EN

OPT2175 – OPT2178

Laser Distance Sensors ToF





IO-Link

Interface Description

Subject to change without notice
Available as PDF version only
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www.wenglor.com

OPT2175 – OPT2178

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)
OPT2175	0x0000CE	206	00 00 CE	0 0 206
OPT2176	0x0000CF	207	00 00 CF	0 0 207
OPT2177	0x0000D0	208	00 00 D0	0 0 208
OPT2178	0x0000D1	209	00 00 D1	0 0 209

IO-Link Information

IO-Link Version:	V1.1
Data Storage:	Yes
Blockparameter:	Yes
Min Cycle time:	0,8 ms
SIO-Mode:	Yes
COM-Mode:	COM3
ISDU:	Yes
Process data In (Device to Master):	48 Bit
Process data Out (Master to Device):	8 Bit

IO-Link Profiles

Common Profile
Smart Sensor Profil - Measuring Sensor, high resolution, SSP 3.2
Smart Sensor Profil - Transducer Disable

Process Data Input (Length: 48 Bit)

Device to Master

Index 276 = 0 --> Distance in Millimeter , Index 276 = 1 --> Distance in Inch

Subindex	Name	Bit Offset	Length	Range
1	Measurement Value: Distance in mm Distance in Inch	16	Sint32	OPT2175, OPT2176, OPT2177: 50…10.000 mm 2,0...393,7 1/10 inch OPT2178: 200…100.000 mm 8,0...3937 1/10 inch
2	Scale	8	Sint8	– 3 = mm
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 Distance =		
Object too far	2147483640	0x7FFFFFF8
Object too close	–2147483640	0x80000008
No measurement data	2147483644	0x7FFFFFFC

	Octet 0 (MSB)								Octet 1								Octet 2								Octet 3							
Subindex	1																															
Bit Offset	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
	Measurement value 32 bit																															

	Octet 4								Octet 5 (LSB)							
Subindex	2								**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Bit Offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Scale															

Index 276 = 2 --> Distance in mm + Speed

Subindex	Name	Bit Offset	Length	Range
1	Measurement Value: Distance in mm	24	Sint24	OPT2175, OPT2176, OPT2177: 50…10.000 mm 2,0...393,7 1/10 inch OPT2178: 200…100.000 mm 8,0...3937 1/10 inch
2	Measurement Value: Speed in mm/s	8	Sint16	–30.000…30.000 mm/s
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 Distance =		
Object too far	8388600	0x7FFFF8
Object too close	–8388600	0x800008
No measurement data	8388604	0xFFFFFC
Measured Value Speed =		
Object too far	---	---
Object too close	---	---
No measurement data	32764	0x7FFC

	Octet 0 (MSB)								Octet 1								Octet 2								Octet 3							
Subindex	1																								2							
Bit Offset	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
	Measured Distance 24 bit																								Measured Speed 16 bit							

	Octet 4								Octet 5 (LSB)							
Subindex	2								3	4	5	6	7	8	9	10
Bit Offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Measured Speed 16 bit															

Index 276 = 3 --> Distance in mm + Speed + Intensity
Only available for OPT2175, OPT2176, OPT2177

Subindex	Name	Bit Offset	Length	Range
1	Measurement Value: Distance in mm	32	Uint16	50…10.000 mm 2,0...393,7 1/10 inch
2	Measurement Value: Speed in mm/s	16	Sint16	–30.000…30.000 mm/s
3	Measurement Value: Intensity in Digits	8	Uint8	0…255
4	Indication Error/Warning 4	7	1 Bit	0 = false 1 = true
5	Indication Error/Warning 3	6	1 Bit	0 = false 1 = true
6	Indication Error/Warning 2	5	1 Bit	0 = false 1 = true
7	Indication Error/Warning 1	4	1 Bit	0 = false 1 = true
8	Error	3	1 Bit	0 = false 1 = true
9	Warning	2	1 Bit	0 = false 1 = true
10	SSC1 - Switching Signal 2	1	1 Bit	0 = false 1 = true
11	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 Distance =

Object too far	65534	0xFFFE
Object too close	0	0
No measurement data	65535	0xFFFF

