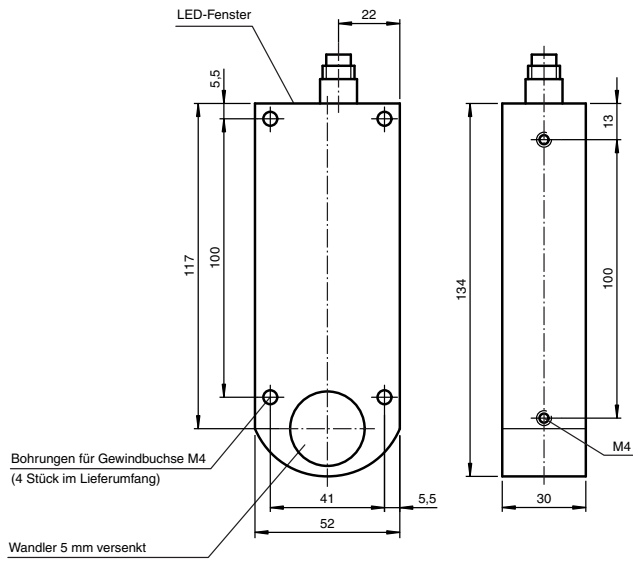
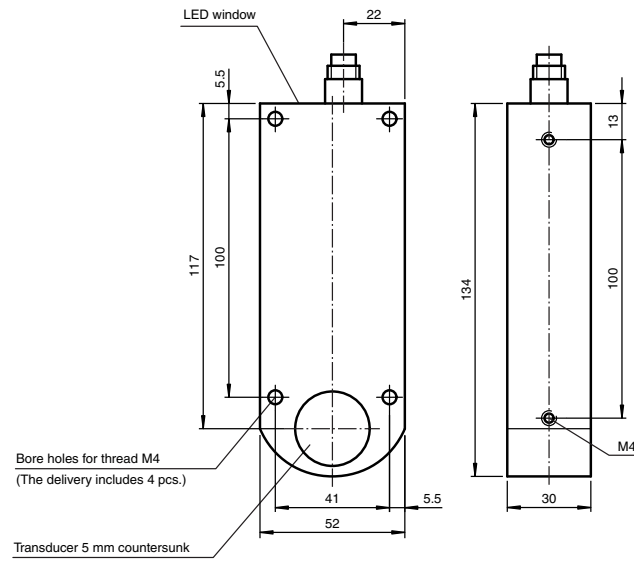


Abmessungen



Dimensions



Ultraschall-Sensor Ultrasonic Sensor UC2000-F43-2KIR2-V17

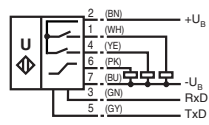


Doc. No.: 45-0909A
DIN A3 -> DIN
Part. No.: 120029
Date: 12/09/2009

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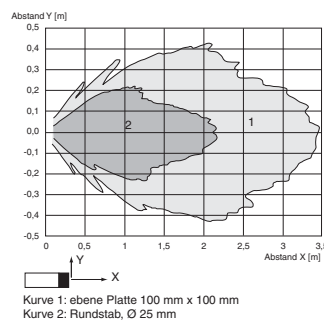
Elektrischer Anschluss/Kurven/Zusätzliche Informationen

Normsymbol/Anschluss:



Adernfarben gemäß EN 60947-5-2.

Charakteristische Ansprechkurve



Grundeinstellung

OM:
Relais 1: Schließer
Relais 2: Schließer

SD1/SD2:
Schaltpunkt Relais 1 = 100 mm
Schaltpunkt Relais 2 = 2000 mm

NDE/FDE:
Analogausgang: 4 mA \Rightarrow 100 mm
20 mA \Rightarrow 2000 mm

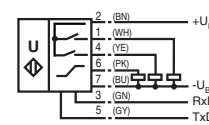
FSF:
Fehler \Rightarrow Relais 1 und 2: letzter Zustand
 \Rightarrow Analogausgang: I_{OUT} = 3,9 mA

