Ultrasonic sensor UB2000-F54-U-V15





Bore hole and countersinking for screws/hexagon M4

80 ... 2000 mm

0 ... 80 mm

≤ 150 ms

flashing:

 \leq 55 mA

≤ 33 Hz

100 ... 2000 mm

100 mm x 100 mm

approx. 175 kHz



Features

- Analogue output 0 V ... 10 V
- · Measuring window adjustable
- TEACH-IN input
- Synchronisation options
- · Deactivation option
- Temperature compensation

Technical data

Dimensions

General specifications Sensing range Adjustment range Unusable area Standard target plate Transducer frequency Response delay Indicators/operating means LED green

LED yellow

LED red

Electrical specifications Operating voltage No-load supply current Io Input/Output Synchronisation

Synchronisation frequency Common mode operation

Deviation of the characteristic

Multiplex operation

Input

Input type

Output

curve

Output type

Resolution

Standards Ambient conditions

Connection

Transducer

Material Housina

Mass

Default setting

Repeat accuracy

Load impedance Temperature influence

Standard conformity

Ambient temperature Storage temperature

Mechanical specifications Protection degree

Electrical connection

Standard symbol/Connections:

(versio	110)		
	1	(BN)	+11
1 1	2	(WH)	— ∓ 0 _B — Tooching input
U	5	(GY)	
∿	4	(BK)	- Synchronous
*	3	(BU)	Analog output
		• • • • •	- U _B

Core colours in accordance with EN 60947-5-2.

Connector V15



1 synchronous input 0-level: -U_B...+1 V 1-level: +4 V...+U_B input impedance: > 12 KOhm synchronisation pulse: 0,1 ... 28 ms \leq 33 / n Hz, n = number of sensors

permanently green: monitoring system green flashing: TEACH-IN function

tlashing: normal mode: error TEACH-IN function: no object detected permanently: TEACH-IN mode, object uncertain

15 ... 30 V DC , ripple 10 %_{SS}

permanently yellow: object in the evaluation range yellow, flashing: TEACH-IN function, object detected

1 TEACH-IN input lower evaluation limit A1: -U_B ... +1 V, upper evaluation limit A2: +4 V ... +U_B input impedance: > 4.7 k\Omega, pulse duration: \geq 1 s

1 analogue output 0 ... 10 V evaluation limit 1: 100 mm evaluation limit 2: 2000 mm 0.47 mm ± 1 % of full-scale value ± 0,1 % of full-scale value ≥ 1 kOhm ± 1,5 % of full-scale value EN 60947-5-2

-25 ... 70 °C (248 ... 343 K) -40 ... 85 °C (233 ... 358 K) IP65 connector V15 (M12 x 1), 5 pin

ABS epoxy resin/hollow glass sphere mixture; polyurethane foam 100 g

CE

08163_ENG.xml

2004-11-05

Printed in Germany

Sensotronik AB • Tel.: +46 44 200 800 • Fax +46 44 200 899 • E-mail info@sensotronik.se • Internet http://www.sensotronik.se

Synchronisation

The sensor features a synchronisation input for the suppression of mutual interference. If this input is not used, the sensor will operate using an internally generated clock rate. The synchronisation of multiple sensors can be realised as follows:

External synchronisation:

The sensor can be synchronised by the external application of a square wave voltage. A synchronisation pulse at the synchronisation input starts a measuring cycle. The pulse must have a duration greater than 100 μ s. The measuring cycle starts with the falling edge of a synchronisation pulse. A low level > 1 s or an open synchronisation input will result in the normal operation of the sensor. A high level at the synchronisation input disables the sensor.

Two operating modes are available:

- 1. Multiple sensors can be controlled by the same synchronisation signal. The sensors are synchronised.
- The synchronisation pulses are sent cyclically to individual sensors. The sensors operate in multiplex mode.

Internal synchronisation:

The synchronisation connections of up to 5 sensors capable of internal synchronisation are connected to one another. When power is applied, these sensors will operate in multiplex mode.

The response delay increases according to the number of sensors to be synchronised.

Synchronisation cannot be performed during TEACH-IN and vice versa. The sensors must be operated in an unsynchronised manner to teach the evaluation limits.

Note:

If the option for synchronisation is not used, the synchronisation input has to be connected to ground (0V) or the sensor has to be operated via a V1 cable connector (4-pin).

Adjusting the evaluation range (analogue output)

The ultrasonic sensor has an analogue output with programmable evaluation limits. These are set by applying the supply voltage $-U_B$ or $+U_B$ to the TEACH-IN input. The supply voltage must be applied to the TEACH-IN input for at least 1 s. LEDs indicate whether the sensor has recognised the target during the TEACH-IN procedure. The lower evaluation limit A1 is taught with $-U_B$, A2 with $+U_B$.

Two different output functions can be set:

- 1. Analogue value increases with rising distance to object (rising ramp)
- 2. Analogue value falls with rising distance to object (falling rampe)

TEACH-IN rising ramp (A1 > A2)

- Position object at lower evaluation limit
- TEACH-IN lower limit A1 with U_B
- Position object at upper evaluation limit
- TEACH-IN upper limit A2 with + U_B

TEACH-IN falling ramp (A1 > A):

- Position object at lower evaluation limit
- TEACH-IN lower limit A2 with + UB
- Position object at upper evaluation limit
- TEACH-IN upper limit A1 with UB

LED Displays

Displays in dependence on operating mode	Red LED	Yellow LED	Green LED
TEACH-IN evaluation limit			
Object detected	off	flashes	flashes
No object detected	flashes	off	flashes
Object uncertain (TEACH-IN invalid)	on	off	flashes
Normal mode (evaluation range)	off	on	on
Fault	flashes	previous	off
		state	

Model number

UB2000-F54-U-V15

Characteristic curves/additional information

Characteristic response curve





Programmed analogue output function



Accessories

Programming unit UB-PROG2

Cable sockets *)

V15-G-2M-PVC V15-W-2M-PUR

^{*)} For additional cable sockets see section "Accessories".

2