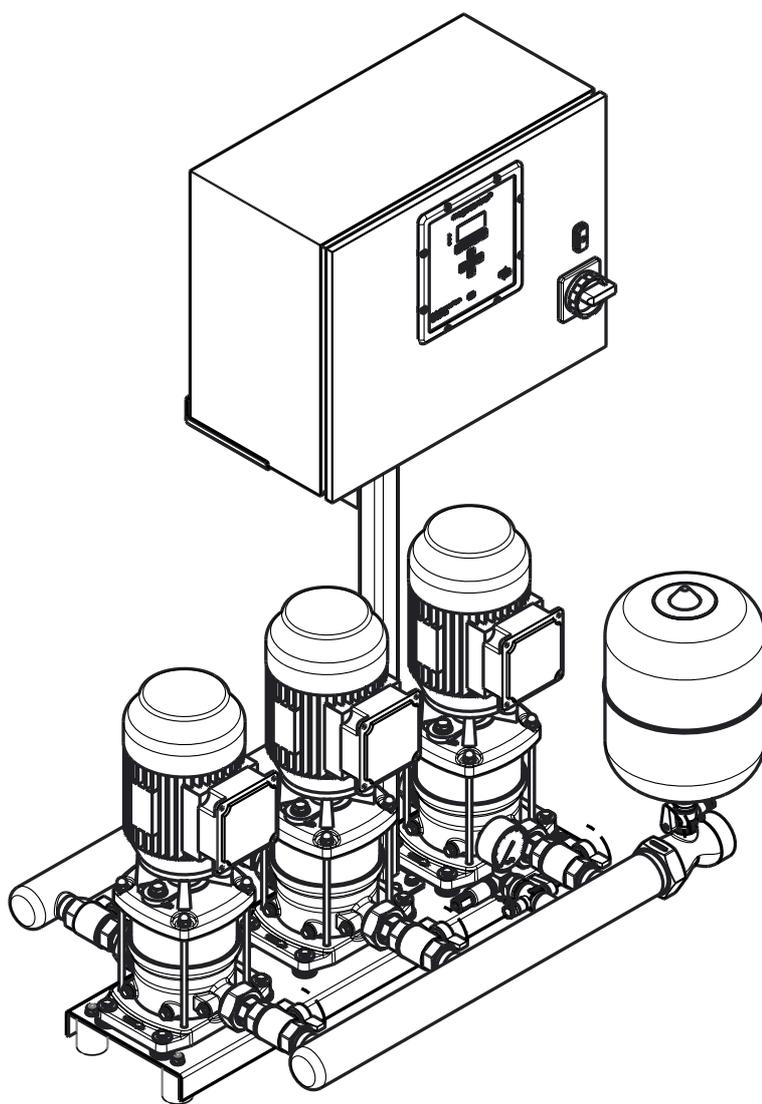


# Hydro-Unit Premium Line

Installation and operating instructions  
series: HU 2/3 DPV(M)E 2,4,6,10 Megacontrol MF



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# 1 Manual introduction

## 1.1 Preface

This manual contains important information for reliable, proper and efficient operation. Compliance with the operating instructions is of vital importance to ensure reliability and a long service life of the product and to avoid any risks.

The first chapters contain information about this manual and safety in general. The following chapters provide information about normal use, installation, maintenance and repairs of the product. The annex contains the declaration(s) of conformity.

- Make yourself familiar with the content.
- Accurately follow the directions and instructions.
- Never change the sequence of the operations to be carried out.
- Keep this manual or a copy of it in a fixed place near the product which can be accessed by all personnel.



### **READ THE (SUPPLEMENTARY) DOCUMENTATION**

**Read the user and operating instructions.**

## 1.2 Icons and symbols

In this manual and in all accompanying documentation the following icons and symbols are used.



### **WARNING**

**Danger of electric Voltage. Safety sign according to IEC 417 - 5036**



### **WARNING**

**Operations or procedures, if carried out without caution, may cause personal injury or damage to the product.**

**General hazard sign according to ISO 7000-0434**



### **ATTENTION**

**Is used to introduce safety instructions whose non-observance may lead to damage to the product and its functions.**



### **ENVIRONMENTAL INSTRUCTION**

**Remarks with respect to the environment.**

## 2 Identification, service, and technical support

### 2.1 Identification, service and technical support

The name plate indicates the type series / size, main operating data and identification number. Please quote this information in all queries, repeat orders and particularly when ordering spare parts. If you need any additional information or instructions exceeding the scope of this manual or in case of damage please contact DP-Pumps's nearest customer service centre.

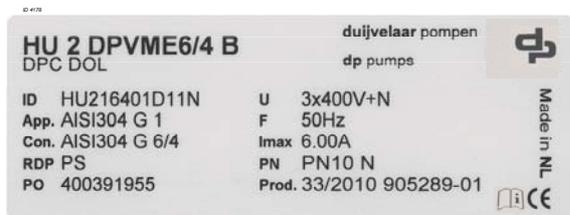


Figure 1: Identification sticker

Table 1: sticker identification

Indication	Meaning
HU 2 DPVME6/4 B	Installation type
DPC DOL	Controller type and start-up method
ID	Article number
App.	Material valve and connection size
Con.	Material and connecting piping size
RDP	Run-dry protection type
PO	Purchase order number
U	Voltage
F	Mains frequency of the installation
Imax	Maximum current consumption of the installation
PN	Pressure class and design
Prod.	Production week/year and number

The following address data are available for service and technical support:

Table 2: Address service department

DP-Pumps	Tel: +31 172 488388 Fax: +31 172 468930
Kalkovenweg 13 2401 LJ Alphen a/d Rijn The Netherlands	Internet: <a href="http://www.dp-pumps.com">www.dp-pumps.com</a> E-mail: <a href="mailto:dp@dp-pumps.com">dp@dp-pumps.com</a>

### 2.2 Supplementary documentation

This version is valid from MCIII version V1.57. Apart from this manual, the additional documentation given below is available as well:

Table 3: Supplementary documentation

Document	Code
General terms of delivery	119 / 1998
Installation and operation instructions pumps	BE00000377
Installation and operation instructions Megacontrol	BE00000347
Technical documentation	97004467

See also: [www.dp-pumps.com](http://www.dp-pumps.com)

Table 4: Software version

Firmware version (see parameter: 4-1-3)	version
Megacontrol V 1.57	01-2014

See also: [www.dp-pumps.com](http://www.dp-pumps.com)

# 3 Warranty

## 3.1 Terms of warranty

The warranty period is settled by the terms of your contract or at least by the general terms and conditions of sales.



### ATTENTION

**Modifications or alterations of the product supplied are only permitted after consultation with the manufacturer. Original spare parts and accessories authorized by the manufacturer ensure safety. The use of other parts can invalidate any liability of the manufacturer for consequential damage.**



### ATTENTION

**The warranty relating to the operating reliability and safety of the product supplied is only valid if the product is used in accordance with its designated use as described in the following sections of this manual. The limits stated in the data sheet must not be exceeded under any circumstances.**

The warranty becomes invalid if one or more of the points below occur.

- The buyer makes modifications himself.
- The buyer carries out repairs himself or has these carried out by a third party.
- The product has been handled or maintained improperly.
- The product has non original DP-Pumps spare parts fitted.

DP-Pumps repairs defects under warranty when:

- They are caused by flaws in the design, the material or the production.
- They are reported within the warranty period.

Other terms of warranty have been included in the general terms of delivery, which are available upon request.

# 4 Safety and environment

## 4.1 General

This DP-Pumps product has been developed using state-of-the-art technology; it is manufactured with utmost care and subject to continuous quality control. DP-Pumps does not accept any liability for damage and injury caused by not observing the directions and instructions in this manual, or in cases of carelessness during the installation procedure, use and maintenance of the product.

Non-compliance with safety instructions can jeopardize the safety of personnel, the environment and the product itself. Non-compliance with these safety instructions will also lead to forfeiture of any and all rights to claims for damages.

For example, in particular non-compliance can result in:

- failure of important pump/system functions,
- failure of prescribed maintenance and servicing practices,
- injury to persons by electrical, mechanical and chemical effects,
- hazard of the environment due to leakage of hazardous substances,
- explosions.

Depending on specific activities, extra safety measures may be required. Contact DP-Pumps if a potential danger arises during use.



### ATTENTION

**The owner of the product is responsible for compliance with the local safety regulations and internal company guidelines.**



### ATTENTION

**Not only must the general safety instructions laid down in this chapter on "Safety" be complied with, but also the safety instructions outlined under specific headings.**

## 4.2 Users

All personnel involved in the operation, maintenance, inspection and installation of the product must be fully qualified to carry out the work involved and be aware

of all applicable responsibilities, authorisations and super visions. If the personnel in question is not already in possession of the required know-how, appropriate training and instruction must be provided. If required, the operator may commission the manufacturer / supplier to take care of such training. In addition, the operator is responsible for ensuring that the contents of the operating instructions are fully understood by the responsible personnel.

## 4.3 Safety provisions

The product has been designed with the greatest possible care. Original parts and accessories meet the safety regulations. Modifications in the construction or the use of non-original parts may lead to a safety risk.



### ATTENTION

**Make sure that the product operates within its working range. Only then the product performance is guaranteed.**

### 4.3.1 Labels on the product

The icons, warnings and instructions applied to the product are part of the safety provisions. The labels may not be removed or covered. Labels must remain legible during the entire life of the product. Replace damaged labels immediately.

## 4.4 Safety precautions

### 4.4.1 During normal use

- Contact the local electricity company for questions about the power supply.
- Protect the parts that can become hot, making direct contact impossible.
- When applicable, always place undeformed coupling guards to protect the coupling, before putting the pump into use. Make sure that the coupling guards are never in contact with the rotating coupling.
- Always close the terminal box of the motor.
- Always close the control panel where applicable

#### 4.4.2 During installation, maintenance and repair

Only authorised personnel may install, maintain and inspect the product and repair electrical components. Observe the local safety regulations.



**WARNING**  
Always disconnect the energy supply to the product first, before installation, maintenance and repairs. Secure this disconnection.



**WARNING**  
Surfaces of a pump can be hot after continuous operation.



**WARNING**  
Make sure that no one can be near rotating components when starting a pump.



**WARNING**  
Handle a pump with dangerous liquids with the utmost care. Avoid danger for persons or the environment when repairing leakages, draining liquids and venting. It is strongly recommended to place a leakage tray under the pump.



**WARNING**  
Immediately following completion of the work, all safety-relevant and protective devices must be re-installed and / or re-activated.



**WARNING**  
Please observe all instructions set out in the chapter "Commissioning/Start-up" before returning the product to service.



#### ENVIRONMENTAL INSTRUCTION

Always act according to the laws, by-laws regulations and instructions with respect to health, safety and the environment.

#### 4.5.2 Dismantling

The owner is responsible for the dismantling and environmentally friendly disposal of the product.



#### ENVIRONMENTAL INSTRUCTION

Ask at the local government about the re-use or the environmentally friendly processing of discarded materials.

## 4.5 Environmental aspects

### 4.5.1 General

The products of DP-Pumps are designed to function in an environmentally friendly way during their entire lifetime. Therefore, when applicable, always use biodegradable lubricants for maintenance.

# 5 Introduction

## 5.1 General

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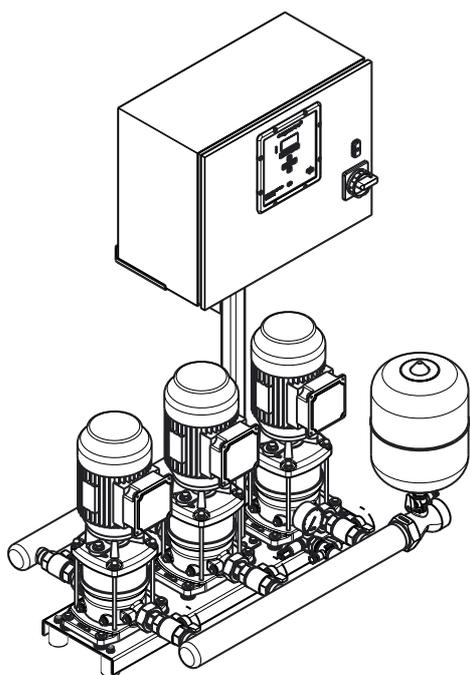


Figure 2: Installations type HU 2/3 Premium Line Megacontrol MF

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Units of the type HU 2/3 Premium Line Megacontrol MF are manufactured by DP-Pumps.

