

EN

U18T002

Ultrasonic Distance Sensor



Interface Protocol

U18T002

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)
U18T002	0x160302	1442562	16 03 02	22 3 2

IO-Link Information

IO-Link version:	V1.1
Data storage:	Yes
Block parameters:	Yes
Min. cycle time:	3,3 ms
SIO mode:	Yes
COM mode:	COM2
ISDU:	Yes
Process data input (device to master):	32 Bit
Process data output (master to device):	8 Bit

IO-Link Profiles

Common Profile
Smart Sensor Profile - Measuring Sensor, Type 3.1
Function Class Sensor Control (Transducer Disable)
Firmware Update

Process Input Data

Device to Master

Subindex	Name	Bit offset	Length	Range
1	Measured value: Distance in mm Distance in 1/10 inch	16	Int16	100...1200 mm 39...473 1/10 inch
2	Scale	8	8 bit	-3 = mm -1 = 1/10 inch
3	Error/warning message 4	7	1 bit	0 = false 1 = true
4	Error/warning message 3	6	1 bit	0 = false 1 = true
5	Error/warning message 2	5	1 bit	0 = false 1 = true
6	Error/warning message 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 point 2	1	1 bit	0 = false 1 = true
10	SSC1 – Switching point 1	0	1 bit	0 = false 1 = true

These values are out of measurement range and provide 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										
	Measured value: 16 bit [0...15]																Scale																									

Process Output Data

Master to Device, for Process Data Type “Millimeter/ Inch”

Subindex	Name	Bit offset	Length	Range
1	Emitted signal	0	1 Bit	0 = Enabled 1 = Disabled
2	Find me	1	1 Bit	0 = Disabled 1 = Enabled
3	Teach SSC1	3	1 Bit	0 -> 1 Start Teach
4	Teach SSC2	4	1 Bit	0 -> 1 Start Teach

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

Process Output Data

Master to Device, for Process Data Type “Millimeter/ Inch + External Temperature”

Subindex	Name	Bit offset	Length	Range
1	External temperature	0	SIInt8	-30...+60 °C

Octet 0							
Subindex	1	1	1	1	1	1	1
Bit offset	7	6	5	4	3	2	1
External temperature							

Identification

Name	Index (hex)	Index (dec)	Sub-index	R/W	Data type	Data storage	Dynamic	Modifies 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				U18T002	
Product ID	0x0013	19	0	R	String 32 Byte				U18T002	
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			***	
Function tag	0x0019	25	0	R/W	String 32 Byte	X			***	
Location tag	0x001A	26	0	R/W	String 32 Byte	X			***	
Sensor Localisation										
Find me	0x1200	4608	0	R/W	String 32 Byte				0 = Off 1 = Blinking	

Parameters

Name	Index (hex)	Index (dec)	Sub-index	R/W	Data type	Data storage	Dynamic	Modifies others	Default value	Range
Device Settings										
System command	0x0002	2	0	W	Uint8			X	—	Device reset = 0x80 (128) Application reset = 0x81 (129) Restore factory settings = 0x82 (130) Back to box = 0x83 (131)
Local parameterization locked	0x000C	12	3	R/W	Bool	X			1 = Local parameterization locked	0 = unlocked 1 = Local parameterization locked
Measured value settings										
Sensor mode	0x0110	272	0	R/W	Uint8	X			1 = Synchron	0 = Normal 1 = Synchron 3 = Barrier emitter 4 = Barrier receiver 5 = Multiplex master 6 = Multiplex sub
Filter	0x00D0	208	0	R/W	Uint8	X			0	0...20
Emitted signal	0x00E0	224	0	R/W	Uint8	X			0 = ON	0 = ON 1 = OFF
Sonic cone	0x0111	273	0	R/W	Uint8	X			0 = Standard	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 = Internal	0 = Internal 1 = External
External temperature										
External temperature value (only if extern by parameter)	0x0059	89	0	R/W	Sint8		X		23	-30...+60 °C
Multiplex master										
Number of multiplex sub-sensors	0x005A	90	0	R/W	Uint8	X			1	1-15
Multiplex sub										
Address of multiplex sub-sensors	0x005B	91	0	R/W	Uint8	X			1	1-15
Switching point 1 – SSC1										
SSC1 teach-in mode	0x0290	656	0	R/W	Uint8	X		X	0 = Foreground	0 = Foreground 1 = Background 3 = Window
SSC1 additional hysteresis	0x0300	768	0	R/W	Uint16	X			0 mm	0...500 mm
SSC1 foreground (teach-in mode = foreground)										
SSC1 switching point	0x0270	624	0	R/W	Uint16	X			1,200 mm	100...1,200 mm
SSC1 window (SSC1 teach-in mode = window)										
SSC1 switch point near	0x0271	625	0	R/W	Uint16	X			500 mm	100...1,200 mm
SSC1 switch point far	0x0272	626	0	R/W	Uint16	X			600 mm	100...1,200 mm
Switching point 2 – SSC2										
SSC2 teach-in mode	0x0291	657	0	R/W	Uint8	X		X	0 = Foreground	0 = Foreground 1 = Background 3 = Window
SSC2 additional hysteresis	0x0301	769	0	R/W	Uint16	X			0 mm	0...500 mm
SSC2 foreground (teach-in mode = foreground)										
SSC2 switching point	0x0280	640	0	R/W	Uint16	X			1,200 mm	100...1,200 mm

