

UK6 M18 CILINDRYCAL ULTRASONIC SENSOR IN SHORT HOUSING

Installation Manual - 826001620 Rev. A- ENG - Created: 10/11/2022

SUPPLIED MATERIAL

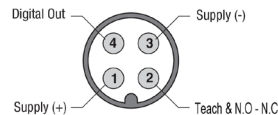
- Installation manual
- 2 plastic nuts SW22, h 8.3 mm (for plastic housing)
- 2 flexible washer (only for plastic version)
- 2 metallic nuts SW24, h 4 mm (for metallic housing)
- Safety instructions for dangerous areas (only for ATEX version)
- Declaration of CE conformity (only for ATEX version)
- Label ATEX marked (only for ATEX version)

GENERAL DESCRIPTION

- M18 ultrasonic sensors in short housing
- Models with single output:
 - Current analogue output (4 - 20 mA)
 - Voltage analogue output (0 - 10 V)
 - Digital output (NPN NO/NC selectable, PNP NO/NC selectable)
- Operating distance adjustment (Window Teach-in option and On object Teach-in option)
- Complete protection against electrical damages
- Double multifunction LED indicator
 - Orange LED: output state, Teach-in function
 - Green LED: echo
- Plastic and stainless steel AISI 316L (DIN 1.4404) housing

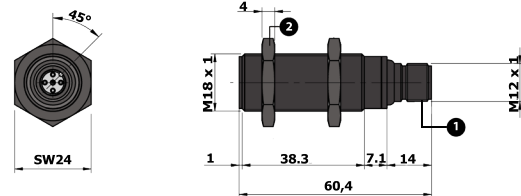
PLUGS

M12 UK6*/H*-*E

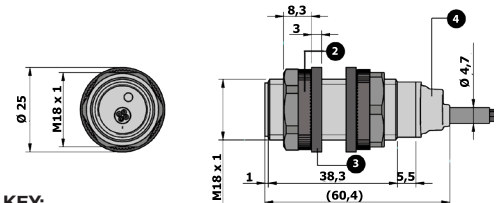


DIMENSIONS (mm)

Metallic connector version (plastic version available)



Plastic cable version (metallic version available)



KEY:

1 Connector output M12; 2 Plastic or metallic tightening nut; 3 Flexible washer; 4 Cable exit

INSTALLATION CONDITION

The standard fixation of the sensor has to be done using nut and flexible washer supplied with ultrasonic sensor (see Supplied Material). In case of non standard installation condition, as for example in case the sensor is fixed directly into metal block through hole or threaded, it is necessary to use always flexible washer and plastic nut to fix the sensor. Anyway both nuts and metal block have to be minimum 5 mm from the edge of the active face and it is necessary that the first 5 mm of the threaded housing are not screwed. Both metal blocks and nuts have to be connected to ground.

STATES PRESERVATION

The sensor preserves the last adjustment made, therefore removing the voltage supply and restoring it, the sensor works in according to last value of P1 and P2 point.

ATTENTION

Make sure that the supply voltage is correctly set with a ripple corresponding to the values indicated on the catalogue. In case the noise produced by the power lines exceeds the values foreseen by the CE norm (in-terference immunity), separate the sensor cables from both the power and high tension lines and insert it in a grounding metal raceway. Moreover it is advisable to connect the sensor directly to the supply source and not to other devices. To extend the supply and output cables, it is necessary to use a cable having conductors with a minimum size of 1 mm². The maximum length of extension is 100 m (this value is referred to a minimum tension and power supply at the load of 100 mA). In industrial environments, we recommend to use shielded cables in order to prevent possible disturbances on the devices caused by electromagnetic fields induced. Do not expose sensor head to hot water > 50 °C, water steam, acids or solvents. Clean the active face of the sensor with a wet cloth and then dry it.

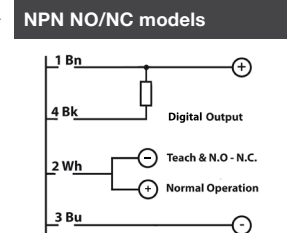
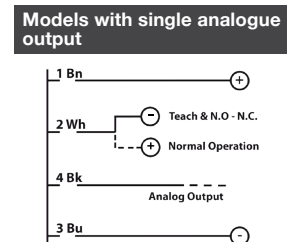
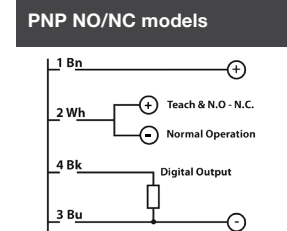
If the sensor is measuring across a temperature gradient, the compensation will be less effective. The temperature warm up drift upon power-up influence the measurement of the sensing distance. After 25 minutes, the sensing distance will be stable.

