



More than **sensors + automation**



Welcome

Introduction and startup JUMO dTRANS pH02

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Content

- Startup of the measuring transmitter function
- Configuration via the menu basic setting
- Concept of operations
- User data
- Controller function
- Kind of the measured value display
- Flow measuring
- Data logger
- Hold operation
- Manual operation
- Hardware

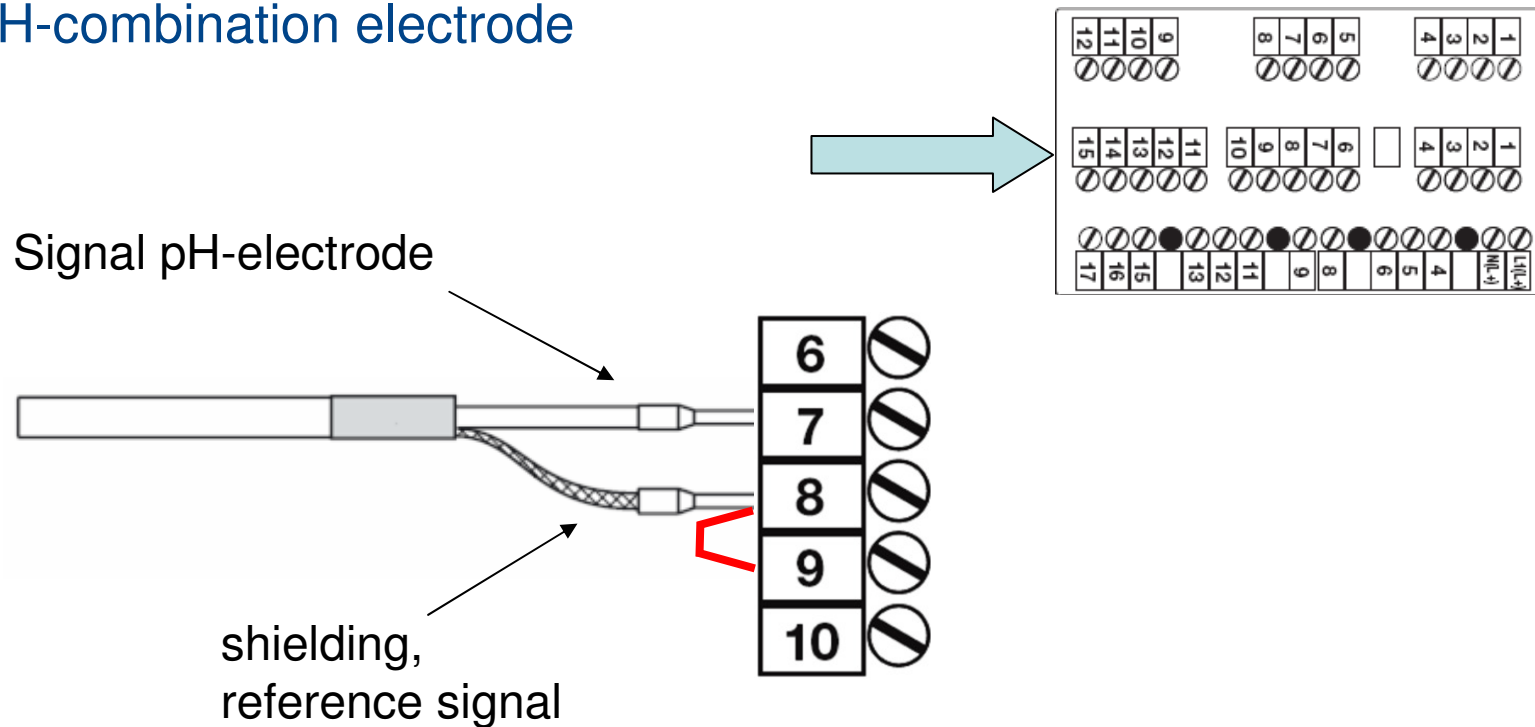


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Startup of the measuring transmitter function



Wiring pH-combination electrode

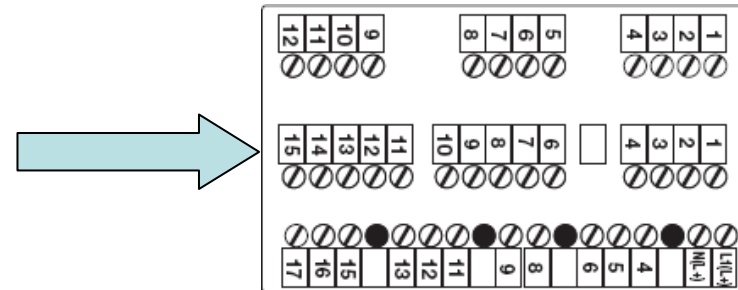


- Normally, the connection of the pH-electrode is effected asymmetrically, in this standard-case the included short circuit bridge has to be mounted



Wiring

Temperature sensor

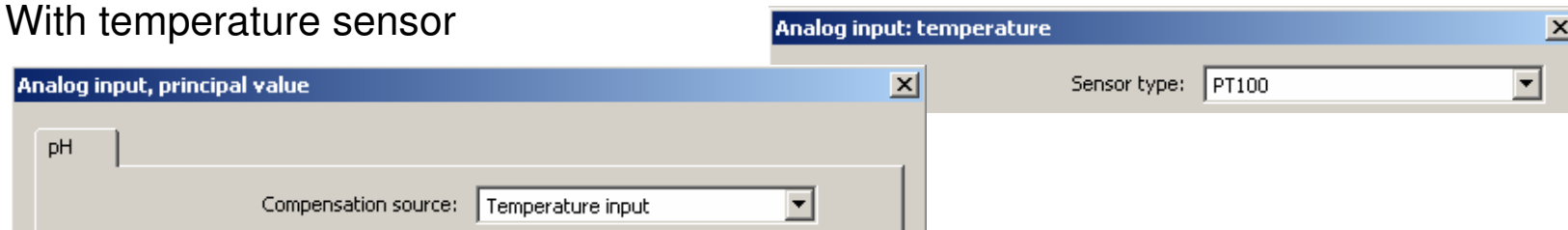


Standard signal input for voltage 0(2) - 10 V or 10 - 0(2) V		1 4
Temperature sensor in a two-wire circuit Pt100 or Pt1000		2 3 4
Temperature sensor in a three-wire circuit Pt100 or Pt1000		2 3 4

