

EN

U1RT002 U1RT003

Ultrasonic Distance Sensor



Interface Description

U1RT002 / U1RT003

Vendor ID

Product	hex	dec	hex (Bytes)	dec (Bytes)
wenglor sensoric GmbH	0x0057	87	00 57	0 87

Device ID

Product	hex	dec	hex (Bytes)	dec (Bytes)
U1RT002	0x160D02	1445122	16 0D 02	22 13 2
U1RT003	0x160D03	1445123	16 0D 03	22 13 3

IO-Link Information

IO-Link Version:	V1.1
Data Storage:	Yes
Blockparameter:	Yes
Min Cycle time:	3,3 ms
SIO-Mode:	Yes
COM-Mode:	COM2
ISDU:	Yes
Process data In (Device to Master):	48 Bit
Process data Out (Master to Device):	8 Bit

IO-Link Profiles

Common Profile
Function Class Identification
Function Class Diagnosis
Smart Sensor Profil – Measuring Sensor, Type 3.3
Smart Sensor Profil – Transducer Disable
Common Profile

Process Input data

Device to Master

Subindex	Name	Bit Offset	Length	Range
1	Measurement Value: Distance in mm Distance in 1/10 Inch	16	Int16	100...1.2000 mm 39...472,5 1/10 inch
2	Scale	8	8 Bit	-3 = mm -1 = 1/10 inch
3	Indication Error/Warning 4	7	1 Bit	0 = false 1 = true
4	Indication Error/Warning 3	6	1 Bit	0 = false 1 = true
5	Indication Error/Warning 2	5	1 Bit	0 = false 1 = true
6	Indication Error/Warning 1	4	1 Bit	0 = false 1 = true
7	Error	3	1 Bit	0 = false 1 = true
8	Warning	2	1 Bit	0 = false 1 = true
9	SSC1 – Switching Signal 2	1	1 Bit	0 = false 1 = true
10	SSC1 – Switching Signal 1	0	1 Bit	0 = false 1 = true

These values are outside the measurement range and show information about the measurement

Measured Value =	0x8008	- 32760	Object too close
	0x7FF8	32760	Object too far
	0x7FFC	32764	No measurement data

	Octet 0 (MSB)								Octet 1								Octet 2								Octet 3 (LSB)							
Subindex	1																2								3	4	5	6	7	8	9	10
Bit Offset	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Measurement value 16 bit [0...15]																Scale															

Process Output data

Master to Device, if parameter “Process Data Type” = Normal

Subindex	Name	Bit Offset	Length	Range
4	Emitted Signal	0	1 Bit	0 = Enabled 1 = Disabled
3	Find Me	1	1 Bit	0 = Off 1 = Blinking
2	Teach SSC1	3	1 Bit	0 → 1 Start Teach
1	Teach SSC2	4	1 Bit	0 → 1 Start Teach

	Octet 0							
Subindex				1	2		3	4
Bit Offset	7	6	5	4	3	2	1	0

Process Output data

Master to Device, if parameter “Process Data Type” = extern Temperature

Subindex	Name	Bit Offset	Length	Range
1	External Temperature	0	SInt8	−30...+60°C

Octet 0								
Subindex	1	1	1	1	1	1	1	1
Bit Offset	7	6	5	4	3	2	1	0
External Temperature								

Parameter

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
Identification										
Vendor Name	0x0010	16	0	R	String 32 Byte				wenglor sensoric GmbH	
Vendor Text	0x0011	17	0	R	String 32 Byte				the innovative family	
Product Name	0x0012	18	0	R	String 32 Byte				U1RT002 U1RT003	
Product ID	0x0013	19	0	R	String 32 Byte				U1RT002 U1RT003	
Product Text	0x0014	20	0	R	String 32 Byte				Ultrasonic Distance Sensor	
Serial Number	0x0015	21	0	R	String 9 Byte				—	
Hardware Version	0x0016	22	0	R	String 32 Byte				—	
Firmware Version	0x0017	23	0	R	String 32 Byte				—	
Tags										
Application Specific Tag	0x0018	24	0	R/W	String 32 Byte	X			***	
Sensor Localisation										
Find Me	0x1200	4608	0	R/W	Uint8		X		0 = Off	0 = Off 1 = Blinking
Device Settings										
System Command	0x0002	2	0	W	Uint8			X	—	Restore Factory Settings = 0x82 (130)
Device Access Locks.Data Storage Lock	0x000C	12	2	R/W	Bool	X			0 = unlocked	0 = unlocked 1 = Data Storage Locked
Device Access Locks.Local Parameterization Lock	0x000C	12	3	R/W	Bool	X			0 = unlocked	0 = unlocked 1 = Local Parameterization locked
NFC Lock	0x0305	773	0	R/W	Uint8	X			0	0 = read/write 1 = read only 2 = locked
Measurement Value Settings										
Sensor Mode	0x0110	272	0	R/W	Uint8	X			0	0 = Normal 1 = Synchron Master Unit 2 = Synchron Sub Unit 3 = Barrier Emitter 4 = Barrier Receiver
Filter	0x00D0	208	0	R/W	Uint8	X			0	0...20
Emitted Signal	0x00E0	224	0	R/W	Uint8	X			0	0 = On 1 = Off
Sonic Cone	0x00E0	273	0	R/W	Uint8	X			0	0 = Standard 1 = Narrow 2 = Extra-narrow
Process Data Type	0x0114	276	0	R/W	Uint8	X		X	0 = Millimeter	0 = Millimeter 1 = Inch 2 = Millimeter (with external Temperature) 3 = Inch (with external Temperature)
Temperature Mode	0x0049	73	0	R/W	Uint8	X			0	0 = Internal 1 = External