Measured Value Speed =

Object too far	---	---
Object too close	---	---
No measurement data	32764	0x7FFC

Measured Value Intensity =

Object too far	---	---
Object too close	---	---
No measurement data	255	0xFF

	Octet 0 (MSB)								Octet 1								Octet 2								Octet 3							
Subindex	1																2															
Bit Offset	47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
	Measured Distance 16 bit																Measured Speed 16 bit															

	Octet 4								Octet 5 (LSB)							
Subindex	3								**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Bit Offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Measured Intensity 8 bit															

Process Data Output (Length: 8 Bit)

Master to Device

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

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

Parameter

Identification

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
Information										
Vendor Name	10	**16**	0	R	String				wenglor sensoric GmbH	
Vendor Text	11	**17**	0	R	String				the innovative family	
Product Name	12	**18**	0	R	String				OPT2175, OPT2176, OPT2177, OPT2178	
Product ID	13	**19**	0	R	String				OPT2175, OPT2176, OPT2177, OPT2178	
Product Text	14	**20**	0	R	String				Laser Distance Sensor ToF	
Serial Number	15	**21**	0	R	String				-	
Hardware Version	16	**22**	0	R	String				-	
Firmware Version	17	**23**	0	R	String				-	
Tags										
Application Specific Tag	18	**24**	0	R/W	String 32 Byte	X			***	
Function Tag	19	**25**	0	R/W	String 32 Byte	X			***	
Location Tag	1A	**26**	0	R/W	String 32 Byte	X			***	
Sensor Localisation										
Find Me	1200	**4608**	0	R/W	Uint8		X		0 = Off	0 = Off 1 = Blinking

Parameter

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
Device Settings										
System Command	02	**2**	0	W	Uint8			X	-	Device Reset = 0x80 (128) Application Reset = 0x81 (129) Restore Factory Settings = 0x82 (130) Back-to-Box = 0x83 (131)
Device Access Locks	0C	**12**	0	R/W	Uint16	X			0 = unlocked	0 = unlocked Bit 3 = 1: Local Parameterization locked Bit 4 = 1: User Interface Operation locked
Language	F0	**240**	0	R/W	Uint8				1 = English	0 = German 1 = English 5 = Chinese
Display rotate	A0	**160**	0	R/W	Uint8				0	0 = Off 1 = On
Measurement Value Settings										
Object Detection	111	**273**	0	R/W	Uint8	X			0 = First Object	0 = First Object 1 = Last Object 2 = Most Intense Object
Measurement Mode	110	**272**	0	R/W	Uint8	X			1 = Precision	0 = Speed 1 = Precision 2 = Precision Plus
Sensitivity (only OPT2175, OPT2176, OPT2177)	115	**277**	0	R/W	Uint8	X			0 = Maximum	0 = Maximum 1 = Medium 2 = Low 3 = Minimum 4 = Ultra Low (Y1TA)
Noise Filter	D0	**208**	0	R/W	Uint8	X			0 = Off	0 = Off 1…9
Emitted Light	E0	**224**	0	R/W	Uint8	X			0 = On	0 = On 1 = Off
Process Data Type	114	**276**	0	R/W	Uint8	X		X	0 = Millimeter	OPT2175, OPT2176, OPT2177: 0 = Millimeter 1 = Inch 2 = Millimeter and Speed 3 = Millimeter and Speed and Intensity OPT2178: 0 = Millimeter 1 = Inch 2 = Millimeter and Speed
Detection Range Near	112	**274**	0	R/W	Int32	X			0 mm	OPT2175, OPT2176, OPT2177: 0…10.000 mm OPT2178: 0… 100.000 mm
Detection Range Far	113	**275**	0	R//W	Int32	X			OPT2175, OPT2176, OPT2177: 30.000 mm OPT2178: 130.000mm	OPT2175, OPT2176, OPT2177: 0…10.000 mm OPT2178: 0…100.000 mm
Switching Signal Channel 1 - SSC1										
SSC1 Teach-Mode	290	**656**	0	R/W	Uint8	X		X	0 = Foreground	OPT2175, OPT2176, OPT2177: 0 = Foreground 1 = Background 2 = Window 4 = Intensity 5 = Jump OPT2178: 0 = Foreground 1 = Background 2 = Window 5 = Jump

