Füllstand | Druck | Durchfluss | Temperatur | Flüssigkeits-analyse | Registrierung | Systeme Komponenten | Services | Solutions

Technical Information

Mycom S CLM153

One or two circuit transmitter for conductive or inductive conductivity, with controller and limit value functions, for Ex or non-Ex areas

Application

The four-wire transmitter Mycom S CLM153 is optimally suited for conductivity measurement and resistivity measurement in the following areas of process engineering and processing systems:

- Chemical processes
- Food technology
- Pharmaceuticals
- Water treatment
- Explosion hazardous areas

Your benefits

- High measurement reliability:
  - Monitoring of the measuring signal
  - Polarisation monitoring
  - Numberous temperature compensation methods including neutral and acid ultra pure water compensation
  - Logbook functions and data log
  - Redundancy and differential measurement
- High user friendliness:
  - Integrated cleaning function Chemoclean
  - Online help
- Individually adaptable:
  - Optional two-circuit measurement (galvanically isolated)
  - Extended controller and limit value functions
  - Current and resistance inputs for feedforward control and position feedback
  - Plug-in module to save and transfer configuration (DAT)
  - Output contacts according to NAMUR
  - Limit value function acc. to USP (US Pharmacopeia)
  - pH value from the differential conductivity acc. to VGB (Vereinigung der Großkraftwerksbetreiber e.V. / Ass. of power and heat generating utilities)
- Ex approval: ATEX II (1) 2 G EEx em [ia/ib] IIC T4
- HART or PROFIBUS PA (Profile 3.0) certified

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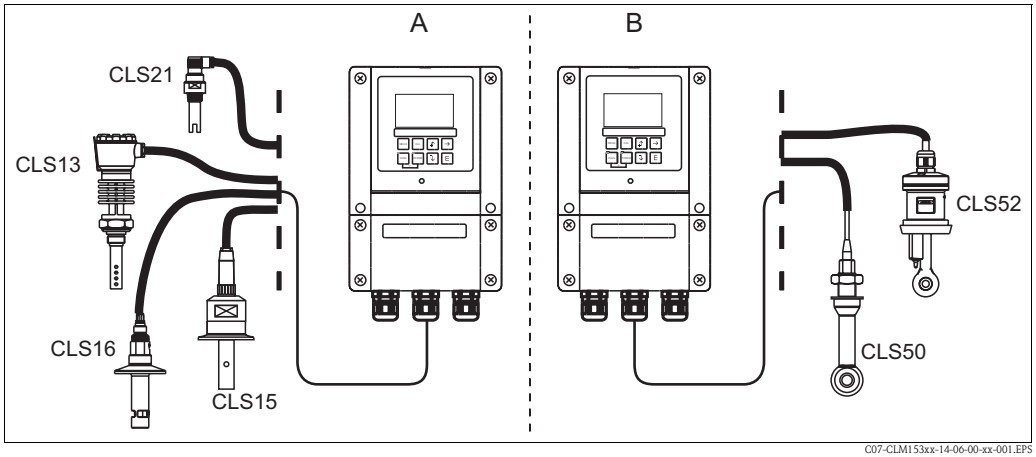
People for Process Automation

Function and system design

Measuring system

A complete measuring system comprises:
- Transmitter Mycom S CLM153
- Conductivity sensor with integrated temperature sensor Pt100:
  – conductive, e.g. CLS12, CLS13, CLS14, CLS15, CLS16, CLS21 oder
  – inductive, e.g. CLS50, CLS52
- Welded socket or assembly for pipe or tank installation
- Conductivity measuring cable, e.g. CPK9 (with TOP68 plug for CLS16), CLK5 (inductive), CLK71 (conductive)



Measuring system

A Conductive conductivity measurement
B Inductive conductivity measurement

Important functions

Polarisation detection

Polarisation effects in the boundary layer between the sensor and the solution to be measured limit the measuring range of conductive conductivity sensors.
The CLM 153 transmitter can detect polarisation effects using an innovative, intelligent signal evaluation process.

Process Check System (PCS)

This function checks the measuring signal for deviations. If the measuring signal does not change for some time (several measured values), an alarm is triggered. Soiling, blockage or similar could be the cause of such behaviour.

Logbooks

There are several logbooks available. The last 30 entries are saved to an error log, an operation log and a calibration log. The entries are displayed with their date and time.

Parameter set switching (PSS)

Inductive measuring systems in particular are equipped with measuring range switching devices because of the large spans they cover.

The CLM 153 transmitter provides the benefit of parameter set switching, remote controlled via binary inputs:
- current output ranges
- operation mode (e.g. conductivity or concentration measurement)
- temperature compensation
- limit values

Two-circuit: differential measurement

A two-circuit device allows you to connect two sensors of the same type to measure and monitor differential conductivity.

This is necessary for:
- Media separation
- Monitoring heat exchangers
- Monitoring ion exchangers
- Determination of the pH value acc. to the VGB-R 450L rule for boiler feed water in power plants. Conditions are:
  – Basic operation of the boiler feed water circuit (conditioning with NaOH or NH_3)
  – Impurities consist of NaCl only (practically no phosphates (<0.5 mg/l))
  – For pH<8 the impurity concentration must be low in relation to the alkalinisation agent.

Two-circuit: efficiency

The two-circuit device allows you to display the two measured values ("A" and "B") according to their efficiency.

You can select from the following:
- A – B
- B – A
- A/B
- B/A
- (A – B)/A
- (B – A)/A
- (A – B)/B
- (B – A)/B

in the following units: auto, µS/cm, mS/cm, S/cm, µS/m, mS/m, S/m bzw. auto, kΩ·cm, MΩ·cm, kΩ·m, % and without unit (quotient).

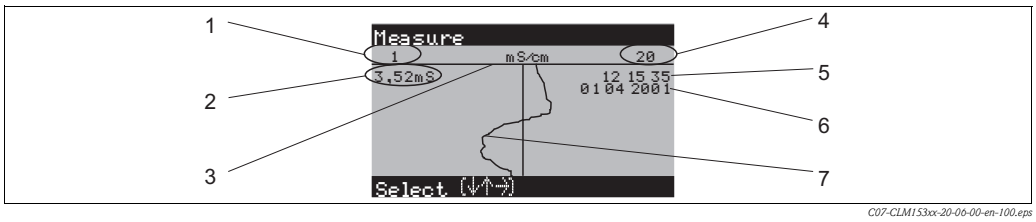
United States Pharmacopeia (USP)

The requirements on ultrapure water in the pharmaceutical industry are specified by the American USP.

Mycom S CLM 153 meets the USP requirements on conductivity measuring systems:
- Precise temperature measurement at point of conductivity measurement
- Simultaneous display of uncompensated conductivity values and temperature
- Display resolution 0.001 µS/cm
- Exact adjustment of the transmitter in the factory with traceable precision resistances
- Exact adjustment of the sensors in the factory in accordance with ASTM D 1125-9 resp. ASTM D 391-99
- Temperature-dependent measurement value monitoring in accordance with USP.

