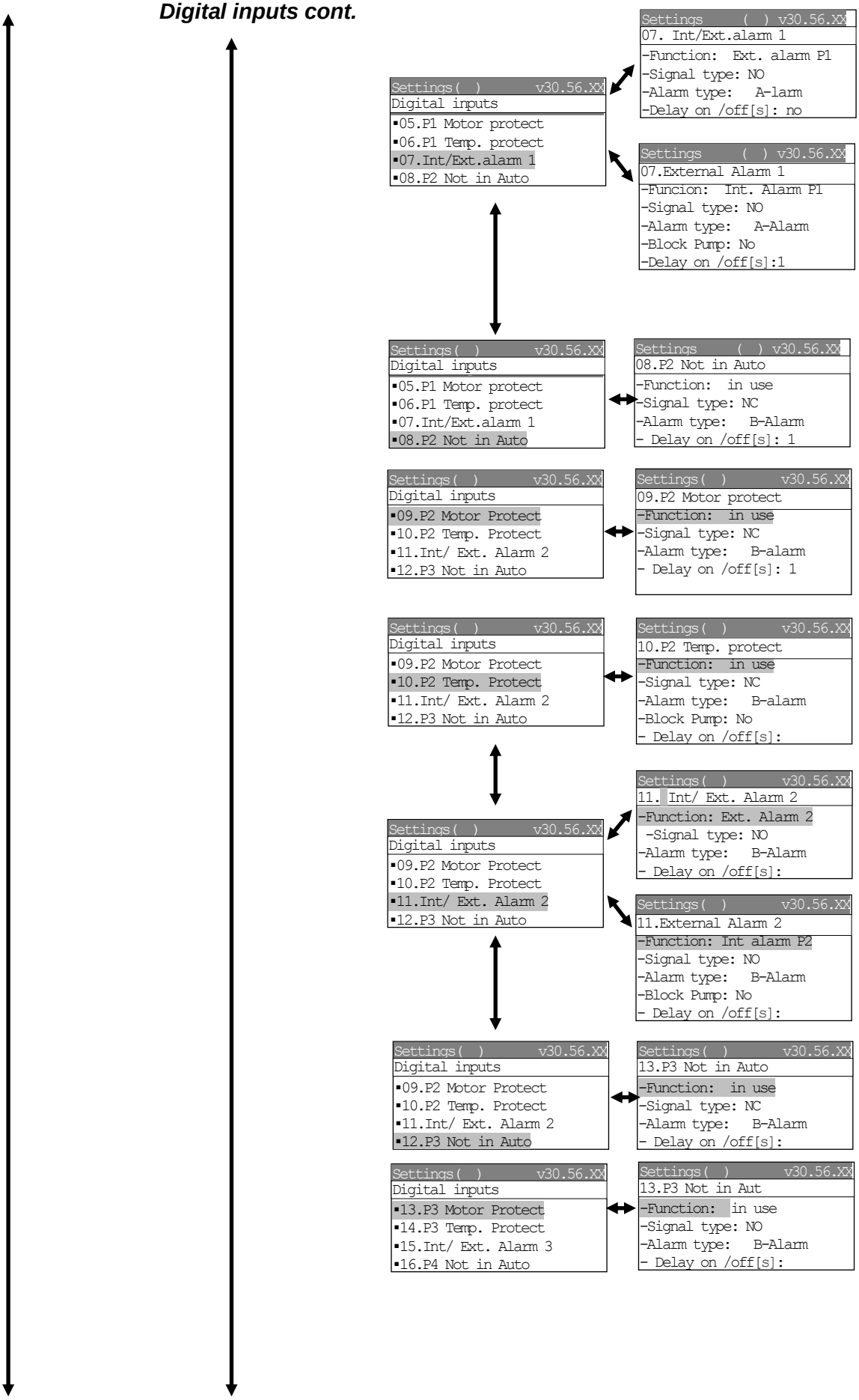
More info see 5.2.

