



# Inductive Conductivity Meter

## Application

- conductivity measurement 0-999mS/cm

## Application Examples

- phase separation of cleaning solutions and other media
- concentration measurement (e.g. cleaning solutions)
- monitoring of product quality

## Hygienic design / Process connection

- by using the Negele weld-in sleeve EMZ-352 or the build-in system EHG-.../1" a front-flush, hygienic and easy cleanable measurement point will be achieved (3A-certificate, EHEDG-registration)
- CIP-/ SIP-cleanable up to 140°C
- sensor materials are FDA-conform
- sensor completely made of stainless steel, dip bobbin made of PEEK
- available process connections:  
TriClamp, diary flange, DRD, Varivent, APV, BioControl

## Features

- wear-resistant measurement principle
- 12 measurement ranges, up to 4 extern switchable (ILM-3)
- temperature compensation freely adjustable
- high reproducibility  $\leq 1\%$  of f. s.
- analog output for conductivity and temperature
- smallest pipe diameter is DN40

## Options / Accessories

- electrical connection with M12 plug-in
- cable ex factory for M12 plug-in
- longer dip bobbin



EHG-65/1"

ILM-2 with EMZ-352

**Attention:** Use only Negele weld-in systems to ensure a save function of the measurement point!

## Specification

Process connection	thread	sensor G1" comb. with Negele weld-in sleeve	Accuracy of temperature output	$\leq 100^{\circ}\text{C}$	max. $0,5^{\circ}\text{C}$
	torque	max. 20Nm (2kgm)		100...150°C	max. $1,0^{\circ}\text{C}$
Materials	head	stainless steel V2A (1.4305), $\varnothing 89\text{mm}$	Electr. connection	cable entry	2xPG (M16x1,5)
	thread connection	stainless steel V2A (1.4305), ww 36mm		cable connection	2xM12 plug-in (V2A 1.4305)
	dip bobbin	PEEK	supply voltage	18...36V DC max. 190mA	
Temperature ranges	ambient	-10...+60°C	Input	range setting	E1 and E2 (24V DC) DC decoupled
	process	0...100°C	Outputs	conductivity	analog 4-20mA
	CIP-/ SIP cleaning	up to 140°C max. 30 min		temperature	analog 4-20mA short circuit proof
Process pressure		max. 10bar	Measur. ranges	3 ext. switchable	12 with ILM-2
Type of protection		IP69K	Conductivity	4 ext. switchable	14 with ILM-3
Reproducibility	conductivity	$\leq 1\%$ of f. s.	Measur. ranges	ILM-2	1
Resolution	meas. range $< 1\text{mS/cm}$	$1\mu\text{S/cm}$ (only ilm-3)	Temperature	ILM-3	7
	meas. range $> 1\text{mS/cm}$	$10\mu\text{S/cm}$	Temp. coefficient	1 with ILM-2 free adjustable 0-5%	1 for all ranges 1 per range
Accuracy	span	$\pm 2\%$	LCD-indicator	with illumination	2x8 digits
	offset	$\pm 20\mu\text{S/cm}$	Measur. principle	wear-resistant	inductive
Long term stability	span	$\pm 0,5\%$	Sensor monitoring	device error	2,4mA output cond.
	offset	$\pm 20\mu\text{S/cm}$			

## Order Code

Type	Process connection	Dip bobbin	Electr. connection
ILM-2	G1"	L20 (20mm)	PG
ILM-3	G1"	L50 (50mm)	M12
Order example:	ILM-2 / L20 / M12		



## Mechanical Connection / Installation

- The sensor must be entirely washed around by the medium (fitting in the rising pipeline is recommended).
- The inscription "FLOW" on the bottom side of the sensor shows the sense of the flow. Line up the sensor correctly while installed!
- Very heavy vibrations can cause measurement errors (e. g. when mounting extremely near to a pump).

