



More Precision

eddyNCDT // Eddy current sensors for displacement and position





- Easy sensor replacement
- Configuration via web browser
- High temperature stability, resolution and linearity
- Bandwidth 25 kHz (-3dB)
- Multi channel applications: synchronization of up to 10 controller

System design

The eddyNCDT 3100 includes an extremely compact controller and a displacement sensor. The sensors are connected through a 3m or 9m integrated, highly flexible cable and connected to the controller by a user-friendly push-pull plug-in connection.

The controller housing is made from solid cast aluminium and is protected to IP65. Alternative mounting options are slot nuts, mounting holes or a mounting rail. The robust sensors make the eddyNCDT 3100 system ideally suited to measurement tasks in the industrial environment.

Versatile in application

The eddyNCDT 3100 series is the new generation of eddy current displacement measurement systems. The measurement system uses a patented temperature compensation method to provide firstclass stability even with fluctuating temperatures. These sensors are an excellent choice when you need high precision in harsh industrial environments (pressure, dust, temperature).

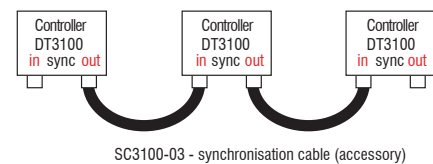
Sensors and cables come with an integrated memory module that stores all the major sensor and cable data. All sensors are factory calibrated to adjust to ferromagnetic and non-ferromagnetic materials.

Multi-channel synchronization

In the case that more sensors of the series eddyNCDT 3100 are operated next to each other, an influence due to a hardly different oscillator frequency (beat frequency) is possible. This can be avoided by synchronization. The eddyNCDT 3100-SM is equipped with two additional connectors for the oscillator output („SYNC OUT“) and for the input („SYNC IN“). The electronics is working independently until a connection is built. By means of the connections with the synchronization cable SC3100-0,3, the electronics switch automatically to synchronization mode. In this way, two up to ten systems can be synchronized with each other.



All settings are made in the intuitive web interface, eliminating the need for any special software.



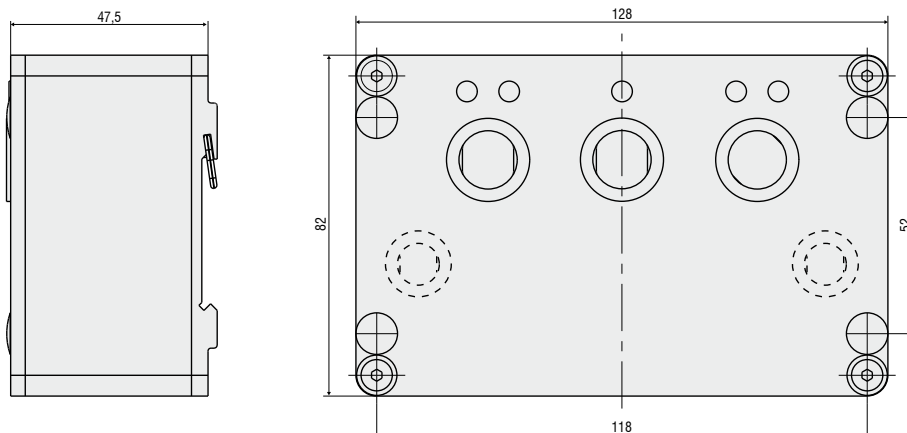
Controller		DT3100
Linearity		<0.25 % FSO
Resolution ¹⁾		0.005 % FSO
Bandwidth		voltage output: 25kHz (-3dB)
		digital (Ethernet): 14.4kHz; 7.2kHz; 3.6kHz (each 16 bit)
Temperature compensation range		standard: 10 ... 65 °C
Temperature range	controller	operation: 10 ... 50 °C
Temperature stability	controller (MMR)	0.05 % FSO / °C
Outputs		0 ... 10 V / - 5 ... + 5 V / 4 ... 20mA / Ethernet
Power supply		24 VDC (11 ... 30V) / ca. 5W
Synchronization	only DT3100-SM	via cable SC 3100-0,3 (accessories)
Protection class	controller	IP65 (connected plug-in connections/covers)