I/O Settings - Digital inputs



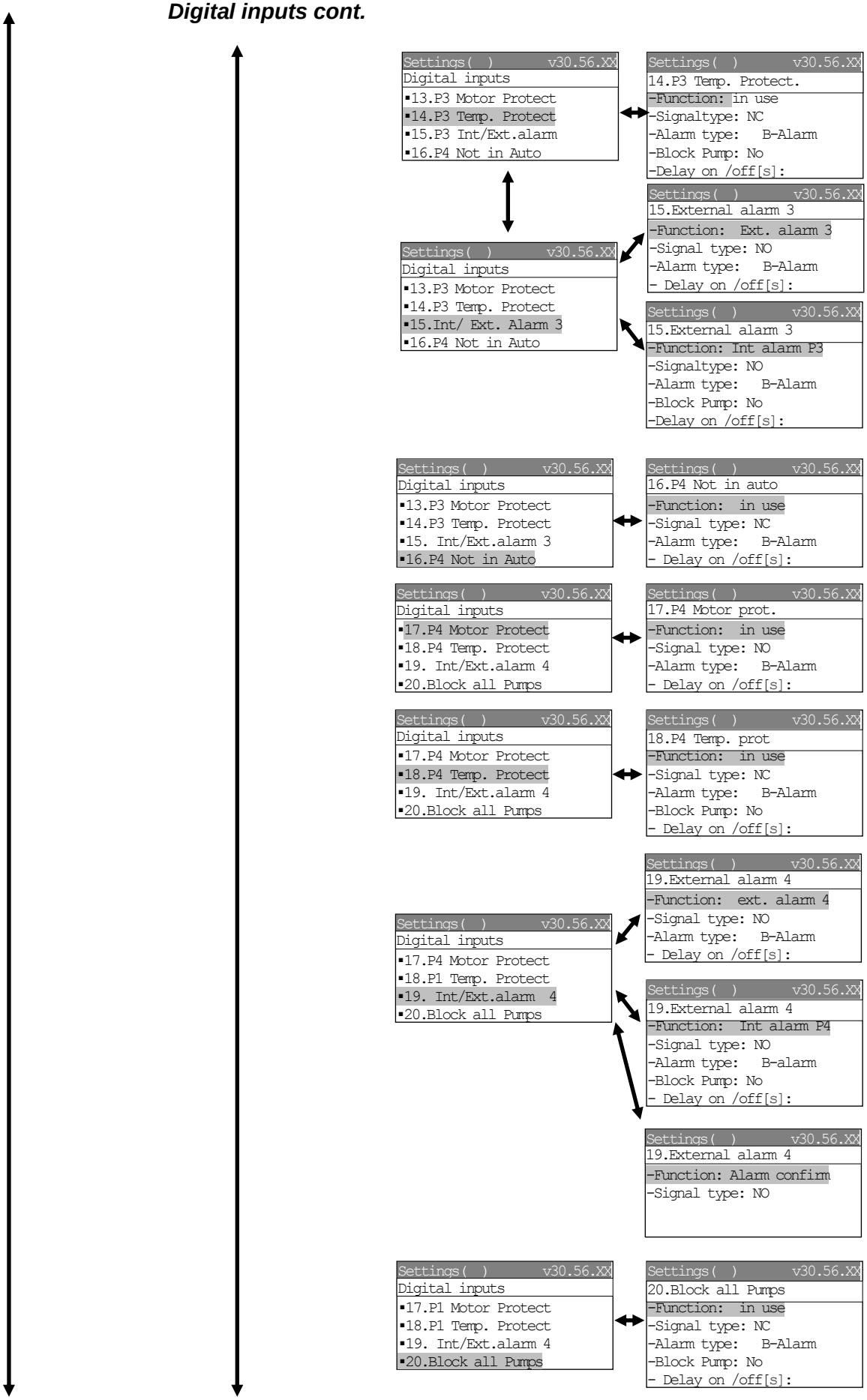
I/O Settings cont.

Digital inputs cont.



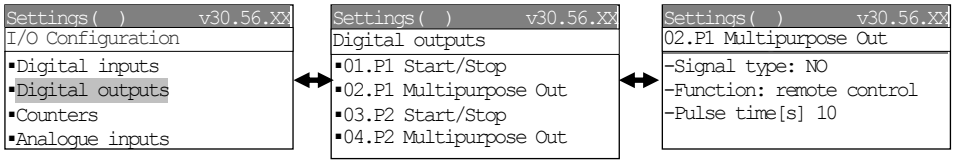
I/O Settings cont.

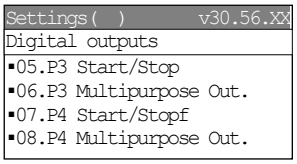
Digital inputs cont.

