NEW

OMRON

N-Smart
Presence / Detection / Measurement

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

Durable

Space-saving

Advanced

Handles Diverse Measurement Applications

New Type with Communications

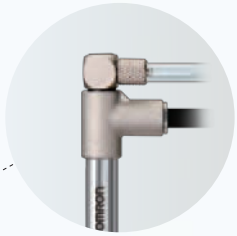
realizing

EtherCAT®

CC-Link V2

Handles Diverse Measurement Applications

Compatible with Air Lifters



Mount the accessory hose elbow to lift a probe with air pressure.

Flanged type is also available.
(Refer to page 5.)

Straight Type

Right-angle Air Type

Measuring Range:
12 mm

Measuring Range:
5 mm

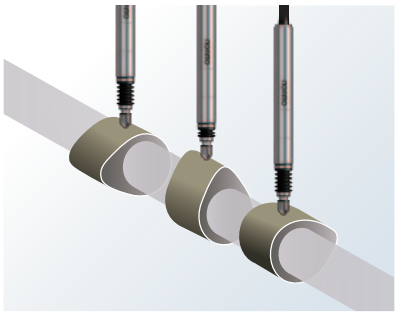
Handles Measurement Applications in Harsh Environments

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

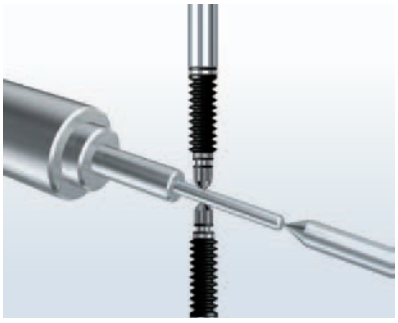
Handles Advanced Measurement Applications *1

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



Measurement of Machined Part Precision

*1. E9NC-TA0 only.

*2. You can connect up to 30 Sensors to an E3NW Sensor Communications Unit with EtherCAT (when using an OMRON NJ-series Controller) or up to 16 Sensors with CC-Link.

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

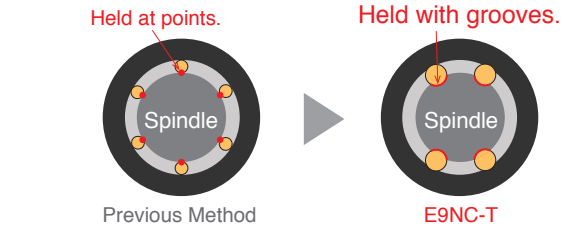
Durable

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.

Cross-sectional Area



Point

Full-stroke Sliding Operations

Over 92 Million Operations*2

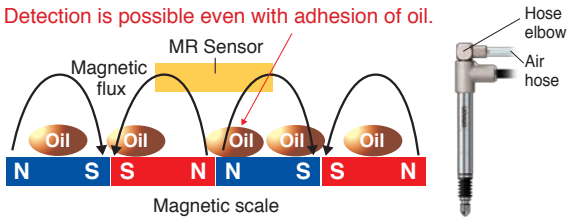
Hard materials that resist abrasion are used, and normal operation has been confirmed for more than 92 million sliding operations.

*2. Test results from more than two years of full-stroke slide testing (as of March 2014).

Resists Water and Oil

IP67 Degree of Protection*1 and Magnetic Sensing Method

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.



*1. For the right-angle type, this applies only when a hose elbow and air hose are connected. Straight type with IP67 protection is scheduled for release in the near future. For details, please contact your OMRON sales representative.

Point

Magnetic Sensing Method

There is a magnetic scale with north and south poles alternately positioned at a fine pitch on top of the spindle. The MR sensor detects a change in the magnetic flux from the north and south poles.

*Head (conceptual illustration)

Withstands Bending

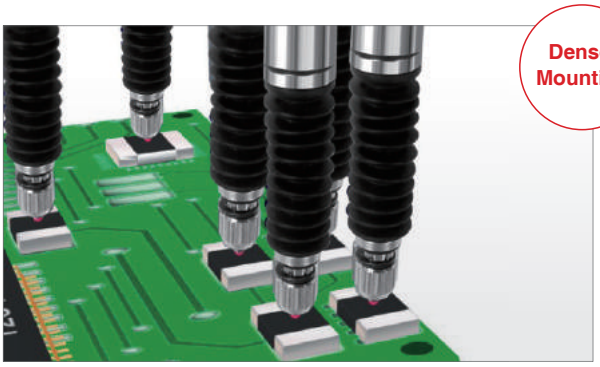
Robot Cables*3

*3. Robot cable specifications apply to the Sensor Head cable and the Connection Cable between the Preamplifier and the Amplifier Unit.

Space-saving

Slim, Short Sensor Heads

8-mm outside diameter



Dense Mounting

Measuring Dimensions of Electronic Components

Save more space and design more freely with the right-angle air type.

