TMR7903-B

B Series AC Voltage Switch Sensor

DESCRIPTION

TMR7903-B is an AC voltage switch sensor based on the principle of electric field differential gradient. This sensor enables the detection of AC, pulsed and other irregular electric field signals with excellent galvanic separation performance by comparing whether the voltage of the cable under test is higher than the sensor threshold voltage. Voltage output and indicator light, the dual indication modes ensure its output accuracy. The compact, antenna free design allows TMR7903-B possessing excellent immunity to external EM interference performance and easy to installation.

FEATURES AND BENEFITS

- Compact size, simple design, easy installation
- Excellent insulation and galvanic separation performance
- Low power consumption
- Dual indication mode: voltage output and indicator light
- Antenna free, High immunity to external interferences
- Lightweight (~10g)

APPLICATIONS

- Power failure alarm
- Variable frequency drive
- Uninterruptible power supplies (UPS)
- Communication power supplies
- Switching power supplies

INSULATION AND ENVIRONMENTAL CHARACTERISTICS

Parameters	Symbol	Min.	Typ.	Max.	Unit
Dielectric strength, 50 Hz, 1 min	U_D	-	4.2	-	kV
Insulation resistance	R_{IS}	-	500	-	MΩ
Limit Voltage	V_{Pmax}	-	4.5	-	kV_{AC}
Maximum output current	I_{Omax}	-	100	-	mA_{DC}
Ambient operating temperature	T_A	-25	-	75	°C
Ambient storage temperature	T_{STG}	-40	-	85	°C
Ingress protection rating	-	-	IP64	-	-

SPECIFICATIONS

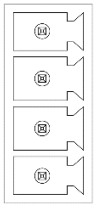
At T_A = 25 °C, unless otherwise noted

Parameters	Symbol	Conditions	Min.	Typ.	Max.	Unit
General Electrical Data						
Primary voltage, measuring range	V_P	T_A=+25°C	0		380	V_{AC}
Threshold voltage	V_{TH}	T_A=+25°C	80	90	100	V_{AC}
Supply voltage	V_{CC}	5%	10	12	30	V_{DC}
Current consumption	I_C	V_P<V_{TH}			16	mA
Output Voltage	V_{OUT}	V_P<V_{TH}, indicator off	2.4	2.5	2.6	V_{DC}
		$V_P \geqq V_{TH}$, indicator (red) on	4.9	5.0	5.1	
Temperature coefficient of V_{OS}	V_{OST}	-25°C to 75°C	-0.55		0.55	V/°C
Dynamic Performance Data						
Response time	t_R	-		500		ms

- The threshold voltage is customizable within the range of V_P
- The input voltage range is customizable