## Evaluation of Temperature Coefficient of Media

1. Adjust "TK" to 0%/K (see operation scheme).
2. Plunge the device in 25°C warm measuring medium.
3. Wait until the measuring value will not change.
4. Pick off the conductivity from the indicator and note the value.
5. Warm up the measuring medium to about 60°C. In this case the reading of the conductivity on the indicator will change.
6. Wait until the measuring value will not change.
7. Choose operation layer "TC" and put up the TC-value until the measurement value equals the value of conductivity noted before.

## Setting of Measurement Ranges

- The device will be put in to the measuring range 1 (0...200mS/cm = 4-20mA) in output "LF".
- The range 2 (E1=24VDC) or range 3 (E2=24VDC) can be chosen by means of the rated signal +24V DC (18...36V) (see "electrical connection").
- Every range can be assigned a separate temperature coefficient (ilm-3 only).
- At ILM-2 the output range of the temperature is fixed to 0...150°C.
- At ILM-3 the measure range of the temperature output can be chosen out of 7 different but fixed ranges between -20...150°C.

## Table setting measurement range

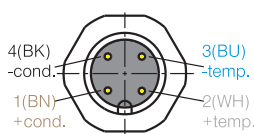
E1	E2	range
0	0	1
1	0	2
0	1	3
1	1	4 (only ilm-3)

0  $\Delta$  0V DC; 1  $\Delta$  24V DC

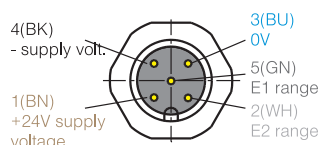
The digital range setting inputs E1 and E2 are DC decoupled from power supply. GND: Pin 9