NEF:
kein Echo \Rightarrow Fehlermeldung

MA,S:
Schaltbetrieb

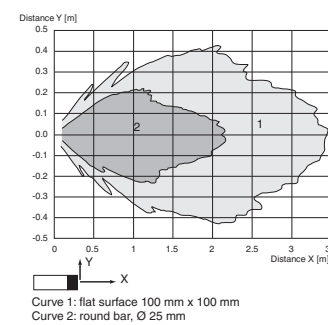
Electrical Connection / Curves / Additional Information

Standard symbol/Connection:



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

Characteristic response curve



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 \Rightarrow 100 mm
20 mA \Rightarrow 2000 mm

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

NEF:
No echo \Rightarrow error message

MA,S:
Switching mode

Steckverbinder V17



Connector V17



Technische Daten

Allgemeine Daten		
Erfassungsbereich		80 ... 2000 mm
Einstellbereich		100 ... 2000 mm
Blindzone		0 ... 80 mm
Normmessplatte		100 mm x 100 mm
Wandlerfrequenz		ca. 175 kHz
Ansprechverzögerung		minimal (EM; NONE): ≤ 50 ms (2 Messzyklen) Werkseinstellung (EM; MXN, 5, 2): ≤ 150 ms (6 Messzyklen) dynamisch (EM; DYN): ≤ 75 ms (3 Messzyklen)
Anzeigen/Bedienelemente		
LED grün		dauernd: Objekt im Messfenster blinkend: Objekt ausserhalb des Messfensters
LED rot		Störung (z. B. Störschallpegel zu hoch)
Elektrische Daten		
Betriebsspannung	U_B	10 ... 30 V DC Welligkeit ± 10 % _{SS}
Leistungsaufnahme	P_0	≤ 2 W (alle Relais angezogen, Stromausgang 20 mA) Leerlaufleistungsaufnahme $\leq 0,7$ W
Schnittstelle		
Schnittstellentyp		RS 232, 9600 Bit/s, no parity, 8 Datenbits, 1 Stoppbit
Ausgang		
Ausgangstyp		2 Relaisausgänge, 1 Analogausgang 4 ... 20 mA
Auflösung		0,6 mm
Kenmlinienabweichung		$< 0,2$ % des Endwertes
Reproduzierbarkeit		$\leq 0,1$ % des Endwertes
Abstandshysterese	H	0 ... 15 % parametrierbar über ULTRA 2001
Lastimpedanz		Stromausgang: $\leq 500 \Omega$ bei $U_B \geq 17V$ $\leq 200 \Omega$ bei $U_B < 17V$
Kontaktbelastung		60 V DC / 1 A (max. 24 W DC), ohmisch
Lebensdauer		elektrisch: 3×10^5 Schaltspiele bei ohm. Last (1 A / 24 V DC) mechanisch: 10^7 Schaltspiele
Temperatureinfluss		≤ 2 % des Endwertes
Umgebungsbedingungen		
Umgebungstemperatur		-25 ... 70 °C (248 ... 343 K)
Lagertemperatur		-40 ... 85 °C (233 ... 358 K)
Mechanische Daten		
Schutzart		IP65
Anschluss		Gerätestecker M12 x 1, 8-polig Schirmung mit Pin 8 verbunden
Material		
Gehäuse		PBT
Wandler		Epoxidharz/Glashohikugelgemisch; Schaum Polyurethan
Masse		290 g
Normen- und Richtlinienkonformität		
Normenkonformität		
Normen		EN 60947-5-2:2007 IEC 60947-5-2:2007 EN 60947-5-7:2003 IEC 60947-5-7:2003

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 $\leq 0,7$ W
Interface		
Interface type		RS 232, 9600 bit/s, no parity, 8 data bits, 1 stop bit
Output		
Output type		2 relay outputs, 1 analogue output 4 ... 20 mA
Resolution		0,6 mm
Deviation of the characteristic curve		$< 0,2$ % of full-scale value
Repeat accuracy		$\leq 0,1$ % of full-scale value
Range hysteresis	H	0 ... 15 % programmable with ULTRA 2001
Load impedance		current output: $\leq 500 \Omega$ at $U_B \geq 17V$ $\leq 200 \Omega$ at $U_B < 17V$
Contact loading		60 V DC / 1 A (max. 24 W DC), ohmic
Lifetime		electrical: 3×10^5 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 (248 ... 343 K)
Storage temperature		-40 ... 85 °C (233 ... 358 K)
Mechanical specifications		
Protection degree		IP65
Connection		connector M12 x 1, 8-pin screen connected to pin 8
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

