

Model Number

UJ6000-FP-8B+RS

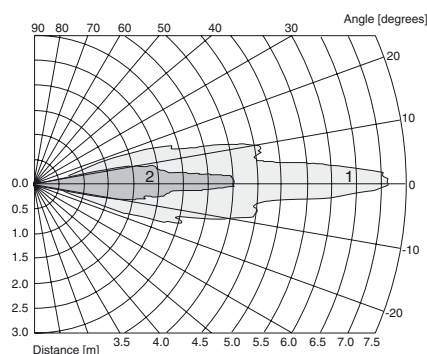
Single head system

Features

- 8 bit output
- Absolute polarity reversal protection
- Test input
- Fault output
- Serial interface
- Programmable with ULTRA 3000

Curves

Characteristic response curves



Curve 1: flat surface 100 mm x 100 mm
Curve 2: round bar, Ø 25 mm

Technical data

General specifications

Sensing range	800 ... 6000 mm
Unusable area	0 ... 800 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 65 kHz
Response delay	static 4: ≤ 720 ms (factory setting) static 1: ≤ 180 ms dynamic; ≤ 270 ms

Indicators/operating means

LED red/green	green LED: Power on red LED, flashing at 2 Hz: error (high level of external noise)
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Electrical specifications

Operating voltage U_B	20 ... 30 V DC , ripple 10 % _{SS}
No-load supply current I_0	≤ 90 mA

Interface

Interface type	RS 232, 9600 bit/s, no parity, 8 data bits, 1 stop bit
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Input

Input type	1 test input, (- U_B + 5 V) up to + U_B , ≤100 kOhm
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Output

Output type	8 bit output for outputting object distance, pnp 1 fault output, pnp NC
Rated operational current I_e	20 mA , short-circuit/overload protected
Voltage drop U_d	≤ 4 V
Resolution	21 mm , (corresponding to 1 LSB)
Repeat accuracy	21 mm , (corresponding to 1 LSB)
Range hysteresis H	21 mm , (corresponding to 1 LSB)
Temperature influence	0.17 % / K

Ambient conditions

Ambient temperature	-10 ... 50 °C (263 ... 323 K)
Storage temperature	-40 ... 85 °C (233 ... 358 K)

Mechanical specifications

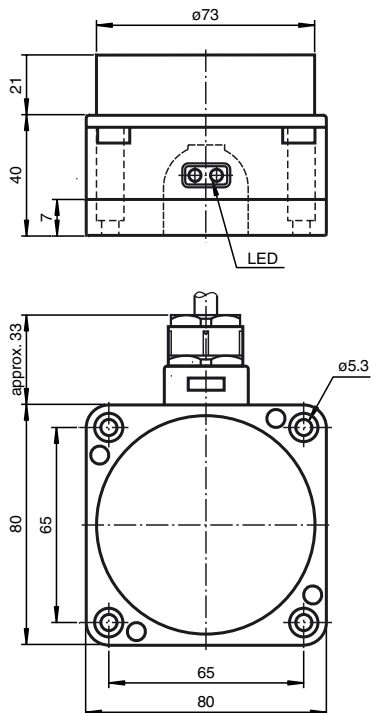
Protection degree	IP65
Connection	2 m, cable, 14 x 0.14 mm ² , cast terminal compartment
Material	
Housing	PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Mass	430 g

Compliance with standards and directives

Standard conformity	
Standards	EN 60947-5-2:2007 IEC 60947-5-2:2007

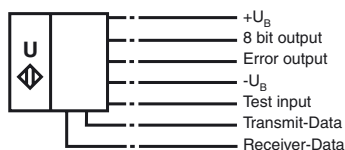
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Dimensions



Electrical Connection

Standard symbol/Connection:



Legend:
 $+U_B$ = Brown Test input = Grey/Pink
 $-U_B$ = Blue Error output = Red/Blue

Interface:
 Receiver-Data RD = White/Green
 Transmit-Data TD = Brown/Green
 8 bit output:
 A1 = White A2 = Yellow
 A3 = Pink A4 = Red
 A5 = Green A6 = Grey
 A7 = Black A8 = Violet

Description of the sensor functions

The measurement of the distance is realised using the echo time of the ultrasonic pulse. The μ processor calculates the distance on the basis of the echo time and the speed of sound. The distance is directly issued in parallel in the form of an 8-bit data word.