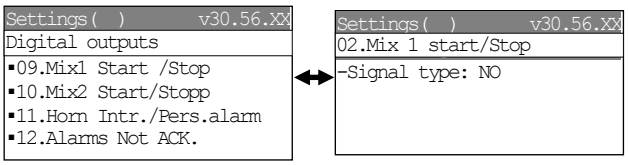


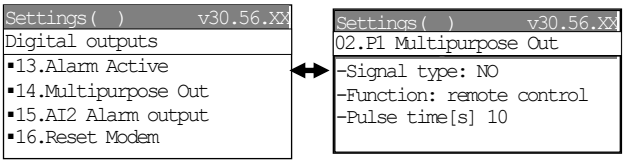
I/O Settings cont.

Digital outputs

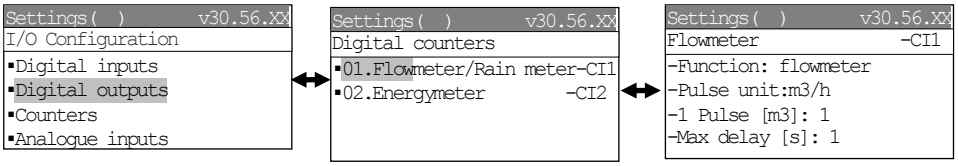


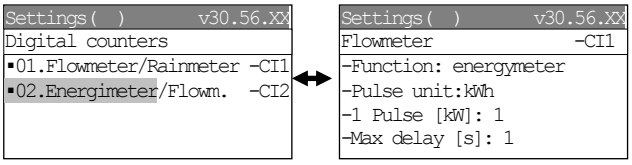




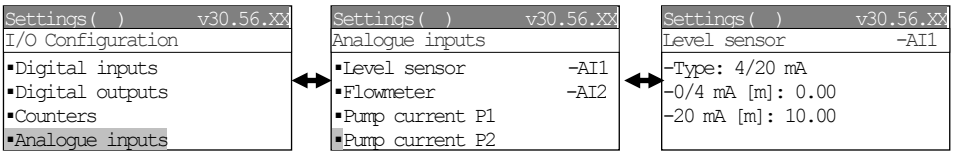