FSO = of full scale output

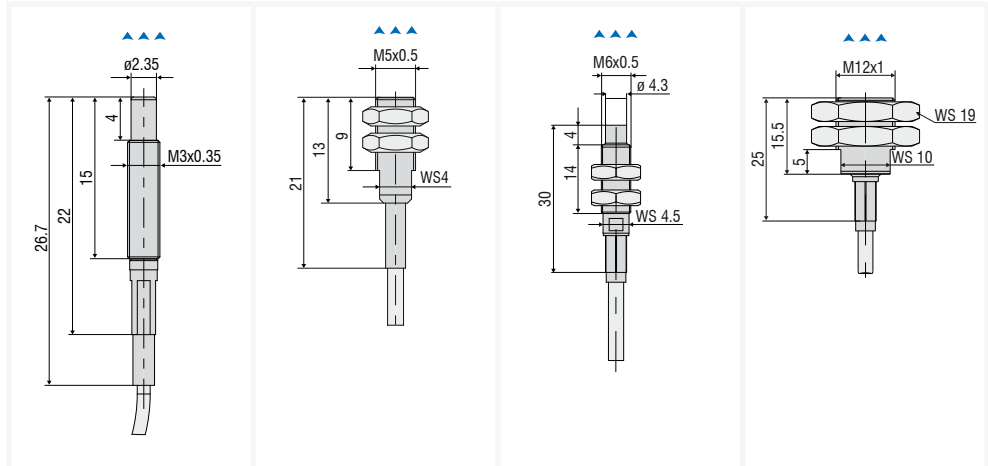
MMR = midrange

¹⁾ Static resolution, relates to center of measuring range; effective value (RMS)

Controller housing DT3100 / DT3100-SM

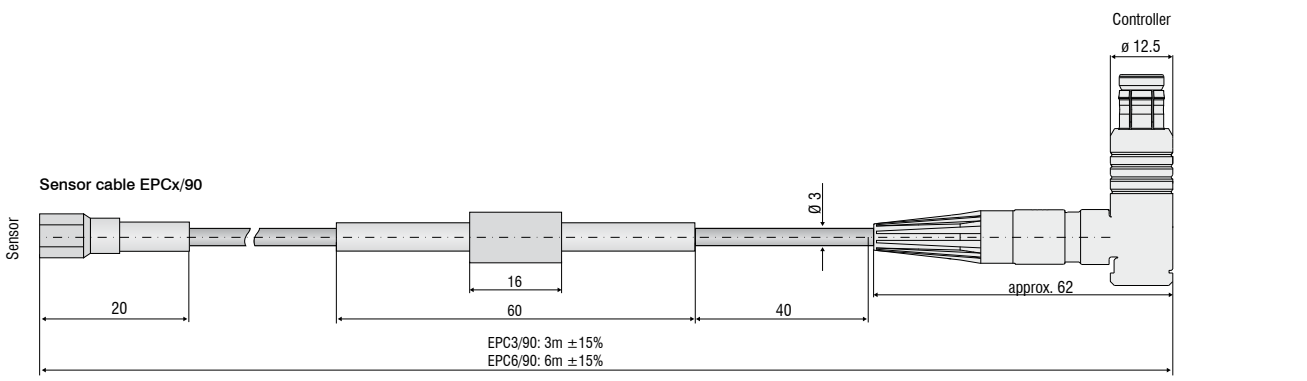
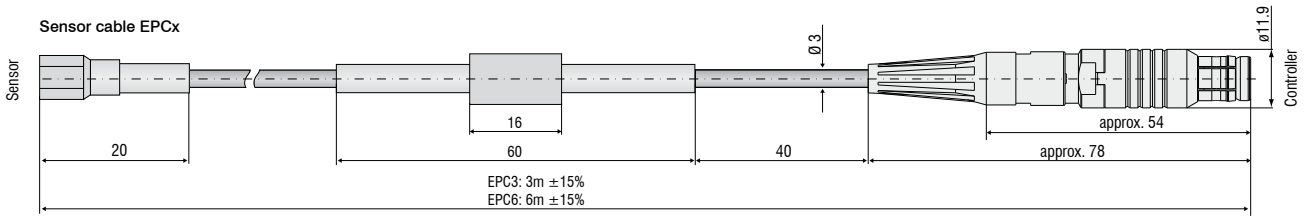


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Measurement direction

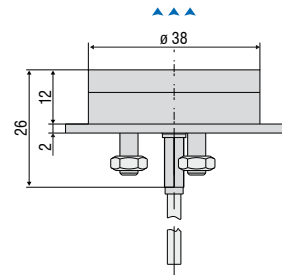
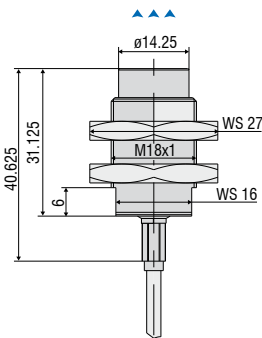
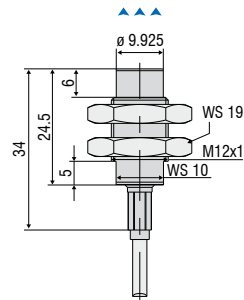


Sensor type	EPU05	EPS08	EPU1	EPS2
Design	unshielded	shielded	unshielded	shielded
Measuring range	0.5mm	0.8mm	1mm	2mm
Offset distance	0.05mm	0.08mm	0.1mm	0.2mm
Linearity	≤ 1.25μm	≤ 2μm	≤ 2.5μm	≤ 5μm
Resolution	0.025μm	0.04μm	0.05μm	0.1μm
Temperature stability (MMR)	≤ 0.25μm/°C	≤ 0.4 μm/°C	≤ 0.5μm/°C	≤ 1μm/°C
Temperature max.	100°C	100°C	100°C	100°C
Protection class (front and rear)	IP67	IP67	IP67	IP67
Integrated cable/ length	3m	3m	3m/9m	3m/9m
Temperature sensor cable	100°C	100°C	100°C	100°C
Housing material	stainless steel and ceramic	stainless steel and plastic	stainless steel and plastic	stainless steel and plastic

MMR = midrange



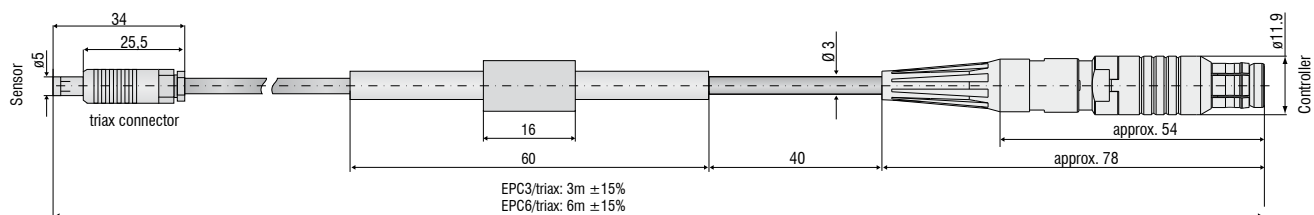
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Measurement direction



Sensor type	EPU3	EPU6	EPU15
Design	unshielded	unshielded	unshielded
Measuring range	3mm	6mm	15mm
Offset distance	0.3mm	0.6mm	1.5mm
Linearity	$\leq 7.5\mu\text{m}$	$\leq 15\mu\text{m}$	$\leq 37.5\mu\text{m}$
Resolution	$0.15\mu\text{m}$	$0.3\mu\text{m}$	$0.75\mu\text{m}$
Temperature stability (MMR)	$\leq 1.5\mu\text{m}/^\circ\text{C}$	$\leq 3\mu\text{m}/^\circ\text{C}$	$\leq 7.5\mu\text{m}/^\circ\text{C}$
Temperature max.	100°C	100°C	100°C
Protection class (front and rear)	IP67	IP67	IP67
Integrated cable/ length	3m/9m	3m/9m	3m/9m
Temperature sensor cable	100°C	100°C	100°C
Housing material	stainless steel and plastic	stainless steel and plastic	epoxy