Data log

You can record two freely selectable parameters using the integrated data logs and then display the results graphically in real time. You can retrieve the 500 most recently measured values using date and time. In this way, you can graphically display the process flow. This is a quick way of checking the process and provides a good opportunity for optimising conductivity control.



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Example of data log 1
1 Minimum display range (selectable to 0 µS/cm)
2 Measured value of the current scroll bar position
3 Scroll bar
4 Maximum display range (selectable to 2000 mS/cm)
5 Time when this measured value was recorded
6 Date when this measured value was recorded
7 Measured value graph

Cleaning functions

The Chemoclean® spray cleaning system automatically cleans the electrode. It is controlled by two contacts (possible with basic version). Cleaning can be triggered automatically at programmed intervals, manually or by an error message. You can configure almost any error to trigger cleaning.

Simple control

The following control functions are integrated in Mycom:
- Limit value contact: two-point controller with hysteresis for simple temperature control for example
- PID controller:
  - For one and two-sided processes
  - With freely adjustable P, I and D components
  - Including configurable range-dependent gain (segmented curve)
  - Differentiation between batch and online processes
- Manipulated variable output
  The manipulated variable can be output either as binary signal via the relays or via the current output:
  - Binary signal via relays as PWM (pulse length), PFM (pulse frequency)
  - Current output (0/4 ... 20 mA): analogue signal to control actuator (for one or two actuator drives)

Valves for position feedback or feedforward control can also be included in the control system. For this, you can use the following optional inputs:
– Order version CXM153-xxx2xxxxx: 1 current input (Ex or non-Ex)
– Order version CXM153-xxx4xxxxx: 2 current inputs (Ex or non-Ex)
– Order version CXM153-xxx3xxxxx: 1 resistance input (non-Ex)
– Order version CXM153-xxx5xxxxx: 1 current and 1 resistance input (non-Ex)

Selection aids for control

The following selection aids for online and batch processes help you to select the suitable transmitter version for your process.
PWM = pulse length proportional
PFM = pules frequency proportional
3-point step = three-point step controller

Selection aid for online processes

Process Path	Dosing actuators	Required hardware equipment for control: Circuits	Relay	Current inputs	Current outputs
1-sided control – looking-ahead · 2-circuit · flow	1 PWM	2	1	1	–
	1 PFM	2	1	1	–
	1 3-point step	2	2	2	–
	1 PWM/PFM	2	2	1	–
	analogue	2	–	1	1
1-sided control – not looking-ahead	1 PWM	1	1	–	–
	1 PFM	1	1	–	–
	1 3-point step	1	2	1	–
	1 PWM/PFM	1	2	–	–
	analogue	1	–	–	1

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Selection aid for online processes

Process Path	Dosing actuators	Required hardware equipment for control: Circuits	Relay	Current inputs	Current outputs
1-sided control / looking-ahead · 2-circuit · flow	1 PWM	2	1	1	–
	1 PFM	2	1	1	–
	1 3-point step	2	2	2	–
	1 PWM/PFM	2	2	1	–
	analogue	2	–	1	1
1-sided control / not looking-ahead	1 PWM	1	1	–	–
	1 PFM	1	1	–	–
	1 3-point step	1	2	1	–
	1 PWM/PFM	1	2	–	–
	analogue	1	–	–	1

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Selection aid for batch processes or slow online processes

Process	Dosing actuators	Required hardware equipment for control: Circuits	Relays	Current inputs	Current outputs
1-sided control	1 PWM	1	1	–	–
	1 PFM	1	1	–	–
	1 3-point step	1	2	1	–
	1 PWM/PFM	1	2	–	–
	current output	1	–	–	1
2-sided control	2 PWM	1	2	–	–
	2 PFM	1	2	–	–
	1 3-point step	1	–	1	1
	1 PWM/PFM	1	3	–	–
	current output split range	1	3	–	–

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DAT module

The DAT module is a memory device (EEPROM) which is plugged into the terminal compartment of the transmitter.

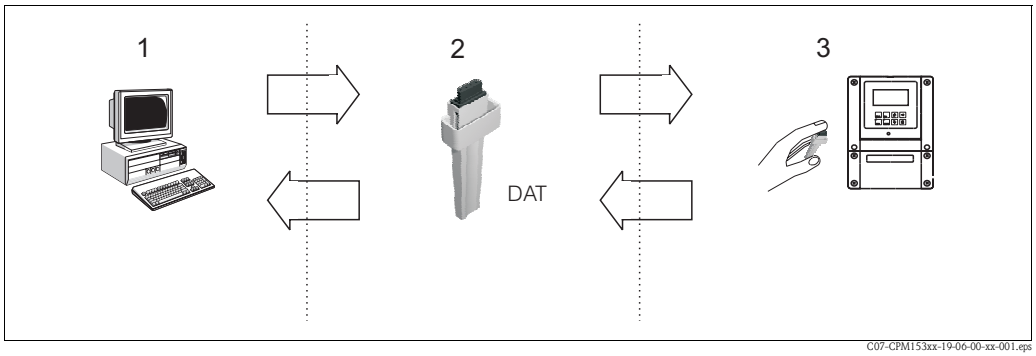
Using the DAT module, you can:
- *save* complete settings, logbooks and the logged data of the data logs of the Mycom S
- *copy* the complete settings to other Mycom S transmitters which have identical hardware functions.

This considerably reduces the effort to install or service several measuring points.

Offline configuration with Parawin

Using the **Parawin** PC tool, you can:

1. Configure the whole measuring point on the PC in the familiar Windows environment.
2. Save the settings to the DAT module.
3. Plug the DAT module into a Mycom S and transfer the entire configuration to the transmitter (= complete transmitter setup). Then you can set up other transmitters with the same configuration.
4. You can also use the DAT module to copy logbooks and data logs from the transmitter and to your computer for documentation purposes. You can then display the logged data in graphic form on your PC.



Offline configuration with Parawin (1 - 2 -3)

Offline data storage (3 -2 -1) ⇨

Calibration and measurement

Calibration options:
- Airset
  With inductive sensors the residual coupling between transmitter and detector coil can compensated by calibration on air.
- Calculation
  The conductivity of the calibration solution (with precisely determined conductivity) is entered and the cell constant of the sensor is thus calculated.
- Installation factor
  In tight installation conditions, the inductive sensor can be influenced by the pipe wall. This means that measuring differences may occur. These are compensated for in the calibration process by entering an installation factor.
- Data entry
  The cell constant of the sensor is entered via the keypad.
- Calibration logbook
  The data of the last 30 calibrations are saved to a list with date and time.