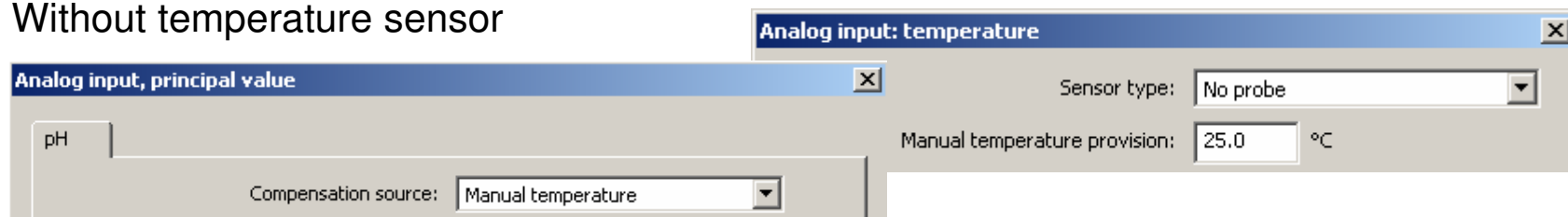
Configuration

with/ without temperature input

- With temperature sensor

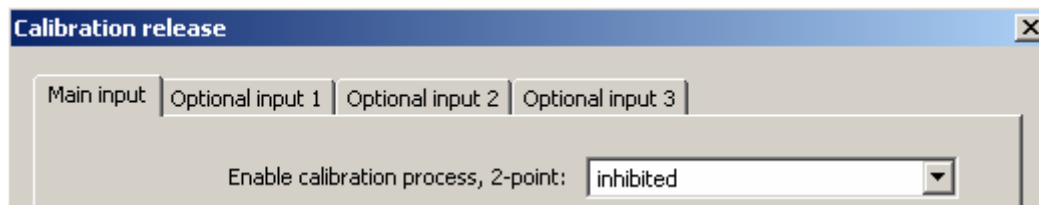


- Without temperature sensor



Configuration

Calibration release



Operation in the measuring mode

Normal display

```

11:26:17
-----
MEASURING    7.00
              pH
              17.7°C
    
```



Main value/ temperature input

```

11:26:34
-----
MAIN VAL.    7.00 pH
TEMP. INF.   17.7 °C
    
```

MIN/MAX main input

```

MIN/MAX MAIN INF.
1:    6.00    7.00 pH
T:    17.7    25.0 °C
    
```





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Configuration via the menu basic setting

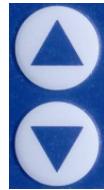


Configuration via the menu basic setting

Measuring mode



→
2s



Administrator level



Basic settings

```
BASIC SETTING
SENSOR
PH STANDARD

BASIC SETTING
TEMP. -COMP. SOURCE
TEMPERATURE INPUT

BASIC SETTING
CONTROL REFERENCE

BASIC SETTING
CONTROL GLASS
OFF

BASIC SETTING
SUPPLY FREQUENCY
50 Hz

NEW DEVICE
INITIALISATION ?
```



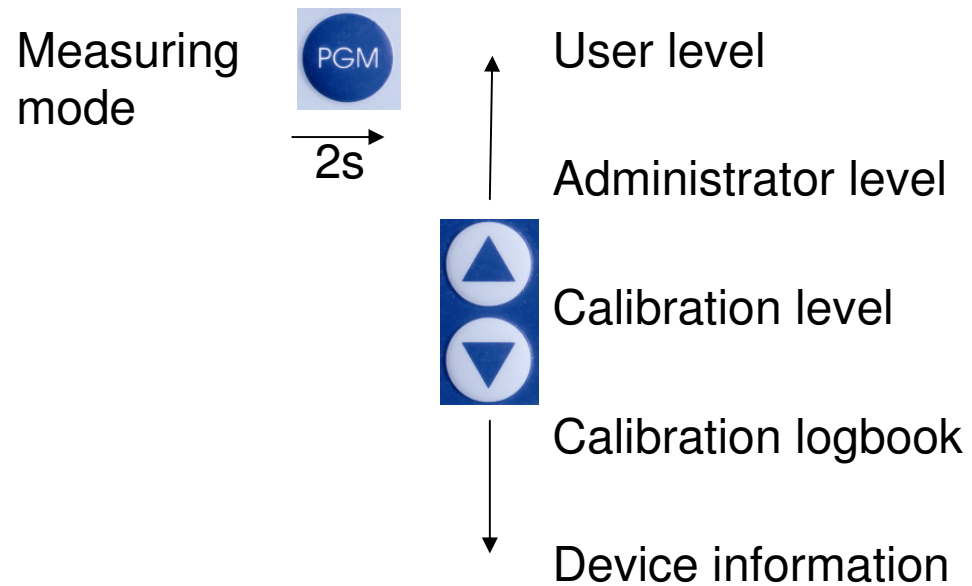


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Concept of operations



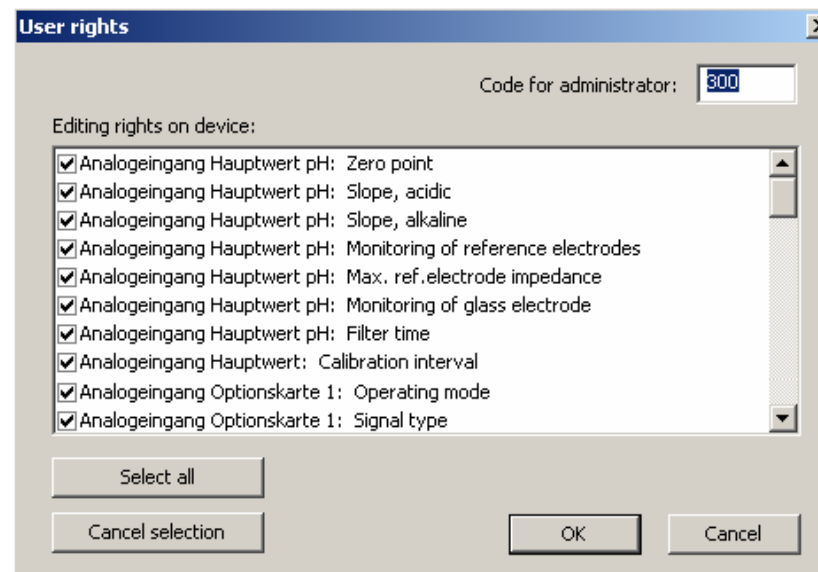
Concept of operations



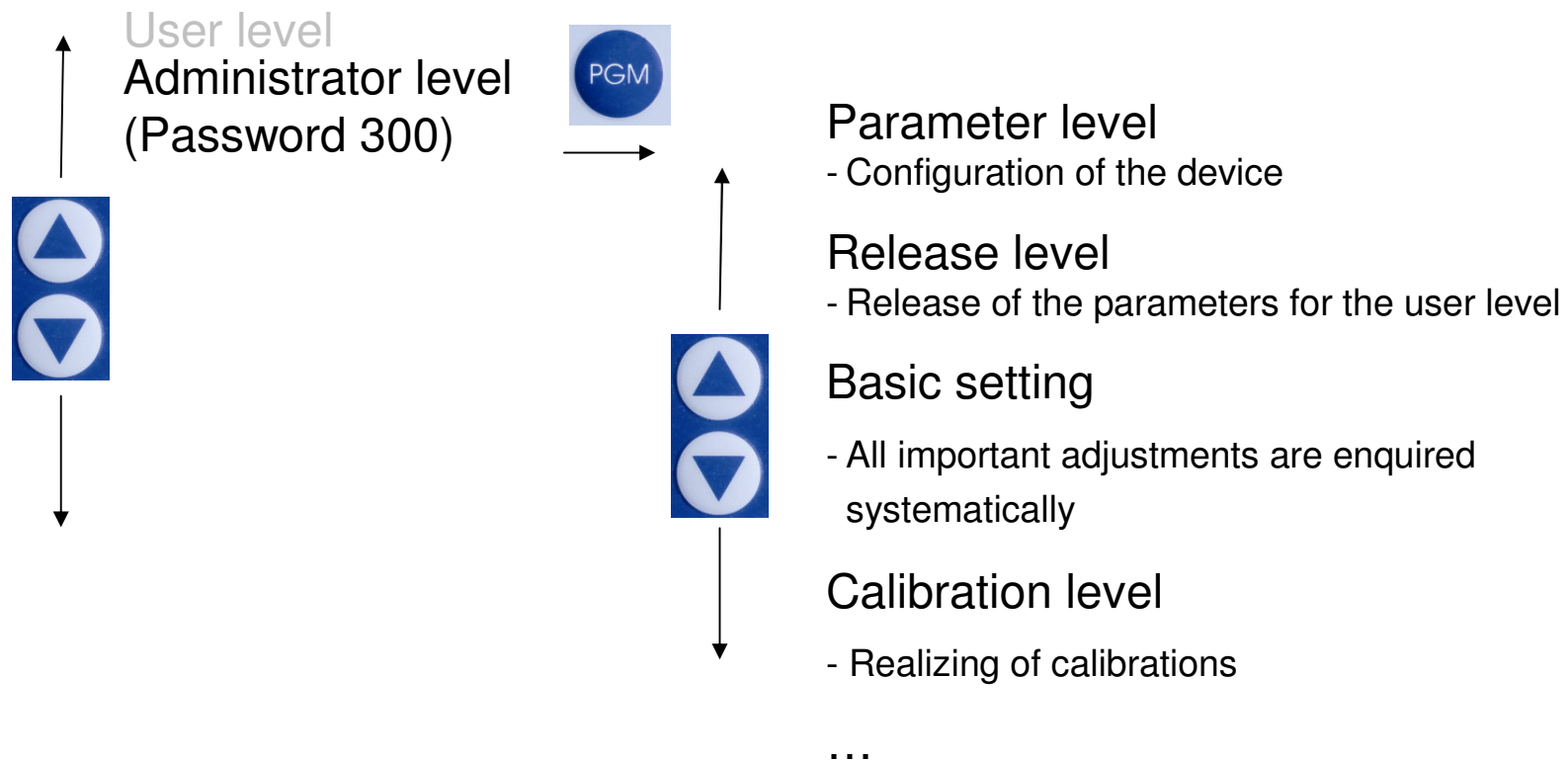
Concept of operations

User level

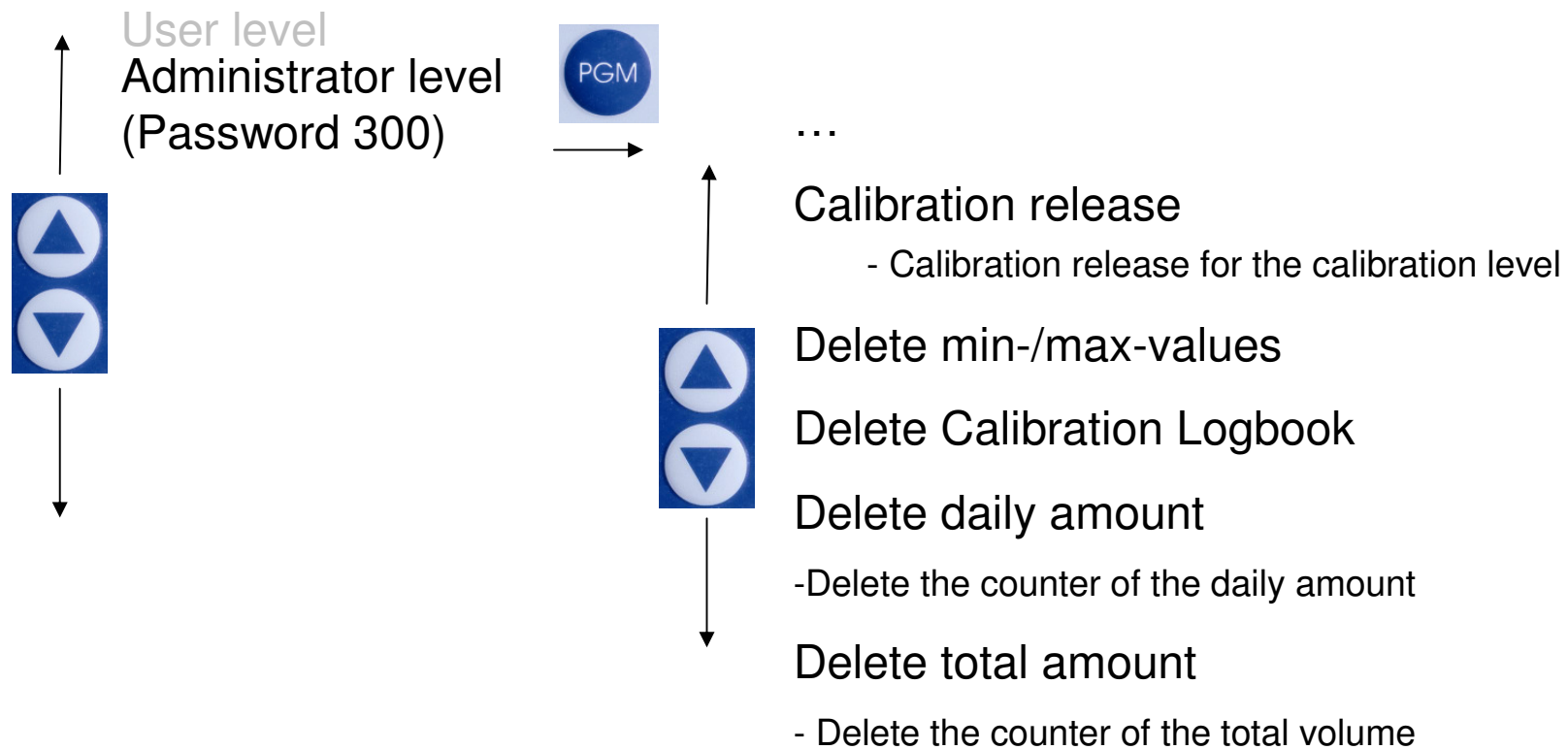
- Configuration of the device
- Configuration only by free given parameters
- Release via administrator level (PW300) -> release level or via Setup-program:



Concept of operations



Concept of operations



Structure User-, Parameter- & Release Level

- Input pH/redox
- Input temperature
- Option inputs
 - Analogue input 1, 2, 3
- Binary inputs
 - Binary input 1, 2
- Controller
 - Controller 1
 - set of parameters 1, 2
 - configuration
 - Controller 2
 - set of parameters 1, 2
 - configuration
 - Controller special function
- Limit value monitoring
 - Limit value 1, 2, 3
- Binary outputs
 - Binary output 1, 2, 3, ... 8
- Analogue output
 - Analogue output 1, 2, 3
- Interface
- Wash timer
- Data logger
- Display



Concept of operations

User level

Administrator level

Calibration level

- Calibration with calibration procedures, that were released via
- Administrator level (PW300) -> Calibration release or
- Setupprogram:



Calibration release X

Main input | Optional input 1 | Optional input 2 | Optional input 3

Enable calibration process, zero point:

Release, calibr. procedure, end point:

Enable calibration process, 2-point:

Enable calibration process, 3-point:



Concept of operations

Administrator level

Calibration level

Calibration Logbook

- Listing of the results of the last five calibrations



Concept of operations

Calibration level

Calibration Logbook

Device information

- Overview of the Hardware-equipment and of the adjustments of the inputs
(useful e.g for fault finding).





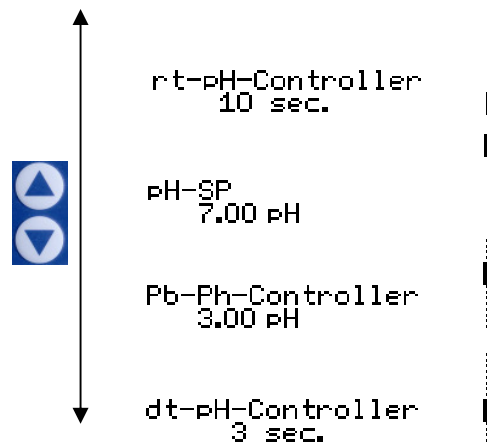
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User data



User data

- The settings of 8 parameters is easily possible with the help of the menu user data :



User data

- Adjustments via the configuration program:

Name	Parameters
1 pH-SP	Regler 1 Parametersatz 1: Set point value 1
2 Pb-Ph-Controller	Regler 1 Parametersatz 1: Proportional band
3 dt-pH-Controller	Regler 1 Parametersatz 1: Derivative time
4 rt-pH-Controller	Regler 1 Parametersatz 1: Reset time
5	Switched off
6	Switched off
7	Switched off
8	Switched off





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Controller function

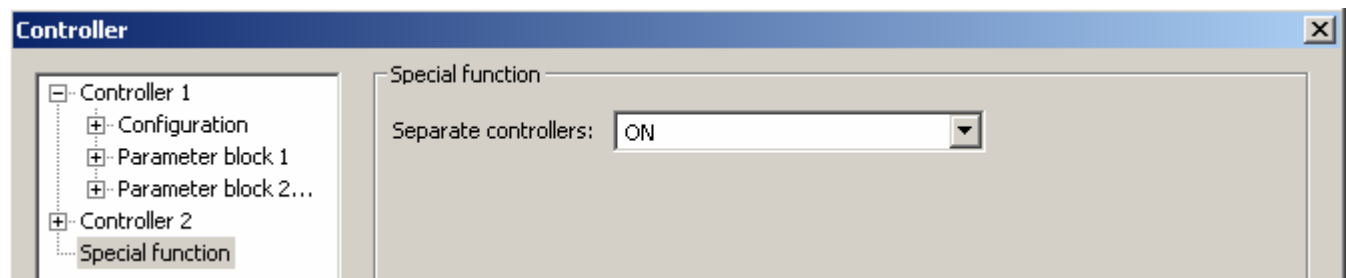


Controller function

- Realization of 2 controllers as:

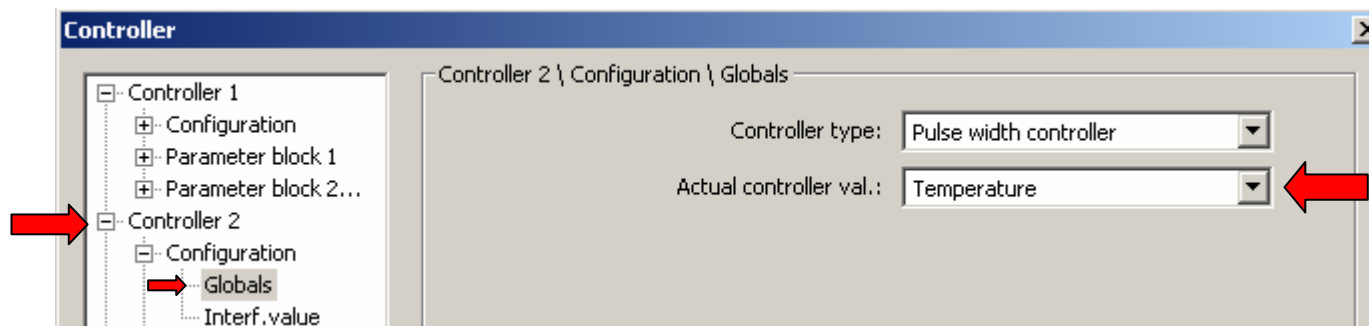
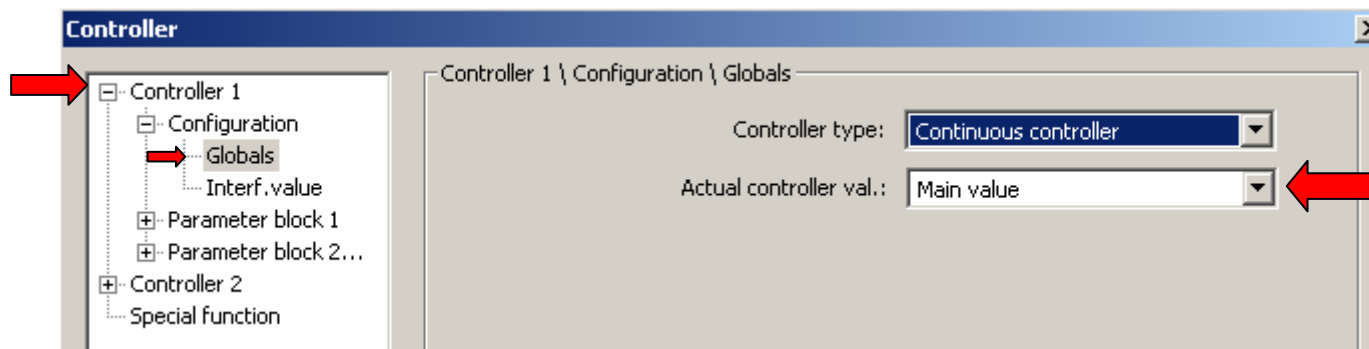
Limit controller
Pulse width controller
Pulse frequency controller
Continuous controller
Modulating controller

- Also separated controllers:



Controller function

- Via the setting „Seperate Controllers: ON“ a 2-channel-controller can be realized, for example for pH-value and temperature:



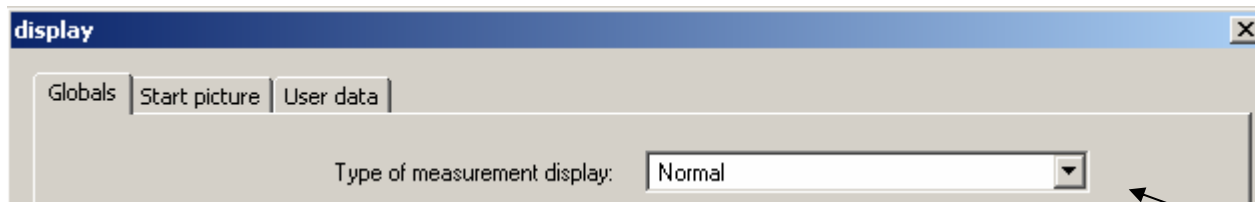


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Kind of the measured value display



Kind of the standard display



- Normal
- Trend
- Bargraph
- Trend curve
- Large display
- 3 measured values

13:37:16
 MEASURING 7.09
 17.1°C pH

Trend display

13:19:16
 24.5°C 7.73
 pH

Bargraph display

13:20:33
 0.00 7.00 pH 16.00

Trend curve display

16.00
 6.00
 0.00

Large display

5.04

3 Measured display

13:58:02
 MAIN VAL. 6.00 pH
 FLOW RATE 3.44 l/s
 TEMP. INP. 24.8 °C

Time

13:28 27



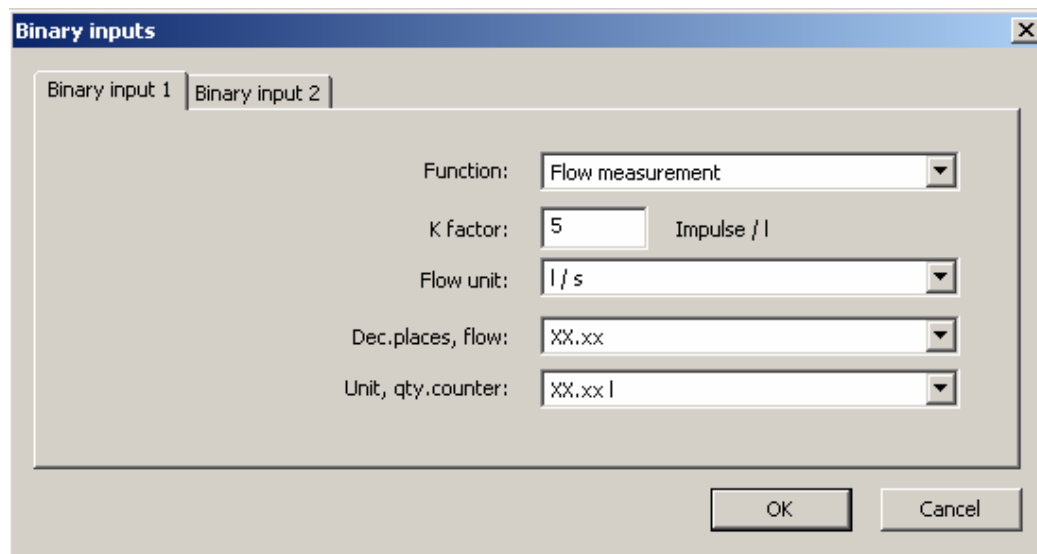


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Flow measuring



Flow measuring



Request in the measuring mode

```

14:04:23
-----
FLOW RATE   3.0 l/s
VOLUME      29.00 l
TOTAL QU.   35.40 l
    
```

- Resetting of the meter readings (partial quantity or total) via:
 - Binary input
 - Device (Administrator level -> delete partial or quantity)
- Binary input 1 (max. 300 Hz) as well as binary input 2 (max. 2 kHz) can be used, max. one binary input is used





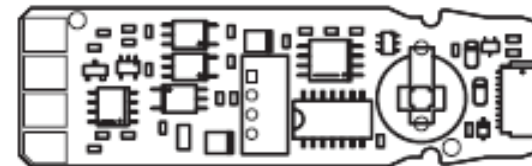
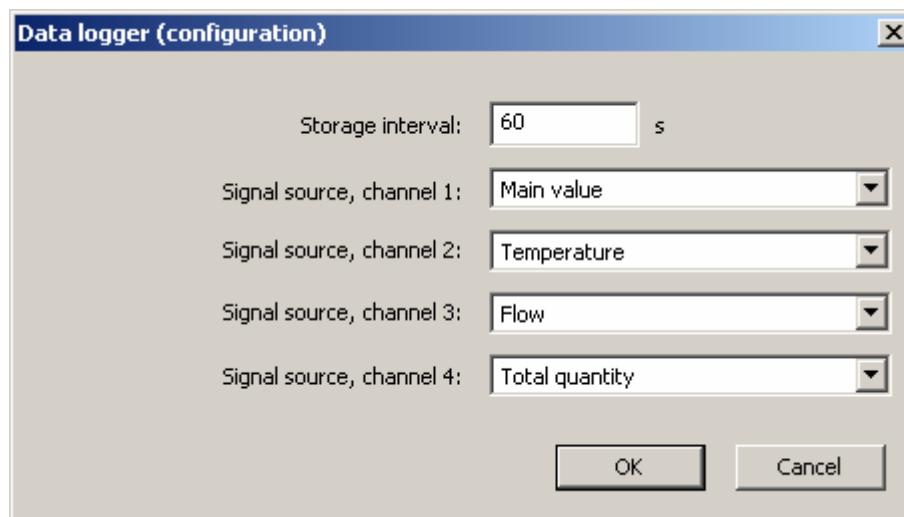
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Data logger



Data logger

- Recording of four variables in the device
- Realisation via a optional card



- Readout of the registered data via the RS485-Interface of the optional card or with the help of the PC-Interface



Data logger – Readout from the device

The screenshot shows the JUMO dTRANS pH / CR 02 (Unicode) - [Setup2 - geändert -] window. A dialog box titled "Selection of data to be transmitted" is open, with "Data logger" checked. The main window displays a table of data points. A red arrow points to the "Datenlogger" icon in the left sidebar.

