Instruction Manual for work sensor K3S

This product is a work sensor with a high-accuracy contact type sensor built-in.

Dust and water-resistant structure resulted from careful study of harsh machining environment enables long product life.

The sensor should be used within its specification rating. Also, please read the following handling instructions and precautions carefully before use.

■Dimensions and specifications

Product No.	**K3S**
Repeatability*1,2,3	1 µm (2σ)
Contact force*1	X,Y=0.5-0.75 N Z=5.5 N
Stroke	X,Y=±9° Z=3.5 mm
Pretravel	0
Output mode	NC (Normally closed)
Output*2	NC (Normally closed) or NO (Normally open)
Detection direction	5-Direction ±X, ±Y, Z
Protective structure	IP68
Operating temperature range	0-60°C (no condensation), CL-Z1: 0-50°C
Contact rating*4	Power supply voltage: DC 24 V, steady-state current: 10 mA (max), inrush current: 20 mA (max)
Cable	Oil resistant, 2 cores, ⌀5, tensile strength 30 N, minimum bending radius R7, AWG26 equivalent
Standard accessory	External I/F unit CL-Z1

*1 Based on inspection with a standard stylus (F-R30T-205)
*2 At operating speed 50-500 mm/min
*3 Operating speed slower than 10 mm/min is not recommended.
*4 When using an external I/F unit CL-Z1

■Installation

1. Mechanical

Install the work sensor so that the contact of the stylus points to the right direction.

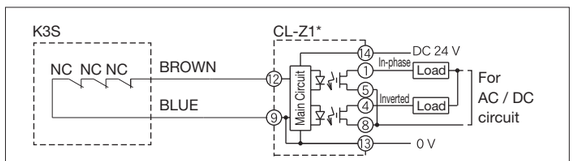
2. Electrical

1) Contact rating: DC24V±10%, 10mA (Max)

2) If the equipment itself is grounded, connecting the sensor so that it is connected to the ground side is recommended.

3) Connect to K3S dedicated I/F unit CL-Z1.

4) In the case of using Interface Unit, refer to the figure below for output specification.



***CL-Z1 specification**
Power supply voltage: DC 24 V Consumption current: 15 mA
Output capacity: DC 200 V 100 mA/AC 200 V 100 mA

* No socket is provided. Please use OMRON's MY2 relay socket (equivalent) or terminal block socket PYFZ-08 (equivalent).

3. Cable handling

1) Since the switching contacts and interface elements may be damaged due to the flow of current in excess of the rating caused by noise or surge induction, place the sensor at an adequate distance from any power lines or other sources of noise.

2) Do not pull the cable by excessive force. Max. 30N (3kgf).

3) The minimum bending radius of the cable is R7 mm.

4) Be careful during installation to avoid any damage on the cable. Resulting in loss of waterproofing property.

■How to use

How to touch the stylus

1) Move the stylus so that its contact ball is perpendicular to the surface of the object being measured.

2) Do not activate the stylus until the end of stroke.

3) To minimize stylus resonance, use the slowest possible speed when starting and stopping sensor movement.

4) The speed at which the sensor contacts the object to be measured is related to the electrical response speed of the machine side, so please set the speed so that it does not exceed the specified speed. To ensure the measurement accuracy of the sensor, it is recommended that the speed be set as follows: 50 to 500 mm/min.
(If the response speed of the machine's control system is 0.5 msec or faster.)

*** Turn on electricity only at the time of measurement.**

Terms of Warranty

We strive to achieve zero claims and complaints with respect to quality assurance.

Although malfunctions are a problem that comes before the warranty and even one should be prevented, malfunctions cannot be prevented through our efforts alone. We would therefore like to request that our customers have an understanding of the functions and specifications of applicable products as indicated in our catalogs, instruction manuals and web site to ensure that they are used properly.

Furthermore, applicable products are designed and manufactured primarily for general industrial use. Therefore, we would also like to request that our customers cooperate in employing a safe design for preventing accidents, fires and the like through the providing of failsafe measures, preventing operational errors and employing redundant designs.

1) Applicable Products

The warranty defined below is applicable to products manufactured and sold by Metrol (to be referred to as the "applicable products").

2) Warranty Period

The warranty period for applicable products is one year and three months following purchase or following delivery to the location designated by the customer.

**The initial three months are assumed to be a preparation period until use of the products following purchase.*

3) Range of Coverage

a. A replacement product will be provided or the malfunctioned product will be repaired free of charge in the case a malfunction has occurred in an applicable product that is attributable to the responsibility of the manufacturer within the warranty period.
However, applicable products are not covered by the warranty in the case of the following malfunctions even though said malfunctions have occurred within the warranty period.

(I) Malfunctions having occurred due to use of a product in a manner that deviates from standards, specifications, environments, usage procedures or usage precautions described in the catalog, instruction manual or specifications.

(II) Malfunctions having occurred for reasons other than those attributable to a delivered product.

(III) Malfunctions having occurred due to modifications or repairs made by persons other than the manufacturer.

(IV) Malfunctions having occurred due natural disasters, fires or other force majeure.

b. The range of coverage is limited to warranty of the applicable product only, and secondary damage attributable to a malfunction of an applicable product is not covered by the warranty.

c. Please be aware that charges for service calls (including installation, on-site confirmation and repairs) are not included in the price of products.

4) Applications

Applicable products are designed and manufactured as general-purpose products used in ordinary industrial environments. In the case of incorporating an applicable product in an apparatus, machine or system, please confirm the suitability of the application along with any related standards, regulations and restrictions. With respect to the applications indicated below in particular, customers are requested to conduct necessary tests on an actual product in advance after consulting with the manufacturer regarding usage conditions and other details.

a. Applications for which usage conditions or environment are outside those presumed by the manufacturer or applications unable to be confirmed as being appropriate by the manufacturer when using applicable products.

b. Applications likely to have an effect on human life or property (such as nuclear power equipment, transportation machinery or medical devices), applications used in public utilities (such as electricity, gas or water lines), or applications applying correspondingly thereto.

c. Applications in harsh environments (special environments requiring heat resistance, vacuum and the like)

**Although Metrol believes that sound reliability in harsh environments is one of the characteristics of our products, there are still cases in which it is difficult to ascertain actual circumstances.*
Since there is the potential for accidents in such cases, customers are requested to have an understanding of protective structures, materials and so forth and provide additional covers and other equipment as necessary.

5) Other Matters

The contents of this catalog, including types, specifications, and other matters, are subject to change without notice.

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