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
External Temperature										
External Temperature value (°C) (only if external Temperature by Parameter)	0x0059	89	0	R/W	Sint8		X		0	-30...+60° C
Switching Signal Channel 1 – SSC1										
SSC1 Teach-Mode	0x0290	656	0	R/W	Uint8	X		X	0 = Foreground	0 = Foreground 1 = Background 3 = Window
SSC1 Internal Hysteresis	0x0230	560	0	R	Uint16		X		–	–
SSC1 Additional Hysteresis	0x0300	768	0	R/W	Uint16	X			0 mm	0...500 mm
SSC1 Foreground / Background (SSC1 Teach-Mode = Foreground / Background)										
SSC1 Param.Switch Point	0x0270	624	0	R/W	Uint16	X			1200 mm	100...1200 mm
SSC1 Window (SSC1 Teach-Mode = Window)										
SSC1 Switch Point Near	0x0271	625	0	R/W	Uint16	X			100 mm	100...1200 mm
SSC1 Switch Point Far	0x0272	626	0	R/W	Uint16	X			100 mm	100...1200 mm
Switching Signal Channel 2 – SSC2										
SSC2 Teach Mode	0x0291	657	0	R/W	Uint8	X		X	0 = Foreground	0 = Foreground 1 = Background 3 = Window
SSC2 Internal Hysteresis	0x0231	561	0	R	Uint16		X		–	–
SSC2 Additional Hysteresis	0x0301	769	0	R/W	Uint16	X			0 mm	0...500 mm
SSC2 Foreground / Background (Teach-Mode = Foreground / Background)										
SSC2 Switch Point	0x0280	640	0	R/W	Uint16	X			1200 mm	100...1200 mm
SSC2 Window (Teach-Mode = Window)										
SSC2 Switch Point Near	0x0281	641	0	R/W	Uint16	X			100 mm	100...1200 mm
SSC2 Switch Point Far	0x0282	642	0	R/W	Uint16	X			100 mm	100...1200 mm
Teach-In										
SSC1 Teach-In	0x0200	512	0	W	Uint8			X	—	0 = no action 1 = Teach-In Foreground / Background 2 = Teach-In Window Point Near 3 = Teach-In Window Point Far
SSC2 Teach-In	0x0201	513	0	W	Uint8			X	—	0 = no action 1 = Teach-In Foreground / Background 2 = Teach-In Window Point Near 3 = Teach-In Window Point Far
Pin Function										
E/A1 Pin Function	0x0040	64	0	R/W	Uint8	X		X	0 = Switching Output	0 = Switching Output SSC1 1 = Error Output 2 = Warning Output 3 = Emitted Signal Disengageable 4 = Extern Teach 5 = Disabled
E/A2 Pin Function	0x0041	65	0	R/W	Uint8	X		X	0 = Switching Output	0 = Switching Output SSC2 1 = Error Output 2 = Warning Output 3 = Emitted Signal Disengageable 4 = Extern Teach 5 = Disabled 6 = Antivalent Switching Output
E3 Pin Function (Disabled in Synchron Modes)	0x0042	66	0	R/W	Uint8	X		X	3 = Emitted Signal Disengageable	3 = Emitted Signal Disengageable 4 = Extern Teach 5 = Disabled

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
Digital Outputs										
A1 (SSC, Error or Warning Output)										
A1 On Delay	0x0050	80	0	R/W	Uint16	X			0 ms	0...10.000 ms
A1 Off Delay	0x0060	96	0	R/W	Uint16	X			0 ms	0...10.000 ms
A1 NO/NC	0x0210	528	0	R/W	Uint8	X			0 = NO	0 = NO 1 = NC
A1 NPN/PNP/P-P	0x0220	544	0	R/W	Uint8	X			0	0 = PNP 1 = NPN 2 = Push-Pull
A2 (SSC, Error or Warning Output)										
A2 On Delay	0x0051	81	0	R/W	Uint16	X			0 ms	0...10.000 ms
A2 Off Delay	0x0061	97	0	R/W	Uint16	X			0 ms	0...10.000 ms
A2 NO/NC	0x0211	529	0	R/W	Uint8	X			0 = NO	0 = NO 1 = NC
A2 NPN/PNP/P-P	0x0221	545	0	R/W	Uint8	X			0	0 = PNP 1 = NPN 2 = Push-Pull
A2 (Antivalent Switching Output)										
A2 NPN/PNP/P-P	0x0221	545	0	R/W	Uint8	X			0 = PNP	0 = PNP 1 = NPN 2 = Push-Pull
Digital Inputs										
E1 (Teach Input)										
E1 Input Ub Active/Inactive	0x0260	608	0	R/W	Uint8	X			0 = Ub active	0 = Ub Active 1 = Ub Inactive
E2 (Teach Input)										
E2 Input Ub Active/Inactive	0x0261	609	0	R/W	Uint8	X			0 = Ub active	0 = Ub Active 1 = Ub Inactive
E3 (Teach Input)										
E3 Input Ub Active/Inactive	0x0262	610	0	R/W	Uint8	X			0 = Ub active	0 = Ub Active 1 = Ub Inactive