Accurate measurement through:
- Medium temperature compensation (alpha value compensation)
  This allows high-accuracy measurement over wide temperature ranges. This compensation type compensates the temperature influence on the pH value of the medium.
  Types of compensation:
  – linear compensation
  – NaCl acc. to IEC 746-3
  – neutral ultra pure water (NaCl)
  – acid ultra pure water (HCl)
  – user defined tables

Input

Measured variable

conductivity, resistivity, temperature

Measuring range

Inductive conductivity

	Measuring range
not compensated	0.04 µS/cm to 2000 mS/cm
compensated	0.04 µS/cm to 1000 mS/cm

Conductive conductivity

Cell constant k	Measuring range	Display range
0.01 cm^{-1}	0.0 nS/cm to 600.0 µS/cm	0.0 µS/cm to 200.0 µS/cm
0.10 cm^{-1}	0.000 µS/cm to 6000 µS/cm	0.000 µS/cm to 2000 µS/cm
1.00 cm^{-1}	0.00 µS/cm to 60.00 mS/cm	0.00 µS/cm to 20.00 mS/cm
10.0 cm^{-1}	0.0 µS/cm to 600.0 mS/cm	0.0 µS/cm to 200.0 mS/cm

Resistivity

Cell constant k	Measuring range	Display range
0.01 cm^{-1}	20.0 kΩ·cm to 80.0 MΩ·cm	20.0 kΩ·cm to 37.99 MΩ·cm
0.10 cm^{-1}	2.00 kΩ·cm to 2000 kΩ·cm	2.00 kΩ·cm to 3799 kΩ·cm
1.00 cm^{-1}	0.200 kΩ·cm to 200.0 kΩ·cm	0.200 kΩ·cm to 379.9 kΩ·cm

Temperature

–35 to +250 °C (–32 to +482 °F)

Sensor input

⟨Ex⟩ Sensor circuit with type of protection EEx ia IIC (optional). This circuit may also be connected to sensors of category 1G (zone 0).

Maximum output voltage U_O:	DC 12.6 V
Maximum output current I_O:	21 mA
Maximum output P_O:	108 mW
Maximum äußere capacity C_O:	50 nF
Maximum äußere inductivity L_O:	100 µH

Current inputs 1/2 (passive, optional)

Signal range:	4 to 20 mA
Input voltage range:	6 to 30 V

⟨Ex⟩ Intrinsically safe current inputs for connection to intrinsically safe electric circuits with type of protection EEx ia IIC or EEx ib IIC (optional)

Maximum input voltage U_i:	DC 30 V
Maximum input current I_i:	100 mA
Maximum input P_i:	3 W
Maximum innere capacity C_i:	1.1 nF
Maximum inner inductivity L_i:	24 µH

Resistance input (active, optional, non-Ex only)

Resistance ranges (selectable by the software):	0 to 1 kΩ 0 to 10 kΩ

Temperature input

connectable temperature sensors:	Pt100 (three wire circuit) Pt1000 NTC 30k

Binary inputs

Input voltage:	10 to 50 V
Inner resistance:	R_i = 5 kΩ

⟨Ex⟩ Intrinsically safe optoelectronic coupler for connection with intrinsically safe electric circuits with type of protection EEx ia IIC or EEx ib IIC

Maximum input voltage U_i:	DC 30 V
Maximum inner capacity C_i:	negligible
Maximum inner inductivity L_i:	negligible

Output

Output signal

0/4 to 20 mA

Signal on alarm

2.4 or 22 mA in case of an error

Load

maximum 600 Ω (dependent from operating voltage)

Linearisation transmission behaviour

linear, bilinear, table

Galvanic isolation

Following circuits are at the same potential:

- Current output 1 and auxiliary voltage
- Current output 2 and resistance input

The remaining circuits are galvanically isolated from each other.

Output distribution

Temperature measurement

	output distribution:
	17 to 170 °C (63 to 338 °F)

Conductivity measurement

measuring range:	output distribution:
0 to 19.99 µS/cm	2 to 19.99 µS/cm
20 to 199.9 µS/cm	20 to 199.9 µS/cm
200 to 1999 µS/cm	200 to 1999 µS/cm
2 to 19.99 mS/cm	2 to 19.99 mS/cm
20 to 2000 mS/cm	20 to 2000 mS/cm

Resistivity measurement

measuring range:	output distribution:
0 to 199.9 kΩ·cm	20 to 199.9 kΩ·cm
200 to 1999 kΩ·cm	200 to 1999 kΩ·cm
2 to 19.99 MΩ·cm	2 to 19.99 MΩ·cm
20 to 200 MΩ·cm	20 to 200 MΩ·cm

Concentration measurement

	output distribution:
	no minimum spacing

Intrinsically safe signal circuit

⟨Ex⟩ Intrinsically safe current output for connection with intrinsically safe electric circuits with type of protection EEx ib IIC

Maximum input voltage U_i:	DC 30 V
Maximum input current I_i:	100 mA
Maximum input P_i:	750 mW
Maximum innere capacity C_i:	negligible
Maximum inner inductivity L_i:	negligible

Power supply for binary inputs E1 - E3

Output voltage:	15 V DC
Output current:	max. 9 mA

⟨Ex⟩ Intrinsically safe current output circuit with type of protection EEx ib IIC

Maximum output voltage U_O:	DC 15.8 V
Maximum output current I_O:	71 mA
Maximum output P_O:	1.13 W
Maximum outer capacity C_O:	50 nF
Maximum outer inductivity L_O:	100 µH

Output relay

Switching voltage:	max. 250 V AC / 125 V DC
Switching current:	max. 3 A
Switching power:	max. 750 VA
Life span:	≥ 5 million switching cycles

⟨Ex⟩ Intrinsically safe relay contact circuits for connection with intrinsically safe electric circuits with type of protection EEx ia IIC or EEx ib IIC

Maximum input voltage U_i:	DC 30 V
Maximum input current I_i:	100 mA
Maximum input P_i:	3 W
Maximum inner capacity C_i:	1.1 nF
Maximum inner inductivity L_i:	24 µH

