

# Conductivity meter

## Type M4036

- ✓ 3.5" IPS touchscreen
- ✓ 2 x current output 0/4-20 mA
- ✓ 3 x changeover contacts (max. 5)
- ✓ 20-253VAC/DC wide range power supply
- ✓ Alarm function
- ✓ Modbus RTU via RS485 interface
- ✓ Data recording USB
- ✓ Easily configurable
- ✓ Galvanically isolated
- ✓ Front IP64 protected



### Typical application area

- Routine environmental monitoring and control functions
- Water, waste water, pure water treatment, PEM electrolyzers for hydrogen production
- Chemical process monitoring

### Technical description

The very compact conductivity meter type M4036 was developed for applications for automatic dosing or monitoring. The 3.5 inch IPS display with increased brightness allows reading of the measured value even in direct sunlight. The capacitive touch screen allows intuitive and fluid operation.

The two-point controller consists of two potential-free limit contacts which can be electronically adjusted over the entire range. The limit value contacts can be used to control alarm devices, dosing valves and dosing pumps, among other things. The current measured value, the temperature, as well as the device status are continuously displayed.

The instrument is supplied with a galvanically isolated wide range power supply from 20 to 253VAC/DC and needs as a pure measuring instrument a conductivity probe to be ready for operation. Commercially available probes with K-factors 0.01, 0.1, 1.0 and 10.0 cover a dynamic range from 1 $\mu$ S to 200mS (example: M8836S). The cable length of the probe is automatically compensated internally and does not influence the measurement signal.

Temperature compensation is performed either manually or by an external Pt-100 temperature sensor. A defective Pt-100 sensor or a broken wire is immediately indicated and triggers an alarm. The conditions for triggering an alarm can be defined.

All instrument settings can be protected by means of access codes. A USB stick can be used to automatically record the measured values. The device also has two freely programmable, galvanically isolated signal outputs.

## Technical data

Measuring ranges:	0...2.000µS 0...20.00µS 0...200.0µS 0...2.000mS 0...20.00mS 0...200.0mS	K = 0.1, K = 0.01 K = 10.0, K = 1.00, K = 0.1 K = 0.01 K = 10.0, K = 1.00, K = 0.1 K = 10.0, K = 1.00, K = 0.1 K = 10.0, K = 1.00 K = 10.0
Conductivity measurement:	direct connection to terminals	
-Slope adjustment:	0.00%/°C to 8.00%/°C (reference temperature 25°C)	
-Measurement frequencies:	between 80Hz and 10kHz	
- Influence line capacity:	automatic compensation up to a max. capacity of 10nF	
- Intrinsic conductivity of water:	automatically compensated	
Accuracy typical:	0.5% at 23°C ambient temperature	
-Reproducibility:	0.1%	
-Temperature coefficient:	Zero drift: 30ppM/°C , gain drift: 25 ppM/°C	
-Long-term stability:	±0.15% after 3 months	
Display:	sunlight readable 3.5" IPS graphic display, 320x240 pixels	
-Resolution:	1 Digit	
-Display range:	0...2150 digit	
Working temperature range:	-5°C to +45°C, higher Temperatures can be ordered optionally	
Max. Humidity:	95%, non-condensing	
Temperature input:	By means of PT-100 sensor 3-wire technology or manually	
- PT-100 range:	-5.0 to 120.0°C	
- PT-100 transmitter Accuracy:	0.3°C	
Current output:	2 outputs, 0 to 20mA, galvanically isolated, freely adjustable to conductivity or temperature, common reference, in case of alarm 3.6mA/22mA/off programmable. in hold mode: hold/min/max/off programmable	
-Max. Load:	500Ω	
-Output impedance:	Type. > 1MΩ	
Relay contacts:	3 relays, alarm contact included	
-Output:	potential-free changeover contacts, max. 5A, continuous 2A at 230V	
-Mode:	automatic or manual	
-Limits:	freely adjustable to conductivity / temperature or other signals	
-Hysteresis:	5-200 digits adjustable	
-Delay:	0-3600s On and/or off delay	
-Minimum switch-on time:	0-10.00s	
-Display labeling:	4 characters	
-Hold mode:	active/inactive/off adjustable	
Alarm:	2 limit values adjustable, wire break at PT-100, wire break conductivity electrode, warning when USB disk full, pump runtime monitoring of switch contact 1 & 2, manual operation monitoring, alarm relay contact can be acknowledged on the display, behavior in hold mode active/inactive/off adjustable	
Digital interface:	RS-485, Modbus RTU protocol (standard: 38'400, 8N1)	
USB:	Logger, recording period (1-7200s)	

Further features	-16 characters available for labeling on the main screen -hold function of the current outputs/relays controlled by external normally open contact -settings can be copied from device to device via USB stick -firmware updates via USB stick -device settings can be blocked with a 4-digit access code.
Supply:	Wide range power supply: 20 to 253VAC or DC
Power consumption:	4.0W to 7.0W at 230VAC
CE conformity:	fulfilled
Connection type:	Connector terminals: 2x 3 pin, 1x 6 pin, 1x 8 pin, 1x 9 pin, 1x 8pin 1x USB-A connector When 5 relay contacts are used, an additional 1x 8Pol plug terminal is added
Mounting:	2 quick release fasteners
Weight:	330g
Protection class:	Front IP64 protected
Warranty:	2 years
Options	-additional 2 relay contacts (5 relay contacts with expansion card) -IoT gateway module for remote monitoring and alarming via LTE network (more information on request).