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
SSC1 Switch Point	270	**624**	0	R/W	Int32	X			OPT2175, OPT2176, OPT2177: 5.000 mm OPT2178: 10.000 mm	OPT2175, OPT2176, OPT2177: 50…10.000 mm OPT2178: 200…100.000 mm
SSC1 Hysteresis	300	**768**	0	R/W	Uint16	X			15 mm	5…1000 mm
SSC1 Window (SSC1 Mode = Window)										
SSC1 Window Near	271	625	0	R/W	Int32	X			30 mm	OPT2175, OPT2176, OPT2177: 1…10.000 mm OPT2178: 1… 100.000 mm
SSC1 Window Far	272	626	0	R/W	Int32	X			30 mm	OPT2175, OPT2176, OPT2177: 1…10.000 mm OPT2178: 1…100.000 mm
SSC1 Jump (SSC1 Mode = Jump Detection)										
SSC1 Jump Height min	224	548	0	R/W	Uint32				50	10…1.000
SSC1 Jump Height max.	223	547	0	R/W	Uint32				1000	0…100.000
SSC1 Jump Direction	226	550	0	R/W	Uint8				1	1 = Positive 2 = Negative 3 = Both
SSC1 Jump Time Delta	225	549	0	R/W	Uint8				10	1…64
SSC1 Jump Impulse	228	552	0	R/W	Uint16				100	0 = Hold 1…1000
SSC1 Intensity (SSC1 Mode = Distance+Intensity)										
SSC1 Distance Window	292	658	0	R/W	Uin16				50	0…300
SSC1 Intensity Hysteresis	294	660	0	R/W	Uint8				5	0…255
SSC1 Intensity Window	295	661	0	R/W	Uint8				5	0…255
SSC1 Intensity Switch Point	296	662	0	R/W	Uint8				200	0…255
Switching Signal Channel 2 – SSC2										
SSC2 Teach Mode	291	657	0	R/W	Uint8	X		X	0 = Foreground	OPT2175, OPT2176, OPT2177: 0 = Foreground 1 = Background 2 = Window 4 = Intensity 5 = Jump OPT2178: 0 = Foreground 1 = Background 2 = Window 5 = Jump
SSC2 Switch Point	280	640	0	R/W	Int32	X			OPT2175, OPT2176, OPT2177: 5.000 mm OPT2178: 10.000 mm	OPT2175, OPT2176, OPT2177: 50…10.000 mm OPT2178: 200…100.000 mm
SSC2 Hysteresis	301	769	0	R/W	Uint16	X			15 mm	5…1000 mm
SSC2 Window (SSC2 Mode = Window)										
SSC2 Window Near	281	641	0	R/W	Int32	X			30 mm	OPT2175, OPT2176, OPT2177: 1…10.000 mm OPT2178: 1…100.000 mm
SSC2 Window Far	282	642	0	R/W	Int32	X			30 mm	OPT2175, OPT2176, OPT2177: 1…10.000 mm OPT2178: 1…100.000 mm
SSC2 Jump (SSC2 Mode = Jump Detection)										
SSC2 Jump Height min	22B	555	0	R/W	Uint32				50	10…1.000
SSC2 Jump Height max.	22A	554	0	R/W	Uint32				1000	0…100.000
SSC2 Jump Direction	22D	557	0	R/W	Uint8				1	1 = Positive 2 = Negative 3 = Both
SSC2 Jump Time Delta	22C	556	0	R/W	Uint8				10	1…64
SSC2 Jump Impulse	22F	559	0	R/W	Uint16				100	0 = Hold 1…1000

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
SSC2 Intensity (SSC2 Mode = Distance+Intensity)										
SSC2 Distance Window	293	659	0	R/W	Uint16				50	0…300
SSC2 Intensity Hysteresis	297	663	0	R/W	Uint8				5	0…255
SSC2 Intensity Window	298	664	0	R/W	Uint8				5	0…255
SSC2 Intensity Switch Point	299	665	0	R/W	Uint8				200	0…255
Teach-In										
SSC1 Teach-In	200	**512**	0	W	Uint8			X	0	0 = No Teach-In 1 = Do Teach-In
SSC2 Teach-In	201	**513**	0	W	Uint8			X	0	0 = No Teach-In 1 = Do Teach-In
Teach-In Status	20F	**527**	1 2 4	R	Uint8				0 false false	0 = Idle 1 = Success 5 = Busy 7 = Error
Pin Function										
E/A1 Pin Function	40	**64**	0	R/W	Uint8	X		X	0 = Switching Output	0 = Switching Output SSC1 1 = Error Output 2 = Warning Output 3 = Emitted Light Disengageable 4 = Extern Teach 5 = Disabled
E/A2 Pin Function	41	**65**	0	R/W	Uint8	X		X	OPT2175 / OPT2178: 0 = Switching Output OPT2177 / OPT2176: not available	0 = Switching Output SSC2 1 = Error Output 2 = Warning Output 3 = Emitted Light Disengageable 4 = Extern Teach 5 = Disabled 6 = Antivalent Switching Output
E3 Pin Function	42	**66**	0	R/W	Uint8	X		X	3 = Emitted Light Disengageable	3 = Emitted Light Disengageable 4 = Extern Teach 5 = Disabled
Digital Outputs										
A1 (SSC, Error or Warning Output)										
A1 On Delay	50	**80**	0	R/W	Uint16	X			0 ms	0...10.000 ms
A1 Off Delay	60	**96**	0	R/W	Uint16	X			0 ms	0...10.000 ms
A1 NO/NC	210	**528**	0	R/W	Uint8	X			0 = NO	0 = NO 1 = NC
A1 NPN/PNP/P-P	220	**544**	0	R/W	Uint8	X			0 = PNP	0 = PNP 1 = NPN 2 = Push-Pull
A2 (SSC, Error or Warning Output)										
A2 On Delay	51	**81**	0	R/W	Uint16	X			0 ms	0...10.000 ms
A2 Off Delay	61	**97**	0	R/W	Uint16	X			0 ms	0...10.000 ms
A2 Config.Logic	211	**529**	0	R/W	Uint8	X			0 = NO	0 = NO 1 = NC
A2 NPN/PNP/P-P	221	**545**	0	R/W	Uint8	X			OPT2175, OPT2178 0 = PNP	0 = PNP 1 = NPN 2 = Push-Pull
Digital Inputs										
E1 (Teach Input or Emitted Light)										
E1 Input Ub Active/Inactive	0260	**608**	0	R/W	Uint8	X			0 = Ub active	0 = Ub Active 1 = Ub Inactive
E2 (Teach Input or Emitted Light)										
E2 Input Ub Active/Inactive	261	**609**	0	R/W	Uint8	X			0 = Ub active	0 = Ub Active 1 = Ub Inactive
E3 (Teach Input or Emitted Light)										
E3 Input Ub Active/Inactive	262	**610**	0	R/W	Uint8	X			0 = Ub active	0 = Ub Active 1 = Ub Inactive

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
Analog Outputs										
Analog Outputs (OPT2177, OPT2176)										
O Analog Teach-In Analog	80	**128**	0	W	Uint8			X	0	0 = No Teach-In 1 = Do Teach 0 V / 4 mA 2 = Do Teach 10 V / 20 mA
O Analog 0 V / 4 mA	81	**129**	0	R/W	Uint32	X			OPT2176, OPT2177: 50 mm	OPT2176, OPT2177: 50...10.000 mm
O Analog 10 V / 20 mA	82	**130**	0	R/W	Uint32	X			OPT2176, OPT2177: 10.000 mm	OPT2176, OPT2177: 50...10.000 mm
O Analog Substitute Values	84	**132**	0	R/W	Uint8	X			OPT2176: 1 = Enabled OPT2177: not available	0 = Disabled 1 = Enabled
Bluetooth										
Bluetooth	306	774	0	R/W	Uint8				0	0 = On 1 = Off
Password Protection	100	256	0	R/W	Uint8				0	0 = Disabled 1 = Enabled
Password change	101	257	0	R/W	String32				***	
Bluetooth Firmware	1401	5121	0	R	String32				***	
Bluetooth Address	1403	5123	0	R	String32				***	
Bluetooth GUI Version	140A	5130	0	R	Uint32				0	
Bluetooth Description Version	140B	5131	0	R	Uint32				0	
Speed Measurement										
Speed Threshold	230	560	0	R/W	Uint16					0…30.000
Speed Direction	231	561	0	R/W	Uint8				0	0 = Both 1 = Direction closer 2 = Direction farther
Speed Hysteresis	232	562	0	R/W	Uint16				10	1…60.000
Speed Filter	233	563	0	R/W	Uint16				1	0 = Off 1 = Automatic 2…16