Output controller

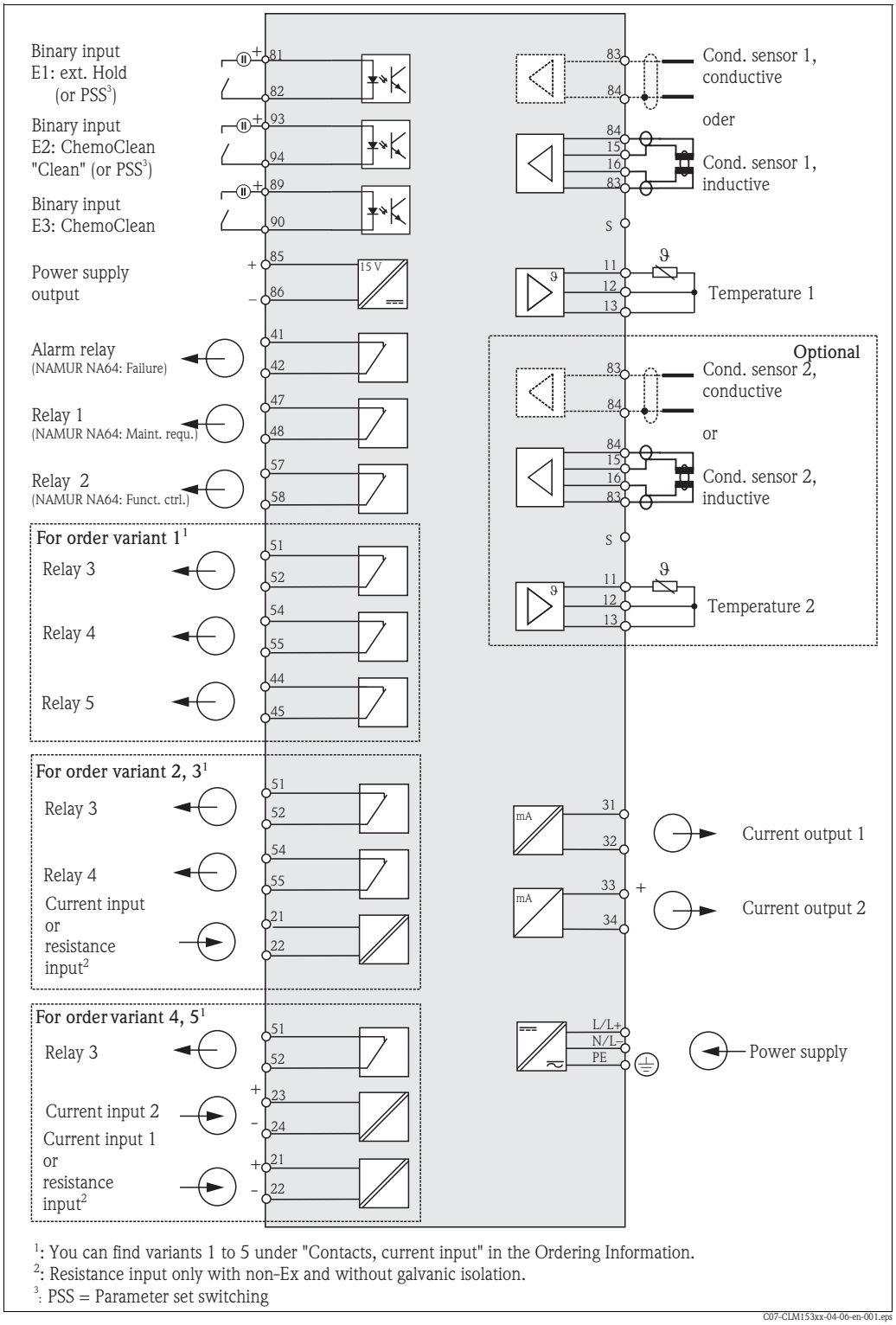
Function (selectable):	Pulse-length controller (PWM) Pulse-frequency controller (PFM) Three-point step-controller (3-point step) Analogue (via current output)
Controller behaviour:	P / PI / PID
Control gain K_R:	0,01 to 20.00
Integral action time T_n:	0,0 to 999.9 min
Derivative action time T_v:	0,0 to 999.9 min
Max. frequency with pulse-frequency controller:	120 min^{-1}
Max. period with pulse-length controller:	1 to 999.9 s
Minimum switch-on period with pulse-length controller:	0.4 s

Limit value and alarm functions

Setpoint adjustments:	0 to 100 % of display range
Hysteresis for switching contacts:	1 to 10 % of display range
Alarm delay:	0 to 6000 s

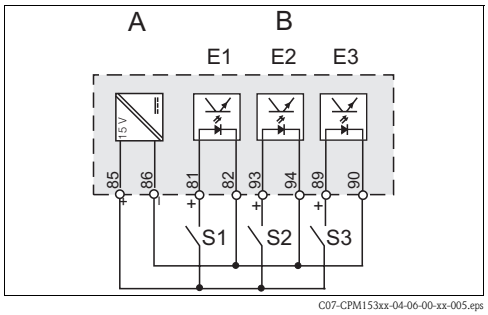
Power supply

Electrical connection



[1]: You can find variants 1 to 5 under "Contacts, current input" in the Ordering Information.
[2]: Resistance input only with non-Ex and without galvanic isolation.
[3]: PSS = Parameter set switching

Switching example for binary inputs



A Auxiliary voltage output
B Binary inputs
E1 External hold
E2 Chemoclean "Clean"
E3 Chemoclean "User"
S1 External de-energised contact
S2 External de-energised contact
S3 External de-energised contact

Supply voltage

Version CLM153-xxxx**0**xxxx	100 to 230 V AC +10/-15 %
Version CLM153-xxxx**8**xxxx	24 V AC/DC +20/-15 %

Cable specification

Maximum cable cross-section: 2.5 mm^2 (0.0036 sq. inch)

Power consumption

maximum 10 VA

Isolation between galvanically separated current circuits

276 V_{eff}

Interface connection data

The basic version of Mycom S has one alarm and two additional contacts.

The transmitter can be upgraded with the following additional equipment:
- 3 contacts
- 2 contacts and 1 current or resistance input (the latter for non-Ex only)
- 1 contact, 1 current input and 1 current or resistance input (the latter for non-Ex only)

You can assign functions to the available contacts via the software. The "Active open" and "Active closed" contact types can also be switched by the software.
With the appropriate instrument version, you can assign up to three relays to the controller.

Note!
If you use NAMUR contacts (acc. to recommendations of the association for process control engineering of the chemical and pharmaceutical industry), the contacts are set to the relays as follows:

Relay	Assignment NAMUR on	Assignment NAMUR off	Terminal
ALARM	Failure	Alarm	41 42
RELAY 1	Warning when maintenance required	free connectable	47 48
RELAY 2	Function check	free connectable	57 58