## Connecting Diagram ILM-2, ILM-3 / M12 with M12 plug-in

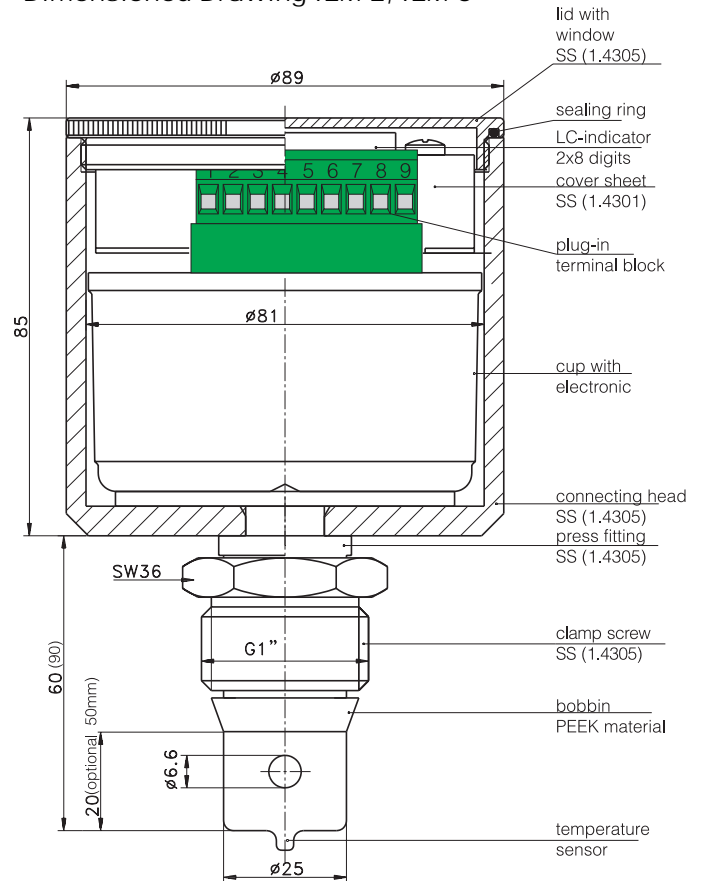
M12-plug left (4pin) outputs 4-20mA



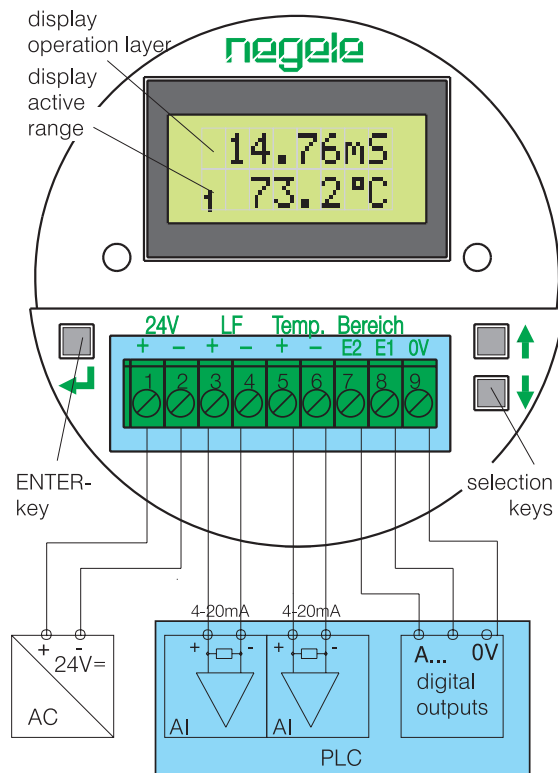
M12-plug right (5pin) supply-/control voltage



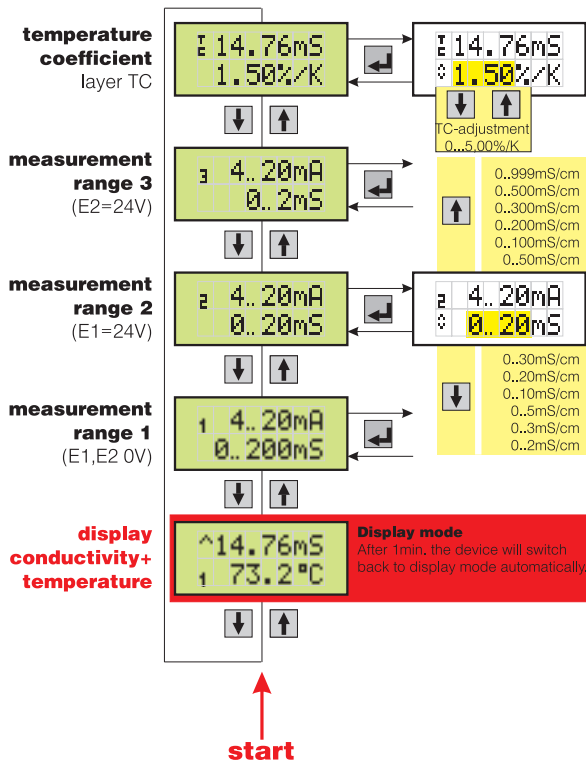
## Dimensioned Drawing ILM-2, ILM-3



## Electrical Connection



## Adjustment ILM-2



## Legend

^ -Symbol

"conductivity current output overload", will be displayed if the measured value is higher than the measurement range.

$I_{out}$ : about 22mA

4 (first line)

current editable range

1 (second line)

current selected measurement range

^, ^^^ -Symbol

the current measured value is higher than the selected measurement range.