Diagnosis

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
Status										
Device Status	0x0024	36	0	R	UInt8		X		0	0 = Proper Operation 1 = Maintenance required 2 = Out of specification 3 = Functional check 4 = Failure
Detailed Device Status	0x0025	37	0	R	Array of StringT3		X		0	Shows the pending Events (maximum 4)
Additional Status Information	0x1300	4864	0	R	UInt32		X		0	Value 0 = No Warning / Errors Measurement: Bit 0 = Signal Warning Bit 4 = Object to Close Bit 5 = Object to Far Bit 6 = No Measurement data Bit 8 = Emitted Signal off Other: Bit 17 = Fatal Device Error Bit 28 = Undervoltage detection Bit 29 = Short Circuit
Self Check	0x2518	9496	0	R	UInt32		X		—	—
Condition Monitoring Configuration										
Process Data Indication										
Indication Error/Warning 1	0x1310	4880	0	R/W	UInt8	X			Signal Warning	31 = No Warning / Error Mapped Measurement: 0 = Signal Warning 4 = Object Too Close 5 = Object Too Far 6 = No Measurement Data 8 = Emitted Signal Off Others: 17 = Fatal Error 28 = Undervoltage 29 = Short Circuit
Indication Error/Warning 2	0x1311	4881	0	R/W	UInt8	X			Short Circuit	
Indication Error/Warning 3	0x1312	4882	0	R/W	UInt8	X			Undervoltage	
Indication Error/Warning 4	0x1313	4883	0	R/W	UInt8	X			No Measurement Data	
Warning Output Configuration	0x1314	4884	0	R/W	UInt32	X			• Signal Warning • Undervoltage detection	0 = Not use as Warning / Error 1 = Used as Warning / Error
Error Output Configuration	0x1315	4885	0	R/W	UInt32	X			• Object to close • Object to far • No Measurement data • Fatal Device Error • Short Circuit	Measurement: Bit 0 = Signal Warning Bit 4 = Object Too Close Bit 5 = Object Too Far Bit 6 = No Measurement Data Bit 8 = Emitted Signal Off Other: Bit 17 = Fatal Device Error Bit 28 = Undervoltage Bit 29 = Short Circuit
Measuring Data Channel										
MDC Descr.Lower Limit	0x4080	16512	1	R	Int32				100	100 mm / 39 1/10 inch
MDC Descr.Upper Limit			2	R	Int32				1.200	1.200 mm / 472,5 1/10 inch
MDC Descr.Unit Code			3	R	UInt16				1010 = Meter 1019 = inch	1010= Meter 1019 = inch
MDC Descr.Scale			4	R	Int8				− 3	10 ^{−3} Meter = mm / 10 ^{−1} = 1/10 inch
Device Simulation										
Simulation Mode	0x0310	784	0	R/W	UInt8		X		0	0 = Off 1 = On

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
Device Simulation Enabled (Simulation Mode= 1)										
Simulation Measurement Value	0x0315	789	0	R/W	Uint32		X		65536	0...1.200 measurement value [mm] 1.201 = Too Far 1.202 = No Measurement 65536 = Use Process Value
Simulation SSC1	0x0331	817	0	R/W	Uint8		X		2	0 = Off 1 = Active 2 = Use Process Value
Simulation SSC2	0x0332	818	0	R/W	Uint8		X		2	0 = Off 1 = Active 2 = Use Process Value
Simulation Signal Warning	0x031B	795	0	R/W	Uint8		X		2	0 = Off 1 = Active 2 = Use Process Value
Simulation Fatal Device Error	0x0323	803	0	R/W	Uint8		X		2	
Simulation Undervoltage	0x0327	807	0	R/W	Uint8		X		2	
Simulation Short Circuit	0x0328	808	0	R/W	Uint8		X		2	

Events

Name	Event Code	Type	Specification
General malfunction – unknown error	0x1000	Error	IO-Link
Short circuit – Check installation	0x7710	Error	IO-Link
Primary supply voltage under-run – Check tolerance	0x5111	Warning	IO-Link