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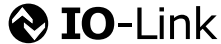
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Please note the validity of the additional operating instructions for automation functions

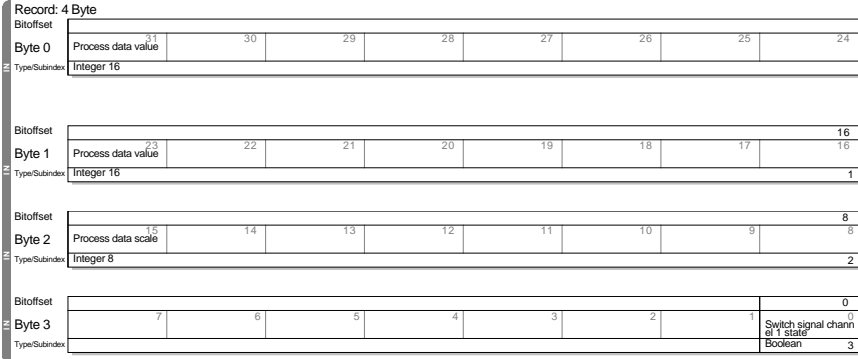
ENGLISH

1. Physical layer

Note: The IO-Link Device's max. current consumption (inclusive load current) shall not exceed the master port's max. output power current.

SIO Modus	yes
Min Cycle Time	41.6 ms
Baudrate <sup>2</sup>	COM2
Process Data Length (IN)	4 Byte
IODD version	V1.0
Valid for IO-Link version	1.1.0

2. Process data



3. Service data

The following ISDU will not be saved via Data-Storage: Teach-in channel

IO-Link specific							
Index dec (hex)	Name	Format (Offset)	Length	Access <sup>1</sup>	Default Value	Value / Range	Remark [Unit]
12 (0x0C)	Device Access Locks	Record	2 Byte	rw			
1 (0x01)	Parameter (write) Access Lock	Bit (0)	1 Bit	rw			
2 (0x02)	Data Storage Lock	Bit (1)	1 Bit	rw			
3 (0x03)	Local Parameterization Lock	Bit (2)	1 Bit	rw			
4 (0x04)	Local User Interface Lock	Bit (3)	1 Bit	rw			
16 (0x10)	Vendor Name	String	64 Byte	ro	SICK AG		
17 (0x11)	Vendor Text	String	64 Byte	ro	Sensor Intelligence.		
18 (0x12)	Product Name	String	64 Byte	ro			
19 (0x13)	Product ID	String	64 Byte	ro			
20 (0x14)	Product Text	String	64 Byte	ro	Ultrasonic Sensor		
21 (0x15)	Serial Number	String	16 Byte	ro			
22 (0x16)	Hardware Version	String	64 Byte	ro			
23 (0x17)	Firmware Version	String	64 Byte	ro			
24 (0x18)	Application Specific Tag	String	32 Byte	rw			
32 (0x20)	Error Count	UInt	16 Bit	ro			
36 (0x24)	Device Status	UInt	8 Bit	ro	0 = Device is OK 1 = Maintenance required 2 = Out of specification 3 = Functional check 4 = Failure 5...255 = Reserved		
37 (0x25)	Detailed Device Status	Array	30 Byte	ro	Octet String [10]		
40 (0x28)	Process Data Input	PD In	4 Byte	ro			

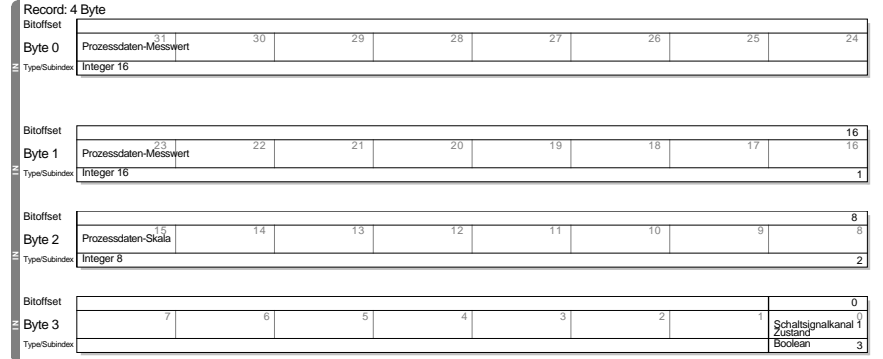
DEUTSCH

1. Physikalische Schicht

Hinweis: Max. Stromaufnahme des IO-Link Devices (inkl. Lastströme) darf max. Ausgangsstrom des Master-Ports nicht überschreiten.