RS 232-Befehlssatz (Kurzübersicht)

			Zugriff
VS0	Velocity of Sound at 0 °C	Schallgeschwindigkeit bei 0 °Celsius VS0 in [cm/s] {12000 ... 60000}	lesen und setzen
VS	Velocity of Sound	Schallgeschwindigkeit VS in [cm/s]	lesen
TO	Temperature Offset	TO in [0.1 K]	lesen und setzen
TEM	TEMperature	TEM in [0.1 K]	lesen und TO anpassen
REF	REFerence measurement	Entfernung REF in [mm] {100 ... 4000}	anpassen von VS0
SD1	Switching Distance 1	Schaltpunkt Relais 1 SD1 in [mm] {100 ... 4000}	lesen und setzen
SD2	Switching Distance 2	Schaltpunkt Relais 2 SD2 in [mm] {100 ... 4000}	lesen und setzen
SH1	Switching Hysteresis 1	Hysteresis Relais 1 in [%] {0 ... 15}	lesen und setzen
SH2	Switching Hysteresis 2	Hysteresis Relais 2 in [%] {0 ... 15}	lesen und setzen
NDE	Near Distance of Evaluation	untere Messfenstergrenze in [mm] {100 ... 4000}	lesen und setzen
FDE	Far Distance of Evaluation	obere Messfenstergrenze in [mm] {100 ... 4000}	lesen und setzen
BR	Blind Range	Blindzone in [mm] {0 ... 4000}	lesen und setzen
RR	Range Reduction	schränkt die Reichweite ein [in mm] {100 ... 4000}	lesen und setzen
CBT	Constant Burst Time	Burstlänge {0,1, 2, 3}	lesen und setzen
CCT	Constant Cycle Time	Zeit in [ms] {0 ... 1000}	lesen und setzen
FTO	Filter TimeOut	Anzahl der zu filternden Messungen ohne Echo {0 ... 255}	lesen und setzen
EM	Evaluation Method	Auswertemethode { 0 = NONE; PT1[,f,p,c]; MXN[,m,n]; DYN[,p] }	lesen und setzen
CON	CONservative filter	Zählerschwelle als Zahl {0 ... 255}	lesen und setzen
OM	Output Mode	OM kodiert [Schließer = 0, Öffner = 1, inaktiv = I]	lesen und setzen
FSF	Fail Safe Function	Fehlerfunktionstyp z. B. FSF,11,35 {0,1,2}, {[Fehlerstrom in 0.1 mA], -1 = Stromausgang indifferent}	lesen und setzen
MD	Master Device	Funktion als Master {0 = NONE},AD,RD,RT,SS,ADB,RDB,RTB }	lesen und setzen
MA	Main Application	legt fest, ob sich die grüne LED am Analogausgang oder an den Schaltausgängen orientiert {A,S}	lesen und setzen
NEF	No Echo Failure	Verhalten des Sensors, wenn kein Echo vorhanden {0,1}	lesen und setzen
AD	Absolute Distance	Entfernung in [mm]	lesen
RD	Relative Distance	Relativentfernung als Zahl {0..4095}	lesen
RT	RunTime	Echolaufzeit in Maschinenzyklen [1 mz = 1.085 µs]	lesen
SS1	Switching State 1	SS1 binär [0: inaktiv, 1 aktiv] (unabhängig von OM)	lesen
SS2	Switching State 2	SS2 binär [0: inaktiv, 1 aktiv] (unabhängig von OM)	lesen
ADB	Absolute Distance Binary	Entfernung in [mm] nicht als ASCII	lesen
RDB	Relative Distance Binary	Relativentfernung als Zahl {0..4095} nicht als ASCII	lesen
RTB	RunTime Binary	Echolaufzeit in Maschinenzyklen [1 mz = 1.085 µs] nicht als ASCII	lesen
ER	Echo Received	Echo erkannt: nein, ja [0/1]	lesen
VER	VERsion	Version string: xxxx	lesen
ID	IDentification	ID string: P&F UC2000-F43-2KIR2-V17...	lesen
DAT	DATe	Datumsstring: z. B. Date: 04/12/02 Time: 11:14:35	lesen
ST	STatus	Status als hexadezimal kodierter String	lesen
RST	ReSeT	führt einen Reset aus	Befehl
DEF	DEFault settings	zurücksetzen auf Voreinstellungen	Befehl
SUC	Store User Configuration	speichern aller Einstellungen	Befehl
RUC	Recall User Configuration	zurücksetzen auf gespeicherte Einstellungen	Befehl