APPLICATION INFORMATION

Connections



1 GND to power supply 0V
2 GND to power supply 0V
3 V_{CC} to power positive
4 V_{OUT} to signal output

Figure 1. Secondary terminal 15EDGVC-3.81-4P

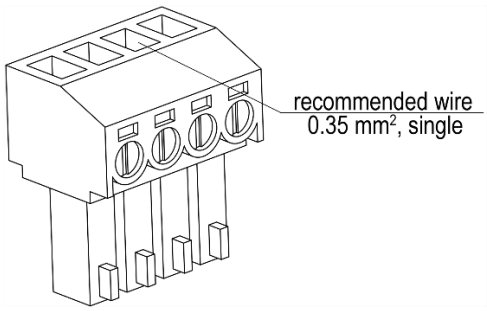


Figure 2. Adapter terminal 15EDGK-3.81-4T

Mounting Rules

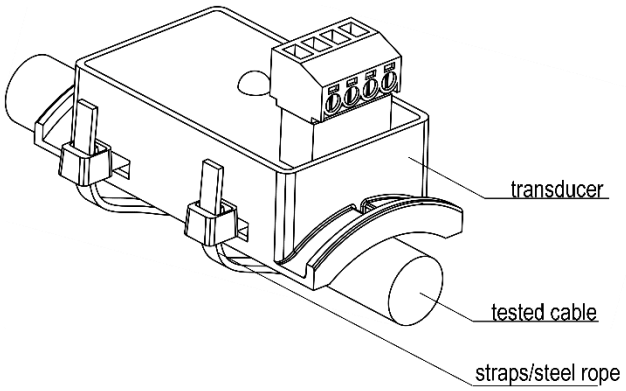


Figure 3. Tested cable mounted in the middle of the sensor

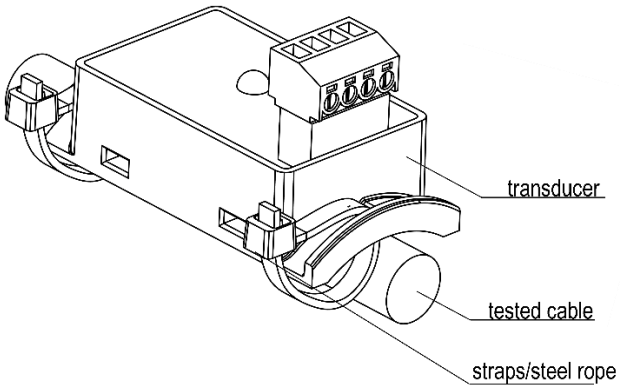


Figure 4. Tested cable mounted on one side of the sensor

Remarks

1. The product is especially suitable for the detection of single-phase single-wire power frequency voltage with a cable diameter of 10mm (cross-sectional area 150mm^2). The recommended installation distance is within 5mm (including covered insulation)
2. The cable under test should have no shielding layer, nor grounding or other treatment which may affect electric field distribution
3. Caution, risk of electrical shock. Please pay attention to the voltage level and insulation condition of the cable under test
4. The threshold voltage and input voltage range are customizable
5. The product has anti-reverse connection function, but improper connection may still cause damage to the product
6. To ensure that no significant change on the relative position between the product and the cable after fixing, please choose the proper cable tie to fix the product according to the cable diameter.
7. The product sensitivity will decrease when a neutral or ground wire is in the tested cable
8. Three-phase multi-wire transmission cables should be twisted internally. And the appropriate installation position could be determined by sliding the product along the cable when installing, since the sensitivity is position related.
9. It is recommended to connect pins 1 and 2 directly to improve the anti-interference performance and sensitivity.
10. Please avoid exposing the product to directly lightning struck environment, or measuring voltage exceeds the limit, which can cause the product permanent damage.
11. The cable direct leading model is recommended for the demand of sealing rating higher than IP64.
12. The product has built-in unrecoverable short circuit protection function
13. Product leakage current is 180 μA @ 25°C when Pin 0V is open. The 2kΩ~5kΩ input resistance at the end of field supervision unit (FSU) is recommended, to ensure FSU measured voltage is 1 V or less when circuit fails.

DIMENSIONS

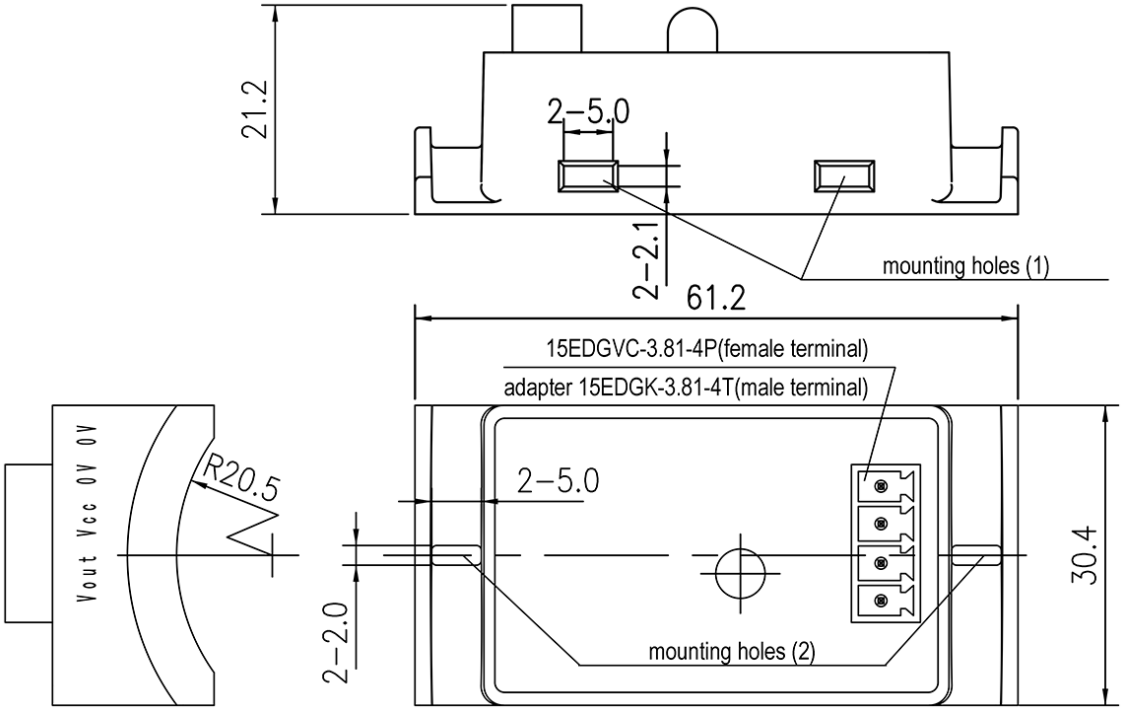


Figure 5. Sensor outline (unit: mm, tolerances for unmarked scales ±1 mm)

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