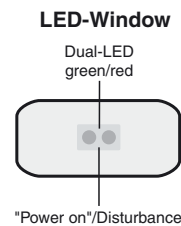
A serial interface (RS 232, 9 600, n, 8, 1) is also available.

The output functions can be set up flexibly. For further information on the sensor's command set, please see the publication "Command Set for Ultrasonic Sensors with RS 232 interface".

In the event of interference that the sensor cannot handle, the sensor goes into failure mode in that the failure output opens and the 8-bit output retains the most recent measuring value. The dual LED goes into the red flashing state.

A 1 level at the test input causes the 8-bit output to switch from 00000000 to 11111111 and back every 200 ms.

Additional Information



Accessories

- PA-02**
Accessories
- MH 04-3505**
Mounting aid
- MHW 11**
Mounting aid
- ULTRA3000**
Software for ultrasonic sensors, comfort line
- UC-FP/U9-R2**
Accessories

Thanks to its extensive command set, the sensor can be configured to suit the application via the RS 232 interface.

RS 232 command set (overview)

Command	Meaning	Parameter	Access
VS	Velocity of Sound	VS in [cm/s]	read
SD1	Switching Distance 1	SD1 distance in [mm]	read and set
SD2	Switching Distance 2	SD2 distance in [mm]	read and set
SH1	Switching Hysteresis 1	Hysteresis in [%]	read and set
SH2	Switching Hysteresis 2	Hysteresis in [%]	read and set
NDE	Near Distance of Evaluation	Near measuring window limit in [mm]	read and set
FDE	Far Distance of Evaluation	Far measuring window limit in [mm]	read and set
BDE	Both Distances of Evaluation	Measuring window limits in [mm]	read and set
REF	Reference measurement	Reference measurement	
FTO	Filter TimeOut	Number of measurements without echo to be filtered	read and set
EM	Evaluation Method	Evaluation method { 0=NONE; PT1[f,p,c]; MXN[m,n]; DYN[p] }	read and set
CON	CONservative filter	Counter threshold as number	read and set
FA1	Filter Activate for Output 1	Conservative or integrating filter (0 = inactive, 1 = active)	read and set
FA2	Filter Activate for Output 2	Conservative or integrating filter (0 = inactive, 1 = active)	read and set
FW	Filter Window	Filter width in % around measured value (5 ... 25)	read and set
OM	Output Mode	OM coded [close NO = 0, open NC = 1]	read and set
ODF	Output Data Format	Data format of the 8-bit output (8B = relative, BCD = absolute)	read and set
MD	Master Device	Function as master {0 = NONE},AD,RD,RT,SS,ATB,RDB,RTB }	read and set
CCT	Constant Cycle Time	Cycle time (0 = variable, 1 = constant)	read and set
CBT	Constant Burst Time	Length of the ultrasonic burst in μ s: 0 = variable, x = fixed (UJ3000: x = 20 ... 500; UJ6000: x = 50 ... 1000)	read and set
RT	Random Time	Random length pause between 2 measurements (= active, 0 = inactive)	read and set
DIP	Read DIP switches	DIP switch setting as hexadecimal string	read
AD	Absolute Distance	Distance in [mm]	read
RD	Relative Distance	Relative distance as number {0 ... 4095}	read
SS1	Switching State 1	SS1 binary [0: inactive, 1 active] (independent of OM)	read
SS2	Switching State 2	SS2 binary [0: inactive, 1 active] (independent of OM)	read
ODR	Object in Detection Range	Object in detection range (0 = no, 1 = yes)	read
OER	Object in Evaluation Range	Object in evaluation range (0 = no, 1 = yes)	read
ER	Echo Received	Echo detected: no, yes [0/1]	read
VER	VERsion	Version string: xxxx	read
ID	IDentification	ID string: P&F UJ...-8B-RS Eprom: xxxx Version yyyy	read
DAT	DATE	Date string: e.g. Date: 06/11/96 Time: 16:14:26	read
FT	Function Test	Performs self-test	Command
RST	ReSeT	Performs a reset	Command
DEF	DEFault settings	Restores defaults	Command

Programming instructions

Electrical connection of interface cable UC-FP/U9-R2 (see accessories).

Interface cable Conductor colour	Sensor terminal compartment Terminal no.
brown (TD)	4 (RD)
black (RD)	2 (TD)
blue (GND)	3 (-U _B)

Structure of the filter functions