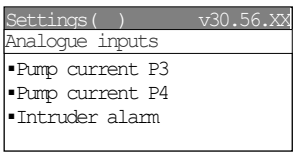
Digital counters



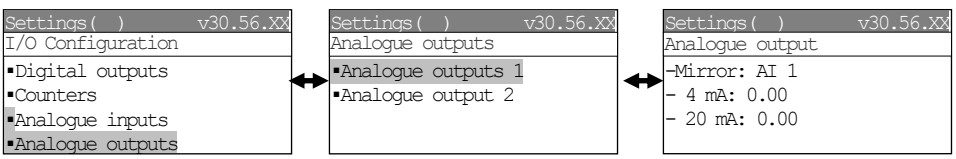


Analogue inputs

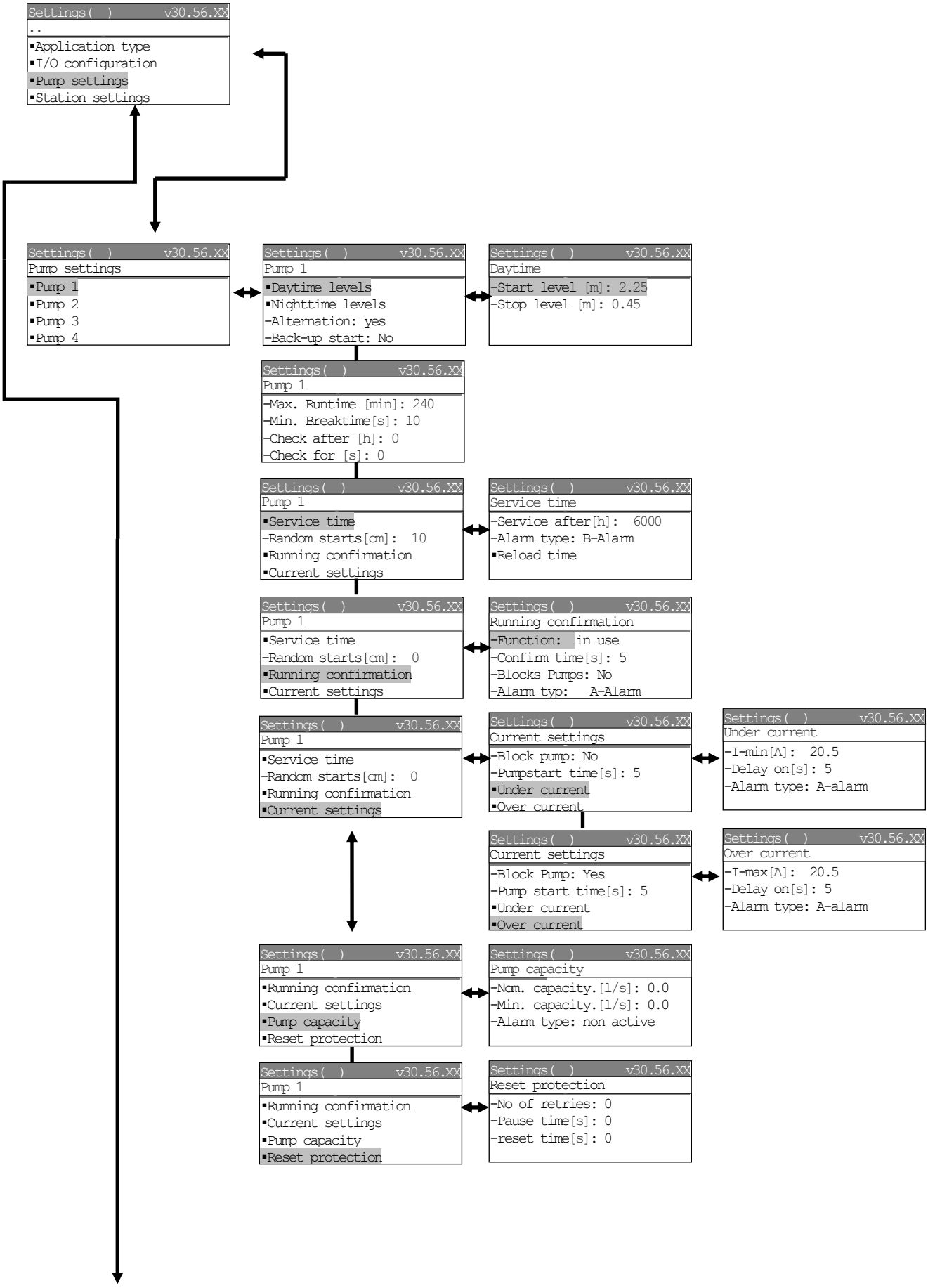