## 5.2 Intended use

The installation HU 2/3 Premium Line Megacontrol MF is suitable for increasing the pressure in (drinking) water installations and for pumping liquids with a viscosity identical to the viscosity of water, within the indicated working range (see "Working range").

Any other or further use of the installation is not in conformity with its intended use. DP-Pumps does not accept any liability for any damage or injury resulting from this. The installation has been produced in accordance with the current standards and guidelines. Use the installation exclusively in a perfect technical state, in conformity with the intended use described below.

The *Intended use* as laid down in ISO 12100:2010 is the use for which the technical product is intended according to the specifications of the manufacturer. The use of the product has been described in the available documentation and information. Always observe the instructions as given in the installation and operating instructions. When in doubt the product must be used as becomes evident from its construction, version and function.

## 5.3 Working range

The working range of the system can be summarised as follows:

Table 5: Specification of the working range

Type	HU 2/3 Premium Line Megacontrol MF
Maximum ambient temperature [°C]	0 - 30
Liquid temperature [°C]	+4 - 40 <sup>1</sup>
Maximum working pressure [kPa]	1.000 Unless indicated otherwise
Minimum suction pressure [kPa]	Not cavitating <sup>1</sup> . Suction pressure plus pump pressure, must never be higher than the maximum working pressure: 1000 kPa (PN10 Installation) 1600 kPa (PN16 installation)
Maximum height	1000 m above sea level

1. Contact your supplier for more detailed advice.

Table 6: Specific applications

type	application area
HU 2/3 Premium Line Megacontrol MF	(Drinking) water supply systems, irrigation systems, water treatment systems, car-wash systems, sprinkler systems and discharge of condensed water.

## 5.4 Operation

### 5.4.1 Standard operation

The Megacontrol is an intelligent control to operate the different parts of a booster installation comprising up to 3 pumps. The system pressure is controlled using a pressure transmitter on the discharge of the installation.

When as a result of an increasing water consumption the pressure drops below the set point pressure, a pump will be activated.

The pumps will be switched off again when the set point pressure has been reached and the minimum run time has expired. The minimum after-run time is continuously optimised. This results in considerable energy savings.

#### 5.4.2 Adjusted settings

The Megacontrol is programmable via the operating panel (Human Machine Interface, HMI) and is guarded from unauthorised use by means of a password protection.

The service port provides access to the parameters of the programme that may be used to optimise the performance of the installation (see parameter list).



**WARNING**  
Always use the special service port cable for access to the parameters via the service port!

#### 5.4.3 Number of operating hours per pump

The current number of operating hours of a pump determines which pump will be switched on or off next. The pump with the fewest operating hours will be switched on first and the pump with the most operating hours will be switched off first. This makes sure that all pumps have an equal number of operating hours, including the backup pump.

#### 5.4.4 Test run

In order to prevent a pump from standing still for a long time, an automatic test-run function has been included.

#### 5.4.5 Temperature sensor (option)

When the Megacontrol has been provided with a temperature sensor, it will generate a temperature-dependent alarm.

Not Urgent:  
a non-urgent alarm is generated when the room temperature exceeds the set temperature.

Urgent:  
an urgent alarm is generated when the 24-hour average room temperature exceeds the set temperature.

#### 5.4.6 Monitoring of supply side/ run-dry protection

Standard is the Premium Line Megacontrol MF MF equipped with a pressure transmitter switch at the suction line as run-dry protection



**ATTENTION**  
The pressure switch is fixed at 20 kPa for a switch-off signal to the megacontrol and a pressure of 110 kPa for an enable signal to the megacontrol.

The following run-dry protections can be connected:

1. Pressure transmitter in supply pipe (option)  
A pressure transmitter can be installed in the supply pipe. This transmitter will register the pre-pressure for:
  - The PID control.
  - Read-out on the display.
  - The run-dry protection.
2. Float switch in pre fill reservoir (standard).  
A float switch can be installed in the pre fill reservoir (or in the suction line). This switch will detect the pre-pressure for the run-dry protection.
3. Pressure transmitter in pre fill reservoir and supply valve (option)  
A pressure transmitter can be installed in the pre fill reservoir. This pressure transmitter will register the water level for:
  - High water alarm.
  - Control of the supply valve. The supply valve may be controlled to open, close, or proportionally open or close as desired (option).
  - Critical water-level indication.
  - Run-dry protection.
  - Two digital contacts for two extra level messages (only available on megacontrol 6 pump version).

#### 5.4.7 Pressure vessel

All Premium Line Megacontrol MF units are provided with a flow-through pressure vessel on a flow-through t-piece. This guarantees a good refreshment of the pressure vessel. Even with limited switching on and

off of the pumps. The constriction in the t-piece provides a higher flow velocity at the location of the small paddle in the shut off valve. Therefore enough fresh water enters the vessel, even at otherwise low flow rates.

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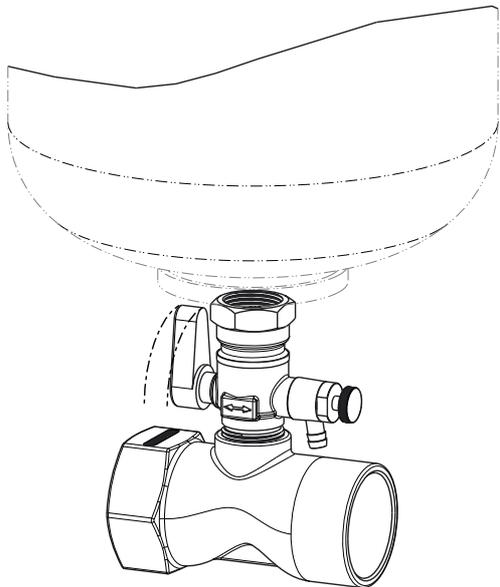


Figure 3: Pressure vessel with shut off valve and flow through t-piece

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## 5.5 ISSO publications 55.1 and 55.2

The ISSO 55.1 and 55.2 state:

### Preconditions:

- Avoid heating of the drinking water as a result of too high internal temperatures, maximum requirement 25°C.
- Avoid long-lasting stagnation/standing still of the drinking water in the membrane tank. When the tank is functioning well, a minimum of 30 switches/day is required for sufficient flow-through.

### Assessment:

Table 7: Average daily

Twenty-four hours' average internal temperatures	≤ 25 °C	> 25 °C
Use	Assessment	Assessment
Sufficient change of the membrane tank (more than 30 switches per day)	0	- (1)
No/insufficient change of the membrane tank (fewer than 30 switches per day)	- (2)	--- (3)

- 1 Slightly negative assessment (-) because of too high temperature.
- 2 Slightly negative assessment (-) because of too few changes.
- 3 Negative assessment (-) because of too high temperature and too few changes.

See ISSO publications 55.1 and 55.2 for installation adjustments with respect to the above assessments.

# 6 Transport

## 6.1 Transport



**WARNING**  
Lift the installation using a hoisting device.



**WARNING**  
The installation must be hoisted according to the applicable hoisting guidelines. Only qualified personnel is allowed to hoist the installation.

Lifting/hoisting advice

- with a fork-lift truck or pallet truck of sufficient width below the ground plate/pallet.

Always observe the instructions as indicated by the labels on the installation.



Figure 4: piping label

ID 185

3. Place the installation in the position as indicated on the packaging.
4. When applicable: Keep the vessel under pressure (1/2 bar).

### 6.2.2 Inspection during storage

1. Turn a shaft every three months<sup>1</sup>. This protects the seals from seizure.
2. After a storage period of six months or longer, inspect the installation before using it again.

1. Transport the installation in the position indicated on the pallet or packaging.
2. Check if the installation is stable.
3. Observe the instructions on the packaging (if present).

12

## 6.2 Storage

### 6.2.1 Preparations for storage

1. Protect the system against the risk of frost.
2. Store the installation in a frost-free environment.

- 
1. period may vary per application or medium. Please consult your sales representative for application details.

# 7 Install

## 7.1 Set up the installation

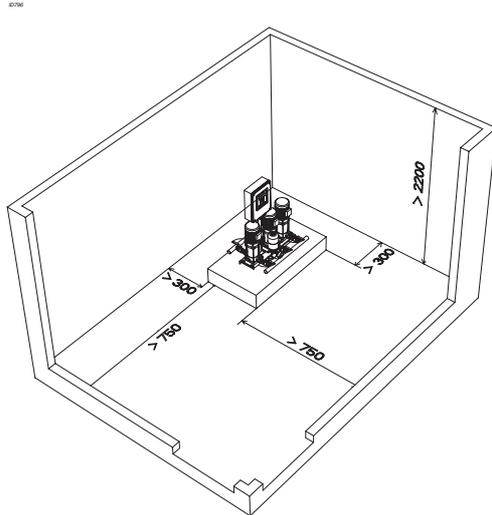


Figure 5: Positioning of the installation

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Preferably set up the installation in an environment with at least the following properties:

Item	Requirements
Room	<ul style="list-style-type: none"> <li>• Clean, dry, dust-free, frost-free and properly lit.</li> <li>• The surface must be large enough for easy access to the installation.</li> <li>• The height of the installation room must meet the minimum requirements of the Buildings Decree.</li> <li>• The layout must be such, that any released water can be discharged without causing inconvenience.</li> </ul>
Foundation	<ul style="list-style-type: none"> <li>• The installation must be free from the walls.</li> <li>• The concrete base must be smooth and level.</li> <li>• The foundation must be large enough to carry all support points</li> </ul>

Connect the installation as follows:

- Connect the suction manifold (indicated with label) to the supply line of the building.
- Connect the discharge manifold (indicated with label) to the discharge line.

In order to minimise the noise level, proceed as follows:

- Position the installation on silent blocks (option).
- Fix the suction and delivery pipes correctly using a bracket.
- Mount a pipe compensator in the supply and discharge pipes (option).
- In case of contamination, insert a filter in the supply pipe.
- Manifolds must be connected free of tension.
- Ensure proper sizing of suction and delivery pipes that are to be connected to the installation. The maximum flow rate in the pipes must be below 2 m/s.



### ATTENTION

**Mount a valve in the discharge line. This in order to avoid having to drain the entire pipe in case of a repair.**

### 7.1.1 Change connection side

If necessary, the connection side of one or both of the manifolds can be changed by turning over the manifolds. Proceed as follows:

- 1 Remove the pressure vessel and t-piece (if mounted).
- 2 Undo the couplings on the base of the pumps, hold on to the gaskets<sup>2</sup>.
- 3 Screw the pressure gauge and drain plug from the pressure set, take of the cable of the pressure transmitter/switch.
- 4 Turn the manifold over and use the couplings with gaskets to mount it to the base of the pumps.
- 5 Screw in the pressure gauge on the top of the pressure set and the drain plug on the opposite side, put back the cable of the pressure transmitter/switch, it will fit in one direction.

2. If the unit has been in use, we recommend replacing the gaskets.

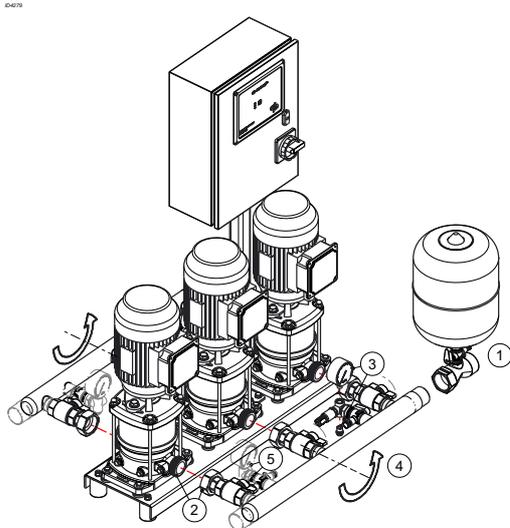


Figure 6: Change connection side

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### 7.1.2 Connecting the pressure vessel on standard installations

With the Premium Line Megacontrol MF installations a separate pressure vessel is included. For a proper operation of the installation it is necessary to mount the pressure vessel on the discharge side of the unit. This can be done directly on the manifold, or further down the main discharge pipe. Mount the t-piece with shut off valve on an accessible place and screw the pressure vessel therein. There is an o-ring in the shut off valve, so it is not required to use a thread sealant.