SIO Modus	ja
Min. Zykluszeit	41.6 ms
Baudrate <sup>2</sup>	COM2
Prozessdatenlänge (IN)	4 Byte
IODD Version	V1.0
Gültig für IO-Link Version	1.1.0

2. Prozessdaten



3. Servicedaten

Die folgende ISDU wird nicht über Data-Storage gesichert: Teach-in Kanal

IO-Link spezifisch							
Index dez (hex)	Name	Format (Offset)	Länge	Zugriff <sup>1</sup>	Standard Wert	Wertebereich	Bemerkung [Einheit]
12 (0x0C)	Gerätezugriffssperren	Record	2 Byte	rw			
1 (0x01)	Parameter (Schreib-)Zugriffssperre	Bit (0)	1 Bit	rw			
2 (0x02)	Datenspeicherungs-sperre	Bit (1)	1 Bit	rw			
3 (0x03)	Lokale Parameterisierungssperre	Bit (2)	1 Bit	rw			
4 (0x04)	Lokale Benutzerinter-face-Sperre	Bit (3)	1 Bit	rw			
16 (0x10)	Herstellername	String	64 Byte	ro	SICK AG		
17 (0x11)	Herstellertext	String	64 Byte	ro	Sensor Intelligence.		
18 (0x12)	Produktname	String	64 Byte	ro			
19 (0x13)	Produkt-ID	String	64 Byte	ro			
20 (0x14)	Produkttext	String	64 Byte	ro	Ultrasonic Sensor		
21 (0x15)	Seriennummer	String	16 Byte	ro			
22 (0x16)	Hardwareversion	String	64 Byte	ro			
23 (0x17)	Firmwareversion	String	64 Byte	ro			
24 (0x18)	Anwendungsspezifische Markierung	String	32 Byte	rw			
32 (0x20)	Fehlerzähler	UInt	16 Bit	ro			
36 (0x24)	Gerätestatus	UInt	8 Bit	ro	0 = Gerät ist OK 1 = Wartung erforderlich 2 = Außerhalb der Spezifikation 3 = Funktionsprüfung 4 = Fehler 5...255 = Reserviert		
37 (0x25)	Ausführlicher Geräte-status	Array	30 Byte	ro	Octet String [10]		
40 (0x28)	Prozessdaten Eingang	PD In	4 Byte	ro			

<sup>1</sup> ro = read only, wo = write only, rw = read/write / ro = nur lesen, wo = nur schreiben, rw = lesen/schreiben

<sup>2</sup> COM values specify the bitrate (see IO-Link specification) / COM Werte spezifizieren die Baudrate (s. IO-Link Spezifikation): COM1 (4,8 kbit/s), COM2 (38,4 kbit/s), COM3 (230,4 kbit/s)



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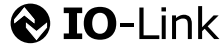
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Please note the validity of the additional operating instructions for automation functions

