Control-Unit
Supplementary operating instructions
Series: Modbus-Module
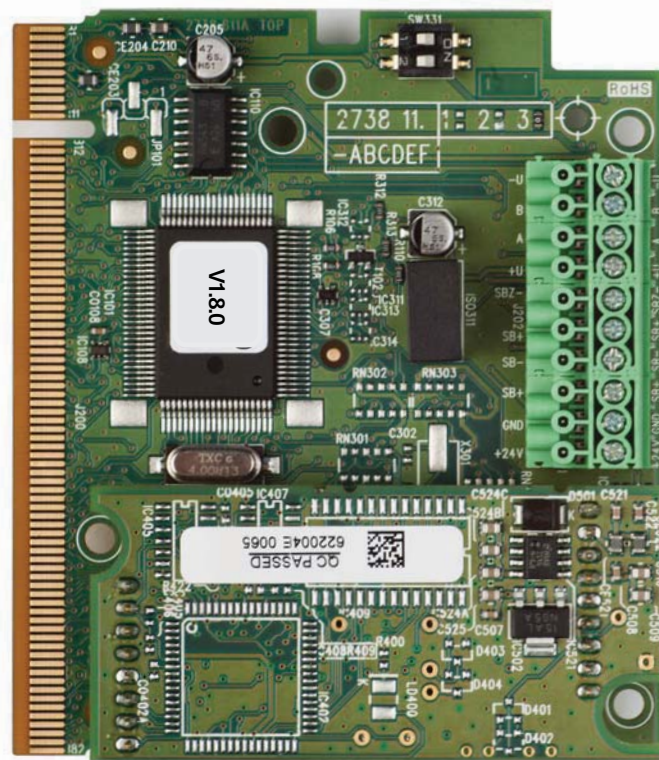
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1 Manual introduction

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 together with the logbook in a fixed place near the product which can be accessed by all personnel.

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.

READ THE (SUPPLEMENTARY) DOCUMENTATION
Read the installation and operating instructions.

2 Identification, service and technical support

2.1 Identification, service and technical support

The system is identified based on the text "Modbus-Module " as given on the front of the system.

Table 1: Control-Unit

Indication	Meaning
Modbus-Module	Type of Control-Unit

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

Table 2: Address service department

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

2.2 Supplementary documentation

ATTENTION
This manual is valid from software version V1.6.1. Software version V1.6.1 only works in combination with a megacontrol with the Firmware version 1.9.0 or higher.

Apart from this manual, the documentation given below is also available:

Table 3: supplementary documentation

Document	Date/version	Code
General terms of delivery	10-1998	119 / 1998
Documentation		

See also: 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 and is manufactured with utmost care and is subject to continuous quality control.
DP-Pumps does not accept any liability for damage or injury caused by not following the directions and instructions in this manual or by carelessness during the installation, use or maintenance of the product. Non-compliance with the 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.
Non-compliance can result in:

- failure of important pump/system functions,
- failure of prescribed maintenance or service,
- injury caused by electrical, mechanical and chemical effects,
- leakage to the environment of hazardous substances,
- explosions.

Depending on the application, 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 supervisions. If the personnel in question is not in possession of the required know-how, appropriate training and instruction must be provided. The operator may require the manufacturer/supplier to provide sufficient training and/or instructions. 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.
- Shield parts that can become hot in such a way, that direct contact is not possible.
- Always close the switch box.

4.4.2   During installation, maintenance and repair

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

4.5   Environmental aspects

4.5.1   General
This product of DP-Pumps is designed to function in an environmentally friendly way during their entire life.

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
Dismantle the product and dispose of it in an environmentally friendly way. The owner is responsible for this.

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

ENVIRONMENTAL INSTRUCTION
All components of the Modbus-Module are manufactured in accordance with RoHS directive 2011/65/EC.

5   Introduction

5.1   General

This document describes the settings and an example for the Modbus-Module connected to a megacontrol. See the enclosed manual Modbus-Module booster advanced control for detailed information.

If the Modbus-Module is properly connected, the megacontrol recognize the module automatically. This can be checked in menu 4-1. Line "Modbus-Module information" should be visible.

The following parameters can be set:
3-15-2-1 slave address 0 up to 247 Default 247
3-15-2-2 baud rate 9600,19200 or 38400 Default 9600

Table 4: Communication settings:

Communication protocol	Modbus RTU (RS485)	Parameter in MCIIIB
Bus speed	9600, 19200 or 38400 Baud	3-15-2-2
Device type	Slave 0 up to 247	3-15-2-1
Bus access	Polling Master Slave	
Parity	Even/Odd/None	3-15-2-3
Stop bits	1(2 automatic at no parity)	
Data bits	8	

OFF   ON
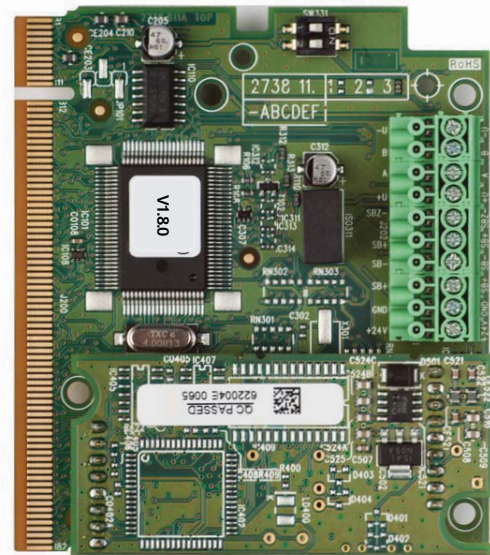
Figure 1: Modbus-Module terminator resistor set

ATTENTION
If the Modbus-Module is the last module in the bus, set both DIP switches of the terminating resistor on ON.