Frequency

47 to 64 Hz

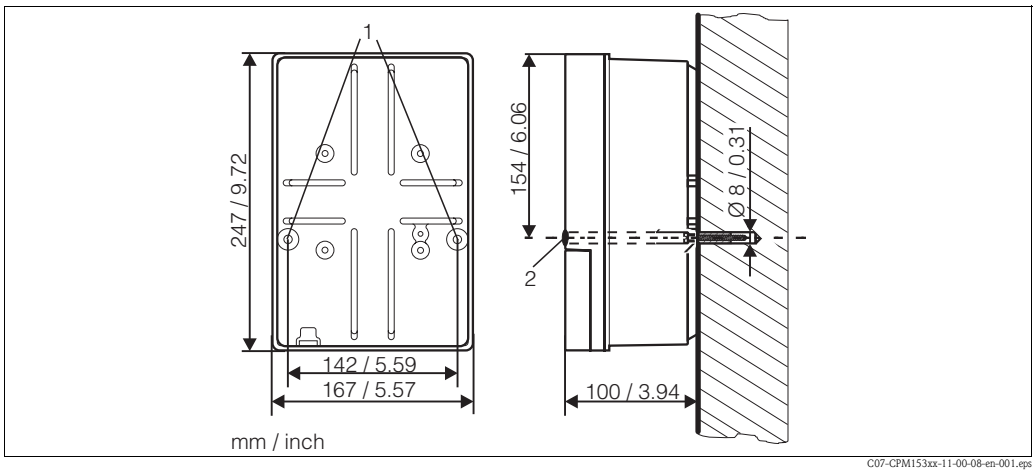
Performance characteristics

Reference temperature	25 °C (77 °F), settable with medium temperature compensation	
Measured value resolution	Conductivity:	0.001 µS/cm
	Temperature:	0.1 K
Maximum measured error[a]	Display:	
	conductivity, resistivity, concentration:	±0.5 % of measured value ±2 digits
	Temperature	< 0.5 K
	Curent outputs:	max. 0.2 % of current range end value additionally to the display error
	Current inputs:	max. 1 % of measuring range
	Resistance input:	max. 1 % of measuring range
Repeatability[a]	Conductivity, resistivity, concentration:	±0.2 % of measured value ±2 digits
	Temperature:	max. 0.1 % of measuring range

Installation

Wall mounting

Caution!
- Check that the temperature does not exceed the maximum permitted operating temperature range (-20 ... +60 °C / -4 ... 140 °F). Install the instrument in a shady location. Avoid direct sunlight.
- Always install the transmitter so that the cable entries point downwards.

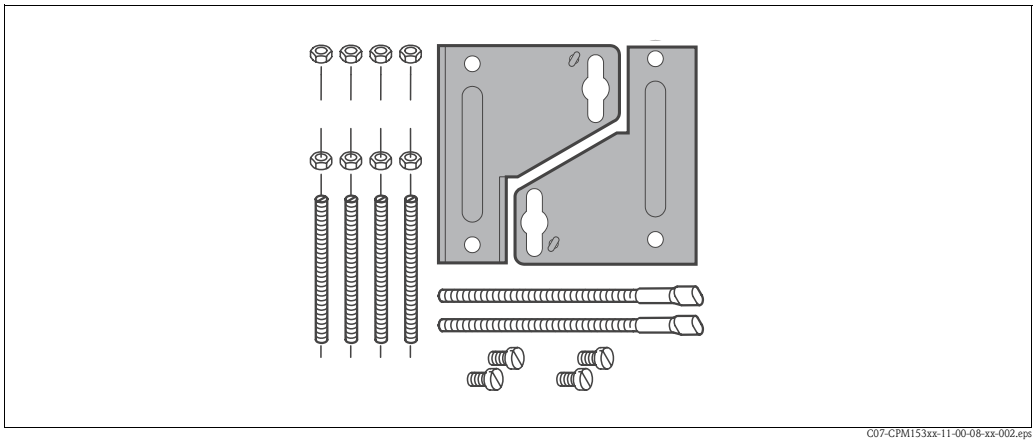


Dimensions for wall mounting, fixing screw: Ø 6 mm / 0.24", wall plug: Ø 8 mm / 0.31"

1 Fixing drill holes
2 Plastic cover cap

a) acc. to IEC 746-1, at nominal operating conditions

Post mounting and panel mounting

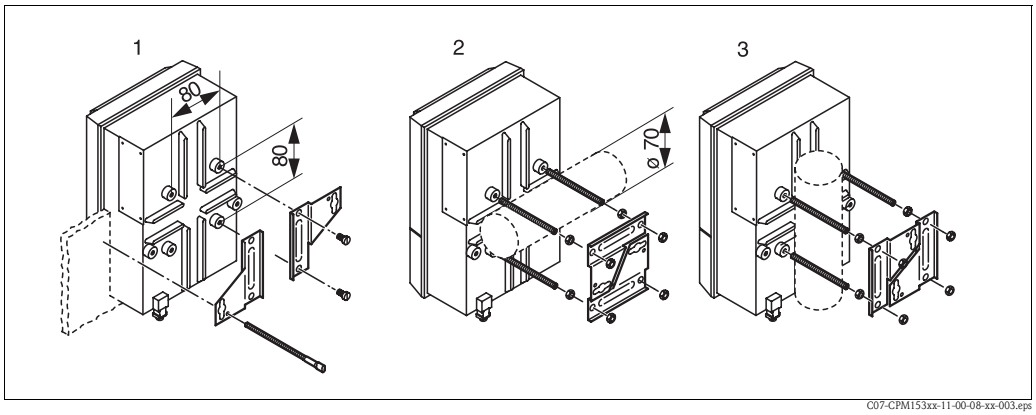


Mounting kit

Mount the parts of the mounting kit at the back of the housing as shown in the figure below.

Panel mounting:
If you need to seal the front panel mounting of the Mycom S air-tight, you must use an additional flat gasket (see accessories).
Required installation cutout: 161 x 241 mm / 6.34 x 9.41 inches
Installation depth: 134 mm / 5.28"

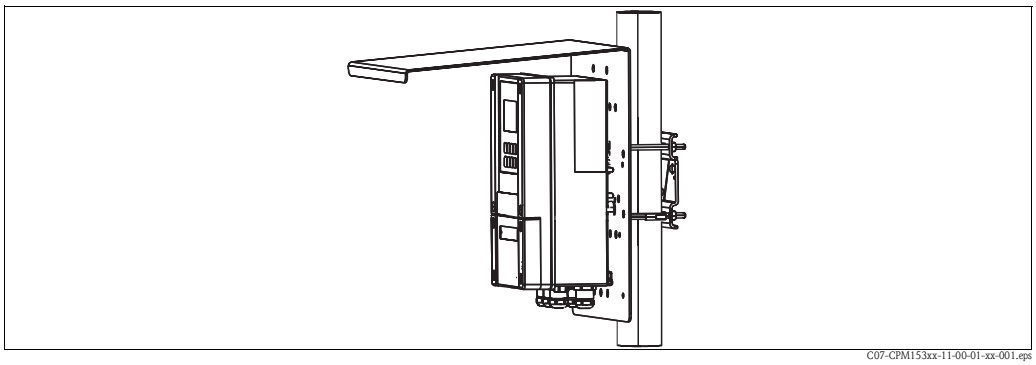
Post mounting:
Post diameter: max. 70 mm / 2.76"



Panel mounting and post mounting

1 Panel mounting
2 Horizontal post mounting
3 Vertical post mounting

Caution!
Always use the CYY101 weather protection cover for outdoor installation (see figure below and accessories).