CODE STRUCTURE

UK	6	A	/	H	P	-	0	E	1E	UL	AN
UK	M18 ultrasonic sensor										
6	Short housing										
A	40-300 mm direct diffuse										
C	60-800 mm direct diffuse										
D	80-1,200 mm direct diffuse										
/											
H	Sensitivity adjustment and status selection by external Teach-in*										
P	PNP-NO/NC single digital output										
N	NPN-NO/NC single digital output										
1	0 ... 10 V single voltage analogue output										
2	4 ... 20 mA single current analogue output										
-											
0	Plastic housing										
1	Stainless steel AISI 316L (DIN 1.4404)										
E	M12 plug cable exit										
A	2 m PVC cable exit										
1E	Sn = 30...200 mm; S _d = 35...200 mm										
1F	Sn = 35...300 mm; Switching frequency: 25 Hz										
UL	cULus certified										
AN	ATEX certified, Cat. 3 Zone 2,22										

(*) Sensitivity adjustment, NO/NC selction and slope of analog output dony by external cable.

ELECTRICAL DIAGRAMS OF THE CONNECTIONS

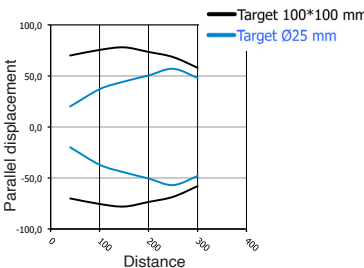


KEY:
BN = brown; BK = black;
BU = blue; WH = white

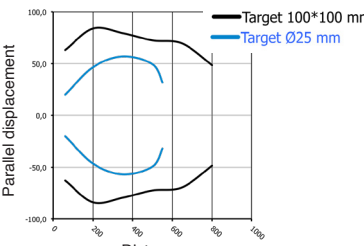
NOTE:
In case of combined load, resistive and capacitive, the maximum admissible capacity (C) is 0,1µF for maximum output voltage and current.

CHARACTERISTIC CURVES

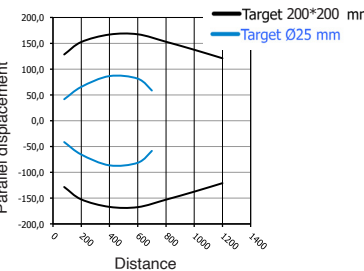
Parallel displacement UK6A/**-**



Parallel displacement UK6C/**-**



Parallel displacement UK6D/**-**



TECHNICAL SPECIFICATIONS

Models	UK6A/**-**	UK6C/**-**	UK6D/**-**
Maximum sensing distance	300 mm ⁽¹⁾	800 mm ⁽¹⁾	1.200 mm ⁽²⁾
Minimum operating distance (blind zone)	40 mm	60 mm	80 mm
Sensing range	40-300mm	60 - 800 mm	80 - 1.200 mm
Beam angle	7° ± 2°	7° ± 2°	8° ± 2°
Switching frequency	8 Hz	5 Hz	5 Hz
Response time (digital output)	60 ms	100 ms	100 ms
Hysteresis		1%	
Repeat accuracy		1%	
Linearity error		< 1%	
Temperature range		- 20°...+70° C - 20°...+50° C (for ATEX version)	
Temperature compensation		Yes	
Thermal drift		± 4%	
Operating voltage		+10... 30 Vdc	
Ripple		5%	
Leakage current		≤ 10 µA @ 30 Vcc	
Output voltage drop		2,2 V max. @ (IL=100 mA)	
No-Load supply		≤ 35 mA	
Maximum load current (digital output)		100 mA	
Response time analog output		≤ 400 ms	
Time delay before availability (digital output)		100 ms	
Supply electrical protections		Polarity reversal, transient	
Digital output electrical protections		Short circuit (auto reset), overvoltage pulses	
EMC		Conforming to the EMC Directive requirements according to EN 60947-5-2	
Electrical protection (analogue output)		Overvoltage pulses	
Protection degree		IP67 ⁽³⁾	
Housing material		PBT / stainless steel AISI 316L (DIN 1.4404)	
Front end material		Epoxy-glass resin	
Connector output		Grilamid	
Weight		plastic housing: 15 g (plug exit), 80 g (cable exit) metallic housing: 35 g (plug exit), 100 g (cable exit)	
Tightening torque		1 Nm plastic housing / 50 Nm metallic housing	
Storage temperature		-35° ...+70° C without freezing	