Observation

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
Object Information Access	1210	**4624**	0	R/W	Uint8	X			0	0 = Disabled 1 = Enabled
Object Information (only if enabled)										
Object Detection Status	1211	**4625**	1	R	Uint8		X		0	0 = Object 1 … 3 = Object 4 255 = No Object
Distance Object 1			2	R	Sint32		X		0	OPT2175, OPT2176, OPT2177: 50…10.000 mm OPT2178: 50…100.000 mm 2147483644 = No object detected –2147483640 = Too close 2147483640 = Too far
Distance Object 2			3	R	Sint32		X		0	
Distance Object 3			4	R	Sint32		X		0	
Distance Object 4			5	R	Sint32		X		0	
Signal Object 1			6	R	UInt8		X		0	
Signal Object 2			7	R	UInt8		X		0	
Signal Object 3			8	R	UInt8		X		0	
Signal Object 4			9	R	UInt8		X		0	

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 = Device is OK 1 = Maintenance required 2 = Out of specification 3 = Functional check 4 = Failure
Detailed Device Status	0x0025	**37**	0	R	Array of OctectStringT3		X		0	Shows the pending Events (maximum 4)
Additional Status Information	1300	**4864**	0	R	Uint32		X		0	Value 0 = No Warning / Errors Measurement: Bit 0 = Signal Warning Bit 1 = Contamination optics Bit 2 = Contamination in range Bit 3 = Ambient light to high Bit 4 = Object to Close Bit 5 = Object to Far Bit 6 = No Measurement data Bit 8 = Emitted Light off Other: Bit 17 = Fatal Device Error Bit 18 = Temperature Error Bit 19 = Temperature Warning High Bit 20 = Temperature Warning Low Bit 21 = Analog Output Error (if implemented) Bit 22 = Velocity Sensor (if implemented) Bit 28 = Undervoltage detection Bit 29 = Short Circuit Bit 30 = Speed
Self Check	2518	**9496**	0	R	Uint32		X		-	-

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
Condition Monitoring Configuration										
Process Data Indication										
Indication Error/Warning 1	1310	**4880**	0	R//W	Uint8	X			0	31 = No Warning / Error Mapped Measurement: 0 = Signal Warning 1 = Contamination Optic 2 = Contamination Range 3 = Ambient Light 4 = Object Too Close 5 = Object Too Far 6 = No Measurement Data 8 = Emitted Light Off Other: 17 = Fatal Error 18 = Temperature Error 19 = Temperature Warning High 20 = Temperature Warning Low 21 = Analog Output Error (if implemented) 22 = Velocity Sensor (if implemented) 28 = Undervoltage 29 = Short Circuit 30 =Speed
Indication Error/Warning 2	1311	**4881**	0	R//W	Uint8	X			1	
Indication Error/Warning 3	1312	**4882**	0	R//W	Uint8	X			3	
Indication Error/Warning 4	1313	**4883**	0	R//W	Uint8	X			19	

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
Warning Output Configuration	1314	**4884**	0	R//W	Uint32	X			OPT2175 OPT2178 1 2 3 4 5 6 7 9 18 19 20 21 10 29 30 OPT2176; OPT2177: additional 22 23	0 = Not use as Warning / Error 1 = Used as Warning / Error Measurement: Bit 0 = Signal Warning Bit 1 = Contamination Optic Bit 2 = Contamination Range Bit 3 = Ambient Light Bit 4 = Object Too Close Bit 5 = Object Too Far Bit 6 = No Measurement Data Bit 8 = Emitted Light Off Other: Bit 17 = Fatal Error Bit 18 = Temperature Error Bit 19 = Temperature Warning High Bit 20 = Temperature Warning Low Bit 21 = Analog Output Error (if implemented) Bit 22 = Velocity Sensor (if implemented) Bit 28 = Undervoltage Bit 29 = Short Circuit Bit 30 = Acceleration Sensor (if implemented)
Error Output Configuration	1315	**4885**	0	R//W	Uint32	X			OPT2175 OPT2178 1 2 3 4 5 6 7 9 18 19 20 21 10 29 30 OPT2176; OPT2177: additional 22 23	