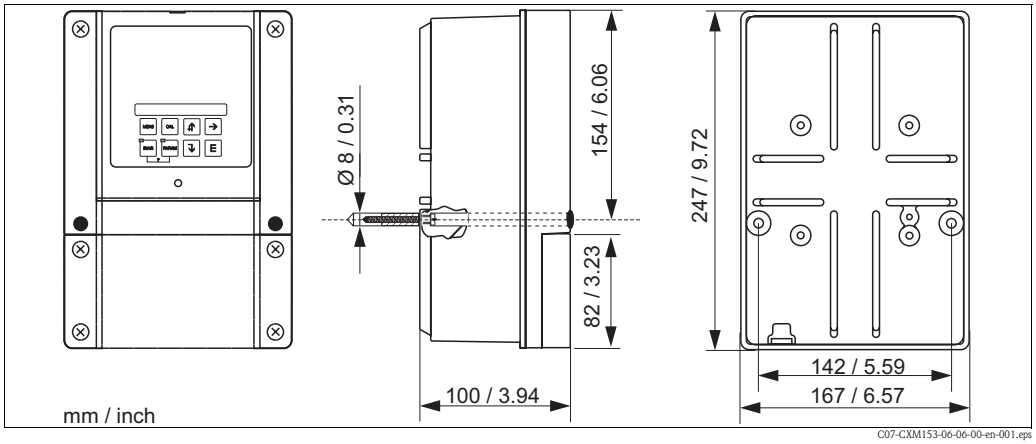
Post mounting with weather protection cover

Environment

Ambient temperature	-10 ... +55 °C / 14 ... 131 °F (Ex: -10 ... +50 °C / 14 ... 122 °F)
Ambient temperature limit	–20 ... +60 °C / -4 ... 140 °F (Ex: -10 ... +50 °C / 14 ... 122 °F)
Relative humidity	10 ... 95%, non-condensing
Storage temperature	–30 ... +80 °C / -22 ... 176 °F
Ingress protection	IP 65
Electromagnetic compatibility	Interference emission acc. to EN 61326: 1997 / A1: 1998, class B resources (housing sector) Interference emission acc. to EN 61326: 1997 / A1: 1998, appendix A (industrial sector)

Mechanical construction

Design, dimensions

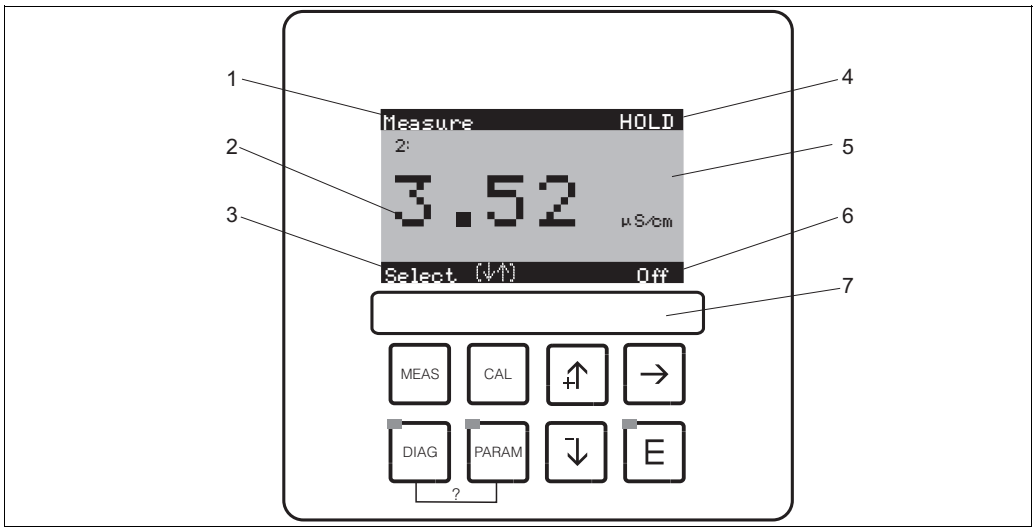


Weight	maximum 6 kg (13.2 lb)	
Materials	Housing: Front:	GD AlSi 12 (Mg content 0.05 %), plastic coated polyester, UV resistent

Human Interface

Display and operating elements

Backlit LC display with dot matrix, 128 x 64 dots
The display shows the current measured value and the temperature, i.e. the most important process data, at a glance. In the configuration menu, online help pages help you to enter suitable instrument parameters.



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1	*Current menu*	MEAS	*Measuring mode key*
2	*Current parameter*	CAL	*Calibration mode key*
3	*Navigation bar: arrow keys for scrolling; "E" for browsing; note for cancelling*	DIAG	*Diagnosis mode key*
		PARAM	*Parameter entry mode key*
4	*HOLD display, if active*	→ ↑	*Arrow keys for selection and enter*
5	*Current main measured value*	↓	
6	*"Failure" display, "Warning" if NAMUR contacts are active*	E	*Enter key*
7	*Labelling strip*		
?	*Simultaneously pressing DIAG and PARAM opens the online help*		

Operating functions

Four main menus are available for instrument operation:

- Measurement
- Configuration
- Calibration
- Diagnosis

Press the MEAS, PARAM, CAL and DIAG keys to switch to the appropriate menu. The submenus are displayed in plain text and the selected elements are displayed in reverse video. Use the arrow keys to select elements and to edit numeric values.

Access codes

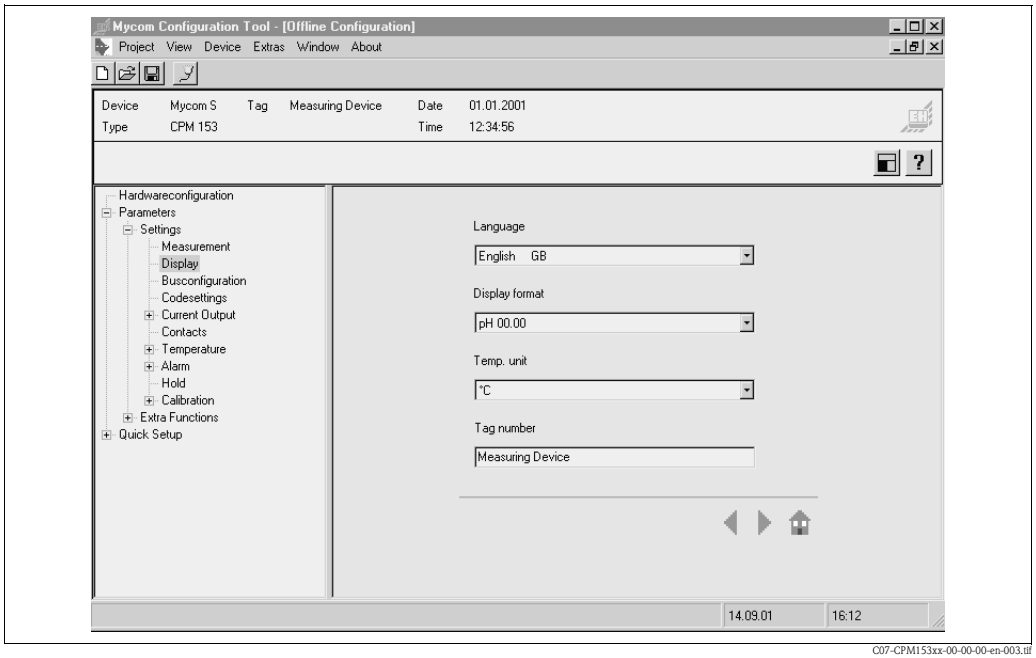
To protect the transmitter from unintended or undesired modification of the configuration and calibration data, four-digit access codes can be defined. Access authorisation has the following levels:

- Read-only level (accessible without code)
  The complete menu can be viewed. The configuration cannot be changed. Calibration is not possible. Only the controller parameters can be changed in the "DIAG" menu branch.
- Maintenance level (can be protected by the service code)
  This code permits calibration.
  Use this code to operate the temperature compensation menu command. The test functions and the internal data can be viewed.
- Specialist level (can be protected by the specialist code)
  All menus are accessible for modification.