- (1) Metallic target 100x100 mm
- (2) Metallic target 200x200 mm
- (3) Protection granted only by plug mounted in a correct way

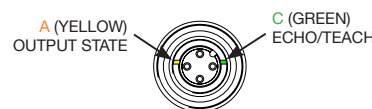
ERROR CONDITIONS

Error condition	Sensor state	Corrective action
Teach P2 (closest point) after the P1 (farthest point)	Orange LED blinks two times. The sensor maintains in the memory the last values selected.	Repeat correctly the Teach operation
Teach P1 (farthest point) within the working range and P at infinite	Orange LED blinks two times. The sensor maintains in the memory the last values selected.	

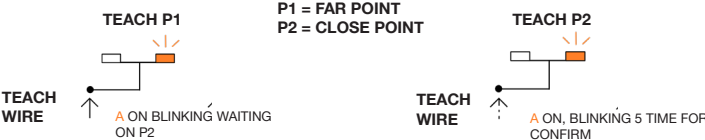
Nota: P1= P2 is not an error condition, it is permitted and it is the same as on object Teach-in option. The maximum distance is P1=(P2) and the minimum operating distance is reported in the table of technical specifications.

ADJUSTMENT

M18 LEDs



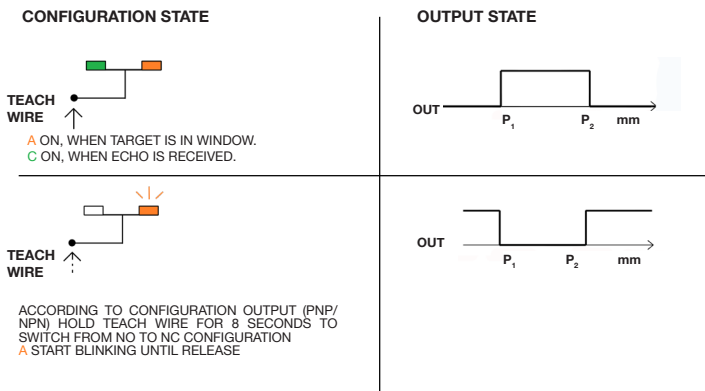
Teach options:



Model UK6A/HP-0E1EUL:



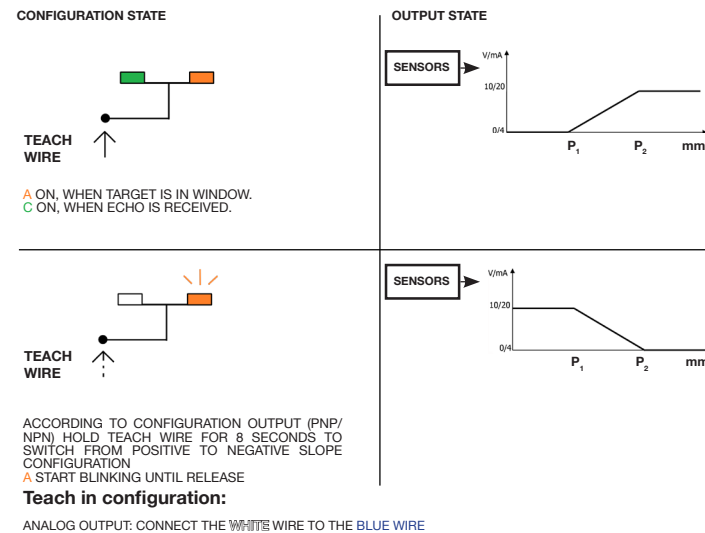
Single digital output



Teach in configuration:

DIGITAL OUTPUT
PNP: CONNECT THE WHITE WIRE TO THE BROWN WIRE
NPN: CONNECT THE WHITE WIRE TO THE BLUE WIRE

Single analog output



Micro Detectors
Italian Sensors Technology



II 3G Ex nA IIC T6 Gc
II 3D Ex tc IIIB T60°C Dc
Certificate Nr.: 1705026X



WARNING These products are NOT safety sensors and are NOT suitable for use in personal safety application

Declaration of conformity

Datasensing S.r.l. declares under its sole responsibility that these products are in conformity with the EMC directive.

Datasensing S.r.l.
Strada S. Caterina 235 - 41122 Modena - Italy
Tel. +39 059 420411 - Fax +39 059 253973 -
www.datasensing.com