MMR = midrange

Sensor cable EPCx/triax



Cable

Cable design	coaxial
Sheath material	TPE-U/ thermoplastic elastomers
Temperature resistance	-40°C to $+90^\circ\text{C}$
Outer diameter	$2.90\text{mm} \pm 0.2\text{mm}$
Length tolerance	$\leq 15\%$
Bending radius	one-time bending during installation: $7.5 \times$ cable diameter minimum bending radius for movement: $15 \times$ cable diameter
Suitable for use with robots	no

Plug Model

Type	6-pole male connector
Locking method	push-pull
Protection class	IP68 (when connected)
Temperature resistance	-40 to $+120^\circ\text{C}$
Material housing	Copper, nickel-plated
Mechanical service life	> 500 mating cycles

Controller side

Type	6-pole male connector
Locking method	push-pull
Protection class	IP68 (when connected)
Temperature resistance	-40 to $+120^\circ\text{C}$
Material housing	Copper, nickel-plated
Mechanical service life	> 500 mating cycles

Sensor side

Model	EPCx / EPCx/90
Type	female connector, coaxial, SMC
Locking method	screw
Protection class	no details
Temperature resistance	-65 to $+165^\circ\text{C}$
Material housing	Brass, gold plated
Mechanical service life	> 500 mating cycles

EPCx/triax

Type	male connector, triaxial
Locking method	push-pull
Protection class	IP67 (when connected)
Temperature resistance	-30 to $+150^\circ\text{C}$
Material housing	Brass nickel-plated, mat
Mechanical service life	> 500 mating cycles

Articel	Description	eddyNCDT 3001	eddyNCDT 3005	eddyNCDT 3010	eddyNCDT 3100	eddyNCDT 3300
PC3/8	Power- and output cable, 3m, 8 pin			•		
PC5/5	Power- and signal cable	•	•			
SC30	Synchronization cable, 30cm			•		
CSP 301	Digital signal processing and display unit up to 2 channels			•		
PC3100-3/6/BNC	Outputcable and supply unit, 3m				•	
PS2020	Power Supply 24V / 2.5A; Input 100-240 VAC; Output 24 VDC / 2.5A; DIN rail mounting; 35mm x 7.5mm, DIN 50022				•	•
MC2.5	Micrometer calibration fixture, range 0 to 2.5 mm, division 1 μ m, for sensors EPU05 to EPS2, adjustable offset (zero)			•	•	•
MC25D	Micrometer calibration fixture, range 0 to 25mm, division 1 μ m, for sensors EPU05 to EPU15, adjustable offset (zero)			•	•	•
ECx	Sensor cable, length selectable up to 15m					•
ECx/90	Sensor cable with 90° connector (sensor-sided) length selectable up to 15m					•
ECx/1	Extension cable for solder connection					•
ECx/2	Extension cable for plug connection					•
SCA3/5	Signal cable analog, 3m					•
SCA3/5/BNC	Signal cable analog with BNC connector, 3m					•
SCD3/8	Signal cable digital (switch input/outout), 3m (also for supply 11 - 32VDC); for DT3301					•
SIC3(07)	Signal cable with BNC connector for direct operation with oscilloscope					•
PSC30	Power / Synchronization cable, 0.3m, for DT3300					•
ESC30	Synchronization cable, 0.3m, for DT3301					•
PS300/12/5	Power supply Input 100 - 240VAC; Output \leq 12VDC / 5.2VDC integrated cable 1.5m; for max. 4x DT3300					•
MBC300	Mounting base for controller DT330x, fixing through M4 threaded holes 166x108x60mm					•
MCT304-SM	Tower for max. 4 controller DT 3300; supply 100 - 240VAC					•
MCT304(01)	Tower for max. 4 controller DT 3301; supply 11 - 32VDC					•

High performance sensors made by Micro-Epsilon



Sensors and systems for displacement and position



Sensors and measurement devices for non-contact temperature measurement



2D/3D profile sensors (laser scanner)



Optical micrometers, fiber optic sensors and fiber optics



Color recognition sensors, LED analyzers and color online spectrometer



Measurement and inspection systems