Note!
As long as no codes are defined, all functions are freely accessible.

Remote operation

The PC tool enables you to configure your measuring point offline on a PC using a simple and self-explaining menu structure (see window example below). Write the configuration to the DAT module using the RS232 interface of the PC. The module can then be plugged into the transmitter.



Parawin structure

Certificates and approvals

CE symbol

Declaration of conformity
The product meets the legal requirements of the harmonised European standards.
The manufacturer confirms compliance with the standards by affixing the CE symbol.

Ex approval

Depending on ordered version:
- ATEX II (1) 2G, EEx em ia/ib IIC T4
- FM NI Class I, Division 2, Groups A, B, C, D; sensor IS Class I Division 1, Groups A, B, C, D
  FM DIP Class II, III, Division 1, Groups E, F, G; sensor IS Class I Division 1, Groups A, B, C, D
- FM NI Class I, Division 2, Groups A, B, C, D
  FM DIP Class II, III, Division 1, Groups E, F, G
- CSA Class I, Division 2; sensor IS Class I Division 1
- FM IS NI Cl. I, II, III, Div. 1&2, Group A-G
- TIIS

Ordering information

Product structure

Certificates										
A	Basic version for non-Ex areas									
G	With ATEX approval, ATEX II (1) 2G EEx, em ib[ia] IIC T4, only passive current outputs									
O	With FM approval, NI Cl. I, Div. 2, Sensor IS Cl. I, Div. 1, only passive current outputs									
P	With FM approval, NI Cl. I, Div. 2, only passive current outputs									
S	With CSA approval, NI Cl. I, Div. 2, Sensor IS Cl. 1, Div. 1, only passive current outputs									
T	With TIIS approval, only passive current outputs									
		Sensor inputs								
		1	1 measuring circuit for conductive sensors, conductivity/resistivity and temperature							
		2	1 measuring circuit for inductive sensors, conductivity/resistivity and temperature							
		3	2 measuring circuits for conductive sensors, conductivity/resistivity and temperature							
		4	2 measuring circuits for inductivesensors, conductivity/resistivity and temperature							
				Output signals						
				A	2 current outputs 0/4 ... 20 mA, passive (Ex and non-Ex)					
				B	2 current outputs 0/4 ... 20 mA, active (non-Ex)					
				C	HART with 2 current outputs 0/4 ... 20 mA, passive (Ex and non-Ex)					
				D	HART with 2 current outputs 0/4 ... 20 mA, active (non-Ex)					
				E	PROFIBUS-PA, no current outputs					
					Contacts, current inputs					
					0	no additional contacts				
					1	3 additional contacts				
					2	2 additional contacts, 1 current input passive (Ex and non-Ex)				
					3	2 additional contacts, 1 resistance input active (non-Ex)				
					4	1 additional contact, 2 current inputs passive (Ex and non-Ex)				
					5	1 additional contact, 1 current input passive, 1 resistance input active (non-Ex)				
						Power supply				
						0	100 to 230 V AC			
						8	24 V AC/DC			
							Languages			
						A	E / D			
						B	E / F			
						C	E / I			
						D	E / ES			
						E	E / NL			
						F	E / J			
							Cable entries			
							0	Cable glands M 20 x 1.5		
							1	Cable entry NPT ½"		
							3	Cable gland M 20 x 1.5, PROFIBUS-PA-M12 plug		
							4	Cable gland NPT ½", PROFIBUS-PA-M12 plug		
								Additional features		
								0	Standard version	
								1	DAT module	
									Configuration	
									0	Factory setup
CLM153-										complete order code

Scope of delivery

The scope of delivery comprises:
- 1 transmitter
- 1 mounting kit
- 4 cable glands
- 1 set for measuring point labelling
- 1 instrument identification card
- 1 Operating Instructions english
- Versions with HART communication:
  1 Operating Instructions field communication with HART, English
- Versions with PROFIBUS interface:
  1 Operating Instructions field communication with PROFIBUS PA, English
- Ex versions acc. to ATEX:
  Safety instructions for electrical equipment in explosion hazardous areas, XA 233C/07/a3

Accessories

Sensors

❑ ConduMax W CLS 12
Conductive conductivity sensor for standard, Ex and high temperature applications;
Ordering acc. to version, see Technical Information TI 082/C07/en

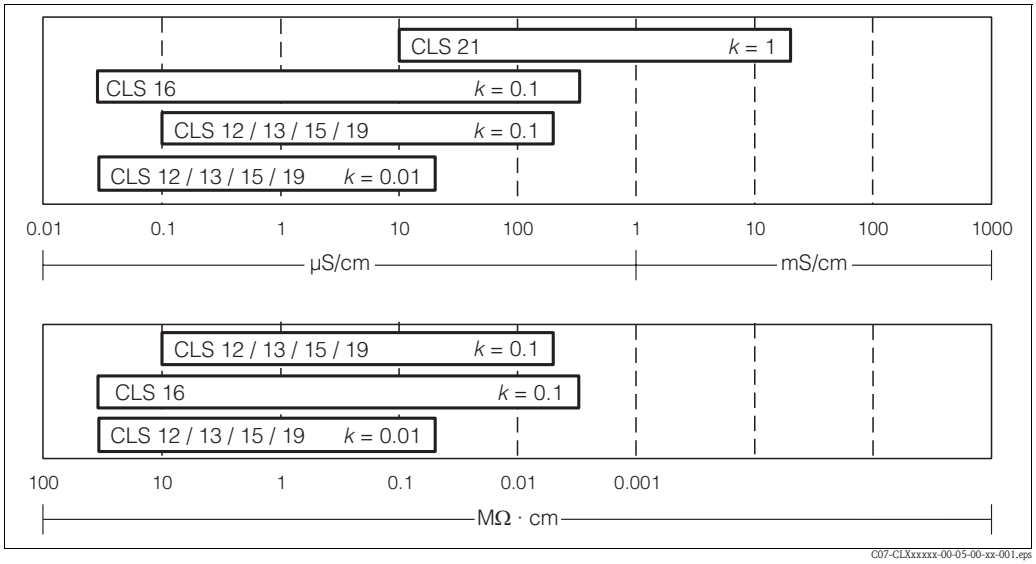
❑ ConduMax W CLS 13
Conductive conductivity sensor for standard, Ex and high temperature applications;
Ordering acc. to version, see Technical Information TI 083/C07/en