	Einheit 1	Analogwert 2	Einheit 2	Analogwert 3	Einheit 3	Analogwert 4	Einheit 4	Binärausgang 1	Binärausgang 2	Binärausgang 3
1	pH	26.99569	°C	42.99999	I	49.39999	I	0	0	0
2	pH	26.99603	°C	42.99999	I	49.39999	I	0	0	0
3	pH	26.99632	°C	42.99999	I	49.39999	I	0	0	0
4	pH	26.99636	°C	42.99999	I	49.39999	I	0	0	0
5	pH	26.99574	°C	42.99999	I	49.39999	I	0	0	0
6	pH	26.99438	°C	42.99999	I	49.39999	I	0	0	0
7	pH	26.99438	°C	42.99999	I	49.39999	I	0	0	0

Verbindungsstatus: Verbunden mit: JUMO dTRANS pH/CR 02 - dTRANS 02, Adr.: 255, USB <-> Serial (LID: 00000041)
Benutzer: Spezialist



Data logger – Demonstration in table view

- Copy of a table part and processing in a spreadsheet program



JUMO dTRANS pH / CR 02 (Unicode) - [Setup2.268]

Gerätekeennung:

	Datum	Zeit	Analogwert 1	Einheit 1	Analogwert 2	Einheit 2	Analogwert 3	Einheit 3	Analogwert 4	Einheit 4	Binärausgang 1	Binärausgang 2	Binärausgang 3
1	15.11.2011	15:51:26	6.998128	pH	26.99569	°C	42.99999	l	49.39999	l	0	0	0
2	15.11.2011	15:51:25	6.998128	pH	26.99603	°C	42.99999	l	49.39999	l	0	0	0
3	15.11.2011	15:51:24	6.998129	pH	26.99632	°C	42.99999	l	49.39999	l	0	0	0
4	15.11.2011	15:51:23	6.998129	pH	26.99636	°C	42.99999	l	49.39999	l	0	0	0
5	15.11.2011	15:51:22	6.998127	pH	26.99574	°C	42.99999	l	49.39999	l	0	0	0
6	15.11.2011	15:51:21	6.998124	pH	26.99438	°C	42.99999	l	49.39999	l	0	0	0
7	15.11.2011	15:51:20	6.998114	pH	26.99438	°C	42.99999	l	49.3	l	0	0	0
8	15.11.2011	15:51:19	6.998093	pH	26.99438	°C	42.99999	l	49.3	l	0	0	0
9	15.11.2011	15:51:18	6.998051	pH	26.99438	°C	42.99999	l	49.3	l	0	0	0
10	15.11.2011	15:51:17	6.997972	pH	26.99438	°C	42.99999	l	49.3	l	0	0	0
11	15.11.2011	15:51:16	6.998041	pH	26.99438	°C	42.99999	l	49.3	l	0	0	0
12	15.11.2011	15:51:15	6.99821	pH	26.99438	°C	42.99999	l	49.3	l	0	0	0

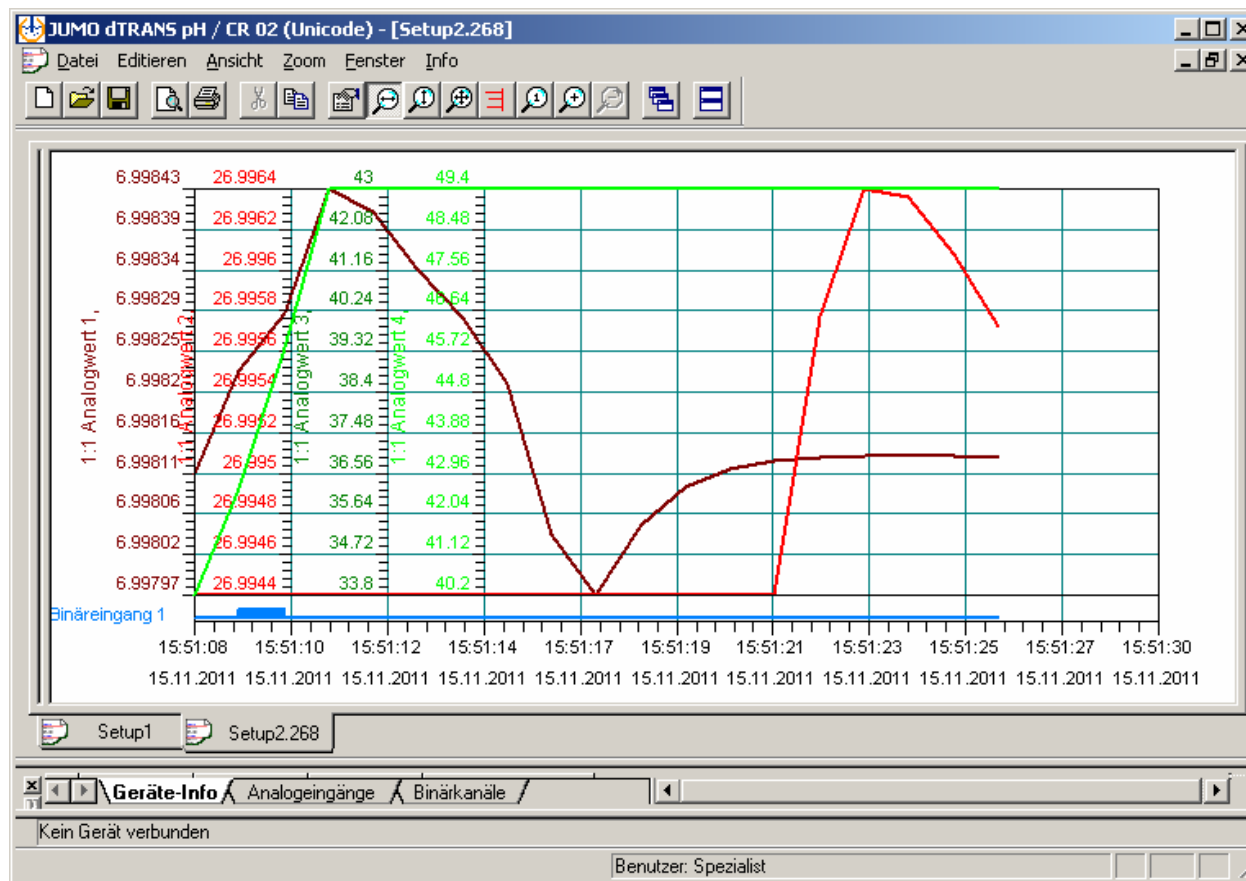
Context menu: Ausschneiden, Kopieren, Einfügen, Drucken

Kein Gerät verbunden

Benutzer: Spezialist



Data logger – Demonstration in graphics







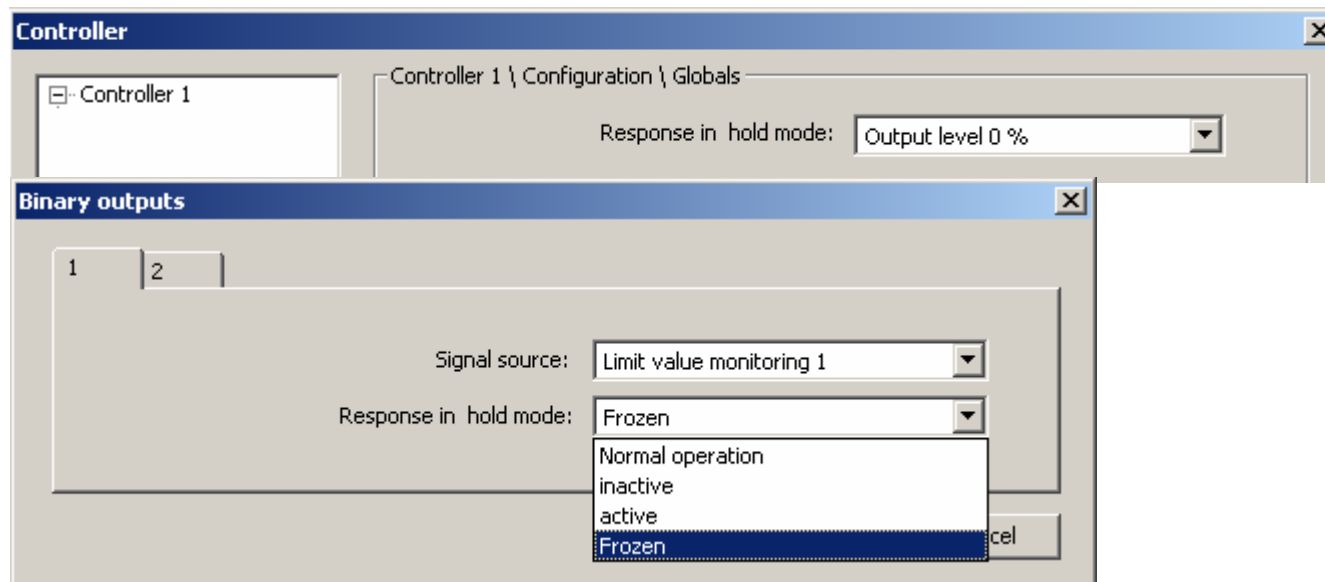
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Hold Operation

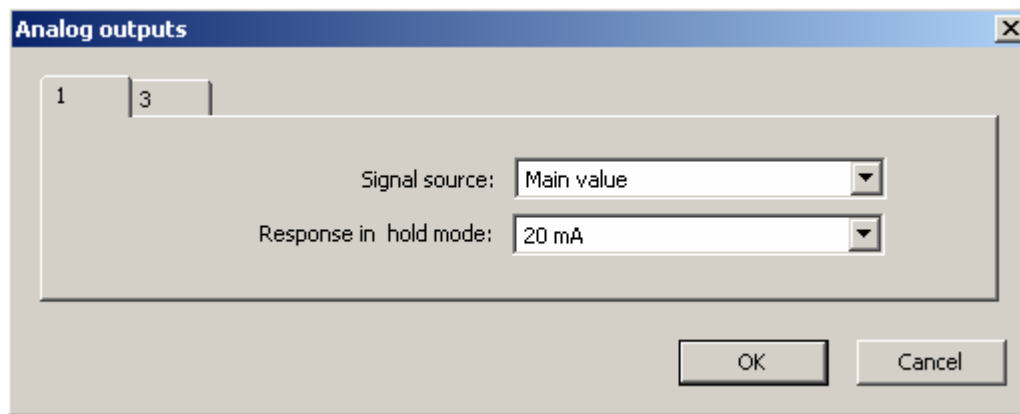


Hold Operation

- Activation via  +  (more than 3 s)
- The outputs behave according to the presets:



Hold Operation





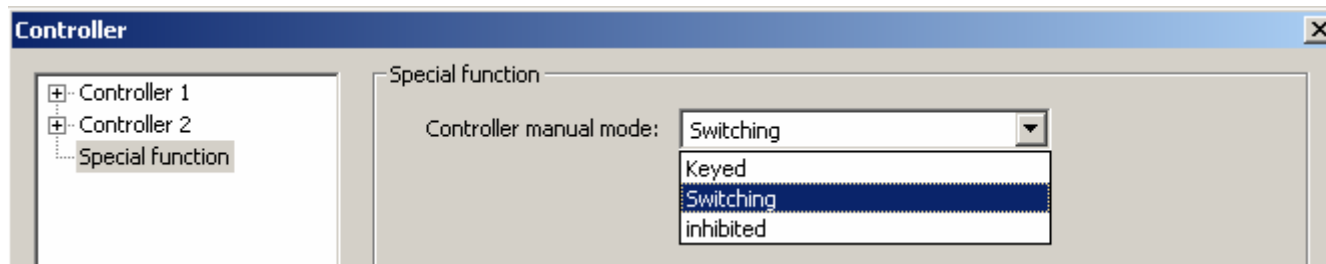
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Manual Operation



Manual Operation

- If required the manual operation has to be unlocked for the controller:



- Activation via  +  (shorter than 2 s)

	HAND
STELLGRAD	
REGLER 1	0 %
REGLER 2	0 %

Driving the output of controller 1  and controller 2 



Manual operation

- Binary and analogue outputs can be set in a defined status
- Binary outputs:
user level -> binary outputs -> binary output x -> manual operation activ
- Analogue outputs:
user level -> analogue outputs -> analogue output x -> simulation value
user level -> analogue outputs -> analogue output x -> simulation ON
- Manual overview binary outputs/ analogue outputs in the measuring mode

```

HANDÜBERSICHT          MANUAL OVERVIEW
ANALOGAUSGANG 1 HAND  BINARY OUTPUTS
ANALOGAUSGANG 2 ---- K1 @ K2 @ K3 0 K4 0
ANALOGAUSGANG 3 ---- K5 0 K6 0 K7 0 K8 0
  
```



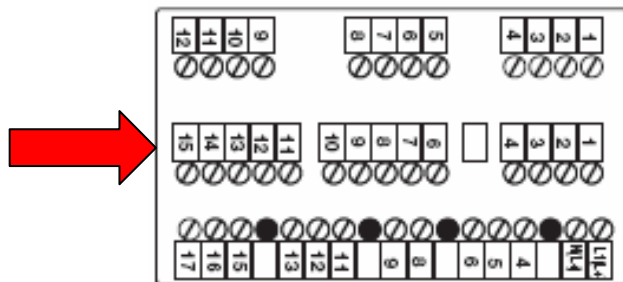


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Hardware



Hardware

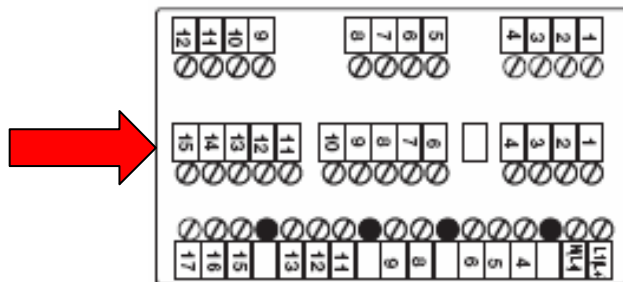


Function	Symbol	Terminal
Power supply for ISFET sensor DC +/- 4.85 V GND	 	11 10 15
Standard signal input for electrical current 0(4) - 20 mA	 	3 4

Standard signal input for voltage 0(2) - 10 V or 10 - 0(2) V	 	1 4
Temperature sensor in a two-wire circuit Pt100 or Pt1000		2 3 4
Temperature sensor in a three-wire circuit Pt100 or Pt1000		2 3 4



Hardware

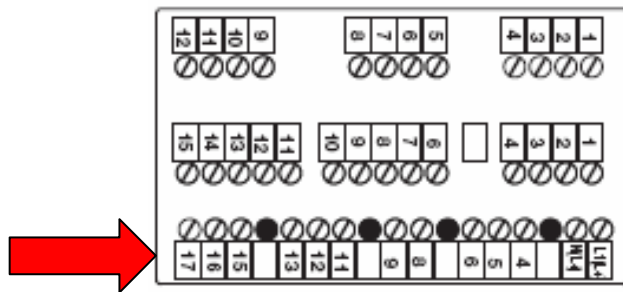


Glass/metal electrode		7
Reference electrode		8
Liquid potential (LP) With asymmetrical connection, bridge between terminal 8 and 9 With symmetrical connection, LP on terminal 9		9

Binary inputs		
Binary input 1		12+ 14
Binary input 2		13+ 14



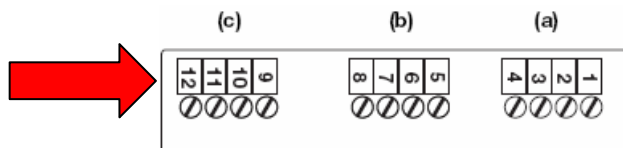
Hardware



Supply voltage for external 2-wire transmitter		
24 V DC (-15 / +20%)		8 L + 9 L -
Relay 1		
Switching output K1 (floating)		11 12 13
Relay 2		
Switching output K2 (floating)		15 16 17
Power supply:	AC 110 - 240 V	1 L1 (L+)
Power supply:	AC/DC 20 - 30 V	2 N (L-)
n.c.		4 5 6



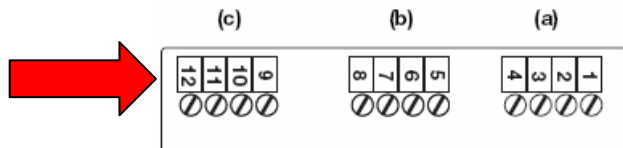
Hardware – Option boards – Analogue Input



Temperature sensor in a two-wire circuit Pt100 or Pt1000		2 4	6 8	10 12
Temperature sensor in a three-wire circuit Pt100 or Pt1000		2 3 4	6 7 8	10 11 12
Resistance transmitter		2 3 4	6 7 8	10 11 12
Electrical current		3 4	7 8	11 12
Voltage 0(2) - 10 V		1 2	5 6	9 10
Voltage 0 - 1 V		2 3	6 7	10 11



Hardware – Option boards – Analogue Input



- Via the option Analog input (4 .. 20 mA) more than 3 pH rod electrode are connected: :

Electrical current	—○ +	3	7	11
	—○ -	4	8	12

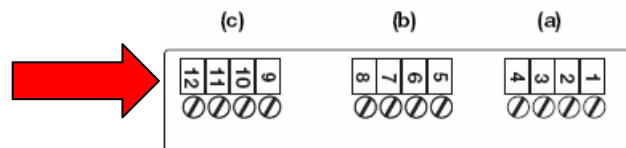
- The signal from the rod electrode must be provided by a transmitter (4 .. 20 mA):



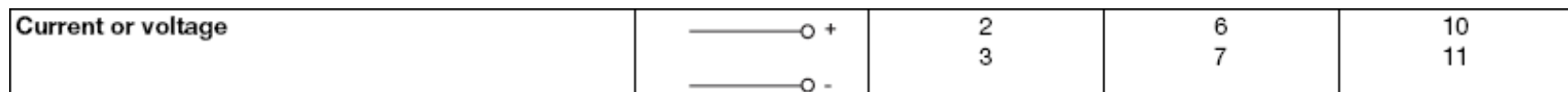
4...20 mA=
-1000...1000 mV



Hardware – Option boards – Analogue Output

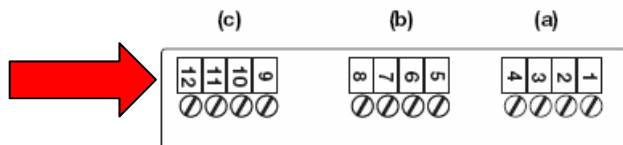


- Variables (pH-Value, temperature etc.) can be output as a current signal or voltage signal 0/2...10 or 0/4...20 mA



Hardware – Option boards – Interfaces

Modbus and PROFIBUS-DP

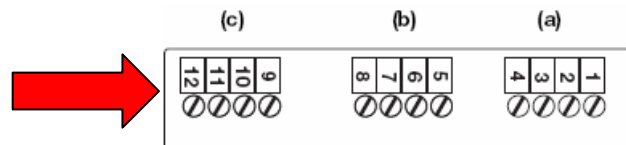


Modbus interface				
RS422	○ RxD+	1	5	9
	○ RxD-	2	6	10
	○ TxD+	3	7	11
	○ TxD-	4	8	12
RS485	○ RxD/TxD+	3	7	11
	○ RxD/TxD-	4	8	12

Profibus interface				
○ VP(+5V)	1	5	9	
○ RxD/TxD-P(B)	2	6	10	
○ RxD/TxD-N(A)	3	7	11	
○ DGND	4	8	12	



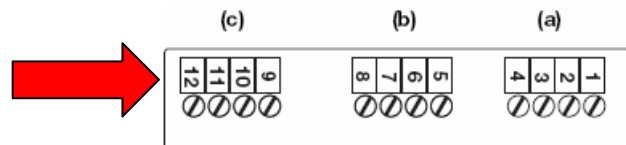
Hardware – Option boards - Data logger With RS485



RS485	—○ RxD/TxD+	2	6	10
	—○ RxD/TxD-	3	7	11



Hardware – Option boards – Relay and Triac



Relay (1x changeover)				
		K3	1 2 3	K4 5 6 7 K5 9 10 11
Relay (2x NO, common pin)				
		K3	1 2 3	K6 3 K5 9 10 K8 11
Triac (1 A)				
		K3	2 3	K4 6 7 K5 10 11



Hardware – Option boards

Photo MOS relay and Power supply for ISFET sensor

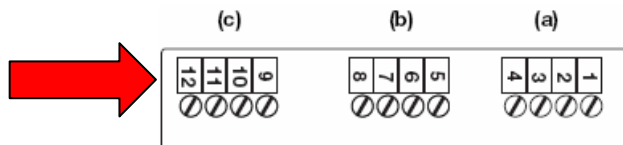


Photo MOS relay (0.2 A)					
		K3	1 2	K4 5 6	K5 9 10
		K6	3 4	K7 7 8	K8 11 12
Power supply for ISFET sensor					
DC +/- 5 V		1	5	9	
GND		2	6	10	
		3	7	11	
		4	8	12	
DC +12 V		1	5	9	
GND		2	6	10	





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Further Functions



Manual Operation

- Wash-Timer
- Limit value monitoring
- Mathematics/ Logic





Thank you for your attention.