6 Transport

6.1 Transport and storage

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

ATTENTION
Store the control unit in a dry and dust-free place.

7 Installation

7.1 General

⚠ WARNING
Make sure that the system is not connected to the mains and secured against reconnection before the Modbus-Module - connection is to install or remove.

7.2 Installation

The Modbus-Module has to be connected or removed only when the power is off. The Modbus-Module is housed in a metal casing which is equipped with a mounting for 35 mm DIN rail. With this mounting the Modbus-Module can be attached to an existing rail.

For high frequency shielding only shielded cables for Modbus-Module have to be used. The installation has to be done in EMC compliance. A minimum distance of 200 mm from electrical lines is recommended. No different voltage in one cable feed (e.g. 230 V and 24 V alarm reset). The local regulations are observed.

7.3 Assignment terminal

The Modbus-Module is provided with a 10-pin terminal connection (J202).

The terminals are described as follow:
Table 5: Assignment terminal Modbus-Module

Terminal	Signal
1	+24 V
2	GND
3	SB+
4	SB-
5	SB+
6	SBZ-
7	+U
8	B
9	A
10	-U

⚠ WARNING
Power supply is not protected against polarity!

☞ ATTENTION
If the Modbus-Module is the last module in the bus, set both DIP switches of the terminating resistor on ON. See figure 1 Modbus-Module terminator resistor set

⚠ WARNING
The terminators are only in function when the module is energized.
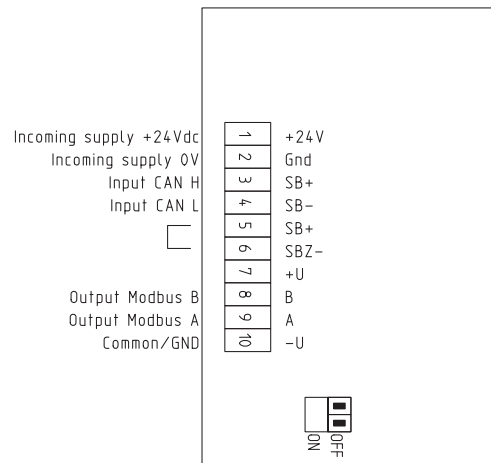

Figure 2: Modbus connection

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8   Parameter list

8.1   Parameter list 'read'

Table 6: Read

Parameter	Name	Modbus-Module register DEC	Hex Address	1 or 2 register (Byte)	Value/Unit
	Status BC IO Board	48193	2000	1	
	Message 1 (Bit 0 .. [15])	48194	2001	2	
	Message 2 (Bit 0 .. [15])	48195	2002	2	
	Message 3 (Bit 0 .. [15])	48196	2003	2	
	Message 4 (Bit 0 .. [15])	48197	2004	2	
	Message 5 (Bit 0 .. [15])	48198	2005	2	
	Message 6 (Bit 0 .. [15])	48199	2006	2	
	Message 7 (Bit 0 .. [15])	48200	2007	2	
	Message 8 (Bit 0 .. [15])	48201	2008	2	
	Message 9 (Bit 0 .. [15])	48433	20F0	2	
	Message 10 (Bit 0 .. [15])	48434	20F1	2	
	RESERVED for more warnings		....	2	
	RESERVED for more warnings	48448	20FF	2	
1-1-1	System pressure	48202	2009	1	kPa
1-1-2	System load	48203	200a	1	
1-1-3	RDP Switch	48204	200b	1	0 = inactive 1 = active
1-1-4	Inlet pressure	48205	200c	1	kPa
1-1-5	Level content	48206	200d	1	%
1-1-6	Level heigt	48207	200e	1	cm
1-1-7	Ambient temperature (WSD)	48208	200f	1	
1-1-9.2	Position suppl. valve	48209	2010	1	ON/OFF
1-1-9.1	Position suppl. valve	48210	2011	1	%
1-1-12	Used Set point	48211	2012	1	kPa
1-1-13	NTC Temperature	48212	2013	1	
1-3-1	Act. runtime OP hours	48213	2014	2	seconds
1-3-2	Time to service	48215	2016	2	
1-3-3	Act. Minimum Runtime	48217	2018	1	seconds
3-3-1	Number of pumps	48218	2019	1	
	Amount working pumps	48219	201a	1	Bit 0 = P1 ... Bit 5 = P6
	Therm. Pump Error-input	48220	201b	1	Bit 0 = P1 ... Bit 5 = P6

Parameter	Name	Modbus-Module register DEC	Hex Address	1 or 2 register (Byte)	Value/Unit

	Common digital inputs	48221	201c	1	Bit0=digitalInputs->thermalFC;// "F"
					Bit1=digitalInputs->thermalValve;// "V"
					Bit2 = digitalInputs->externalOff;// "O"
					Bit3 = digitalInputs->fireAlarm;// "A"
					Bit4 = digitalInputs->dryRun;// "R"
					Bit5 = digitalInputs->input[0];// "I1"
					Bit6 = digitalInputs->input[1];// "I2"
					Bit7 = digitalInputs->input[2];// "I3"