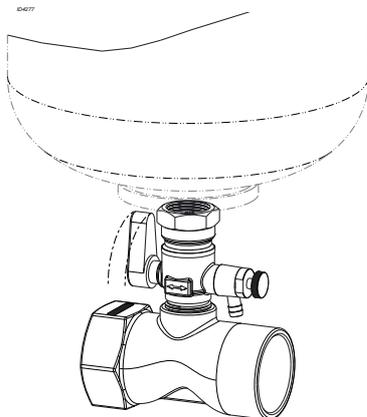


Figure 7: Mounting instruction t-piece with shut off valve.

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### 7.1.3 Indicators

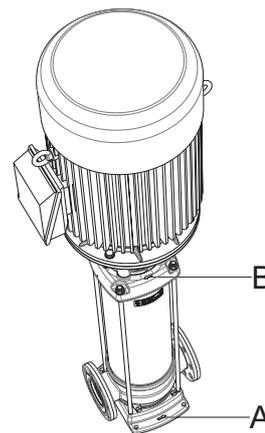


Figure 8: Indicators

The arrow (A) on the pump foot indicates the flow direction of the liquid. The arrow (B) on the head piece indicates the rotating direction of the motor.

## 7.2 Electrical installation



### WARNING

Only authorised personnel is allowed to perform the electrical connection of the installation in accordance with the local regulations.

Electrical connections:

- Make sure that the electrical specifications correspond with the voltage the installation is connected to. Consult 'Electrical circuit diagrams' for the correct connection diagram.
- Connect the installation using an interruptible connection (separator).
- Close the door of the control panel after having completed the installation.
- Earthing:



### WARNING

The ground plate of the Hydro-Unit has been equipped with an earthing connection. This earthing connection must be directly corrected to the central earthing point of the building. The earthing connection requires periodic checking and protection against corrosion with an electrically conductive agent, e.g. MOLYKOTE® HSC PLUS.



**WARNING**  
In case of installations fitted with a frequency converter, the earthing connection must be connected before installing the power cable.



**ATTENTION**  
Seen from the top of the motor the pump must rotate clockwise (See fig.: 8 Indicators). In case of a 3-phase motor the rotating direction can be changed by switching two of the three contact wires on the frequency converter.

### 7.3 Commissioning



**WARNING**  
Never switch on the installation when it does not contain any liquid.



**WARNING**  
Switch off first the main power in the central distribution!  
Wait at least 4-15 minutes before changing the two phase wires of the motor cable to the frequency converter. (The time depends on the size frequency converter. Refer also to the operating instructions of the frequency converter).

Before you run the system:

- Flush the installation with potable water, disinfect the system if necessary.

#### 7.3.1 In a open or closed circuit with sufficient supply pressure (see figure 12 Closed circuit)

Proceed as follows:

1. Turn off the main power.
2. Close the supply valve (A) and the discharge valve (B).
3. Remove the plug (C) from the motor stool.
4. Gradually open the supply valve (A) until the liquid flows from the plug opening.
5. Close the plug opening.
6. Fully open the supply (A) valve.
7. Turn on the main power.
8. Check the direction of rotation of the pump.
9. Fully open the discharge valve.

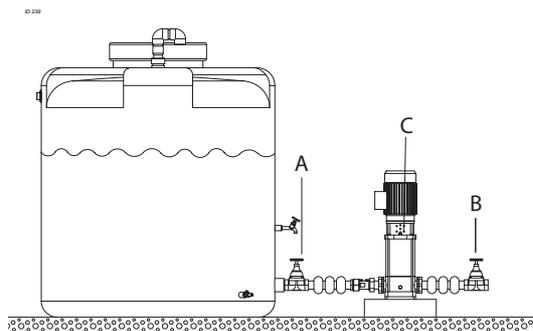


Figure 9: Closed circuit

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#### 7.3.2 Pre-pressure pressure vessel

For a correct functioning of the installation, the pre-pressure in the pressure vessel must be 50 kPa lower than the switch-on pressure. Proceed as follows to determine the pre-pressure:

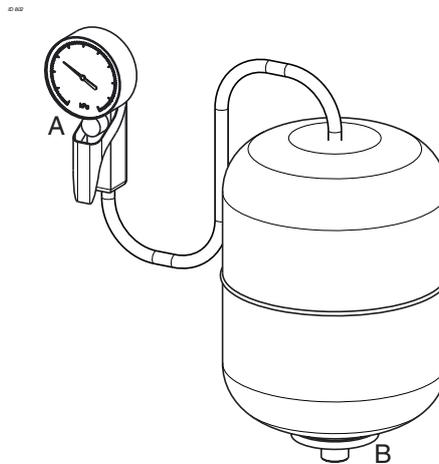


Figure 10: Set the pre-pressure

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1. Measure the pressure (A) in the vessel when there is no pressure on the water side (B).
2. Fill the vessel with nitrogen or air. Preferably use nitrogen.



**WARNING**  
Before putting the installation into use, first put the pressure vessel under pressure. The maximum pre-pressure: 200 kPa below the pressure class (PN).

# 8 Operation

## 8.1 Control panel (HMI)

The control panel comprises a back-light display, function, navigation, and operating keys, LED's, and 2 access points for the service interface. The display shows important information for pump system operation. Data can be displayed in plain text and parameters can be set.

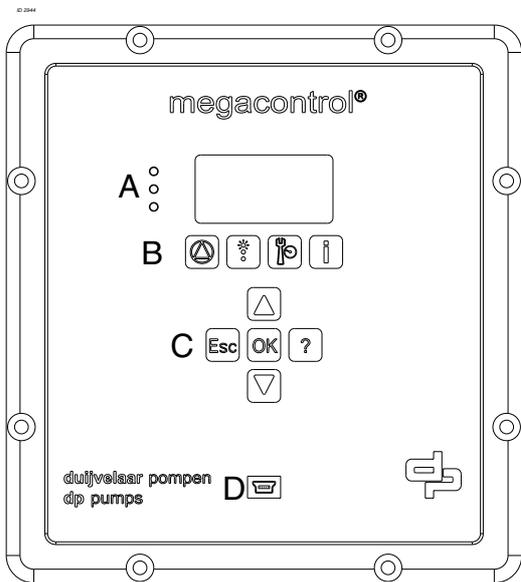


Figure 11: Front Megacontrol

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Table 8: Traffic lights

A: LED's
The "traffic light" signals provide information about the pump system's operating status. LED's:
<ul style="list-style-type: none"> <li>• Red: Alert / urgent alarm is active.</li> <li>• Amber: Warning / non-urgent alarm is active.</li> <li>• Green: O.K. / trouble-free operation.</li> </ul>

Table 9: Function keys

B: Function keys	
	Operation
	Diagnosis
	Settings
	Information

Table 10: Navigation keys

C: Navigation keys	
	<b>Up or Down</b> <ul style="list-style-type: none"> <li>• Move up / down through the root menu (displays the measured values of the system input);</li> <li>• Move up / down through the menu options or;</li> <li>• Increase / decrease a value when you are entering numerals.</li> </ul>
	<b>Escape key</b> <ul style="list-style-type: none"> <li>• Delete / reset entry (the entry is not saved);</li> <li>• Return to the previous menu level.</li> </ul>
	<b>OK key</b> <ul style="list-style-type: none"> <li>• Access to the quick menu;</li> <li>• Confirm a setting;</li> <li>• Confirm a menu selection.</li> <li>• Go to the next number when you are entering numerals.</li> </ul>
	<b>Help key</b> <ul style="list-style-type: none"> <li>• Displays a help text for each selected menu option.</li> </ul>

#### D: Service interface

The service interface allows a PC / Notebook to be connected with use of the special service port cable. The Megacontrol PC software can be used to configure and parameterize the pump system if you do not have access to a control panel. The Megacontrol software can also be updated via this interface. A second service interface is located on the back side of the controller.

### 8.1.1 Display

The 7-row display contains the following information:

The diagram shows a rectangular display area divided into seven horizontal rows. Row 1 is the top-most row. Row 2 is the second row. Row 3 is the third row, containing a scroll bar on the right side. Row 4 is the fourth row. Row 5 is the fifth row. Row 6 is the sixth row. Row 7 is the bottom-most row, containing the date and time. The callouts are: 1 (top left), 2 (top right), 3 (middle left), 4 (middle right), 5 (bottom right).

Table 11: Display rows

	Display	Meaning
1	1-1-1	Displays the selected parameter no.
2	Parameter / Function	Parameter name, Function key: <ul style="list-style-type: none"> <li>• Operation</li> <li>• Diagnosis</li> <li>• Settings</li> <li>• Information</li> </ul>
3	Parameter name	List of selectable parameters
4	Level	Operating level: <ul style="list-style-type: none"> <li>• All</li> <li>• User</li> <li>• Service</li> <li>• Factory</li> </ul>
		"Scroll bar" within the list of selectable parameters
5	MM-YY 00:00	Current date and time

The number of the current menu or parameter is displayed in the top left of the screen. This number indicates the path through the menu levels and, therefore, allows you to quickly locate parameters (see "Parameter list").

The date and time is displayed in the bottom right of the screen. If a fault occurs, this is displayed in the bottom line and alternating with the date and time.

### 8.1.2 Continuous display

When in operation the most common values, like the system pressure are shown on the display continuously. By pushing the navigation buttons Up and Down all selected values are passing by. In Parameter setting 3-10 "Root menu" these values can be selected as pre-set value. The selected values are marked with a "√"

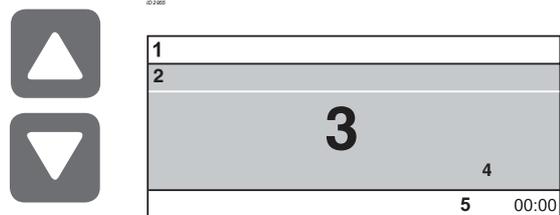


Table 12: Display example

	Display
1	1-1-1
2	System pressure
3	525
4	kPa
5	MM-JJ 00:00

#### 8.1.2.1 Quick menu

Having access to the most used parameters a Quick menu can be entered by pressing the OK key.



#### 8.1.3 Access levels

To prevent accidental or unauthorized access to the Megacontrol parameters, various access levels have been defined.

Table 13: Access levels

Access levels:	Explanation:
<b>Standard</b>	Unless users log on to one of the access levels, they will only have limited access to parameters.
<b>User</b>	Access level for expert users. It enables access to all the parameters required for commissioning. You have to enter a password under 3-2-1 "Log in". The standard password for users is <b>7353</b> .
<b>Service</b>	Access level for service technicians. You have to enter a password under 3-2-1 Log in.
<b>Factory</b>	Access level for the manufacturer only.



**ATTENTION**  
If no keys are pressed for ten minutes, the system automatically returns to the default access level.

#### 8.1.4 Displaying and changing parameters

The parameter numbers contain the navigation path, which helps you find a particular parameter quickly and easily. The first digit of the parameter number indicates the first menu level, which can be called up directly via the four function keys. Subsequent steps are carried out via the navigation keys.



1--Operation    2--Diagnosis    3--Settings    4--Info

#### Example: Parameter 3-5-10 Delta P correction:

First digit of parameter number: **3-5-10**  
**3 Settings**    5 Pressure    10 Delta P correction



Press the third function key for Settings. **3-1** appears in the top left of the screen.

Second digit of parameter number: **3-5-10**  
**3 Settings**    **5 Pressure**    10 Delta P correction



Change the display **3-1** on the screen (top left) to **3-5** by pressing the navigation keys.



To confirm the selection, press OK. **3-5** appears in the top left of the screen.

Third digit of parameter number: **3-5-10**  
**3 Settings**    **5 Pressure**    **10 Delta P correction**



Change the display **3-5-1** on the screen (top left) to **3-5-10** by pressing the navigation keys.



To confirm the selection, press OK. **3-5-10** appears in the top left of the screen.

## 8.2 Manual operation of the pumps

By pressing the Quick access key "Operation", information like system pressure and pump load can be retrieved. Also, the pump operating mode like **Automatic**, **Manual** and **Disabled** can be alternated / selected. Subsequent steps are carried out by using the navigation keys.

#### Example: Parameter 1-2-1 (Pumps) Operation mode:

First digit of parameter number: **1-2-1**  
**1 Operation**    2 Pumps    1 Operation mode



Press the first function key for Operation. **1-1** appears in the top left of the screen.

Second digit of parameter number: **1-2-1**  
**1 Operation**    **2 Pumps**    1 Operation mode



Change the display **1-1** on the screen (top left) to **1-2** by pressing the navigation keys.



To confirm the selection, press OK. **1-2** appears in the top left of the screen.

Third digit of parameter number: **1-2-1**  
**1 Operation**    **2 Pumps**    **1 Operation mode**



To confirm the selection, press OK. **1-2-1** appears in the top left of the screen.



Select the **pump number** by pressing the navigation keys.



To confirm the selection, press OK.



Select the operation mode **manual (on (10 s))**.



To confirm the selection, press OK.

The selected pump will run for a period of 10 seconds and stops. The pump operation mode is changed to **Disabled (off)** This is to avoid that the pump runs unprotected.

### 8.2.1 Putting the pump into automatic operation again

The pump has to be put in operation again by selecting the **Automatic mode**.



Stay in the selected parameter **1-2-1 Operation mode** and press OK.



Select the **pump number** again by pressing the navigation keys.



To confirm the selection, press OK.



Select the operation mode **Automatic**.



To confirm the selection, press OK.

## 8.3 Retrieve and reset a fault

Information about faults can be retrieved by pressing the 'diagnosis' hot key

### Example: Parameter 2-1-1 Current messages



Press the diagnosis key. **2-1 General** appears in the display.



Press the OK key. **2-1-1 Current messages** appears in the display.



Press the OK key again. The list with the current faults or the message 'no faults' appears in the display.

When there is a fault that has a circle with a dot in it, the fault is still active



No Water

When there is a fault that has an open circle, the fault is not active, but has not been acknowledged yet.



No Water

When there is a fault that has a circle with a dot in it and a check mark following the fault message, the fault is still active and the fault has been acknowledged as well. When the fault is remedied now, it will be reset immediately.

### Example: Parameter 2-1-2 History



Press the diagnosis key. **2-1 General** appears in the display.



Press the OK key. The display then shows **2-1-1 Current messages;**  
**2-1-2 History.**



You can select History by pressing the navigation key.



Press the OK key. The list of faults from the past appears.



You can select the fault by pressing the navigation key.



Press the OK key. The below listed information becomes visible.

---

The following information about the fault is known:

- Date and time of occurrence of the fault
- Date and time of acknowledgement of the fault
- Date and time of remedy of the fault

# 9 Maintenance

## 9.1 Introduction



**WARNING**

Observe the general safety precautions for installation, maintenance and repair.

Regular maintenance is necessary for correct operation of the installation. For maintenance of the installation, please contact your supplier. A draft maintenance contract is available upon request.

## 9.2 Maintaining the pump for an extended period of non-operation

Turn the shaft every three months<sup>3</sup>. This protects the seals from seizure.

Protect the pump if there is a risk of frost. Proceed as follows:

1. Close all pump valves.
2. Drain each pump and/or the system.
3. Remove all plugs from the pump.
4. Open the shut-off and fill/air vent plug, if present.

## 9.3 Cleaning instructions

Clean the Hydro-Unit Premium Line using a dry cloth



**WARNING**

Make sure the installation is switched off.



**WARNING**

The pump may be hot.

- 
3. period may vary per application or medium. Please consult your sales representative for application details.

# 10 Hydro-Unit configuration

## 10.1 Hydro-Unit MCMF



**ATTENTION**  
See factory settings 3-2-2-1

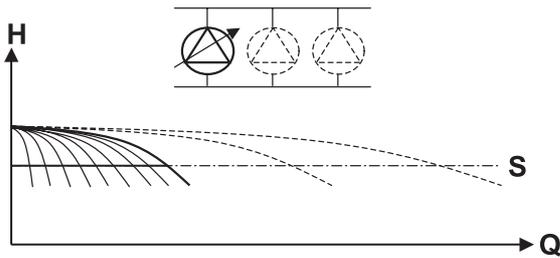


Figure 12: 1 pump operation, 1 pump variable

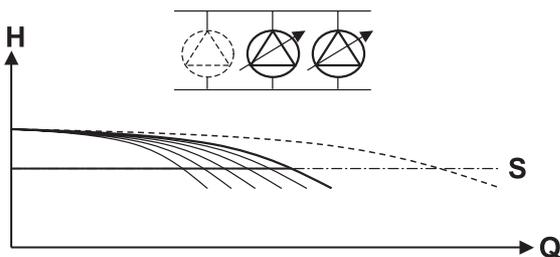


Figure 13: 2 pump operation, 2 pump variable

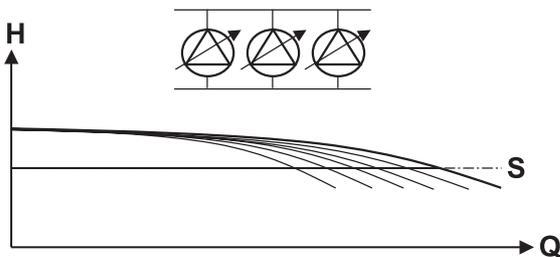


Figure 14: 3 pump operation, 3 pump variable

The Hydro-Unit MCMF is equipped with multiple variable frequency converter. If the Hydro-Unit is frequency-controlled, the required system pressure is sensed by a pressure sensor on the discharge of the installation. An integrated adjustable PID-controller in the software of the Megacontrol ensures that the system pressure remains constant by successively switching on or off one or more (whether or not) frequency-controlled pumps with delay. A pump is only switched on or off when 100% or respectively 0% of the frequency has been reached.

Table 14: Specific parameter settings MCMF

Parameter		Value
3-1-1-3-1	Pressure	kPa
3-3-1	Number of pumps	2 3
3-3-2	Inlet	Switch
3-3-3	Discharge	VFD fixed all
3-4-2-2	Sensor press. 20 mA	See pressure transmitter
3-4-2-4	Max power	Limitation of the maximum power / maximum system load (1 pump is 100%)
3-4-3-1	Communication	Danfoss MicroDrive
3-4-3-2	Proportional const.	3.00
3-4-3-3	Integral const.	0.90
3-4-3-4	Differential const.	0.00
3-4-3-5-1	No flow detection	10
3-4-3-5-3	No flow step	16
3-4-3-13	P nominal of VFD	Motor power W
3-4-3-14	U nominal of VFD	230 or 400 V. See scheme VFD
3-4-3-15	F nominal of VFD	50 / 60 Hz. See order
3-4-3-16	I nominal of VFD	$I_{\max}$ motor (by correct f and U) / $I_{\max}$ VFD
3-4-3-17	RPM nominal of VFD	RPM at the correct f
3-4-3-26	Start selection	Digital input
3-4-3-27	Slip Compensation	0
3-5-1	Set point	.... kPa
3-5-3	Bandwidth	With pressure vessel 10 Without pressure vessel 20
3-5-4	Accumulation press.	30 kPa
3-5-5	Max.set point	See pressure class
3-5-11	High pressure alarm	See pressure class
3-5-13	Low pressure alarm	100 kPa
3-6-2	Min. run time	10 s
3-6-3	Min. run time corr.	0 s
3-6-8	Run-dry delay	30 Float/level control 1

## 10.2 Explanation of parameters

### 10.2.1 Pressure settings set points

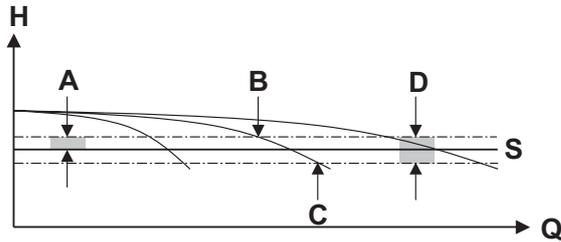


Figure 15: Pressure settings set points fixed speed

Table 15: Pressure settings set points fixed speed

ID	Parameter	
S	3-5-1	Set point
A	3-5-3	Bandwidth
B		Switch-off pressure
C		Switch-on pressure
D		2 x bandwidth

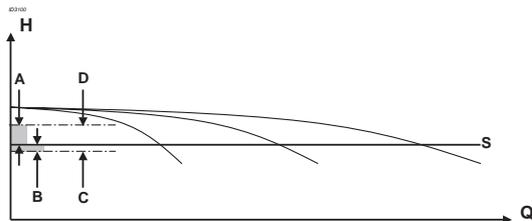


Figure 16: Pressure settings set points variable speed

Table 16: Pressure settings set points variable speed

ID	Parameter	
A	3-5-4	Accumulation pressure
B	3-5-3	Bandwidth
C		Switch-on pressure 1st pump
D		Switch-off pressure last pump
S	3-5-1	Set point

### 10.2.2 Special inputs

Table 17: Special inputs

Input	
External from (27-29 NC) <sup>1</sup>	The unit can be switched off through an external contact.
Fire Alarm (28-29 NC) <sup>2</sup>	All pumps can be switched on through an external contact.
Test run (6-7) <sup>3</sup>	Only active when WSD parameter 3-3-4 is on 1 (off) or on 8 (temp). The test run of the pump can be started through a contact. See parameter 3-7-7 for the duration of the test run
Change set point (8-9)	Only active when WSD parameter 3-3-4 is not on 3, 4, 6 or 7. The set point can be toggled between parameter 3-5-1 (set point) and 3-5-9 (alternative set point). Parameter 1-1-13 shows the applied set point (Development)
External reset (10-11)	Only active when WSD parameter 3-3-4 is not on 4 or 7. All faults can be acknowledged in one go through a contact.

1. the entire control keeps functioning, but the pumps will be switched off.
2. Fire alarm has higher priority over external contact 'off'.
3. This is a pulse contact

3-100/31032008

# 11 Parameters

## 11.1 Parameter list

The parameters of the main menu are related to the standard (default) settings of the installation. The standard (default) settings can be adjusted where necessary and may also be reset whenever required. On the basis of the standard set parameters, an

installation will operate as it should. Additional, extra parameters may be used, e.g. those under 'advanced', 'pressure', 'delays' and 'clock'. In order to use these additional parameters, you should activate the corresponding sub menus.



### ATTENTION

For unit-specific values see: 'Factory settings'.



### ATTENTION

Certain parameters are not visible, depending on the configuration.

Table 18: Access level parameter list

Access level	Read	Write
Everybody	e	e
User	c	c
Service	s	s
Factory	f	f
Nobody		n

### 11.1.1 Operation (Quick access button "pump")

Table 19:

Parameter list MCIII version 1.57 EN

Parameter		Standard	Min	Max	Read	Write	Help text
1	Operation				e	n	Operating status and information
1-1	System				e	n	Information on the operating status and measurements of the complete system
1-1-1	System pressure	0			e	n	Actual system pressure (discharge side)
1-1-2	System load	0			e	n	Actual load in % of all pumps in operation (100% is one pump full speed)
1-1-3	RDP switch	0	not present,present		e	n	Presence of a run dry protection signal by means of a pressure switch or float switch
1-1-4	Inlet pressure	0			e	n	Actual pressure at the inlet connection (suction side)
1-1-5	Level content in %	0			e	n	Actual water level in the receiver tank in % of the content (Storage tank at suction side)
1-1-6	Level height	0			e	n	Actual water height in the receiver tank (storage tank at suction side)

Parameter		Standard	Min	Max	Read	Write	Help text
1-1-7	Ambient temp. (WSD)	0			e	n	Actual ambient temperature when temperature sensor is available (WSD functionality)
1-1-8	Digital inputs				s	s	Displaying the activity status of all the digital inputs 0 = not active 1 = active
1-1-9	Position suppl.valve				e	n	Position of the supply valve proportional 0% ... 100%
	Position suppl.valve	0	open,closed		e	n	Position of the supply valve 1 = open 2 = closed
1-1-10	Power down speed	0			s	n	Calculated power down speed if NFD is running in energy saving mode
1-1-11	state NFC	0	nfdMin,nfdInactive,nfdStableTime,nfdGoingDown,nfdFinished,nfdMax		d	n	Shows the current state of the no flow detection.
1-1-12	used setpoint	0			d	n	used setpoint
1-1-13	NTC Temperature	0			d	n	On board NTC temperature
1-1-14	WSD pulses tank 1	0			e	n	WSD Pulse count of the tank 1
1-1-15	WSD pulses tank 2	0			e	n	WSD Pulse count of the tank 2
1-1-16	WSD pulses tank 3	0			e	n	WSD Pulse count of the tank 3
1-2	Pumps				e	n	Information on the operating status and measurements of the selected pump
1-2-1	Operating mode				e	e	Displaying operating mode of the selected pump
	Pump number	1	1	3	e	e	Selection of the pump of which the operating mode is required
	Operating mode	1	Automatic,Manual (on 10s),Disabled (off)		e	e	Operating mode of the selected pump (continuous active) - Automatic - Manual (on) - Disabled (off)
1-2-2	Pump load				e	n	Displaying the load of the selected pump
1-2-3	Thermal fail. flags				s	n	Displaying the activity status of all thermal protection inputs 0 = not active 1 = active
1-2-4	Running hours pump				e	n	Displaying the total running hours per pump in HHHHHH MM
1-2-5	Number of pumpstarts				c	n	Displaying the total numbers of starts per pump
1-3	Time and statistics				e	n	Operating time and statistics
1-3-1	Act runtime Op hours	0			e	n	Operating hours of the system in HHHHHH
1-3-2	Time to service	0			e	n	Period of time until next service / maintenance
1-3-3	Act Minimum Runtime	0			e	n	Actual minimum pump runtime in seconds
1-4	Debugging				f	f	