Name	Index (hex)	Index (dec)	Sub-index	R/W	Datatype	Data Storage	Dynamic	Modify others	Default value	Range
Measuring Data Channel										
MDC Descr.Lower Limit	4080	**16512**	1	R	Int32				50	50 mm / 19 1/10 inch
MDC Descr.Upper Limit			2	R	Int32				10.000	10.000 mm / 3938 1/10 inch
MDC Descr.Unit Code			3	R	Uint16				1010 = Meter	1010= Meter 1019 = inch
MDC Descr.Scale			4	R	Int8				-3	10-3 Meter = mm / 10-1 = 1/10 inch
Device Simulation										
Simulation Mode	310	**784**	0	R/W	Uint8		X		0	0 = Off 1 = On
Device Simulation Enabled (Simulation Mode= 1)										
Simulation Measurement Value	315	**789**	0	R/W	Uint32		X		2147483645	OPT2175 - OPT2177: 50… 10.000 12345 = Too Far 30001 = No MeasurementData OPT2178: 50..100.000 123456 = Too Far 130001 = No MeasurementData 0 = TooClose 2147483645 = Use Process Value
Simulation SSC1	331	**817**	0	R/W	Uint8		X		2	0 = Off 1 = Active 2 = Use Process Value
Simulation SSC2	332	**818**	0	R/W	Uint8		X		2	0 = Off 1 = Active 2 = Use Process Value
Simulation Analog Output Voltage OPT2177 OPT2176	316	**790**	0	R/W	Uint8		X		OPT2177 OPT2176	OPT2177 10,1V = Use Process Value 0…10V (values transfered in 1/10V) OPT2176 21,1 mA = Use Process Value 3,5…21,0 mA (values transfered in 1/10mA)
Simulation Signal Warning	31B	**795**	0	R/W	Uint8		X		2	0 = Off 1 = Active 2 = Use Process Value
Simulation Contamination Optic	31C	**796**	0	R/W	Uint8		X		2	
Simulation Contamination Range	31D	**797**	0	R/W	Uint8		X		2	
Simulation Ambient Light	31E	**798**	0	R/W	Uint8		X		2	
Simulation Fatal Error	323	**803**	0	R/W	Uint8		X		2	
Simulation Temperature Error	324	**804**	0	R/W	Uint8		X		2	
Simulation Temperature Warning High	325	**805**	0	R/W	Uint8		X		2	
Simulation Temperature Warning Low	32C	**812**	0	R/W	Uint8		X		2	
Simulation Analog Output Error (only OPT2177)	326	**806**	0	R/W	Uint8		X		2	
Simulation Undervoltage	327	**807**	0	R/W	Uint8		X		2	
Simulation Short Circuit	328	**808**	0	R/W	Uint8		X		2	

Errors

Incident	Error Code	Additional Code	Name	Definition
Device application error – no details	0x80	0x00	APP_DEV	See C.2.2
Index not available	0x80	0x11	IDX_NOTAVAIL	See C.2.3
Subindex not available	0x80	0x12	SUBIDX_NOTA-VAIL	See C.2.4
Service temporarily not available	0x80	0x20	SERV_NOTAVAIL	See C.2.5
Service temporarily not available – local control	0x80	0x21	SERV_NOTAVAIL_ LOCCTRL	See C.2.6
Service temporarily not available – Device control	0x80	0x22	SERV_NOTAVAIL_ DEVCTRL	See C.2.7
Access denied	0x80	0x23	IDX_NOT_ACCES-SIBLE	See C.2.8
Parameter value out of range	0x80	0x30	PAR_VALOUTO-FRNG	See C.2.9
Parameter value above limit	0x80	0x31	PAR_VALGTLIM	See C.2.10
Parameter value below limit	0x80	0x32	PAR_VALLTLIM	See C.2.11
Parameter length overrun	0x80	0x33	VAL_LENOVRRUN	See C.2.12
Parameter length underrun	0x80	0x34	VAL_LENUNDRUN	See C.2.13
Function not available	0x80	0x35	FUNC_NOTAVAIL	See C.2.14
Function temporarily unavailable	0x80	0x36	FUNC_UNAVAIL-TEMP	See C.2.15
Invalid parameter set	0x80	0x40	PAR_SETINVALID	See C.2.16
Inconsistent parameter set	0x80	0x41	PAR_SETINCON-SIST	See C.2.17
Application not ready	0x80	0x82	APP_DEVNOTRDY	See C.2.18
Vendor specific	0x81	0x00	UNSPECIFIC	See C.2.19
Vendor specific	0x81	0x01 to 0xFF	VENDOR_SPE-CIFIC	See C.2.19

C.2.2 Device application error – no details

This ErrorType shall be used if the requested service has been refused by the Device application and no detailed information of the incident is available.