	Pump loadPump 1	48222	201d	1	%
	Operating hours Pump 1	48223	201e	2	econds
	Operating hours after Service Pump 1	48225	2020	2	seconds
	Pump starts Pump 1	48227	2022	2	
	Failure counter Pump 1	48229	2024	2	
	Pump status Pump 1	48231	2026	1	Bit0=Auto Bit1=Manual Bit2=Off Bit3=Pump is OK Bit4=Pump is running Bit5=Thermical failure Bit6=FC failure
	Pump load Pump 2	48232	2027	1	%
	Operating hours Pump 2	48233	2028	2	seconds
	Operating hours after Service Pump 2	48235	202a	2	seconds
	Pump starts Pump 2	48237	202c	2	
	Failure counter Pump 2	48239	202e	2	
	Pump status Pump 2	48241	2030	1	Bit0=Auto Bit1=Manual Bit2=Off Bit3=Pump is OK Bit4=Pump is running Bit5=Thermical failure Bit6=FC failure
	Pump load Pump 3	48242	2031	1	%
	Operating hours Pump 3	48243	2032	2	seconds
	Operating hours after Service Pump 3	48245	2034	2	seconds
	Pump starts Pump 3	48247	2036	2	
	Failure counter Pump 3	48249	2038	2	
	Pump status Pump 3	48251	203a	1	Bit0=Auto Bit1=Manual Bit2=Off Bit3=Pump is OK Bit4=Pump is running Bit5=Thermical failure Bit6=FC failure
	Pump load Pump 4	48252	203b	1	%
	Operating hours Pump 4	48253	203c	2	seconds
	Operating hours after Service Pump 4	48255	203e	2	seconds
	Pump starts Pump 4	48257	2040	2	
	Failure counter Pump 4	48259	2042	2	

Parameter	Name	Modbus-Module register DEC	Hex Address	1 or 2 register (Byte)	Value/Unit
	Pump status Pump 4	48261	2044	1	Bit0=Auto Bit1=Manual Bit2=Off Bit3=Pump is OK Bit4=Pump is running Bit5=Thermical failure Bit6=FC failure
	Pump load Pump 5	48262	2045	1	%
	Operating hours Pump 5	48263	2046	2	seconds
	Operating hours after Service Pump 5	48265	2048	2	seconds
	Pump starts Pump 5	48267	204a	2	
	Failure counter Pump 5	48269	204c	2	
	Pump status Pump 5	48271	204e	1	Bit0=Auto Bit1=Manual Bit2=Off Bit3=Pump is OK Bit4=Pump is running Bit5=Thermical failure Bit6=FC failure
	Pump load Pump 6	48272	204f	1	%
	Operating hours Pump 6	48273	2050	2	seconds
	Operating hours after Service P6	48275	2052	2	seconds
	Pump starts Pump 6	48277	2054	2	
	Failure counter Pump 6	48279	2056	2	
	Pump status Pump 6	48281	2058	1	Bit0=Auto Bit1=Manual Bit2=Off Bit3=Pump is OK Bit4=Pump is running Bit5=Thermical failure Bit6=FC failure
4-2-2	IO FW-Version	48282	2059	1	
4-2-3	IO FW-Revision	48283	205a	2	
4-2-4	IO HW-Revision	48285	205c	1	
4-3-2	HMI FW-Version	48286	205d	1	
4-3-3	HMI FW-Revision	48287	205e	2	
4-3-4	HMI HW-Revision	48289	2060	1	
4-4-1	PB FW Version/4-5-1 MB FW Version	48290	2061	1	
4-4-2	PB FW Revision/4-5-2 MB FW Revision	48291	2026	2	
4-4-3	PB HW Revision/4-5-3 MB HW Revision	48293	2064	1	
3-4-1-4-11-1	Level RW-pump Off	48294	2065	1	% i.e. 90 %
3-4-1-4-11-2	Level RW-pump On	48295	2066	1	% i.e. 85 %
3-4-1-4-11-3	Level DW-valve open	48296	2067	1	% i.e. 75 %
3-4-1-7-1	Rainwater nr of pumps	48297	2068	1	Number of pumps 1/2
1-2-6-3-1	Rainwater pump 1 mode	48298	2069	1	0=not active/1=active
1-2-6-3-3	Rainwater pump 1 Runtime	48299	206A	2	seconds
1-2-6-3-4	Rainwater pump 1 starts	48301	206C	2	Number of starts
1-2-6-3-2	Rainwater pump 1 state	48303	206E	1	0=not active/1=active