❑ ConduMax W CLS 15
Conductive conductivity sensor for pure and ultra-pure water applications (incl. Ex);
Ordering acc. to version, see Technical Information TI 109/C07/en

❑ ConduMax W CLS 16
Hygienic conductive conductivity sensor for pure and ultra-pure water applications;
Ordering acc. to version, see Technical Information TI 227/C07/en

❑ ConduMax W CLS 19
Conductive conductivity sensor for pure and ultra-pure water applications;
Ordering acc. to version, see Technical Information TI 110/C07/en

❑ ConduMax W CLS 21
Conductive conductivity sensor for applications with middle to high conductivity (incl. Ex); Ordering acc. to version, see Technical Information TI 085/C07/en



Application ranges of conductive conductivity sensors:

top = conductivity

bottom = specific resistance

❑ InduMax P CLS 50
Inductive conductivity sensor for standard, Ex and high temperature applications;
Ordering acc. to the sensor version, see Technical Information (order no. 50090385)

❑ InduMax H CLS 52
Inductive conductivity sensor with short response time in hygienic design;
Ordering acc. to the sensor version, see Technical Information (order no. 50086110)

Assemblies (selection)

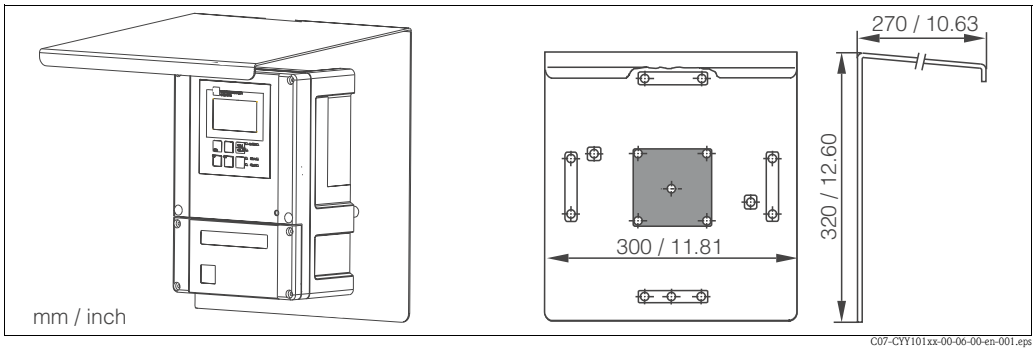
❑ DipFit W CLA 111
Immersion assembly for open and closed tanks with flange DN 100;
Ordering acc. to version, see Technical Information

❑ DipFit P CLA 140
Immersion assembly with flange connection for high duty processes;
Ordering acc. to the version, see Technical Information (order no. 51500081)

❑ Immersion assembly Dipfit W CYA611
for sensor immersion in basins, open channels and tanks, PVC;
Ordering acc. to product structure (Technical Information TI 166C/07/en)

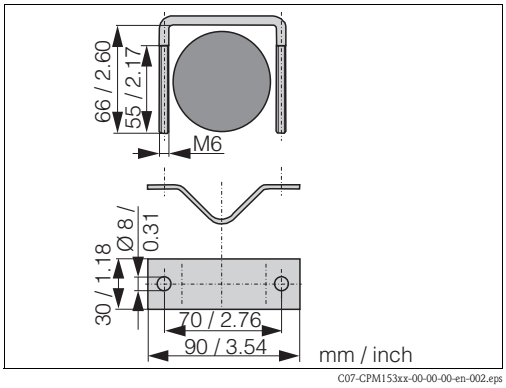
Mounting accessories

❑ Weather protection cover CYY101 for mounting of field housing, for outdoor installation
material: stainless steel 1.4031;
order no. CYY101-A



Weather protection cover for field instrument

❑ Round post fixture to fix the weather protection cover to vertical or horizontal posts with diameters of up to 70 mm / 2.76";
Order no. 50062121



Round post fixture for CYY101

Connection accessories

❑ CPK9 special measuring cable
For sensors with TOP68 plug-in head, for high-temperature and high-pressure applications, IP 68
Ordering acc. to product structure, see Technical Information (TI 118C/07/en)

❑ Extension cable CLK 5
for inductive conductivity sensors, for cable extension via junction box VBM;
(ordering per meter), order no. 50085473

❑ CYK 71
for conductive conductivity sensors, for cable extension via VBM junction box;
order no. 50085333

❑ CYK 71-Ex
for Ex applications, like CYK 71, but blue cable sheath;
order no. 50085673

❑ Junction box VBM
for cable extension, with 10 terminals, IP 65 / NEMA 4X

Cable entry Pg 13.5	Order no. 50003987
Cable entry NPT ½"	Order no. 51500177

DAT module

❑ Additional memory device for saving or copying complete settings, logbooks and the data logs;
Order no.: 51507175

Flat gasket

❑ Flat gasket for sealing the front panel mounting of the Mycom S
Order no.: 50064975

Offline configuration with Parawin

❑ Parawin
Graphical PC software for offline configuration of the measuring point at the PC. The language is selectable. Required operating systems: Windows NT/95/98/2000.
The offline configuration tool consists of:
- a DAT module
- DAT interface (RS 232)
- Software

Order no.: 51507133 (Mycom S only)
Order no.: 51507563 (Topcal S, Topclean S, Mycom S)

Documentation

Operating Instructions

❑ Operating Instructions Mycom S CLM153, BA234C/07/en, order no. 51503794
❑ Ex Safety Instructions, XA233C/07/a3, order no. 51506728
❑ Operating Instructions PROFIBUS-PA/-DP, BA298C/07/en, order no. 51507116
❑ Operating Instructions HART, BA301C/07/en, order no. 51507114

Conductive conductivity

❑ Condumax W CLS12, Technical Information, TI 082C/07/en; order no. 50059349
❑ Condumax W CLS13, TechnicalInformation, TI 083C/07/en; order no. 50059350
❑ Condumax W CLS15, Technical Information, TI 109C/07/en; order no. 50065950
❑ Condumax W CLS16, Technical Information, TI 227C/07/en; order no. 51503431
❑ Condumax W CLS19, Technical Information, TI 110C/07/en; order no. 50065951
❑ Condumax W CLS21, Technical Information, TI 085C/07/en; order no. 50059352
❑ Dipfit W CLA111, Technical Information TI 135C/07/en; order no. 50076858

Inductive conductivity

❑ Indumax P CLS50, Technical Information, TI 182C/07/en; order no. 50090385
❑ Indumax H CLS52, Technical Information, TI 167C/07/en; order no. 50086110
❑ Dipfit P CLA140, Technical Information TI 196C/07/en; order no. 51500081

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