Parameter		Standard	Min	Max	Read	Write	Help text
1-4-1	Reset cause		No Reset,Power ON Reset,Ext. Watchdog Reset,Watchdog Reset,Software Reset		f	n	
1-4-2	Power ON res. count	0			f	n	Power On reset counter
1-4-3	ExtWatchdogRes-Count	0			f	n	ExtWatchdogResCount
1-4-4	Software res. count	0			f	n	Software reset counter
1-4-5	Clear reset cause				f	f	Clear reset cause counter
1-4-6	OS Error	0			f	n	OS Error

### 11.1.2 Diagnosis (Quick access button "traffic light")

Table 20:

Parameter list MCIII version 1.57 EN

Parameter		Standard	Min	Max	Read	Write	Help tekst
2	Diagnosis				e	n	Monitoring and diagnosis
2-1	General				e	n	General diagnosis and monitoring functions
2-1-1	Active Messages				e	c	Actual failure and warning messages
2-1-2	History				e	n	History of all failure and warning messages
2-1-3	Acknowledge All				e	e	Accept / Acknowledge all failure and warning messages
2-1-4	Clear History				s	s	Deleting the history of all failure and warning messages

### 11.1.3 Settings (Quick access button "tool set")

Table 21:

Parameter list MCIII version 1.57 EN

Parameter		Standard	Min	Max	Read	Write	Help tekst
3	Settings				e	n	Settings
3-1	HMI				e	n	Human Machine Interface (HMI)
3-1-1	Basic settings				e	n	Basic settings for HMI
3-1-1-1	Language	0	English,Deutsch,Nederlands,Francais,Trke		e	e	Language settings
3-1-1-2	Backlight				e	e	Backlight settings
3-1-1-2-1	Mode	2	Always on,Timed off		e	e	The configuration of the display backlight (Note: a long-term illumination will shorten the life time)
3-1-1-2-2	Backlight Time	600	10	999	e	s	Timer setting for automatic ending the back-light after use

Parameter		Standard	Min	Max	Read	Write	Help tekst
3-1-1-3	Displayed units				e	n	Setting of the required units in which the system values will be displayed
3-1-1-3-1	Pressure	0	kPa,bar,PSI,feet,mwc		e	s	Unit for the pressure values
3-1-1-3-2	Height	0	cm,m		e	s	Unit for the values of the water level height in the receiver tank (storage tank at suction side)
3-1-1-3-3	Temperature	0	C,F		e	s	Unit of the temperature when temperature sensor is available (WSD functionality)
3-1-1-4	LCD Contrast				e	e	Setting of the LCD contrast
	contrast	13	5	20	e	e	
3-1-2	Fieldbus				n	n	Fieldbus Settings
3-1-2-1	Fieldbus Type		no module,Profibus,Modbus		n	n	Type of the connected fieldbus module
3-1-4	Logo				s	n	Setting of the required logo at system (reboot)
3-1-4-1	Logo	2			s	s	Setting of the required logo at system (reboot)
3-2	Device				e	n	Device-specific settings
3-2-1	Login				e	n	Login to have access to the required user level
3-2-1-1	PIN				e	n	Enter access level and personal identification number
	Access Level	1	User Level,Service Level,Factory Level		e	e	Access Level
	PIN acceptance		'0	9999	e	e	PIN acceptance message
	Login		Login ok,Login failed		e	e	Login
3-2-1-2	Login required	1	no,yes		c	c	Login procedure required yes/no
3-2-2	Service				c	n	Service settings
3-2-2-1	Factory setting				c	c	Reset to factory basic / default parameter settings
	Reset default param.		Reset ok,No set available		c	c	Reset to basic / default parameter settings
3-2-2-2	Reset Srv Interval				s	s	Reset the service interval
	Reset Srv Interval		OK,Failed		s	s	Reset the service interval
3-2-2-3	Customer setting				c	c	Load locally saved parameters
	Load loc. param.		Reset ok,No set available		c	c	Load locally saved parameters
3-2-2-4	Save custom. setting				c	c	Save of the customer setting
3-2-2-5	Save factory setting				f	f	Save of the factory settings
3-2-2-6	Default setting				s	s	Reset to default setting
	Reset default param.		default,Hyamat K,Hyamat V,Hyamat VP,HyaEco VP		s	s	Reset to basic / default parameter settings
3-2-2-7	Edit Pump Opera. hrs				s	s	Edit Pumps operating hours
	Pump number	1	1	3	s	s	Pump number
	Hours			500000	s	s	Hours
	Minutes			59	s	s	Minutes
	Seconds			59	s	s	Seconds
3-2-2-8	Reset Sys. Oper. hrs				s	s	Reset the system operating hours
	Reset Oper. hours		OK,Failed		s	s	Reset the system operating hours

Parameter		Standard	Min	Max	Read	Write	Help tekst
3-2-3	Factory Test				f	n	
3-2-3-1	Factory Test				f	f	
	Test result		Failed,Passed		f	f	
3-3	Configuration				e	n	System configuration
3-3-1	Number of pumps	3	1	6	e	s	Total number of pumps in the system
3-3-2	Inlet	1	Switch,Pressure,Flow Control,Level / valve on-off,Level / valve prop.		e	s	Setting of the applicable configuration at the inlet connection (suction side of the system)
3-3-3	Discharge	1	Fixed speed,One jockey,Two jockey,VFD chng-over,VFD fixed all		e	s	Setting of the applicable configuration at the discharge connection (pressure side of the system)
3-3-4	WSD	1	OFF,1 tank,2 tanks,3 tanks,1 tank + temp,2 tanks + temp,3 tanks + temp, Temperature		e	s	Setting of the applicable configuration of the WSD: (membrane tank refreshments and ambient temp.)
3-3-5	Leakage detection	2	ON,OFF		e	s	Leakage detection
3-3-6	MPO Functionality	0	OFF,ON		s	s	Synchron pump operation
3-3-7	PumpMode int/ext	0	Internal,External		e	s	Pump mode is either Internally (Via HMI or Service) or externally (via digital input) changed.
3-4	System settings				e	n	System parameter settings
3-4-1	Inlet				e	n	Parameter setting for the inlet connection (suction side of the system)
3-4-1-1	Sensor press. 4 mA	0	-100	1000	e	s	Measured value at 4mA
3-4-1-2	Sensor press. 20 mA	1000	-100	9999	e	s	Measured value at 20mA
3-4-1-3	Damp. Time Inlet	200	100	2000	f	f	Damping time for smoothing the measured value, to compensate peaks in the measured values
3-4-1-4	Level config				e	s	Parameter setting for the level control in the receiver tank (storage tank at suction side)
3-4-1-4-1	0% level	0	0	99	e	s	Lowest possible level in the receiver tank at which no air is sucked in. In relation to the bottom
3-4-1-4-2	100% level	200	0	999	e	s	Highest possible level in the receiver tank before overflow is triggered. In relation to the bottom.
3-4-1-4-3	Sensor level	0	-100	999	e	s	The position where the level sensor is located in the receiver tank. In relation to the bottom.
3-4-1-4-4	Low level shut down	10	0	99	e	s	Low water level to protect the pumps for dry running. (system shut down)
3-4-1-4-5	Low level reset	15	0	99	e	s	Reset level to reset the system after low level shut down
3-4-1-4-6	Critical water level	30	0	99	e	s	Critical level at which the tank threatens to become empty. (back-up storage left)
3-4-1-4-7	High water level	105	0	199	e	s	High water level at which the tank threatens to become over-full

Parameter		Standard	Min	Max	Read	Write	Help tekst
3-4-1-4-8	Threshold				e	s	Menu for having one or two extra contacts switched at a level set as required
3-4-1-4-8-1	Threshold 1 ON	50	0	199	e	s	Water level at which the relays output becomes ""high""
3-4-1-4-8-2	Threshold 1 OFF	50	0	199	e	s	Water level at which the relays output becomes ""low""
3-4-1-4-8-3	Threshold 2 ON	40	0	199	e	s	Water level at which the relays output becomes ""high""
3-4-1-4-8-4	Threshold 2 OFF	40	0	199	e	s	Water level at which the relays output becomes ""low""
3-4-1-4-9	Supply valve ON/OFF				e	n	The supply valve open/closed with which the receiver tank is filled
3-4-1-4-9-1	Level 1 open	70	0	99	e	s	Level in the receiver tank at which the supply valve is opened
3-4-1-4-9-2	Level 1 closed	90	0	99	e	s	Level in the receiver tank at which the supply valve is closed
3-4-1-4-9-3	Level 1A open	40	0	99	e	s	Alternative level (Clock alternated) in the receiver tank at which the supply valve is opened
3-4-1-4-9-4	Level 1A closed	60	0	99	e	s	Alternative level (Clock alternated) in the receiver tank at which the supply valve is closed
3-4-1-4-10	Supply valve prop.				e	n	The supply valve proportional opened with which the receiver tank is filled
3-4-1-4-10-1	Level setpoint 1	80	0	99	e	s	Maximum level in the receiver tank at which the proportional valve is fully closed
3-4-1-4-10-2	Level setpoint 1A	40	0	99	e	s	Alternative level (Clock alternated) in the receiver tank at which the proportional valve is fully closed
3-4-1-4-10-3	Hysteresis	15	0	99	e	s	Differential level in the receiver tank at which the proportional valve is fully opened
3-4-1-4-10-4	Sample time	10	0	99	e	s	Time between the level measurements controlling the proportional valve position
3-4-1-4-10-5	Analog output	0	4-20mA,0-20mA		e	s	Analog output configuration, 4-20mA / 0-20mA
3-4-1-5	Auto. Setpoint Redu.				e	n	Automatic setpoint reduction by low inlet pressure
3-4-1-5-1	ASR function	0	OFF,ON		e	s	Automatic setpoint reduction function
3-4-1-5-2	Switch on point	200	100	400	e	s	The pumps are switched On, if inlet pressure is above switch-On point for more then Switch-On time
3-4-1-5-3	Inlet Set point	100	0	400	e	s	Inlet setpoint used for automatic reduction by low inlet pressure
3-4-1-5-4	Switch off point	90	0	100	e	s	The pumps are switched off, if inlet pressure is below switch-off point for more then switch-off time
3-4-1-5-5	Proportional const.	3	0	10	e	s	Proportional amplification factor the system pressure is controlled with
3-4-1-5-6	Integral time	0.9	0	60	e	s	Speed with which the deviation of the required system pressure is adjusted