Parameter	Name	Modbus-Module register DEC	Hex Address	1 or 2 register (Byte)	Value/Unit
1-2-6-4-1	Rainwater pump 2 mode	48304	206F	1	0=off/1=on
1-2-6-4-3	Rainwater pump 2 Runtime	48305	2070	2	in seconds
1-2-6-4-4	Rainwater pump 2 starts	48307	2072	2	Number of starts
1-2-6-4-2	Rainwater pump 2 state	48309	2074	1	0=pumpe off/1=pump running
	HMI traffic light	48429	20EC	1	0=green, 1=yellow, 2=red
3-3-3	Discharge	48431	20EE	1	1=fixed speed, 2 one jockey, 3=two jockey, 4=VFD change over, 6=VFD fixed all
3-5-1	Setpoint	48449	2100	1	
3-5-9	Adapt. Setpoint	48450	2101	1	
2-1-3	Acknowledge all failure and warning messages	48451	2102	1	
3-7-1	Year Format: YYYY	48452	2103	1	e.g. 2014
3-7-1	Month Format: MM	48453	2104	1	1 to 12
3-7-1	Day Format: DD	48454	2105	1	1 to 31
3-7-2	Current Time. SSSSS	48455	2106	2	0 to 86399

8.2 Parameter list 'write'

Table 7: Write

Parameter-Nr	Name	Modbus-Module register DEC	Hex-Address 0x....	1 or 2 register (Byte)	Value/ Unit
3-5-1	Setpoint	48449	2100	1	Value 3-4-2-1 to 3-5-3 In kPa
3-5-9	Adapt. Setpoint	48450	2101	1	Value 3-4-2-1 to 3-5-3 In kPa
2-1-3[1]	Acknowledge All	48451	2102	1	0->1
3-7-1	Actual year Format: YYYY	48452	2103	1	1970 to 2099 e.g. 2014
3-7-1	Actual month Format: MM	48453	2104	1	1 to 12
3-7-1	Actual day Format: DD	48454	2105	1	1 to 31
3-7-2	Actual Time Format SSSSS	48455	2106	2	0 to 86399

1. All faults can be acknowledged but some failures have a mechanical or electrical lock. These failures can only be solved at the control panel.

8.3   Parameter list 'messages'

Table 8: Messages 1-10

Name Parameter	Modbus-Module register DEC	Hex-Address 0x…	2 registers (Byte)	Register length
Message 1	48194	2001	2	1
Message 2	48195	2002	2	1
Message 3	48196	2003	2	1
Message 4	48197	2004	2	1
Message 5	48198	2005	2	1
Message 6	48199	2006	2	1
Message 7	48200	2007	2	1
Message 8	48201	2008	2	1
Message 9	48433	20F0	2	1
Message 10	48434	20F1	2	1

Table 9: Message 1

Message field 0x2001 48194	Bit	Message description	DOL 1-6	MCF 1-6	MCMF 1-6	Digital input
Message 1	0	Temp.high Pump 6	x	x	x	x
Message 1	1	Supply valve suction side	x	x	x	x
Message 1	2	Sensor failure input.	x	x	x	
Message 1	3	Level High water Tank.	x	x	x	
Message 1	4	Critical water level	x	x	x	
Message 1	5	Low level shut down	x	x	x	
Message 1	6	Communication error FC 1			x	
Message 1	7	Communication error FC 2			x	
Message 1	8	Communication error FC 3			x	
Message 1	9	Communication error FC 4			x	
Message 1	10	Communication error FC 5			x	
Message 1	11	Communication error FC 6			x	
Message 1	12	Wrong Checksum FC 1			x	
Message 1	13	Wrong Checksum FC 2			x	
Message 1	14	Wrong Checksum FC 3			x	
Message 1	15	Wrong Checksum FC 4			x	

Table 10: Message 2

Message field 0x2002 48195	Bit	Message description	DOL 1-6	MCF 1-6	MCMF 1-6	Digital input
Message 2	0	Pressure sensor failure short-circuit	x	x	x	
Message 2	1	System pressure low	x	x	x	
Message 2	2	System pressure high	x	x	x	
Message 2	3	Dry run	x	x	x	x
Message 2	4	Service necessary	x	x	x	
Message 2	5	Therm. Alarm more than 1 pump	x	x	x	
Message 2	6	WSD Tank1	x	x	x	
Message 2	7	WSD Tank2	x	x	x	
Message 2	8	WSD Tank3	x	x	x	
Message 2	9	WSD: T mitt. high	x	x	x	
Message 2	10	WSD: akt. T. High	x	x	x	
Message 2	11	Temp.high Pump 1	x	x	x	x
Message 2	12	Temp.high Pump 2	x	x	x	x
Message 2	13	Temp.high Pump 3	x	x	x	x
Message 2	14	Temp.high Pump 4	x	x	x	x
Message 2	15	Temp.high Pump 5	x	x	x	x

Table 11: Message 3

Message field 0x2003 48196	Bit	Message description	DOL 1-6	MCF 1-6	MCMF 1-6	Digital input
Message 3	0	Pump 3 Off (via display)	x	x	x	
Message 3	1	Pump 4 Off (via display)	x	x	x	
Message 3	2	Pump 5 Off (via display)	x	x	x	
Message 3	3	Pump 6 Off (via display)	x	x	x	
Message 3	4	Pump 1 Manual (via display)	x	x	x	
Message 3	5	Pump 2 Manual (via display)	x	x	x	
Message 3	6	Pump 3 Manual (via display)	x	x	x	
Message 3	7	Pump 4 Manual (via display)	x	x	x	
Message 3	8	Pump 5 Manual (via display)	x	x	x	
Message 3	9	Pump 6 Manual (via display)	x	x	x	
Message 3	10	Several Pumps off (via display)	x	x	x	
Message 3	11	Intern error FC 1			x	
Message 3	12	Intern error FC 2			x	
Message 3	13	Intern error FC 3			x	
Message 3	14	Intern error FC 4			x	
Message 3	15	Intern error FC 5			x	