107.8 mm* even including the bending radius

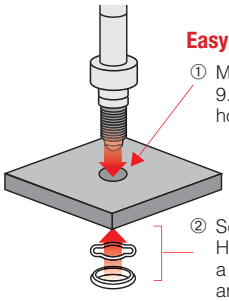
* For permanent bend

Actual Size *

* E9NC-TH5S (on the left) and E9NC-TH5L (on the right)

Point

Flanged Type to Simplify Installation



Easy to Secure

① Make a 9.7-mm-dia. hole.

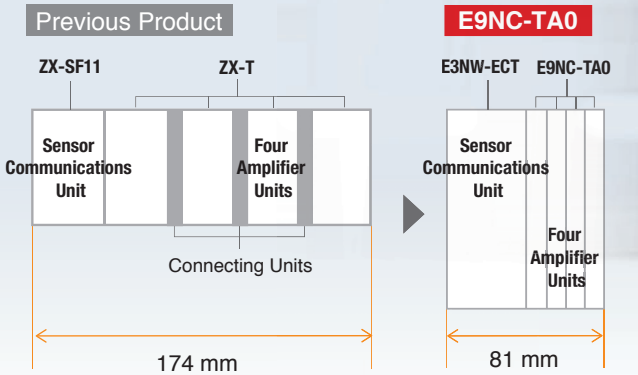
② Secure the Head with a washer and nut.

Easy Positioning

The flange is secured with the mounting plate, which simplifies positioning the case.

Slim Amplifier Units

Slim Body Only 10 mm Wide



1/2 the Space* of Previous Product

* For the above connection example.

Actual Size *

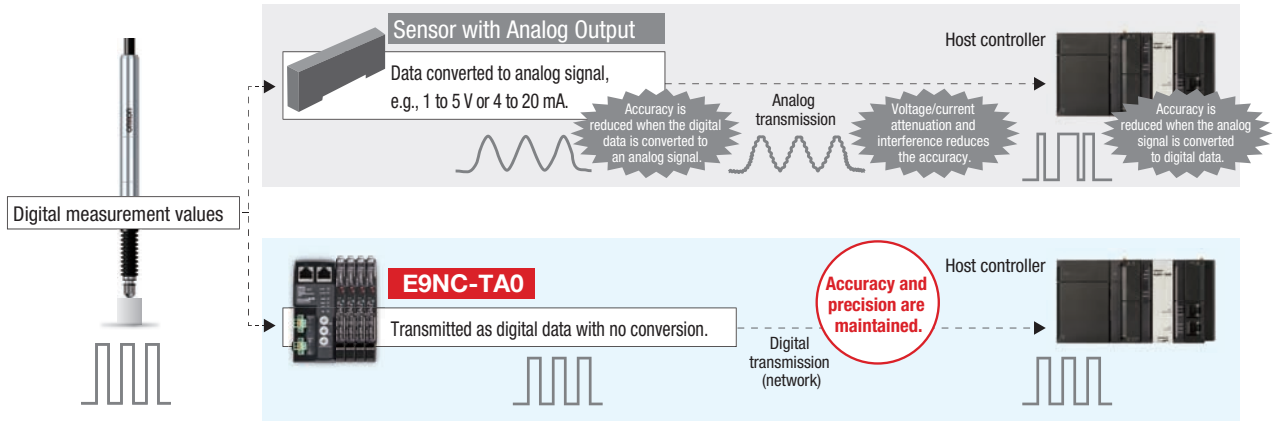
* On the left in the photo: E3NW-ECT (Sensor Communications Unit), on the right in the photo: E9NC-TA0 (four linked Units).

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.



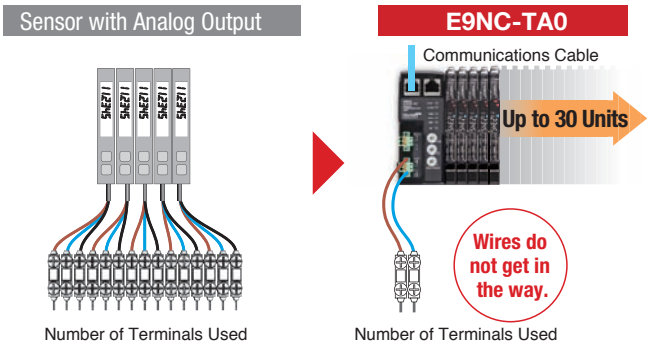
Connect Many Sensors

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.

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

■ **Comparison of Wiring When Connecting Five Sensors**



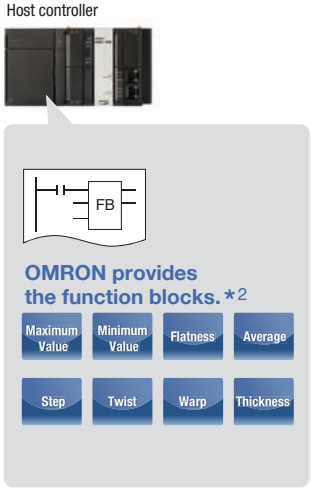
Total: **15** wires
Output wires (black): 5
Power wires (brown/blue): 10

Total: **3** wires
Communications wires (light blue): 1
Power wires (brown/blue): 2

Eight Calculation Functions

From Maximum/Minimum Values to Warp and Thickness

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



Measuring Dimensions of Machined Engine Parts

*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!