Parameter		Standard	Min	Max	Read	Write	Help tekst
3-4-1-5-7	Differential time	0	0	99.99	e	s	The level of damping with which the deviation of the required system pressure is controlled
3-4-2	Discharge				e	s	Discharge pressure settings
3-4-2-1	Sensor press. 4 mA	0	-100	1000	e	s	Measured value at 4mA
3-4-2-2	Sensor press. 20 mA	1000		9999	e	s	Measured value at 20mA
3-4-2-3	Pumps ON sensor fail		0	3	e	s	Number of pumps that is started in case of a failure of the pressure sensor on the discharge side.
3-4-2-4	Max power	600 <sup>1</sup>	0	600	e	s	Limitation of the maximum power / maximum system load (1 pump is 100%)
3-4-2-5	Max power ext. oper.	600 <sup>1</sup>	0	600	e	s	Limitation of the maximum power / maximum system load, when external power supply operation is active
3-4-2-6	Damp. Time P. Sensor	200	100	2000	f	f	Damping time for smoothing the measured value, to compensate peaks in the measured values
3-4-3	Variable freq. drive				e	n	Configuration of variable frequency drive
3-4-3-1	Communication	0	None, Analog 4-20mA, Analog 0-20mA, Pump-Drive, Danfoss VLT 2800, Danfoss MicroDrive, Danfoss AquaDrive		e	s	Configuration of the communication protocol of the frequency converter
3-4-3-2	Proportional const.	3	0	100	e	s	Proportional amplification factor the system pressure is controlled with
3-4-3-3	Integral time	1	0	60	e	s	Speed with which the deviation of the required system pressure is adjusted
3-4-3-4	Differential time	0	0	99.99	e	s	The level of damping with which the deviation of the required system pressure is controlled
3-4-3-5	No flow detection				e	s	Accuracy of which the minimum water demand "no-flow" is detected (System switch-off procedure)
3-4-3-5-1	No flow bandwidth	6	0	50	s	s	Bandwidth of the no flow detection
3-4-3-5-2	No flow time	16	0	60	s	s	Time of the no flow detection in s
3-4-3-5-3	No flow step	1	1	50	s	s	Step height of the no flow detection in %
3-4-3-5-4	No flow max. power	100	0	100	s	s	No flow detection is active below this Pump load in %
3-4-3-9	VFD Ramp-Up	3	0.1	999	e	s	Setting of the ramp-up of the VFD
3-4-3-10	VFD Ramp-Down	3	0.1	999	e	s	Setting of the ramp-down of the VFD
3-4-3-11	VFD min. frequency	30	0	50	e	s	Minimum frequency of the VFD
3-4-3-12	VFD max. frequency	50	30	140	e	s	Maximum frequency of the VFD
3-4-3-13	P nominal of VFD	1500	0	100000	e	s	nominal power of the VFD
3-4-3-14	U nominal of VFD	400	0	500	e	s	nominal voltage of the VFD
3-4-3-15	F nominal of VFD	50	50	50	e	s	nominal frequency of the VFD
3-4-3-16	I nominal of VFD	4	0	450	e	s	nominal current of the VFD
3-4-3-17	RPM nominal of VFD	2880	0	10000	e	s	nominal speed of the VFD
3-4-3-20	Motor Speed Unit	Hz	RPM,Hz		e	s	Unit of motor speed

Parameter		Standard	Min	Max	Read	Write	Help tekst
3-4-3-21	Digital I/P 33 func.	No	No Function,Coasting stop inv.		e	s	Selection of digital input
3-4-3-22	Digital I/P 29 func.	No	No Function,Jog Function,Jog Function		e	s	Selection of digital input
3-4-3-23	Jog frequency	50	30	50	e	s	Motor speed manual mode
3-4-3-24	Jog ramp time	5	0.04	3600	e	s	Ramp time
3-4-3-25	Costing select	3	Digital Input,Bus,Digital And Bus,Digital Or Bus		e	s	Selection manual mode
3-4-3-26	Start select	3	Digital Input,Bus,Digital And Bus,Digital Or Bus		e	s	Selection start signal
3-4-3-27	Slip Compensation	0	-400	399	e	s	Slip Compensation of the VFD
3-4-4	WSD settings				e	n	WSD functionality settings
3-4-4-1	Nbr of refreshments	30	0	99	e	s	Numbers of refreshments of the membrane tank. (water entering the tank)
3-4-4-2	Refresh time span	24	0	999	e	s	Time span of the numbers of refreshments
3-4-4-3	Average room temp.	25	0	50	e	s	Average (pump) room temperature.
3-4-4-4	Room temp. time span	24	0	999	e	s	Time span of average (pump) room temperature
3-5	Pressure				e	n	System pressure settings
3-5-1	Set point	400	0	1000	e	c	System pressure set point
3-5-3	Bandwidth	5	0	999	e	c	A dead area in which the power to the VFD remains constant independent from pressure fluctuations.
3-5-4	Accumulation press.	30	0	999	e	c	Membrane tank (water) pressure accumulation prior to the system switch-off
3-5-5	Max.set point	1000	400	1000	e	s	Upper limit for the setpoint value to be set by the customer
3-5-9	Adapt. setpoint	400	0	1000	e	c	Alternative setpoint alternating by clock settings.
3-5-10	Delta p	0	-999	999	e	c	Quadratic function to correct the setpoint when a pump is switching on or off
3-5-11	High pressure alarm	1000	400	1000	e	c	Upper limit value for the system pressure to shut down or notification only (signal)
3-5-12	High pressure action				e	c	Selection parameter to define the action at system over-pressure (shut down or signal only)
	High pressure action	1	shutdown pumps,only message		e	c	Selection parameter to define the action at system over-pressure (shut down or signal only)
3-5-13	Low pressure alarm	0	0	400	e	c	Under limit value for the system pressure to shut down or notification only (signal)

Parameter		Standard	Min	Max	Read	Write	Help tekst
3-5-14	Low pressure action				e	c	Selection parameter to define the action at system under-pressure (shut down or signal only)
	Low pressure action	1	shutdown pumps, only message		e	c	Selection parameter to define the action at system under-pressure (shut down or signal only)
3-5-15	Shut down RDP	20	0	80	e	c	Low inlet pressure or level to protect the pumps for dry running. (system shut down)
3-5-16	Reset RDP	80	20	999	e	c	Reset pressure or level to reset the system after run dry protection shut down
3-5-17	Press. Flow Control	100	0	1000	e	s	Failure no water available gets active if setpoint - adjusted pressure is exceeded
3-6	Timer settings				e	n	Timer parameter configuration
3-6-1	Opt. pump starts /h	10	0	99	e	s	The optimum nrs of pump starts per hour. The minimum run time will be automatically corrected.
3-6-2	Min. run time	180	0	999	e	c	The minimum time of the pump to run. (the run time correction will not drop below this value)
3-6-3	Min. run time corr.	10	0	99	e	s	Adapting the Minimum run time to optimize the required number of pump starts per hour.
3-6-4	Max. run time	86400	0	604800	e	s	Maximum continuous run time of the pump. After this time the pump will be forced to change over.
3-6-5	Start delay	1	0	999	e	s	Start delay to switch the pumps on when pressure remains low
3-6-6	Stop delay	1	0	999	e	s	Stop delay to switch the pumps off when pressure remains high.
3-6-8	RDP delay	10	0	999	e	s	Delay time after run-dry protection to shut down the system
3-6-9	High/low alarm delay	60	10	999	e	s	Permitted time of setpoint pressure deviation > too high or too low system pressure.
3-6-10	WSD 1 pulse length	4	0	99	e	s	Length in time of the water flow detection device (flow position) digital input 1
3-6-11	WSD 2 pulse length	4	0	99	e	s	Length in time of the water flow detection device (flow position) digital input 2
3-6-12	WSD 3 pulse length	4	0	99	e	s	Length in time of the water flow detection device (flow position) digital input 3
3-6-13	Sys. start up delay	10	0	32	s	s	Delay time for starting up system
3-6-14	Jockey min. run time	0	0	999	s	s	The minimum time of the Jockey pump to run.
3-7	Time/Date				e	n	Date and time
3-7-1	Date				e	c	Setting the date
	Year	2007	1970	2099	e	c	Setting the actual Year
	Month	1	1	12	e	c	Setting the actual Month
	Day	1	1	31	e	c	Setting the actual Day

Parameter		Standard	Min	Max	Read	Write	Help tekst
3-7-2	Time				e	c	Setting the time
	Time			86399	e	c	Setting the time HH:MM:SS
3-7-3	Check run mode	2	OFF,Digital Input,Interval based,Time of day based,Time of week based		e	c	Select how and when a checkrun should be performed. (check run only on pumps which did not run)
3-7-4	Check run interval	86400	0	1000000	e	s	The interval between the check runs Applicable for pumps not operation for 24h.
3-7-5	Check run at				e	c	Setting the clock when a check run is required. Applicable for pumps not operation for 24h.
	Hours			23	e	c	Setting the hours of the check run clock
	Minutes			59	e	c	Setting the minutes of the check run clock
3-7-6	Check run at				e	c	Setting the date and clock when a check run is required. Applicable for pumps not operation for 24h.
	Hours			23	e	c	Setting the hours of the check run clock
	Minutes			59	e	c	Setting the minutes of the check run clock
	Day		Sunday,Monday,Tuesday,Wednesday,Thursday,Friday,Saturday		e	c	Setting the day of the check run clock
3-7-7	Check run duration	30	0	30	e	s	The check-run time per pump. (one at the time and alternating)
3-7-8	Clock adapt setp.				e	n	Alternative setpoint which will be active on clock settings
3-7-8-1	Adaptation mode	1	OFF,Adapt ON/OFF ev. day,Adapt.ON/OFF per day		e	c	Setting the adaptation mode of the alternative setpoint.
3-7-8-2	Change on/off times				e	c	The alternation to an alternative setpoint becomes active/ will be undo at the selected time.
	Hours adapt setp.ON			23	e	c	Setting the hours at which the alternation to a alternative setpoint becomes active
	Min adapt setp.ON			59	e	c	Setting the minutes at which the alternation to a alternative setpoint becomes active
	Hours adapt setp.OFF			23	e	c	Setting the hours at which the alternation to a alternative setpoint will be undo
	Min adapt setp.OFF			59	e	c	Setting the minutes at which the alternation to a alternative setpoint will be undo
3-7-8-3	Select day of week	0	Sunday,Monday,Tuesday,Wednesday,Thursday,Friday,Saturday		e	c	Setting the day at which the alternation to a alternative setpoint becomes active

Parameter		Standard	Min	Max	Read	Write	Help tekst
3-7-8-4	Change on/off times				e	c	The setpoint alternation becomes active/ will be undo at the selected time of the selected day's)
	Hours adapt setp.ON			23	e	c	Setting the hours at which the alternation to a alternative setpoint becomes active
	Min adapt setp.ON			59	e	c	Setting the minutes at which the alternation to a alternative setpoint becomes active
	Hours adapt setp.OFF			23	e	c	Setting the hours at which the alternation to a alternative setpoint will be undo
	Min adapt setp.OFF			59	e	c	Setting the minutes at which the alternation to a alternative setpoint will be undo
3-7-9	Date adapt level On				e	c	The level setpoint alternation becomes active at the selected day's) and Month's)
	Month adapt level On		OFF,January,February,March,April,May,June,July,August,September,October,November,December		e	c	The level setpoint alternation becomes active at the selected Month's
	Day adapt level On	1	1	31	e	c	The level setpoint alternation becomes active at the selected day of the selected Month's)
3-7-10	Date adapt level Off				e	c	The level setpoint alternation will be undo at the selected day's) and Month's)
	Month adapt lev Off		OFF,January,February,March,April,May,June,July,August,September,October,November,December		e	c	The level setpoint alternation will be undo at the selected Month's
	Day adapt level Off	1	1	31	e	c	The level setpoint alternation will be undo at the selected day of the selected Month's)
3-7-11	Maintenance interval				s	s	Setting the service / maintenance days left for the system.
	Maintenance interval			3000	s	s	Setting the service / maintenance days left for the system.
3-8	Definable I/O				s	s	Configuration of the relays outputs
3-8-1	Inputs				s	n	Configurable inputs
3-8-1-1	Input 1	None	None,Check run mode,Alternate Setpoint,Leakage,Remote acknowledge,Bypass valve,Ext. power operation		s	s	Configuration DI

Parameter		Standard	Min	Max	Read	Write	Help tekst
3-8-1-2	Input 2	None	None, Check run mode, Alternate Setpoint, Leakage, Remote acknowledge, Bypass valve, Ext. power operation		s	s	Configuration DI
3-8-1-3	Input 3	None	None, Check run mode, Alternate Setpoint, Leakage, Remote acknowledge, Bypass valve, Ext. power operation		s	s	Configuration DI
3-8-2	Outputs				s	n	Configurable outputs
3-8-2-1	Output 1 (P4)	None	None, Threshold relay 1, Threshold relay 2, Input valve, By-pass valve, RDP Alarm O/P		s	s	Configuration DO
3-8-2-2	Output 2 (P5)	None	None, Threshold relay 1, Threshold relay 2, Input valve, By-pass valve, RDP Alarm O/P		s	s	Configuration DO
3-8-2-3	Output 3 (P6)	None	None, Threshold relay 1, Threshold relay 2, Input valve, By-pass valve, RDP Alarm O/P		s	s	Configuration DO
3-8-2-4	Output 4 (FR4)	None	None, Threshold relay 1, Threshold relay 2, Input valve, By-pass valve, RDP Alarm O/P		s	s	Configuration DO
3-8-2-5	Output 5 (FR5)	None	None, Threshold relay 1, Threshold relay 2, Input valve, By-pass valve, RDP Alarm O/P		s	s	Configuration DO
3-8-2-6	Output 6 (FR6)	None	None, Threshold relay 1, Threshold relay 2, Input valve, By-pass valve, RDP Alarm O/P		s	s	Configuration DO
3-9	Messages				s	n	Messages
3-9-1	Message Settings				s	s	List of all alerts
	failure id		See failure table Megacontrol		s	s	
	Traffic Light	3	Green, Amber, Red		s	s	Fault classification: warning or alert
	Fault on Hold		Disabled, Enabled		s	s	With / without automatic re-start
3-10	Root menu				c	n	Settings of Root Menu