RS 232 command set (overview)

Command	Meaning	Parameter	Access
VS0	Velocity of Sound at 0 °C	Velocity of sound at 0 °centigrade VS0 in [cm/s] {12000 ... 60000}	read and set
VS	Velocity of Sound	Velocity of sound VS in [cm/s]	read
TO	Temperature Offset	TO in [0.1K]	read and set
TEM	TEMperature	TEM in [0.1K]	read and adapt to TO
REF	REFerence measurement	REF distance in [mm] {100 ... 4000}	adaptation of VS0
SD1	Switching Distance 1	Switching point, relay 1 SD1 in [mm] {100 ... 4000}	read and set
SD2	Switching Distance 2	Switching point, relay 2 SD1 in [mm] {100 ... 4000}	read and set
SH1	Switching Hysteresis 1	Hysteresis, relay 1 in [%] {0 ... 15}	read and set
SH2	Switching Hysteresis 2	Hysteresis, relay 2 in [%] {0 ... 15}	read and set
NDE	Near Distance of Evaluation	Near measuring window limit in [mm] {100 ... 4000}	read and set
FDE	Far Distance of Evaluation	Far measuring window limit in [mm] {100 ... 4000}	read and set
BR	Unusable area (Blind Range)	Unusable area in [mm] {0 ... 4000}	read and set
RR	Range Reduction	reduces sensing range [in mm] {100 ... 4000}	read and set
CBT	Constant Burst Time	Burst length {0,1, 2, 3}	read and set
CCT	Constant Cycle Time	Time in [ms] {0 ... 1000}	read and set
FTO	Filter TimeOut	Number of measurements without echo to be filtered {0 ... 255}	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 {0 ... 255}	read and set
OM	Output Mode	OM coded [normally-open = 0, normally-closed = 1, inactive = I]	read and set
FSF	Fail Safe Function	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	Master Device	Function as master {0 = NONE},AD,RD,RT,SS,ADB,RDB,RTB }	read and set
MA	Main Application	Determines whether the green LED orients on analogue output or switching outputs {A,S}	read and set
NEF	No Echo Failure	Sensor behaviour when no echo is present {0,1}	read and set
AD	Absolute Distance	Distance in [mm]	read
RD	Relative Distance	Relative distance as number {0 ... 4095}	read
RT	RunTime	Echo run time in machine cycles [1 machine cycle = 1.085µs]	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
ADB	Absolute Distance Binary	Distance in [mm] not as ASCII	read
RDB	Relative Distance Binary	Relative distance as number {0 ... 4095} not as ASCII	read
RTB	RunTime Binary	Echo run time in machine cycles [1 machine cycle = 1.085µs] not as ASCII	read
ER	Echo Received	Echo detected: no, yes [0/1]	read
VER	VERsion	Version string: xxxx	read
ID	IDentification	ID string: P&F UC2000-F43-2KIR2-V17...	read
DAT	DATe	Date string: e.g. Date: 04/12/02 Time: 11:14:35	read
ST	STatus	Status as hexadecimal string	read
RST	ReSeT	Performs a reset	Command
DEF	DEFault settings	Restores defaults	Command
SUC	Store User Configuration	Stores all settings	Command
RUC	Recall User Configuration	Restores stored settings	Command