ENGLISH							
SICK device specific							
Index dec (hex)	Name	Format (Offset)	Length	Access <sup>1</sup>	Default Value	Value / Range	Remark [Unit]
58 (0x3A)	Teach-in channel	UInt	8 Bit	rw	0	0 = SSC1: pin 4 (push-pull) 1 = SSC1: pin 4 (push-pull)	Choice of channel for the next teach-in procedure
59 (0x3B)	Teach-in status	Record	1 Byte	ro			
1 (0x01)	Teach-in status	Bit (0)	4 Bit	ro	0	0 = Idle 1 = SP1 success 2 = SP2 success 3 = SP12 success 4 = Wait for command 5 = Busy 7 = Error	
2 (0x02)	SP1 TP1	Bit (4)	1 Bit	ro	0		
3 (0x03)	SP2 TP1	Bit (6)	1 Bit	ro	0		
60 (0x3C)	SSC1 parameter	Record	4 Byte	rw			
1 (0x01)	SP1	Bit (16)	16 Bit	rw	1300	200...9988	Setpoint 1 for switching output [mm]
2 (0x02)	SP2	Bit (0)	16 Bit	rw	1500	200...9988	Setpoint 2 for switching output [mm]
61 (0x3D)	SSC1 configuration	Record	4 Byte	rw			
1 (0x01)	Logic	Bit (24)	8 Bit	rw	0	0 = High active 1 = Low active	Logic state for detected target
2 (0x02)	Mode	Bit (16)	8 Bit	rw	1	0 = Deactivated 1 = Single point (SP1: DtO) 2 = Window (SP1, SP2: Window mode) 3 = Two point (SP1, SP2: Hysteresis mode) 128 = Single point + Offset (SP1: DtO + Setpoint offset) 129 = Two point ± Offset (SP1: ObSB)	Operating mode of the switching signal channel: Deactivated, Distance to Object (DtO), Window mode, Hysteresis mode, Distance to Object (DtO) + Setpoint Offset, Object between Sensor and Background mode (ObSB)
3 (0x03)	Hysteresis	Bit (0)	16 Bit	rw	20	1...9789	Hysteresis for SP1 and SP2 [mm]
100 (0x64)	SSC1 advanced configuration	Record	3 Byte	rw			
1 (0x01)	Switch-on delay	Bit (16)	8 Bit	rw	0	0...20	Switch-on delay in seconds [s]
2 (0x02)	Switch-off delay	Bit (8)	8 Bit	rw	0	0...20	Switch-off delay in seconds [s]
3 (0x03)	Setpoint Offset	Bit (0)	8 Bit	rw	8	1...20	Offset value in % of SP1, which will be added to or subtracted from SP1. [%]
200 (0x08)	Measurement configuration	Record	4 Byte	rw			
1 (0x01)	Foreground suppression	Bit (16)	16 Bit	rw	184	184...600	The start of the measurement evaluation will be shifted from the blind zone to the value of the foreground suppression. [mm]
2 (0x02)	Limiting range	Bit (0)	16 Bit	rw	5000	5000...9990	[mm]
220 (0xDC)	Sensitivity	Record	5 Byte	rw			The width of the detection area can be adjusted through the sensitivity setting of the sensor. The detection area is wide when selecting high sensitivity and it is narrow when selecting low sensitivity.
1 (0x01)	Type	Bit (32)	8 Bit	rw	1	1 = High sensitivity 2 = Standard sensitivity 3 = Variable sensitivity	