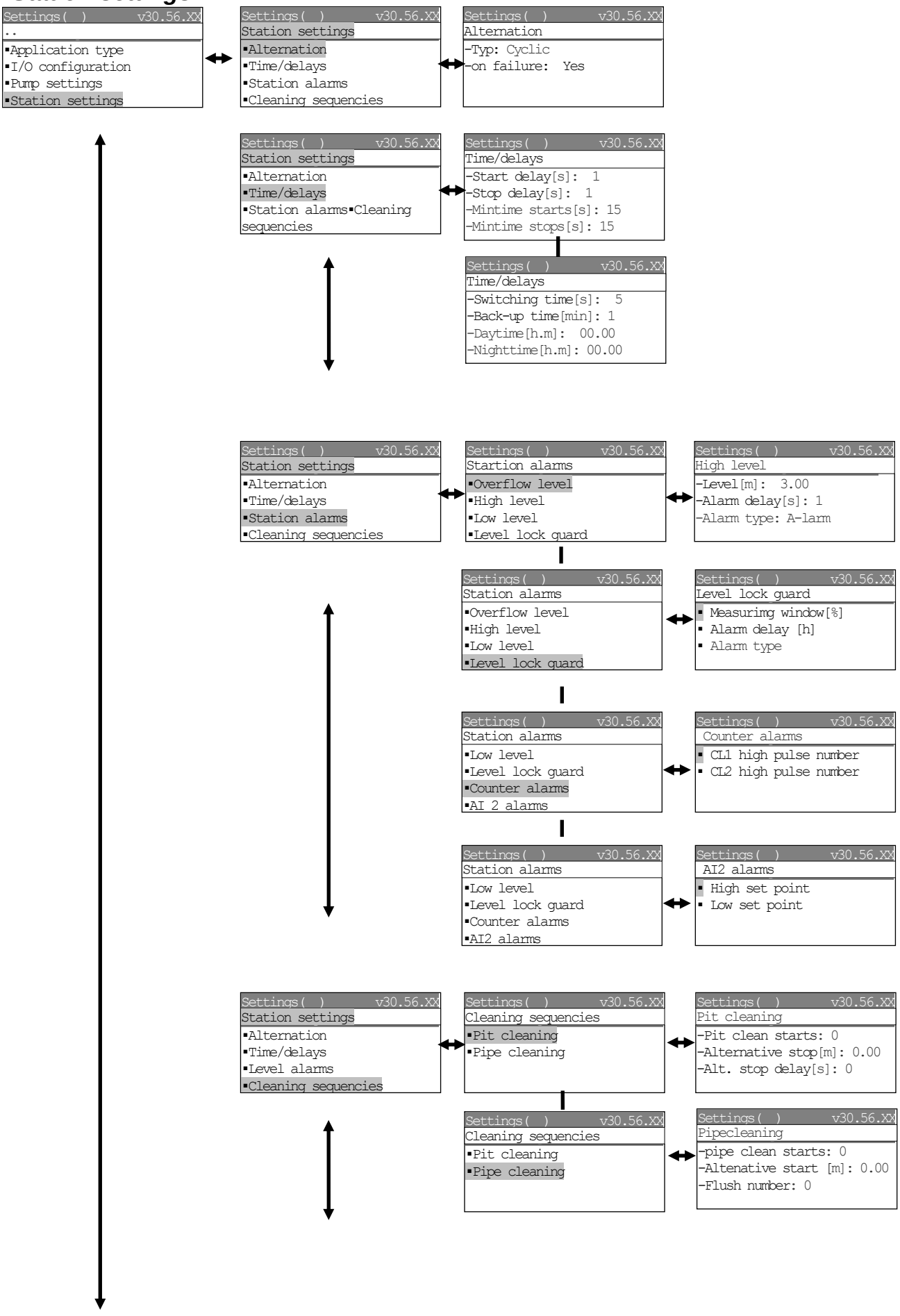
Analogue outputs



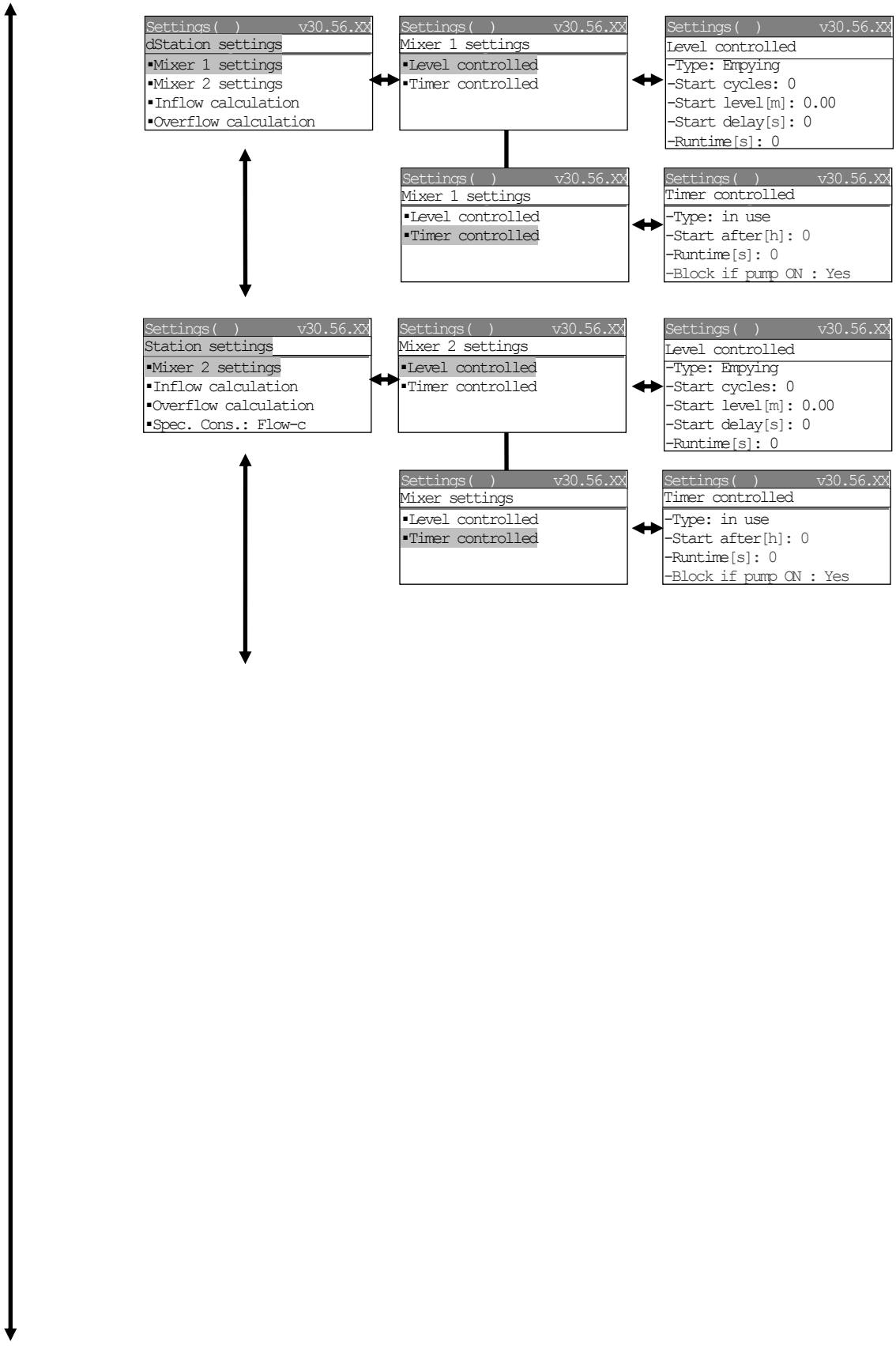
Pumpsettings