C.2.3 Index not available

This ErrorType shall be used whenever a read or write access occurs to a non-existing Index with or without Subindex access.

C.2.4 Subindex not available

This ErrorType shall be used whenever a read or write access occurs to a non-existing Subindex of an existing Index.

C.2.5 Service temporarily not available

This ErrorType shall be used if a parameter is not accessible for a read or write service due to the current state of the Device application.

C.2.6 Service temporarily not available – local control

This ErrorType shall be used if a parameter is not accessible for a read or write service due to an ongoing local operation at the Device (for example operation or parameterization via an on-board Device control panel).

C.2.7 Service temporarily not available – device control

This ErrorType shall be used if a read or write service is not accessible due to a remote triggered state of the device application (for example parameterization during a remote triggered teach-in operation or calibration).

C.2.8 Access denied

This ErrorType shall be used if a Write service tries to access a read-only parameter or if a Read service tries to access a write-only parameter.

C.2.9 Parameter value out of range

This ErrorType shall be used for a write service to a parameter outside its permitted range of values. Example: enumerations (list of single values), combination of value ranges and enumeration.

C.2.10 Parameter value above limit

This ErrorType shall be used for a write service to a parameter above its specified value range.

C.2.11 Parameter value below limit

This ErrorType shall be used for a write service to a parameter below its specified value range.

C.2.12 Parameter length overrun

This ErrorType shall be used when the content of a write service to a parameter is greater than the parameter specified length. This ErrorType shall also be used, if a data object is too large to be processed by the Device application (for example ISDU buffer restriction).

C.2.13 Parameter length underrun

This ErrorType shall be used when the content of a write service to a parameter is less than the parameter specified length (for example write access of an Unsigned16 value to an Unsigned32 parameter).

C.2.14 Function not available

This ErrorType shall be used for a write service with a command value not supported by the Device application (for example a SystemCommand with a value not implemented).

C.2.15 Function temporarily unavailable

This ErrorType shall be used for a write service with a command value calling a Device function not available due to the current state of the Device application (for example a SystemCommand).

C.2.16 Invalid parameter set

This ErrorType shall be used if values sent via single parameter transfer are not consistent with other actual parameter settings (for example overlapping set points for a binary data setting; see 10.3.4).

C.2.17 Inconsistent parameter set

This ErrorType shall be used at the termination of a Block Parameter transfer with ParamDownloadEnd or ParamDownloadStore or after a DS_ DownloadEnd Command, if the plausibility check shows inconsistencies (see 10.3.5, B.2.2, and 10.4.1).

C.2.18 Application not ready

This ErrorType shall be used if a read or write service is refused due to a temporarily unavailable application (for example peripheral controllers during startup).

C.2.19 Vendor specific

This ErrorType will be propagated directly to upper level processing elements as an error (no warning) by the Master.

Events

Name	Event Code	Type	Specification
Maintenance required – Cleaning	0x8C40	Notification	IO-Link
General malfunction – unknown error	0x1000	Error	IO-Link
Short circuit – Check installation	0x7710	Error	IO-Link
Device temperature over-run – Clear source of heat	0x4210	Warning	IO-Link
Device temperature under-run – Insulate device	0x4220	Warning	IO-Link
Temperature fault – Overload	0x4000	Error	IO-Link
Primary supply voltage under-run – Check tolerance	0x5111	Warning	IO-Link
Simulations Event 1	0x8DFE	Warning	wenglor
Simulations Event 2	0x8DFF	Warning	wenglor

Reserved

Index	Subindex	Name
0x0091	0x00	internal use
0x00A2	0x00	internal use
0x00E1	0x00	internal use
0x0227	0x00	internal use
0x022E	0x00	internal use
0x1320	0x00	internal use
0x1321	0x00	internal use
0x1322	0x00	internal use
0x1323	0x00	internal use
0x0222	0x00	internal use
0x0227	0x00	internal use
0x0229	0x00	internal use