Parameter		Standard	Min	Max	Read	Write	Help tekst
3-10-1	Root Menu Settings				c	e	List of all root menu elements
3-11	Energy Saving Mode				s	n	Energy Saving Mode
3-11-1	Energy Saving Mode	0	OFF,ON		s	s	Energy Saving Mode
3-11-2	direct off	0	OFF,ON		s	s	Energy Saving Mode without NFD functionality is executed
3-11-3	Power down speed %	30	1	99	s	s	Calculated power down speed if NFD is running in energy saving mode in %
3-11-4	time direct off	5	0	9999	s	s	Time after the Energy Saving Mode without NFD functionality is executed
3-12	FC failure behavior				e	s	FC failure behavior
3-12-1	behavior	0	OFF,Fixed Speed		s	s	behavior
3-13	Pump Changeover				e	s	Pump change due to maximum run time
3-13-1	Supply reaction	0	Under pressure,Over pressure		e	s	Selection Under-/Oversupply
3-13-2	Changeover delay	0	0	10	e	s	Time delay between the changeover
3-14	By Pass Valve				e	s	By pass valve connected on the discharge side
3-14-1	Valve Function	0	Off,Check run,PT 1000,Digital Input		e	s	Function of the valve
3-14-2	Open delay	2	0	20	e	s	Time delay for opening the valve
3-14-3	Close delay	2	0	20	e	s	Time delay for closing the valve
3-14-4	Temperature	20	0	40	e	s	Above this temperature the valve will be opened
3-14-5	Flush Time	120	10	600	e	s	Time during the valve is opened
3-14-6	Attempts in 24Hrs	2	1	5	e	s	Number of attempts to open valave before an urgent alarm occurs
3-14-7	Min. open time	2	0	20	e	s	Minimal opening time for the valve
3-15	Fieldbus				c	n	Fieldbus Settings
3-15-1	Profibus				c	n	Profibus Settings
3-15-1-1	PB Slave Address	126	1	255	c	c	Profibus Slave Address
3-15-2	Modbus				c	n	Modbus Settings
3-15-2-1	MB Slave Address	247	1	247	c	c	Modbus Slave Address
3-15-2-2	Baudrate	2	9600.192		c	c	

1. Depending on the system configuration

### 11.1.4 Info (Quick access button "Info")

Table 22:

Parameter list MCIII version 1.57 EN

Parameter		Standard	Min	Max	Read	Write	Help tekst
4	Info				e	n	Information
4-1	Device				e	n	Device control module
4-1-1	Serial Number				e	n	Serial number of the control module
4-1-2	Parameter Set	0			e	e	HMI parameter set version
4-2	IO Info				e	n	
4-2-1	IO Serial Number				e	n	
4-2-2	IO FW-Version				e	n	
4-2-3	IO FW-Revision				e	n	
4-2-4	IO HW-Revision	0			e	n	
4-3	HMI Info				e	e	
4-3-1	HMI Serial Number				e	n	
4-3-2	HMI FW-Version				e	n	
4-3-3	HMI FW-Revision				e	n	
4-3-4	HMI HW-Revision	0			e	n	
4-4	Profibus Info				e	e	
4-4-1	PB FW-Version				e	n	
4-4-2	PB FW-Revision				e	n	
4-4-3	PB HW-Revision	0			e	n	
4-5	Modbus Info				e	e	
4-5-1	MB FW-Version				e	n	
4-5-2	MB FW-Revision				e	n	
4-5-3	MB HW-Revision	0			e	n	

### 11.1.5 Quick menu (Quick access button "OK")

Table 23:

Parameter list MCIII version 1.57 EN

Parameter		Standard	Min	Max	Read	Write	Help tekst
3-2-1-1.1	PIN				e	n	Enter access level and personal identification number
3-4-1-4-8-1	Threshold 1 ON	50	0	199	e	s	Water level at which the relays output becomes ""high""
3-4-1-4-8-2	Threshold 1 OFF	50	0	199	e	s	Water level at which the relays output becomes ""low""
3-4-1-4-8-3	Threshold 2 ON	40	0	199	e	s	Water level at which the relays output becomes ""high""
3-4-1-4-8-4	Threshold 2 OFF	40	0	199	e	s	Water level at which the relays output becomes ""low""
3-4-1-4-9-1	Level 1 open	70	0	99	e	s	Level in the receiver tank at which the supply valve is opened
3-4-1-4-9-2	Level 1 closed	90	0	99	e	s	Level in the receiver tank at which the supply valve is closed

Parameter		Standard	Min	Max	Read	Write	Help tekst
3-4-1-4-10-1	Level setpoint 1	80	0	99	e	s	Maximum level in the receiver tank at which the proportional valve is fully closed
3-4-1-4-10-3	Hysteresis	15	0	99	e	s	Differential level in the receiver tank at which the proportional valve is fully opened
3-4-1-4-10-4	Sample time	10	0	99	e	s	Time between the level measurements controlling the proportional valve position
3-4-3-2	Proportional const.	3	0	100	e	s	Proportional amplification factor the system pressure is controlled with
3-4-3-3	Integral time	1	0	60	e	s	Speed with which the deviation of the required system pressure is adjusted
3-4-3-4	Differential time		0	99.99	e	s	The level of damping with which the deviation of the required system pressure is controlled
3-4-3-9	VFD Ramp-Up	3	0.1	999	e	s	Setting of the ramp-up of the VFD
3-4-3-10	VFD Ramp-Down	3	0.1	999	e	s	Setting of the ramp-down of the VFD
3-4-3-27	Slip Compensation		-400	399	e	s	Slip Compensation of the VFD
3-5-1	Set point	400		1000	e	c	System pressure set point
3-5-3	Bandwidth	5	0	999	e	c	A dead area in which the power to the VFD remains constant independent from pressure fluctuations.
3-5-4	Accumulation press.	30	0	999	e	c	Membrane tank (water) pressure accumulation prior to the system switch-off
3-5-5	Max.set point	1000	400	1000	e	s	Upper limit for the setpoint value to be set by the customer
3-5-9	Adapt. setpoint	400	0	1000	e	c	Alternative setpoint alternating by clock settings.
3-5-10	Delta p	0	-999	999	e	c	Quadratic function to correct the setpoint when a pump is switching on or off
3-5-11	High pressure alarm	1000	400	1000	e	c	Upper limit value for the system pressure to shut down or notification only (signal)
3-5-12	High pressure action				e	c	Selection parameter to define the action at system over-pressure (shut down or signal only)
3-5-13	Low pressure alarm	0	0	400	e	c	Under limit value for the system pressure to shut down or notification only (signal)
3-5-14	Low pressure action				e	c	Selection parameter to define the action at system under-pressure (shut down or signal only)
3-5-15	Shut down RDP	20	0	80	e	c	Low inlet pressure or level to protect the pumps for dry running. (system shut down)
3-5-16	Reset RDP	80	20	999	e	c	Reset pressure or level to reset the system after run dry protection shut down
3-5-17	Press. Flow Control	100	0	1000	e	s	Failure no water available gets active if setpoint - adjusted pressure is exceeded

Parameter		Standard	Min	Max	Read	Write	Help tekst
3-6-2	Min. run time	180	0	999	e	c	The minimum time of the pump to run. (the run time correction will not drop below this value)
3-6-5	Start delay	1	0	999	e	s	Start delay to switch the pumps on when pressure remains low
3-6-6	Stop delay	1	0	999	e	s	Stop delay to switch the pumps off when pressure remains high.
3-6-8	RDP delay	10	0	999	e	s	Delay time after run-dry protection to shut down the system
3-6-9	High/low alarm delay	60	10	999	e	s	Permitted time of setpoint pressure deviation > too high or too low system pressure.



# 12 Failures

## 12.1 Failure messages Megacontrol

Table 24: Faults list MCIII

Failure message:	Explanation:	Failure output:
Failure PT. Dis.	Failure Pressure Transmitter discharge side (value >20mA) replace PT and reset system	Urgent
Sys. press.to low	System pressure too long under minimum value (3-5-13)	Urgent <sup>1</sup>
Sys press.to high	System pressure too long above maximum value (3-5-11)	Urgent <sup>1</sup>
Sys. press.to low	System pressure too long under minimum value (3-5-13)	Non urgent <sup>2</sup>
Sys press.to high	System pressure too long above maximum value (3-5-11)	Non urgent <sup>2</sup>
No water	No sufficient water or -pressure available at suction side	Urgent <sup>1</sup>
No water	No sufficient water or -pressure available at suction side	Non urgent <sup>2</sup>
Maintenance req.	Maintenance is required	Non urgent
More pumps fail	More than two pumps out of order	Urgent
No refresh tank #	No water refreshm in tank # (sensed by the flow detector) check precharged air pressure	Urgent
Aver temp to high	Average room temperature to high (sensed by the temperature sensor)	Urgent
Curr temp to high	Current room temperature to high (sensed by the temperature sensor)	Non urgent
Temp.failure Pump #	Failure pump #. Solve problem and reset the system	Non urgent
Failure valve	Failure supply valve. Solve problem and reset the system	Urgent
Inlet sensor fail	Failure inlet Sensor for level or pressure. (signal out of range) replace Sensor and reset system.	Urgent
High water level	Water level in receiver tank too high	Non urgent
Crit. water level	Water level in receiver tank critical (near to empty)	Non urgent
Low water level	Water level in receiver tank too low (system shut down for run dry protection)	Urgent <sup>1</sup>
Low water level	Water level in receiver tank too low (system shut down for run dry protection)	Non urgent <sup>2</sup>
Comm. Error FC#	Communication to variable frequency drive # is broken	Non urgent
Failure FC #	general failure variable frequency drive #	Non urgent
Incor. check sum F#	Incorrect check sum within the protocol	Non urgent
Temp. sensor fail	Failure Room Temperature Sensor. replace R.T.S. and reset system	Non urgent
24V out of range	Failure message due to internal 24V supply out of range	Non urgent
5V out of range	failure message due to internal 5V supply out of range	Non urgent
3V out of range	Failure message due to internal 3V supply out of range	Non urgent
External off	Failure message due to an external off command	Urgent
Fire alarm	Failure message due to an external fire alarm command	Urgent
Failure VFD	Failure of the VFD drive at discharge mode VFD change-over or VFD fixed one	Urgent
Br. Wire Sens.dis	Failure Pressure Transmitter discharge side (value lower then 4mA) connect or replace Pressure Transmitter and reset system	Urgent
Br. Wire Sens.Inl	Failure inlet Sensor for level or pressure. (wire break detection) Replace Sensor and reset system.	Urgent
Fail. several FCs	Failure for more than one FC occurs	Urgent
Leakage	There is a leakage in the unit. Solve problem and reset the system	Urgent
Eeprom HW Error	The Eeprom data was not saved due to HW problem	Urgent
Manual off Pump # off		Not urgent
Manual On Pump #		Not urgent
More Pumps off		Not urgent
Internal Failure P#		Not urgent
Mains Failure P#		Not urgent
Over voltageP#		Not urgent
Under voltage P#		Not urgent
Overload Failure P#		Not urgent

Failure message:	Explanation:	Failure output:
Brake resistor P#		Not urgent
Temp. Failure P#		Not urgent
ATM Failure P#		Not urgent
Flushing		Not urgent
Valve opened oftenly		Urgent
Circuit Fail. FC#		Not urgent
Ext. Power Operation	External power supply operation	Not urgent
Setpoint Reduction	Automatic Setpoint Reduction because of inlet pressure dropdown	Not urgent
Factory Test		Not urgent
MPO Failure	Incorrect switching point configured or sensor failure	
ASR Shutdown	Automatic Setpoint Reduction Shutdown because of inlet pressure dropdown	
Occured:	Failures that have occurred recently.	
Acknowledged:	Failures that got acknowledged.	
Cleared:	Failures that got cleared	
Data:		
No failures		

1. Manual alarm reset = Urgent.
2. Automatic alarm reset = Non urgent.

## 12.2 Failure messages frequency converter



### ATTENTION

The error codes are displayed in the error log of the Megacontrol. For specific information about the error codes please consult the (technical) documentation of the frequency converter concerned.