### Part numbers / Order numbers

Item number	Description
M4036	Conductivity meter
-option GW	Additional relay contacts 3/4
-option Modbus Master	Modbus master for M3836 conductivity transmitter

### Available probes

Type	M8836S-0.01	M8836S
Area	K = 0.01, 0...20 $\mu$ S	K = 1.0, 0...2000 $\mu$ S
Pt-100	Yes	Yes
Material	Chrome steel	PVDF



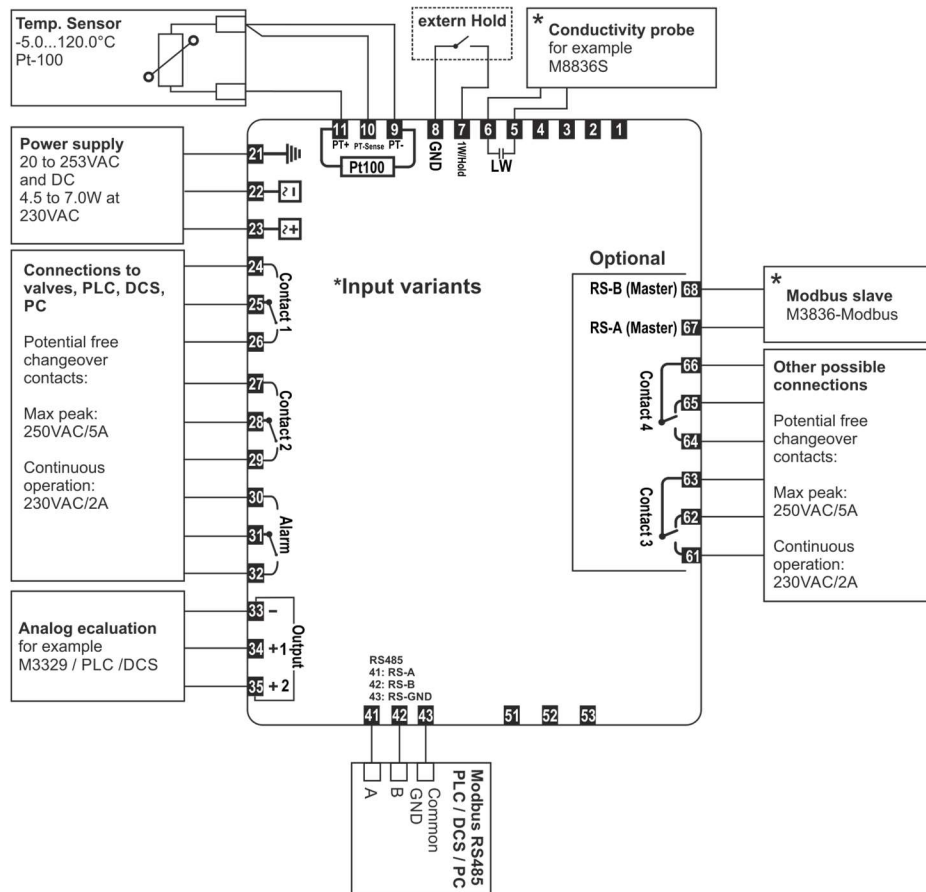
Variant

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Open electrode: M8836S-OE

Other probe types or material on request.

## Wiring diagram



## Connections

5	Probe + input	6	Probe - input	7	Hold input	8	GND
9	Pt-100 sensor (-)	10	Pt-100 sensor sense(-)	11	Pt-100 sensor (+)		
21	Protective earth PE	22	Supply power (-)	23	Supply power (-)		
24	Limit value 1: normally open contact (NO)	25	Limit value 1: Changeover contact	26	Limit value 1: normally closed contact (NC)		
27	Limit value 2: normally open contact (NO)	28	Limit value 2: Changeover contact	29	Limit value 2: normally closed contact (NC)		
30	Alarm contact: normally open contact (NO)	31	Alarm contact: Changeover contact	32	Alarm contact: normally closed contact (NC)		
33	Signal outputs GND	34	Signal output 1	35	Signal output 2		
41	Modbus RS485-A	42	Modbus RS485-B	43	Modbus RS485-GND		

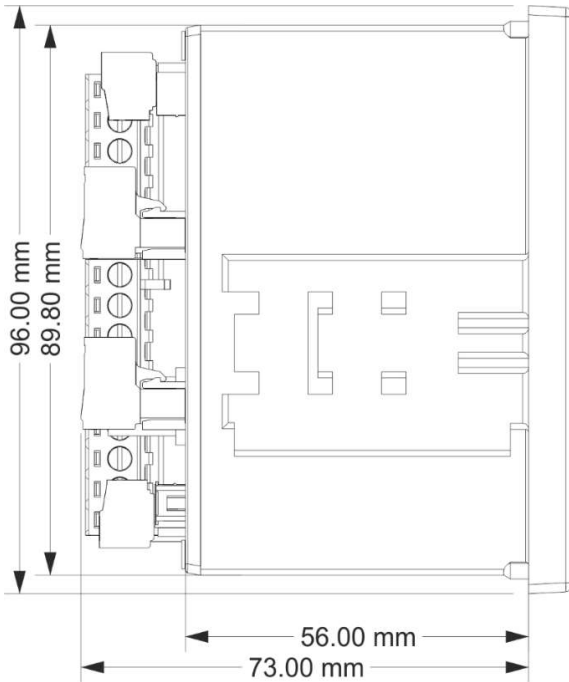
### Additional clamp (optional)

61	Limit value 3: normally open contact (NO)	62	Limit value 3: normally closed contact (NC)	63	Limit value 3: Changeover contact
64	Limit value 4: normally open contact (NO)	65	Limit value 4: normally closed contact (NC)	66	Limit value 4: Changeover contact
67	Modb. RS485 Master-A	68	Modb. RS485 Master-B		

### Dimensions

Front panel mounting requires a cutout of 91x91mm.

#### Side view:



#### Rear view:

