





Contact-Type Smart Sensor (Communications Type) E9NC-T



DurableSpace-savingAdvanced

Handles Diverse Measurement Applications





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Handles Diverse Measurement Applications



Handles Measurement Applications in Harsh Environments

Durable

Tough under Vibration and Shock Ball Spline Mechanism

Resists Water and Oil IP67 Degree of Protection and Magnetic Sensing Method

Withstands Bending Robot Cables



Angle Inspections for Camshafts

Handles Measurement Applications with Limited Space

Space-saving

Slim, Short Sensor Heads 8-mm outside diameter

Slim Amplifier Units Slim Body Only 10 mm Wide



Height Measurement for Assembled Watch Gears

Handles Advanced Measurement Applications *1

Advanced

Data Communications via Field Networks

High-precision Data Transmission (0.1-µm Resolution)

Connect Many Sensors

Connect Up to 30 Sensors with Reduced Wiring *2

Eight Calculation Functions *3

Maximum Value, Minimum Value, Flatness, Average, Step, Twist, Warp, and Thickness

*1. E9NC-TA0 only.



*3. Calculations are performed on the host controller. Special function blocks are available separately. For details, please contact your OMRON sales representative.



Measurement of Machined Part Precision

Durable

Tough under Vibration and Shock

Ball Spline Mechanism

A ball spline mechanism is used to hold the balls in grooves (on the right in the following diagram). This helps prevent the balls from damaging internal parts due to vibration or shock to reduce the chance of malfunction. In comparison with the previous method (on the left in the following diagram), load capacity is increased and an exceptionally smooth sliding operation is achieved for long-term stable operation.



Resists Water and Oil

IP67 protection is combined with a magnetic sensing method.

Even in the unlikely event that water, oil, or condensation enters the sensing section, this sensor is not affected by problems

such as light scattering, which can occur with optical sensors.

You therefore get stable detection even in harsh environments.

Hose

elbow

IP67 Degree of Protection *1 and

Detection is possible even with adhesion of oil.

Magnetic Sensing Method

4



Advanced

Data Communications via Field Networks

High-precision Data Transmission (0.1-µm Resolution)

With a standard type with an analog output, accuracy is reduced when the data is sent. With the communications type, however, the high-precision data measured at a resolution of 0.1 µm is transmitted as digital data without loosing any precision or accuracy.



Connect Many Sensors

Connect Up to 30 Sensors with Reduced Wiring *1

You can quickly and easily connect E9NC-TA0 Units to the E3NW-ECT Sensor Communications Unit. You can easily achieve simultaneous measurements or measurements for multiple processes. You can reduce wiring work in comparison with the analog output type.

 When using EtherCAT with an OMRON NJ-series Controller. With CC-Link, you can connect up to 16 Sensors.



Eight Calculation Functions

From Maximum/Minimum Values to Warp and Thickness

Just add function blocks to the host controller to easily perform various calculations.



*2. Function blocks are available for Mitsubishi Q-series and L-series Controllers. For details, please contact your OMRON sales representative. ON/OFF Output Type for Determinations E9NC-TA21/TA51

Easy Setup with One Button!

Smart Tuning

Just press the STUNE Button to easily set up various types of determinations.



Check Component Heights or Assembly Conditions Height Determination Set a threshold value for the standard height. GO (OK) NOGO (NG) Reference workpiece

Set the Head against the reference workpiece and press the S-TUNE Button.



Set the Head against each of the upper-limit and lower-limit workpieces and press the S-TUNE Button once for each.

Determine the Heights of Two Workpieces



Set the Head against each of the two workpieces and press the S-TUNE Button once for each.



Set the Head against the workpiece and press the S-TUNE Button.

Hybrid Output

You can use the hybrid output with the two outputs from the Amplifier Unit to determine if the high threshold value is exceeded or if the low threshold value is exceeded.

Outputs (Set for NO Operation) in Hybrid Output Mode

• •				
	LOW judgement	GO judgement	HIGH judgement	Error judgement or undetermined
Control output 1	OFF	ON	ON	OFF
Control output 2	ON	ON	OFF	OFF

Ordering Information

Sensor Heads (Connection Cable between Preamplifier and Amplifier Unit is not provided with the Sensor Head. Be sure to have the Connection Cable ready when using the Sensor.)

Туре	Appearance (Head size)	Measuring range (Moving range)	Resolution	Precision	Model
Straight Type	8 dia. 82.8 82.8				E9NC-TH5S 2M
Right-angle Air Type	8 dia. 82.7	5 mm			E9NC-TH5L 2M
Flanged Type/ Straight Type	M9 82.8 82.8	5 1111			E9NC-TH5SF 2M
Flanged Type/ Right-angle Air Type	M9 82.7		0.1.um	1 um	E9NC-TH5LF 2M
Straight Type	8 dia. ↓ 109.7 →		0.1 μm	ιμπ	E9NC-TH12S 2M
Right-angle Air Type	8 dia.	10 mm			E9NC-TH12L 2M
Flanged Type/ Straight Type	M9 + 109.7 - +	12 11111			E9NC-TH12SF 2M
Flanged Type/ Right-angle Air Type	M9 + 109.6 - +				E9NC-TH12LF 2M

Amplifier Units

Туре		Inputs/outputs	Model		
Communications Type * 1 Data communication		E9NC-TA0			
01/055	and the second s	1 input	NPN output	PNP output	
ON/OFF Output Type	+ 2 outputs	E9NC-TA21 2M	E9NC-TA51 2M		

*1. A Sensor Communications Unit is required if you want to use the Amplifier Unit on a network.

Connection Cable between Preamplifier and Amplifier Unit

Cable length	Model	Quantity
0.5 m	E9NC-TXC05	1
5 m	E9NC-TXC5	1
10 m	E9NC-TXC10	1
20 m	E9NC-TXC20	1

Accessories (Sold Separately)

• Sensor Head Accessories

Probe

The E9NC-TB1 is provided with the Sensor Head. Order replacements as required.

Туре	Appearance	Model	Quantity
3-dia. probe	6.	E9NC-TB1	1
Nylon probe	a	E9NC-TB2	1
Probe for flat surfaces	(FI)	E9NC-TB3	1

Amplifier Unit Accessories

Mounting bracket

A Mounting Bracket is not provided with the Amplifier Unit. It must be ordered separately as required.

Appearance	Model	Quantity
and	E39-L143	1

We also supply other accessories, such as Rubber Boots for Sensor Heads and DIN Track and End Plates and Covers for Amplifier Units. For details, refer to the E9NC-T Compact-Type Smart Sensor datasheet (Cat. No. E434-E1).

Related Products

• Sensor Communications Units

Туре	Appearance	Model
Sensor Communications Unit for EtherCAT	Jan Barris	E3NW-ECT
Sensor Communications Unit for CC-Link		E3NW-CCL
Distributed Sensor Unit*2	and the second s	E3NW-DS

*2. The Distributed Sensor Unit can be connected to any of the Sensor Communications Units.

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Note: Do not use this document to operate the Unit.