Name	Index (hex)	Index (dec)	Sub-index	R/W	Data type	Data storage	Dynamic	Modifies others	Default value	Range
SSC2 window (SSC1 teach-in mode = window)										
SSC2 switch point near	0x0281	641	0	R/W	Uint16	X			500 mm	100...1,200 mm
SSC2 switch point far	0x0282	642	0	R/W	Uint16	X			600 mm	100...1,200 mm
Teach-in (depending on teach-in mode)										
SSC1 teach-in	0x0200	512	0	W	Uint8			X	0 = No action	0 = No action 1 = Teach-in foreground/ background 2 = Teach-in window Switching point near 3 = Teach-in window Switching point far
SSC2 teach-in	0x0201	513	0	W	Uint8			X	0 = No action	0 = No action 1 = Teach-in foreground/ background 2 = Teach-in window Switching point near 3 = Teach-in window Switching point far
Pin function										
E/A1 pin function	0x0040	64	0	R/W	Uint8	X		X	0 = Switching output	0 = Switching output 1 = Error output 2 = Warning output 3 = Emitted signal disengageable 5 = Disabled
E3 pin function	0x0042	66	0	R/W	Uint8	X		X	5 = Disabled	4 = Extern teach enabled 5 = Extern teach disabled
Digital Outputs										
A1 (SSC, error/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 NC/NO	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 = PNP	0 = PNP 1 = NPN 2 = Push-pull
Digital inputs										
E1 settings										
E1 input Ub active/inactive	0x0260	608	0	R/W	Uint8	X			0 = Ub active	0 = Ub active 1 = Ub inactive
Analog output										
O Analog output										
Analog Teach-In	0x0080	128	0	W	Uint8			X	0 = No action	0 = No action 1 = 0 V 2 = 10 V
Analog point low (0 V)	0x0081	129	0	R/W	Uint16	X			100 mm	100...1,200 mm
Analog point high (10 V)	0x0082	130	0	R/W	Uint16	X			1,200 mm	100...1,200 mm

Diagnosis

Name	Index (hex)	Index (dec)	Sub-index	R/W	Data type	Data storage	Dynamic	Modifies others	Default value	Range
Status										
Device status	0x0024	36	0	R	UInt8		X		0 = Device is OK	0 = Device is OK 1 = Maintenance required 2 = Out of specification 3 = Function check 4 = Failure
Detailed device status	0x0025	37	0	R	Array of Octect-StringT3		X		0	Shows upcoming events (4 max.)
Additional status information	0x1300	4864	0	R	UInt32		X		0	Value 0 = no error/warning 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 detection Bit 29 = Short circuit
Self-check	0x2518	9496	0	R	UInt32		X		–	–
Condition monitoring functions										
Process data indication										
Indication error/warning 1	0x1310	4880	0	R/W	UInt8	X			17 = Fatal device error	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 Other: 17 = Fatal device error 28 = Undervoltage 29 = Short circuit
Indication error/warning 2	0x1311	4881	0	R/W	UInt8	X			29 = Short circuit	
Indication error/warning 3	0x1312	4882	0	R/W	UInt8	X			28 = Undervoltage	
Indication error/warning 4	0x1313	4883	0	R/W	UInt8	X			06 = No measurement data	
Warning output configuration	0x1314	4884	0	R/W	UInt32	X			268435457 = Signal warning, undervoltage detection	0 = Not used as warning / error 1 = Used as warning / error 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
Error output configuration	0x1315	4885	0	R/W	UInt32	X			537002048 = No measurement data, fatal device error, short circuit	
Measuring data channel										
Lower limit	0x4080	16512	1	R	Int32				100	100 mm / 39 1/10 inch
Upper limit			2	R	Int32				1,200	1,200 mm / 473 1/10 inch
Unit code			3	R	UInt16				1010 = meter	1010 = meter 1019 = Inch
Scale			4	R	Int8				–3	10 ⁻³ meters = mm / 10 ⁻¹ = 1/10 inches

Name	Index (hex)	Index (dec)	Sub-index	R/W	Data type	Data storage	Dynamic	Modifies others	Default value	Range
Device simulation										
Simulation mode	0x0310	784	0	R/W	Uint8		X		0 = Off	0 = Off 1 = On
Device simulation enabled (simulation mode = 1)										
Simulation measured value	0x0315	789	0	R/W	Uint32		X		65536 = Use process value	0...1200 measurement value [mm] 10001 = Too far 10002 = No measurement 65536 = Use process values
Simulation SSC1	0x0331	817	0	R/W	Uint8		X		2 = Use process value	0 = Off 1 = Active 2 = Use process values
Simulation SSC2	0x0332	818	0	R/W	Uint8		X			
Simulation signal warning	0x031B	795	0	R/W	Uint8		X			
Simulation fatal device error	0x0323	803	0	R/W	Uint8		X			
Simulation undervoltage	0x0327	807	0	R/W	Uint8		X			
Simulation short circuit	0x0328	808	0	R/W	Uint8		X			
Simulation analog output	0x0316	790	0	R/W	Uint8		X		1001 = Use process value	0 = 0 V ... 1000 = 10 V 1001 = Use process value

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 underrun – check tolerance	0x5111	Warning	IO-Link