Table 12: Message 4

Message field 0x2004 48197	Bit	Message description	DOL 1-6	MCF 1-6	MCMF 1-6	Digital input
Message 4	0	Wrong Checksum FC 5			x	
Message 4	1	Wrong Checksum FC 6			x	
Message 4	2	WSD Temp. Sensor	x	x	x	
Message 4	3	24 V a. Area	x	x	x	
Message 4	4	5V Span. invalid	x	x	x	
Message 4	5	3 V a. Area	x	x	x	
Message 4	6	External Off	x	x	x	x
Message 4	7	Fire alarm	x	x	x	x
Message 4	8	Disturbance FC		x		
Message 4	9	Error Sensor pressure side	x	x	x	
Message 4	10	Error Sensor suction side	x	x	x	
Message 4	11	Disturbance FCs in V mode			x	
Message 4	12	Leakage	x	x	x	
Message 4	13	Eeprom HW Defect wire breakage	x	x	x	
Message 4	14	Pump 1 Off (via display)	x	x	x	
Message 4	15	Pump 2 Off (via display)	x	x	x	

Table 13: Message 5

Message field 0x2005 48198	Bit	Message description	DOL 1-6	MCF 1-6	MCMF 1-6	Digital input
Message 5	0	Under voltage FC 4			x	
Message 5	1	Under voltage FC 5			x	
Message 5	2	Under voltage FC 6			x	
Message 5	3	Overload error FC 1			x	
Message 5	4	Overload error FC 2			x	
Message 5	5	Overload error FC 3			x	
Message 5	6	Overload error FC 4			x	
Message 5	7	Overload error FC 5			x	
Message 5	8	Overload error FC 6			x	
Message 5	9	Braking resistor FC 1			x	
Message 5	10	Braking resistor FC 2			x	
Message 5	11	Braking resistor FC 3			x	
Message 5	12	Braking resistor FC 4			x	
Message 5	13	Braking resistor FC 5			x	
Message 5	14	Braking resistor FC 6			x	
Message 5	15	Temperature error FC 1			x	

Table 14: Message 6

Message field 0x2006 48199	Bit	Message description	DOL 1-6	MCF 1-6	MCMF 1-6	Digital input
Message 6	0	Intern error FC 6			x	
Message 6	1	error main FC 1			x	
Message 6	2	error main FC 2			x	
Message 6	3	error main FC 3			x	
Message 6	4	error main FC 4			x	
Message 6	5	error main FC 5			x	
Message 6	6	error main FC 6			x	
Message 6	7	Over voltage FC 1			x	
Message 6	8	Over voltage FC 2			x	
Message 6	9	Over voltage FC 3			x	
Message 6	10	Over voltage FC 4			x	
Message 6	11	Over voltage FC 5			x	
Message 6	12	Over voltage FC 6			x	
Message 6	13	Under voltage FC 1			x	
Message 6	14	Under voltage FC 2			x	
Message 6	15	Under voltage FC 3			x	

Table 15: Message 7

Message field 0x2007 48200	Bit	Message description	DOL	MCF	MCMF	Digital input
Message 7	0	Short error FC 4			x^1	
Message 7	1	Short error FC 5			x^1	
Message 7	2	Short error FC 6			x^1	
Message 7	3	External power operation	x^1	x^1	x^1	
Message 7	4	Reducing Setpoint		x^1	x^1	
Message 7	5	Factory test	x^1	x^1	x^1	
Message 7	6	MPO Error			x^1	
Message 7	7	Switch off ASR		x^1	x^1	
Message 7	8	BC IO communication error	x^1	x^1	x^1	
Message 7	9	Fault rainwater pump 1	x^2	x^2	x^2	
Message 7	10	Fault rainwater pump 2	x^2	x^2	x^2	
Message 7	11	No rainwater	x^2	x^2	x^2	
Message 7	12	Fault potable water network	x^2	x^2	x^2	
Message 7	13	Starts/h rainwater pump 1	x^2	x^2	x^2	
Message 7	14	Starts/h rainwater pump 2	x^2	x^2	x^2	
Message 7	15	Potable water consumption	x^2	x^2	x^2	

1. 1-6 pumps
2. 1-3 pumps

Table 16: Message 8

Message field 0x2008 848201	Bit	Message description	DOL 1-6	MCF 1-6	MCMF 1-6	Digital input
Message 8	0	Temperature error FC 2			x	
Message 8	1	Temperature error FC 3			x	
Message 8	2	Temperature error FC 4			x	
Message 8	3	Temperature error FC 5			x	
Message 8	4	Temperature error FC 6			x	
Message 8	5	ATM error FC 1, only Danfoss			x	
Message 8	6	ATM error FC 2, only Danfoss			x	
Message 8	7	ATM error FC 3, only Danfoss			x	
Message 8	8	ATM error FC 4, only Danfoss			x	
Message 8	9	ATM error FC 5, only Danfoss			x	
Message 8	10	ATM error FC 6, only Danfoss			x	
Message 8	11	flushing	x	x	x	
Message 8	12	Valve opened often	x	x	x	
Message 8	13	Short error FC 1			x	
Message 8	14	Short error FC 2			x	
Message 8	15	Short error FC 3			x	

