Model Number

UC2000-F43-2KIR2-V17

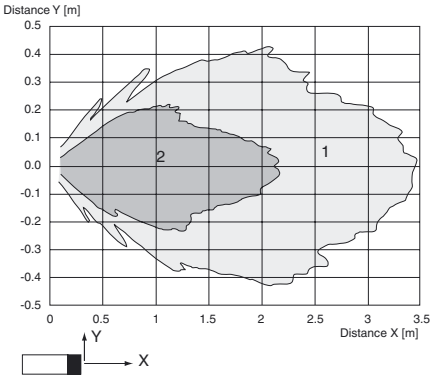
Single head system

Features

- **Current output 4 mA ... 20 mA**
- **2 relay outputs**
- **Serial Interfaces**
- **Temperature compensation**
- **Reverse polarity protection**
- **Programmable with ULTRA 3000**

Diagrams

Characteristic response curve



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

Technical data

General specifications	
Sensing range	80 ... 2000 mm
Adjustment range	100 ... 2000 mm
Unusable area	0 ... 80 mm
Standard target plate	100 mm x 100 mm
Transducer frequency	approx. 175 kHz
Response delay	minimum (EM; NONE): ≤50 ms (2 measuring cycles) factory setting (EM, MXN, 5, 2): ≤150 ms (6 measuring cycles) dynamic (EM, DYN): ≤75 ms (3 measuring cycles)
Indicators/operating means	
LED green	continuous: object in the measuring window flashing: object outside the measuring window
LED red	error (e. g. interference level too high)
Electrical specifications	
Operating voltage U_B	10 ... 30 V DC ripple ± 10 $\%_{SS}$
Power consumption P_0	≤ 2 W (all relays pulled-in, current output 20 mA) no-load power consumption ≤ 0.7 W
Interface	
Interface type	RS 232, 9600 bit/s, no parity, 8 data bits, 1 stop bit
Output	
Output type	2 relay outputs, 1 analog output 4 ... 20 mA
Resolution	0.6 mm
Deviation of the characteristic curve	< 0.2 % of full-scale value
Repeat accuracy	≤ 0.1 % of full-scale value
Range hysteresis H	0 ... 15 % programmable with ULTRA 2001
Load impedance	current output: ≤ 500 Ω at U_B ≥ 17V ≤ 200 Ω at U_B < 17V
Contact loading	60 V DC / 1 A (max. 24 W DC), ohmic
Life span	electrical: 3 x 10^5 switching cycles at resistive load (1 A / 24 V DC) mechanical: 10^7 switching cycles
Temperature influence	≤ 2 % of full-scale value
Ambient conditions	
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications	
Connection type	Connector M12 x 1 , 8-pin screen connected to pin 8
Protection degree	IP65
Material	
Housing	PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Mass	290 g
Compliance with standards and directives	
Standard conformity	
Standards	EN 60947-5-2:2007 IEC 60947-5-2:2007 EN 60947-5-7:2003 IEC 60947-5-7:2003
Approvals and certificates	
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
CCC approval	CCC approval / marking not required for products rated ≤36 V

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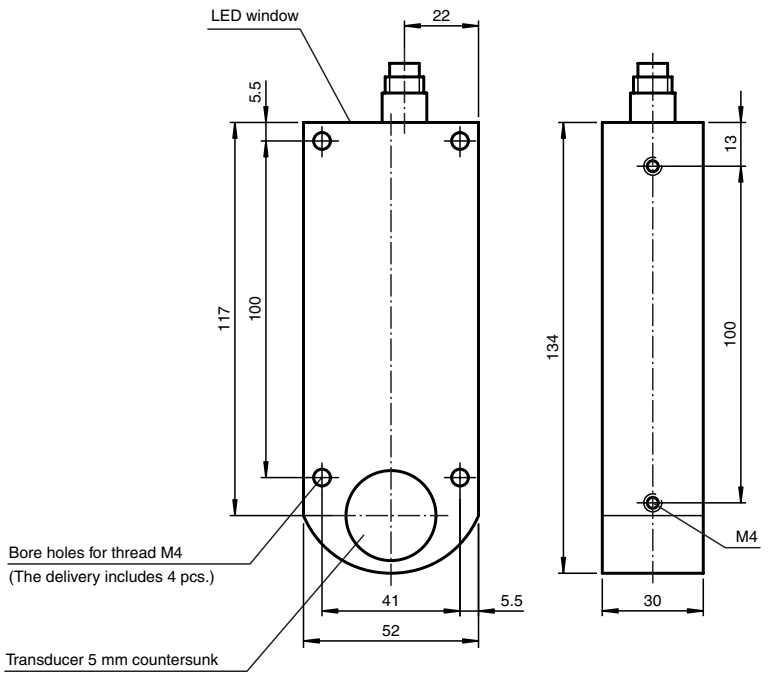
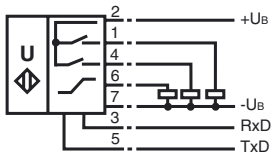
Dimensions

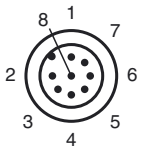


Electrical Connection

Standard symbol/Connection:



Pinout



Wire colors

1	WH	(white)
2	BN	(brown)
3	GN	(green)
4	YE	(yellow)
5	GY	(gray)
6	PK	(pink)
7	BU	(blue)
8	RD	(red)

Additional Information

Basic setting

OM:
Relay 1: NO
Relay 2: NO

SD1/SD2:
Switch point relay 1 = 100 mm
Switch point relay 2 = 2000 mm

NDE/FDE:
Analogue output: 4 mA ⇒ 100 mm
20 mA ⇒ 2000 mm

FSF:
Error ⇒ Relay 1 and 2: latest state
⇒ Analogue output: I_{OUT} = 3,9 mA

NEF:
No echo ⇒ error message

MA,S:
Switching mode

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Accessories

UC-F43-R2

ULTRA3000
Software for ultrasonic sensors, comfort line

V17-G-2M-PUR
Female cordset, M12, 8-pin, shielded, PUR cable

V17-G-5M-PUR
Female cordset, M12, 8-pin, shielded, PUR cable

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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
VS0	**V**elocity of **S**ound at **0** °C	Velocity of sound at 0 °centigrade VS0 in [cm/s] {12000 ... 60000)	read and set
VS	**V**elocity of **S**ound	Velocity of sound VS in [cm/s]	read
TO	**T**emperature **O**ffset	TO in [0.1K]	read and set
TEM	**TEM**perature	TEM in [0.1K]	read and adapt to TO
REF	**REF**erence measurement	REF distance in [mm] {100 ... 4000}	adaptation of VS0
SD1	**S**witching **D**istance **1**	Switching point, relay 1 SD1 in [mm] {100 ... 4000}	read and set
SD2	**S**witching **D**istance **2**	Switching point, relay 2 SD1 in [mm] {100 ... 4000}	read and set
SH1	**S**witching **H**ysteresis **1**	Hysteresis, relay 1 in [%] {0 ... 15}	read and set
SH2	**S**witching **H**ysteresis **2**	Hysteresis, relay 2 in [%] {0 ... 15}	read and set
NDE	**N**ear **D**istance of **E**valuation	Near measuring window limit in [mm] {100 ... 4000}	read and set
FDE	**F**ar **D**istance of **E**valuation	Far measuring window limit in [mm] {100 ... 4000}	read and set
BR	Unusable area (**B**lind **R**ange)	Unusable area in [mm] {0 ... 4000}	read and set
RR	**R**ange **R**eduction	reduces sensing range [in mm] {100 ... 4000}	read and set
CBT	**C**onstant **B**urst **T**ime	Burst length {0,1, 2, 3}	read and set
CCT	**C**onstant **C**ycle **T**ime	Time in [ms] {0 ... 1000}	read and set
FTO	**F**ilter **T**ime**O**ut	Number of measurements without echo to be filtered {0 ... 255}	read and set
EM	**E**valuation **M**ethod	Evaluation method { 0 = NONE; PT1[,f,p,c]; MXN[,m,n]; DYN[,p] }	read and set
CON	**CON**servative filter	Counter threshold as number {0 ... 255}	read and set
OM	**O**utput **M**ode	OM coded [normally-open = 0, normally-closed = 1, inactive = I]	read and set
FSF	**F**ail **S**afe **F**unction	Failure function type e.g. FSF,11,35 {0,1,2}, [fault current in 0.1 mA], -1 = current output indifferently	read and set
MD	**M**aster **D**evice	Function as master {0 = NONE},AD,RD,RT,SS,ADB,RDB,RTB }	read and set
MA	**M**ain **A**pplication	Determines whether the green LED orients on analogue output or switching outputs {A,S}	read and set
NEF	**N**o **E**cho **F**ailure	Sensor behaviour when no echo is present {0,1}	read and set
AD	**A**bsolute **D**istance	Distance in [mm]	read
RD	**R**elative **D**istance	Relative distance as number {0 ... 4095}	read
RT	**R**un**T**ime	Echo run time in machine cycles [1 machine cycle = 1.085µs]	read
SS1	**S**witching **S**tate **1**	SS1 binary [0: inactive, 1 active] (independent of OM)	read
SS2	**S**witching **S**tate **2**	SS2 binary [0: inactive, 1 active] (independent of OM)	read
ADB	**A**bsolute **D**istance **B**inary	Distance in [mm] not as ASCII	read
RDB	**R**elative **D**istance **B**inary	Relative distance as number {0 ... 4095} not as ASCII	read
RTB	**R**un**T**ime **B**inary	Echo run time in machine cycles [1 machine cycle = 1.085µs] not as ASCII	read
ER	**E**cho **R**eceived	Echo detected: no, yes [0/1]	read
VER	**VER**sion	Version string: xxxx	read
ID	**ID**entification	ID string: P&F UC2000-F43-2KIR2-V17...	read
DAT	**DAT**e	Date string: e.g. Date: 04/12/02 Time: 11:14:35	read
ST	**ST**atus	Status as hexadecimal string	read
RST	**R**e**S**e**T**	Performs a reset	Command
DEF	**DEF**ault settings	Restores defaults	Command
SUC	**S**tore **U**ser **C**onfiguration	Stores all settings	Command
RUC	**R**ecall **U**ser **C**onfiguration	Restores stored settings	Command

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