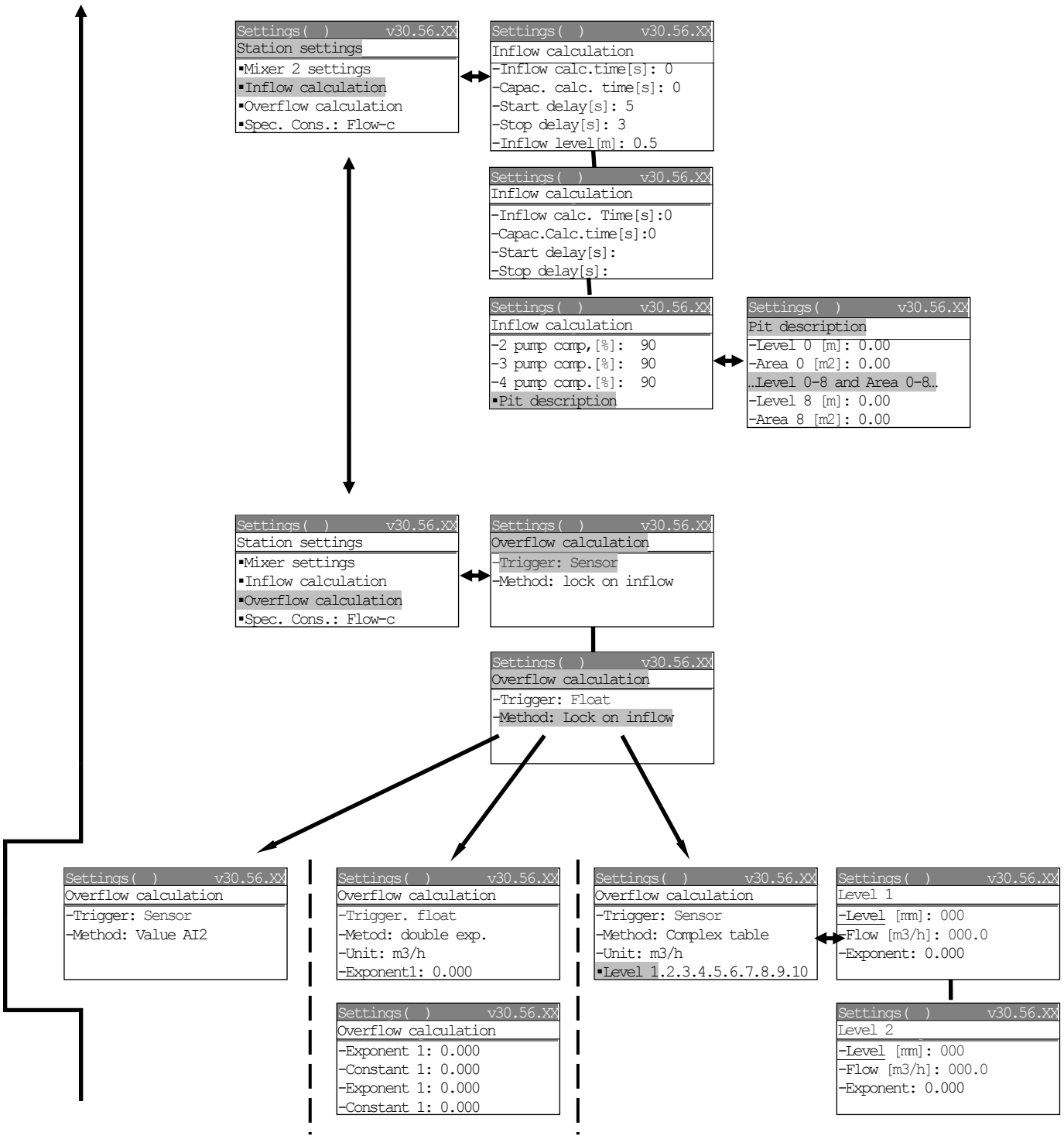
Station settings



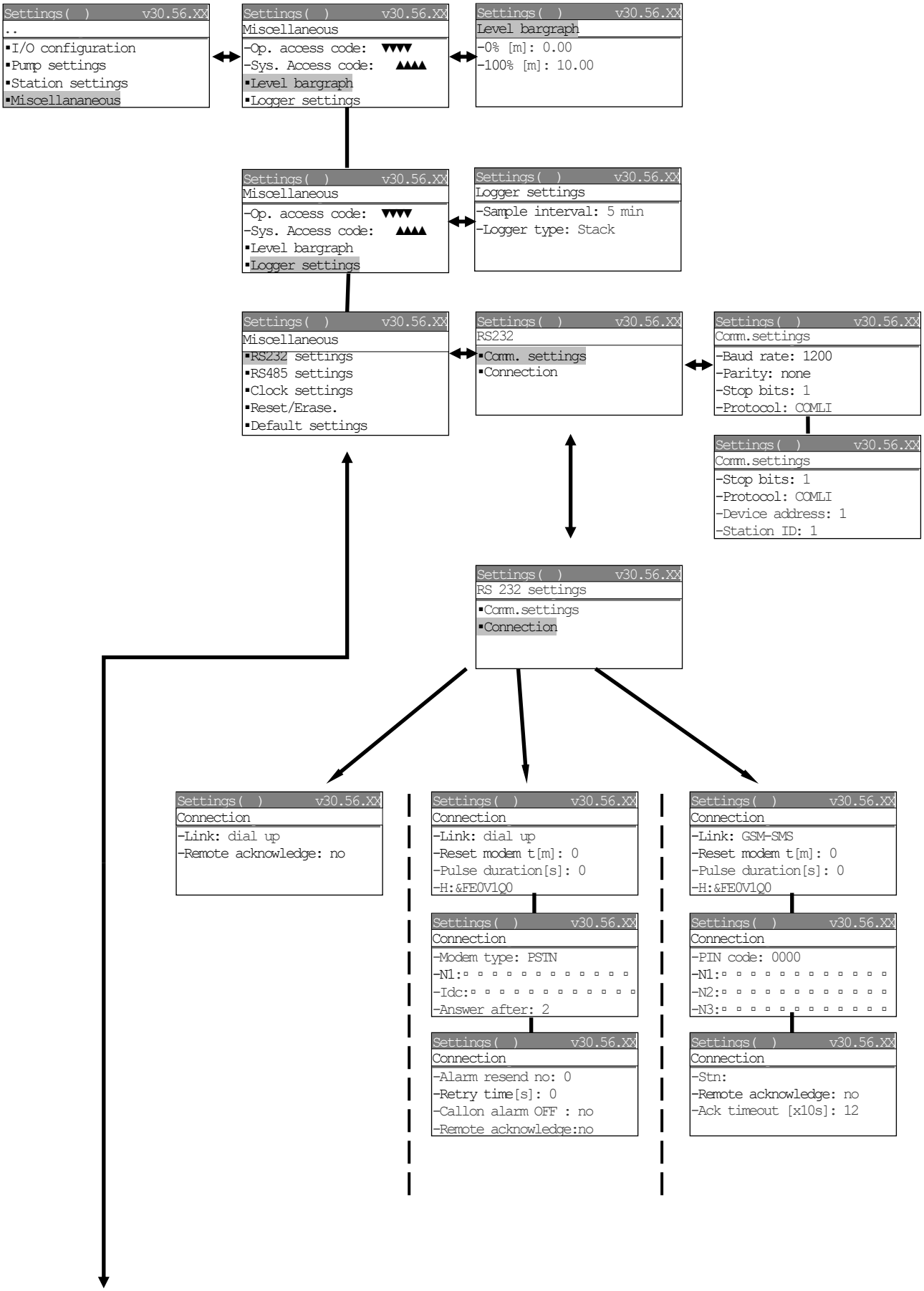
Station settings cont.