Table 17: Message 9

Message field 0x20F0 848233	Bit	Message description	DOL 1-6	MCF 1-6	MCMF 1-6	Digital input
Message 9	0	Reserve				
Message 9	1	Reserve				
Message 9	2	Reserve				
Message 9	3	Reserve				
Message 9	4	Reserve				
Message 9	5	Reserve				
Message 9	6	Reserve				
Message 9	7	Reserve				
Message 9	8	Reserve				
Message 9	9	Reserve				
Message 9	10	Reserve				
Message 9	11	Reserve				
Message 9	12	Reserve				
Message 9	13	Reserve				
Message 9	14	Reserve				
Message 9	15	Reserve				

Table 18: Message 10

Message field 0x20F1 848234	Bit	Message description	DOL 1-3	MCF 1-3	MCMF 1-3	Digital input
Message 10	0	Water changes	x	x	x	
Message 10	1	Forced water changes	x	x	x	
Message 10	2	Rainwater pump 1 manual OFF	x	x	x	
Message 10	3	Rainwater pump 2 manual OFF	x	x	x	
Message 10	4	Rainwater pump 1 manual ON	x	x	x	
Message 10	5	Rainwater pump 2 manual ON	x	x	x	
Message 10	6	Rainwater reservoir filling	x	x	x	
Message 10	7	Rainwater changes not completed	x	x	x	
Message 10	8	Reserve				
Message 10	9	Reserve				
Message 10	10	Reserve				
Message 10	11	Reserve				
Message 10	12	Reserve				
Message 10	13	Reserve				
Message 10	14	Reserve				
Message 10	15	Reserve				

ATTENTION

X = query / analysis is possible in corresponding variant
P1 = Pump 1 … P6 = Pump 6
Evaluation / query collective fault: Register 0x2001/0x2003/0x2005/0x2007/0x20F0/0x20F1
unequal to 0Run/Operating signal of individual pumps: bit representation in the register
0x201aMalfunctions of each pump must be requested variant-specific:
e.g. in DOL-variant only register 0x2001 Bit 11-16
e.g. in MCMF-variant Register 0x2001 Bit 11-16 and in addition all possible frequency converter faults
Remote acknowledgement can be executed with signal change 0 -> 1 in the register 0x2102.

8.4   Example

ATTENTION
The used software program to this example is: ModbusMat 1.1

Set communication parameters

Connect
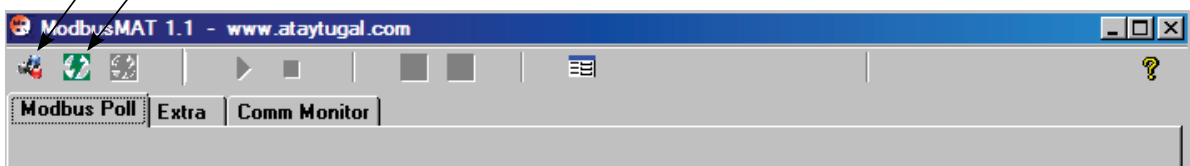
Figure 3: ModbusMat 1.1

8.4.1 Set communication parameters

COM1 depends on the used PC / Laptop. Baud rate depends on the baud rate set in Megacontrol 3-15-2-2. After setting the communication parameters click on "Close"
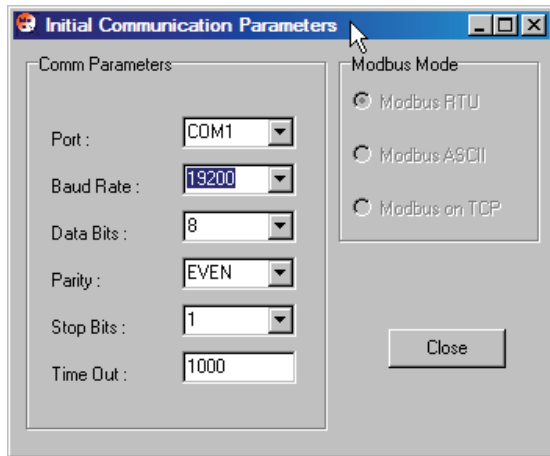

Figure 4: Set communication parameters
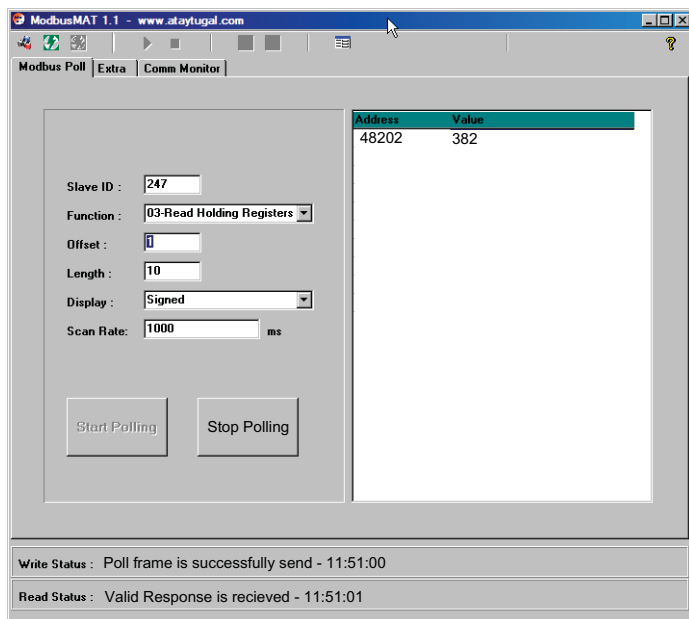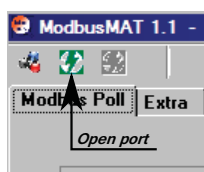
8.4.2 Retrieve system pressure