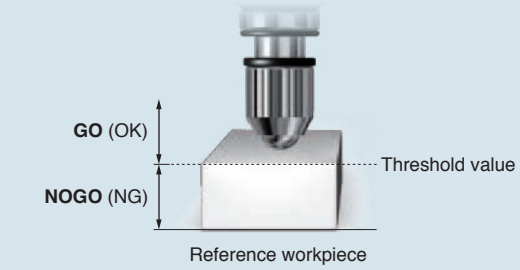
Smart Tuning

Just press the **TUNE 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.

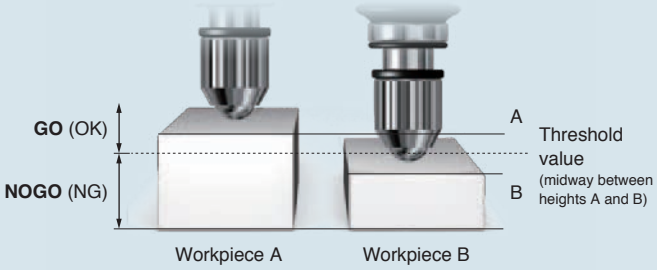


Set the Head against the reference workpiece and press the S-TUNE Button.

Determine the Heights of Two Workpieces

Model Determination

Determine the Difference in Heights between Two Workpieces



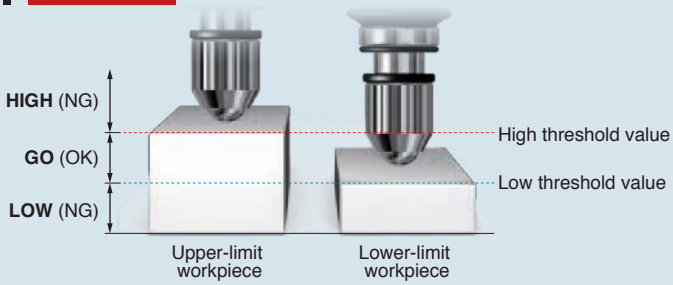
Set the Head against each of the two workpieces and press the S-TUNE Button once for each.

Determine If the Dimension of a Components is within a Specified Range

Hybrid Output

Determination within Range

Set upper and lower threshold values.



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

Determine If a Workpiece is within Tolerances

Hybrid Output

Determination within Tolerance

Set thresholds for the upper and lower limits of the plus-minus tolerance for the height of a reference workpiece.

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

Hybrid Output

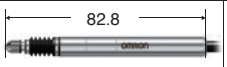
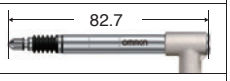
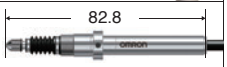
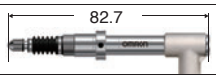
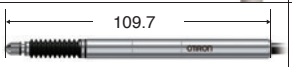
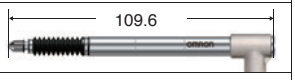
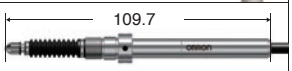
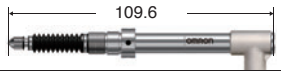
You can use the hybrid output with the two outputs from the Amplifier Unit to determine if the high threshold value is exceeded or if the low threshold value is exceeded.

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.)

Type	Appearance (Head size)	Measuring range (Moving range)	Resolution	Precision	Model
Straight Type	8 dia. 	5 mm	0.1 µm	1 µm	**E9NC-TH5S 2M**
Right-angle Air Type	8 dia. 				**E9NC-TH5L 2M**
Flanged Type/ Straight Type	M9 				**E9NC-TH5SF 2M**
Flanged Type/ Right-angle Air Type	M9 				**E9NC-TH5LF 2M**
Straight Type	8 dia. 	12 mm			**E9NC-TH12S 2M**
Right-angle Air Type	8 dia. 				**E9NC-TH12L 2M**
Flanged Type/ Straight Type	M9 				**E9NC-TH12SF 2M**
Flanged Type/ Right-angle Air Type	M9 				**E9NC-TH12LF 2M**

Amplifier Units

Type	Inputs/outputs	Model	
Communications Type ✶1 	Data communication	**E9NC-TA0**	
ON/OFF Output Type 	1 input + 2 outputs	NPN output	PNP output
		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.

Type	Appearance	Model	Quantity
3-dia. probe		**E9NC-TB1**	1
Nylon probe		**E9NC-TB2**	1
Probe for flat surfaces		**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
	**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

Type	Appearance	Model
Sensor Communications Unit for EtherCAT		**E3NW-ECT**
Sensor Communications Unit for CC-Link		**E3NW-CCL**
Distributed Sensor Unit ✶2		**E3NW-DS**

Refer to your OMRON website for details.
✶2. The Distributed Sensor Unit can be connected to any of the Sensor Communications Units.

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Authorized Distributor:

CSM_2_4_0716
Cat. No. E433-E1-02
Printed in Japan
0614 (0614)