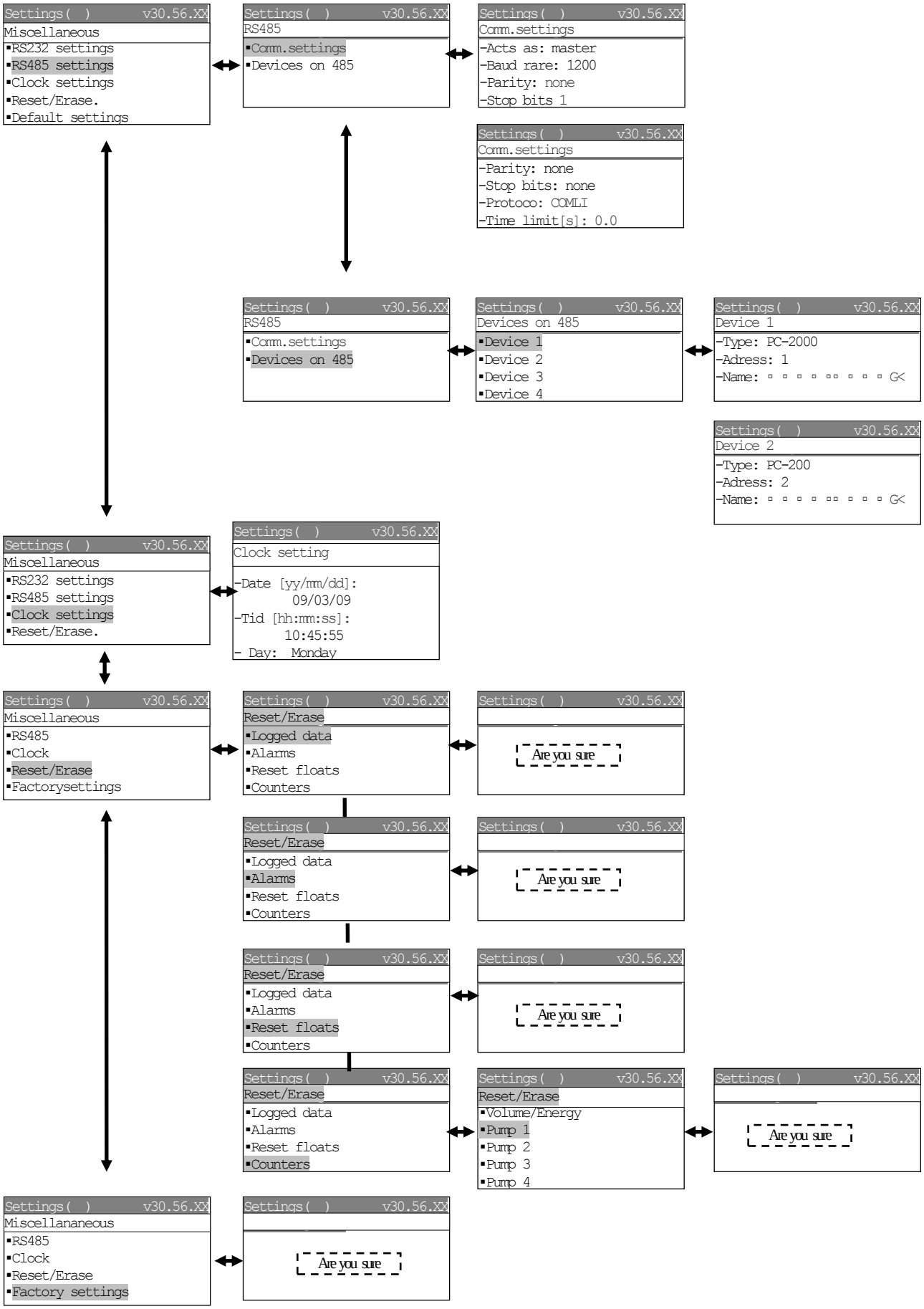
Station settings cont.



Miscellaneous



Miscellaneous cont.



Notes