Figure 5: Set communication parameters

Register 2009 Hex => 8201 Dec +1 = 8202 => 48202

Slave ID depends on the setup slave address in the Megacontrol 3-15-2-1.
Fill in the offset without completing the 4 of the holding register. Click "Open port" and Click "Start Polling"

The next frame is sent to the Modbus-Module
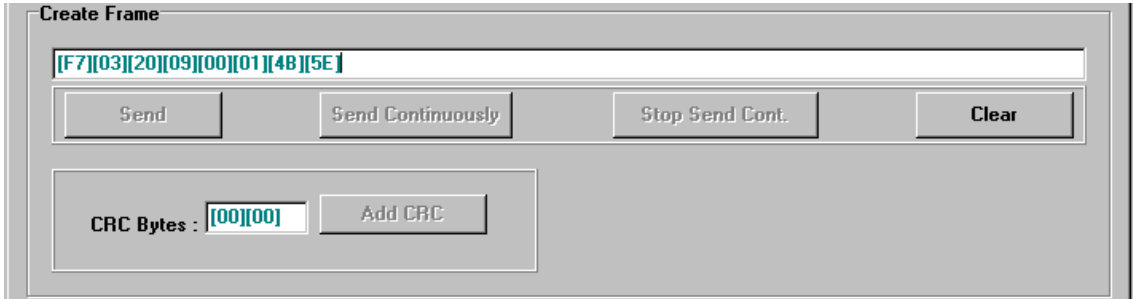
 Figure 6: Frame

Table 19: Description frame

Description	Value
Slave address 247	[F7]
Function 03-read holding register	[03]
Read register (e.g. 2009 system pressure)	[20][09]
Length register (16 bit is 1 register)	[00][01]
CRC (control bytes, added automatically)	[4B][5E]

8.4.3   Write required system pressure
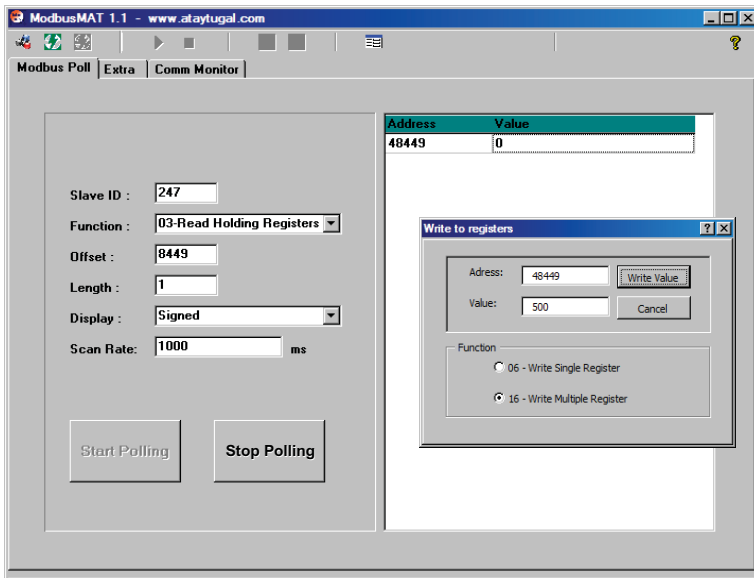
 Figure 7: Write the system pressure

Register 2100 Hex => 8448 Dec + 1 = 8449 => 48449

Slave ID depends on the setup slave address in the Megacontrol 3-15-2-1.
Fill in the offset without completing the 4 of the holding register. Click "Start Polling".
To write a new value to the Megacontrol double-click on change Value. A popup appears where the new value can be entered. Then click on "Write Value".

The next frame is sent to the Modbus-Module

Figure 8: Frame sent to the Modbus-Module

Table 20: Description frame

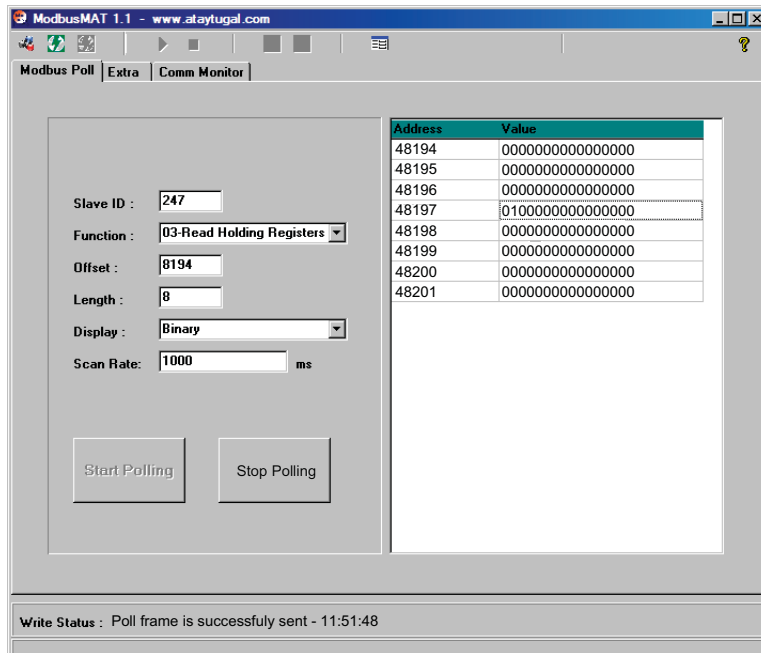| Description	Value
Slave address 247	[F7]
Function 10-write registers	[10]
The write register (e.g. 2100 system pressure)	[21][00]
Length register (16 bit is 1 register)	[00][01]
Number of bytes (16 bit = 2 bytes)	[02]
The write value (e.g. 500 = 01F4 Hex)	[01][F4]
CRC (control bytes, added automatically)	[B8][E1]