### 12.2.1 Danfoss MicroDrive FC51

Table 25: VLT Microdrive FC 51

Error code:	Explanation:	Warning:	Alarm:	Trip lock:	Error
2	Live zero error	X	X		
4	Mains phase loss <sup>1</sup>	X	X	X	
7	DC over voltage <sup>1</sup>	X	X		
8	DC under voltage <sup>1</sup>	X	X		
9	Inverter overloaded	X	X		
10	Motor ETR over temperature	X	X		
11	Motor thermistor over temperature	X	X		
12	Torque limit	X			
13	Over Current	X	X	X	
14	Earth fault		X	X	
16	Short Circuit		X	X	
17	Control word time out	X	X		
25	Brake resistor short-circuited		X	X	
27	Brake chopper short-circuit		X	X	
28	Brake check		X		
29	Power board over temp	X	X	X	
30	Motor phase U missing		X	X	
31	Motor phase V missing		X	X	

Error code:	Explanation:	Warning:	Alarm:	Trip lock:	Error
32	Motor phase W missing		X	X	
38	Internal fault		X	X	
44	Earth fault		X	X	
47	Control Voltage Fault		X	X	
51	AMT check $U_{nom}$ and $I_{nom}$		X		
52	AMT low $I_{nom}$		X		
59	Current limit	X			
63	Mechanical Brake Low		X		
80	Drive Initialised to Default Value		X		
84	The connection between drive and LCP is lost				X
85	Button disabled				X
86	Copy fail				X
87	LCP data invalid				X
88	LCP data not compatible				X
89	Parameter read only				X
90	Parameter database busy				X
91	Parameter value is not valid in this mode				X
92	Parameter value exceeds the min/max limits				X
nw run	Not While RUNning				X
Err.	A wrong password was entered				X

1. These faults may be caused by mains distortions. Installing Danfoss Line Filter may rectify this problem.

### 12.3 Failure table Hydro-Unit Premium Line



#### WARNING

Observe the general safety precautions for installation, maintenance and repair.

Problem	Possible cause	Possible solution	Checkpoints
Leakage along the shaft.	Shaft seal worn.	Replace the shaft seal.	Check the pump for fouling.
	Pump has been operated without water.	Replace the shaft seal.	
Pump is vibrating and makes a lot of noise.	There is no water in the pump.	Fill and de-aerate the pump.	Check if the supply pipes are not clogged.
	No water supply.	Restore the water supply.	
	Bearings of pump and/or motor defective.	Have the bearings replaced by a certified company.	
	Hydraulic assembly defective.	Replace the hydraulic assembly.	

Problem	Possible cause	Possible solution	Checkpoints
Installation / pump does not start.	No voltage on the connecting clamps.	Check the power supply.	<ul style="list-style-type: none"> <li>• Circuit</li> <li>• Main switch</li> <li>• Fuses</li> </ul>
	Thermal motor safety switch triggered	Reset the thermal motor safety. Contact the supplier, if this problem occurs more often	
	Run-dry protection triggered.	Restore the watersupply. Reset the installation.	
	Pressure set point incorrect.	Adjust the pressure set-point.	
Installation / pump supplies insufficient capacity and/or pressure.	There is air in the pump.	Vent the pump.	
	Capacity of water meter in the supply line is too small.	Increase the capacity of the water meter.	
	Discharge and/or suction shut-off valve is closed.	Open both shut-off valves.	
	System resistance too high.	Adjust the set points	
Let the supplier check the system			
Pumps continuously start and stop.	Pressure vessel(s) leaky or incorrect pre-pressure.	Have your supplier check the installation.	

# 13 Annexes

## 13.1 P&ID Diagram

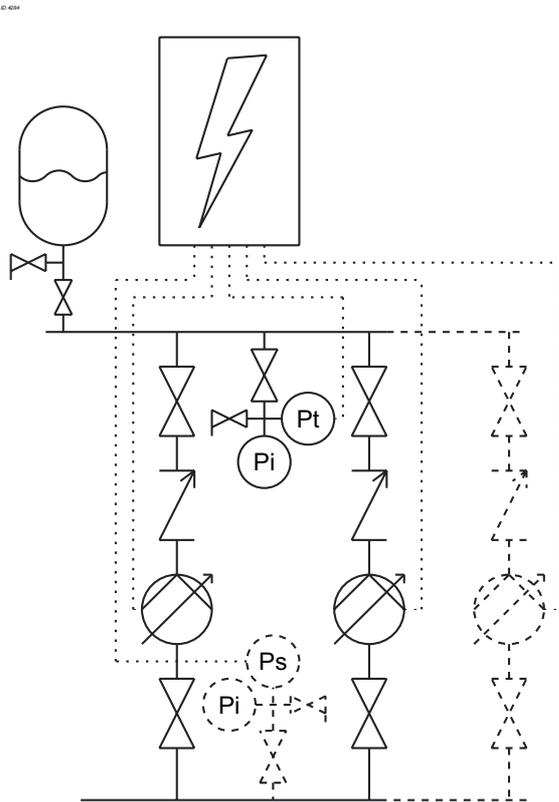


Figure 17: Hydro-Unit Premium Line Megacontrol MF

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## 13.2 Connections

### 13.2.1 Terminal strip X 0 Pumps MCMF

Table 26: Terminal strip

Terminal strip X 0 Pumps	
Frequency converter 1	U1 Pump 1
	V1 Pump 1
	W1 Pump 1
Frequency converter 2	U1 Pump 2
	V1 Pump 2
	W1 Pump 2
Frequency converter 3	U1 Pump 3
	V1 Pump 3
	W1 Pump 3



**ATTENTION**  
pump cables are connected directly to frequency converter



**ATTENTION**  
The alarm contact is closed when the installations are without power or in case of a fault

### 13.2.2 Terminal strip for external contacts

See included wiring diagram for external wiring connection.

### 13.3 Electrical connections

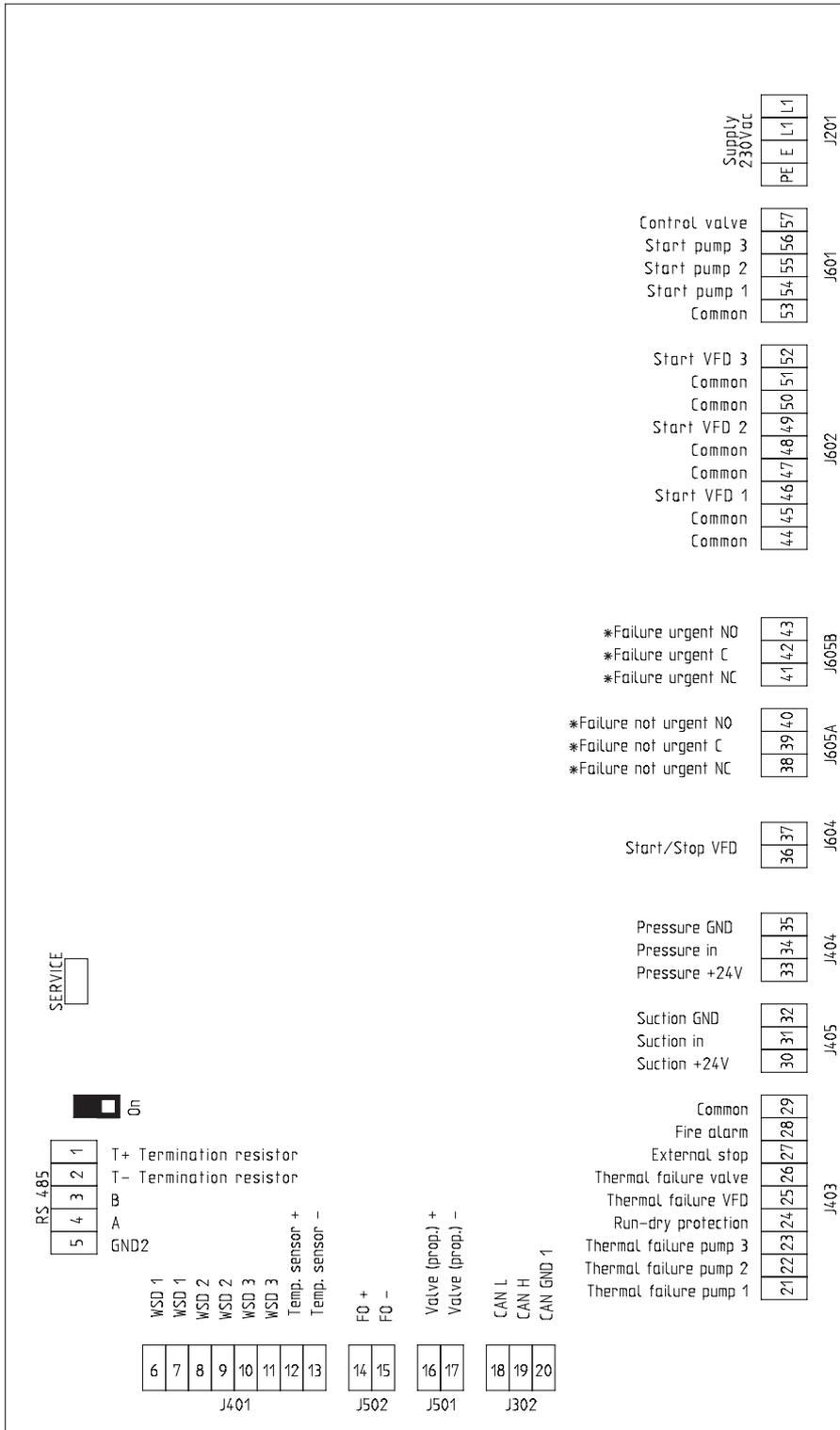


Figure 18: Megacontrol Lay-out 1-3 pumps

\* Connections 38/39 and 41/42 are closed in case of fault and power cut.



## 13.4 EC declaration of conformity

Undersigned:

DP-Pumps  
Kalkovenweg 13  
2401 LJ Alphen aan den Rijn, The Netherlands  
Tel: (+31)(0)-172-48 83 88

Declares as the manufacturer in his own responsibility, that the products:

Product: Hydro-Unit  
Type: Premium Line Megacontrol MF

to which this declaration relates, are constructed in conformity with the following harmonized international standards:

- ISO 12100:2010
- EN 809+A1/C1:2010
- IEC 60204-1:2006
- IEC 61000-6-1:2007
- IEC 61000-6-3/A1:2011
- IEC 61000-3-2 ( $I \leq 16$  A)
- IEC 61000-3-12 ( $16$  A  $< I < 75$  A)

in according with the provisions of:

- Machinery directive 2006/42/EC
- EMC directive 2004/108/EC

The Hydro-Unit Premium Line is subject to this declaration of conformity as a stand alone product.

Make sure the appliance or installation in which the Hydro-Unit Premium Line is built in, has got a declaration of compliance with the directives listed above, for its complete assembly.



Place sticker with serial  
number here

## 13.5 CE conformity marking

The product is CE-marked and fulfils the requirements specified in the European Electromagnetic Compatibility Directive 2004/108/EC dated 15 December 2004, Annex I. Compliance with the provisions of the directive is certified by a Declaration of Conformity. In accordance with the EN 61000-6-1 standard, the product meets Class B requirements (limits to EN 55011). The integrated frequency inverter fulfils the requirements of the EN 61800-3 product standard.

Table 27: Classification by category

Category	C1	C2	C3	C4
Mode of sales distribution	Unrestricted distribution	Restricted distribution	Restricted distribution	Restricted distribution
Environment	1ste environment	1ste or 2nd environment (operator's decision)	2nd environment	2nd environment
Voltage/current	< 1000 V			≥ 1000 V I <sub>n</sub> > 400 A Connection to IT network
EMC competence	No special requirement	Installation and commissioning by personnel suitably trained in EMC applications		EMC plan required
Limit to EN 55011	Class B	Class A1 (+warning)	Class A2 (+warning)	Value exceed class A2 limits

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## **DP pumps**

**DP pumps**  
P.O. Box 28  
2400 AA Alphen aan den Rijn (NL)

**t** (+31-172) 48 83 88  
**f** (+31-172) 46 89 30

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[www.dp-pumps.com](http://www.dp-pumps.com)

05/2014

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Original instructions

Can be changed without prior notice