$I_{out}$ : about 22mA

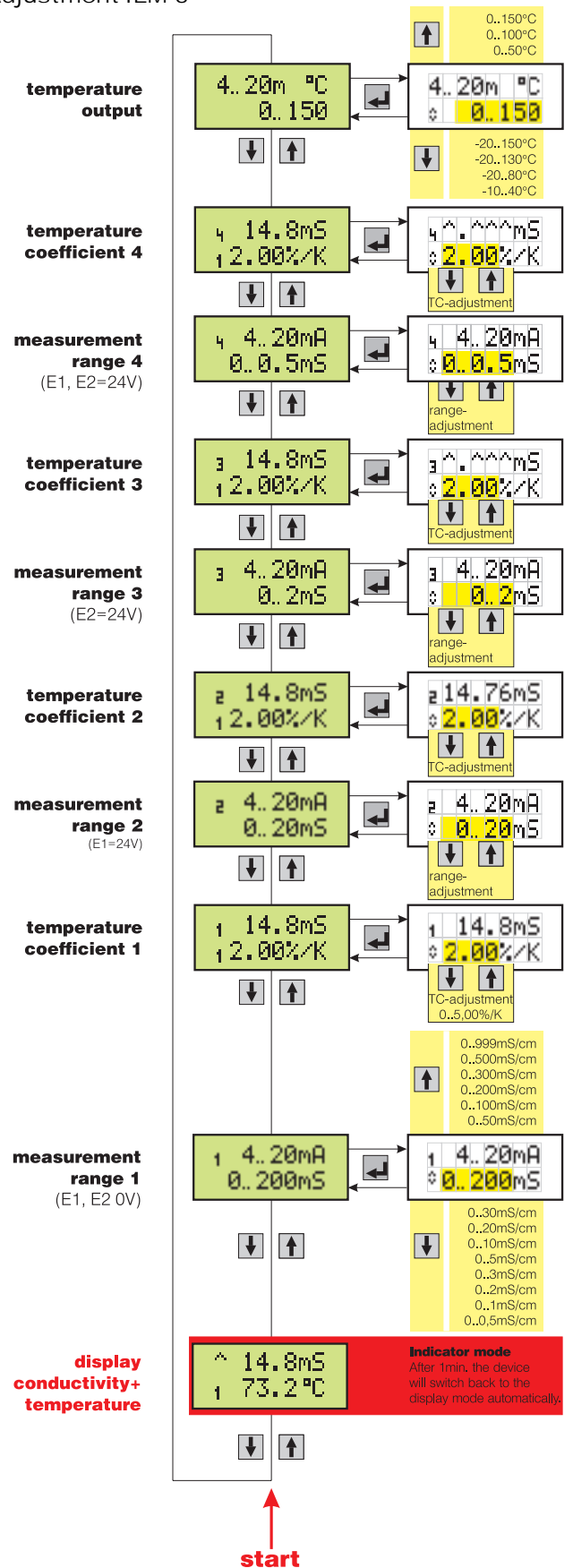
◊ -Symbol

the value in the margin is now editable by using the arrow-buttons

## Differences between ILM-3 and ILM-2

1. one more external switchable measurement range
2. one adjustable TC per measurement range
3. a selected sensor for higher accuracy in the smaller measurement ranges

## Adjustment ILM-3



Special version ILM-2 / L50 / M12



Suitable for pipes  
≥ DN65 or for  
building into a  
T-piece



ILM-2 devices in a CIP-cleaning-circuit for phase separation of lye - acid - water.

Overview of Deliverable Process Connections (Basic device and adapters order separately!)

ILM-2, ILM-3 with Adapter								
Process Connection	Build-in system EHG (DIN 11850 Reihe 2)	Negele weld-in sleeve	TriClamp	Diary flange (DIN 11851)	DRD (press ring optional deliverable)	Varivent	APV-Inline	BioControl
Size								
DN25	-	-	AMC-352/1"-1,5"	AMK-352/25		-	-	-
DN40	EHG-40/1"	EMS-352	AMC-352/1"-1,5"	AMK-352/40		AMV-352/40	AMA-352	AMB-352/50
DN50	EHG-50/1"	EMS-352	AMC-352/2"	AMK-352/50	AMK-352/50	AMV-352/40	AMA-352	and
DN65	EHG-65/1"	EMS-352	AMC-352/3"	AMK-352/65	(only one size)	AMV-352/40	AMA-352	AMB-352/65
DN80	EHG-80/1"	EMS-352	AMC-352/80	AMK-352/80		AMV-352/40	AMA-352	from DN40 up to DN100
DN100	EHG-100/1"	EMS-352	AMC-352/4"	AMK-352/100		AMV-352/100	AMA-352	
Order example:			TriClamp für DN100:	AMC-352 / 4"				