8.4.4 Read messages

Figure 9: Read messages

Slave ID depends on the setup slave address in the Megacontrol 3-15-2-1.
Fill in the offset without completing the 4 of the holding register. Click "Start Polling".

The last bit is bit 0, so 48194 = 0000000000000001 means Temperature failure high pomp 6 (see parameter list)
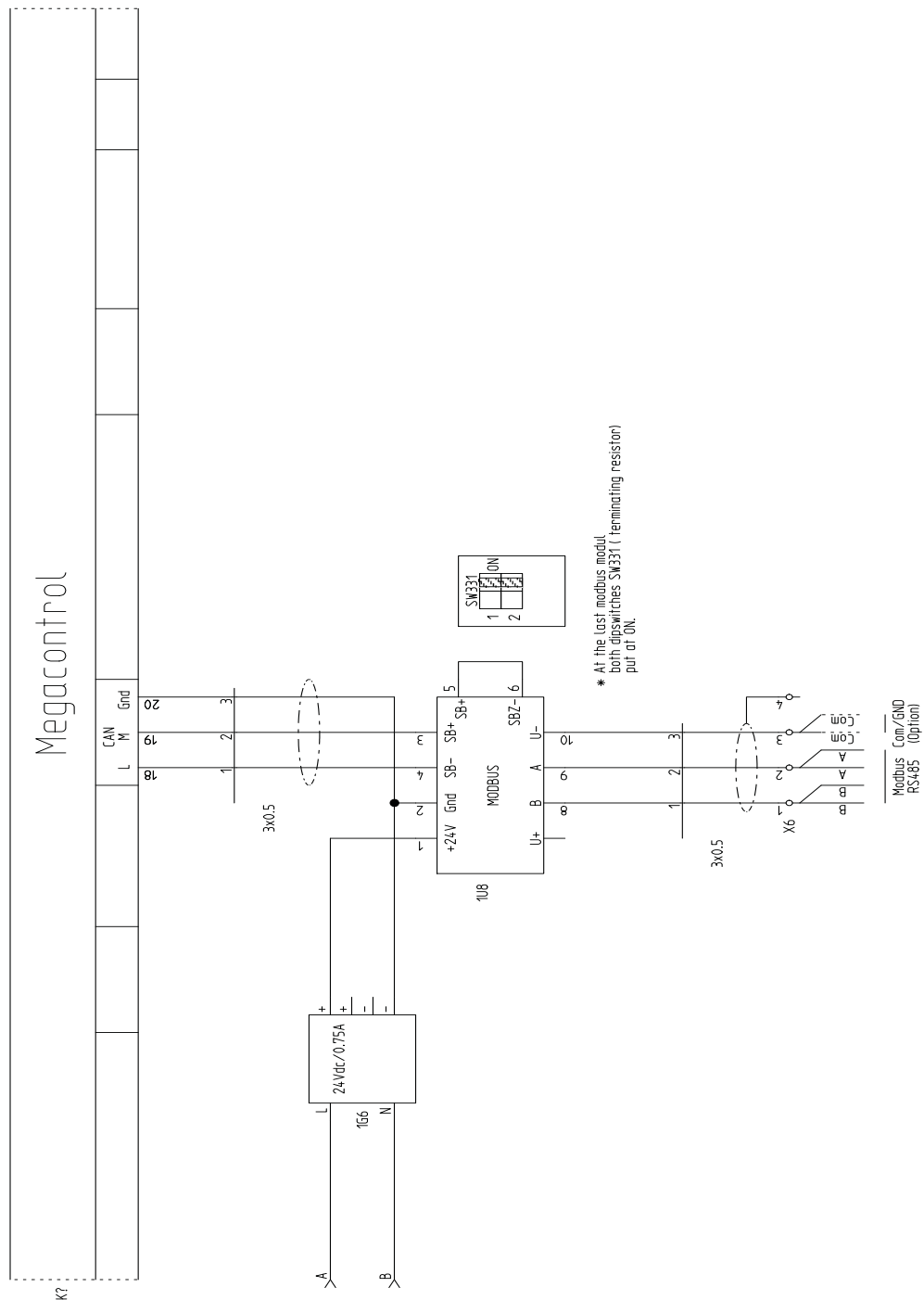
9 Annexes

9.1 Modbus / megacontrol diagram

Figure 10: Modbus / megacontrol diagram

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dp pumps

Original instructions

Can be changed without prior notice