DEUTSCH									
SICK spezifisch									
Index dez (hex)	Name	Format (Offset)	Länge	Zugriff <sup>1</sup>	Standard Wert	Wertebereich	Bemerkung [Einheit]		
58 (0x3A)	Teach-in Kanal	UInt	8 Bit	rw	0	0 = SSC1: Pin 4 (Push-Pull) 1 = SSC1: Pin 4 (Push-Pull)	Auswahl des Kanals für den nächsten Teach-in Vorgang		
59 (0x3B)	Teach-in Status	Record	1 Byte	ro					
1 (0x01)	Teach-in Status	Bit (0)	4 Bit	ro	0	0 = Untätig 1 = SP1 erfolgreich 2 = SP2 erfolgreich 3 = SP12 erfolgreich 4 = Warte auf Kommando 5 = In Arbeit 7 = Fehler			
2 (0x02)	SP1 TP1	Bit (4)	1 Bit	ro	0				
3 (0x03)	SP2 TP1	Bit (6)	1 Bit	ro	0				
60 (0x3C)	SSC1 Parameter	Record	4 Byte	rw					
1 (0x01)	SP1	Bit (16)	16 Bit	rw	1300	200...9988	Setpoint 1 für Schaltausgang [mm]		
2 (0x02)	SP2	Bit (0)	16 Bit	rw	1500	200...9988	Setpoint 2 für Schaltausgang [mm]		
61 (0x3D)	SSC1 Konfiguration	Record	4 Byte	rw					
1 (0x01)	Logik	Bit (24)	8 Bit	rw	0	0 = High active 1 = Low active	Logischer Zustand bei erkanntem Objekt		
2 (0x02)	Modus	Bit (16)	8 Bit	rw	1	0 = Deaktiviert 1 = Einzelpunkt (SP1: DtO) 2 = Fenster (SP1, SP2: Fensterbetrieb) 3 = Zweipunkt (SP1, SP2: Hysteresebetrieb) 128 = Einzelpunkt + Offset (SP1: DtO + Offset) 129 = Fenster ± Offset (SP1: ObSB)	Betriebsart des Schaltausgangs: Distanz zu Objekt (DtO), Fensterbetrieb, Hysteresebetrieb, Distanz zu Objekt (DtO) + Offset, Objekt zwischen Sensor und Hintergrund (ObSB)		
3 (0x03)	Hysteresis	Bit (0)	16 Bit	rw	20	1...9789	Hysteresis für SP1 und SP2 [mm]		
100 (0x64)	SSC1 erweiterte Konfiguration	Record	3 Byte	rw					
1 (0x01)	Einschaltverzögerung	Bit (16)	8 Bit	rw	0	0...20	Einschaltverzögerung in Sekunden [s]		
2 (0x02)	Ausschaltverzögerung	Bit (8)	8 Bit	rw	0	0...20	Ausschaltverzögerung in Sekunden [s]		
3 (0x03)	Schaltpunktoffset	Bit (0)	8 Bit	rw	8	1...20	Offsetwert in % von SP1, der dem SP1 aufaddiert oder subtrahiert wird [%]		
200 (0x08)	Messkonfiguration	Record	4 Byte	rw					
1 (0x01)	Vordergrundaussblendung	Bit (16)	16 Bit	rw	184	184...600	Verschiebt den Beginn der Messwertauswertung von der Blindzone auf den Wert der Vordergrundaussblendung. [mm]		
2 (0x02)	Grenzreichweite	Bit (0)	16 Bit	rw	5000	5000...9990	[mm]		
220 (0xDC)	Schallfeldempfindlichkeit	Record	5 Byte	rw			Die Breite des Erfassungsbereichs kann über die Empfindlichkeitseinstellung des Sensors eingestellt werden: Bei hoher Empfindlichkeit ist der Erfassungsbereich breit und umgekehrt bei niedriger Empfindlichkeit schmal.		
1 (0x01)	Typ	Bit (32)	8 Bit	rw	1	1 = Hohe Empfindlichkeit 2 = Standardempfindlichkeit 3 = Variable Empfindlichkeit			

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<sup>2</sup> COM values specify the bitrate (see IO-Link specification) / COM Werte spezifizieren die Baudrate (s. IO-Link Spezifikation): COM1 (4,8 kbit/s), COM2 (38,4 kbit/s), COM3 (230,4 kbit/s)

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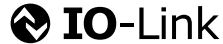
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Index dec (hex)	Name	Format (Offset)	Length	Access <sup>1</sup>	Default Value	Value / Range	Remark [Unit]
2 (0x02)	Start of sensitivity increase	Bit (16)	16 Bit	rw	606	190...5000	This setting only applies to variable sensitivity. The sensitivity of the sensor is minimal up to this distance. [mm]
3 (0x03)	End of sensitivity increase	Bit (0)	16 Bit	rw	28638	261...33032	This setting only applies to variable sensitivity. The sensitivity of the sensor is maximum from this distance. [mm]
256 (0x100)	Filter	Record	2 Byte	rw			
1 (0x01)	Type	Bit (8)	8 Bit	rw	1	0 = F00: no filter 1 = F01: approximation filter 2 = F02: averaging filter 3 = F03: foreground filter 4 = F04: background filter	Measurement filter for the evaluation of the measured values
2 (0x02)	Strength	Bit (0)	8 Bit	rw	0	0 = P00: weak filter 1 = P01 2 = P02 3 = P03 4 = P04 5 = P05 6 = P06 7 = P07 8 = P08 9 = P09: strong filter	Strength of the chosen measurement filter
300 (0x12C)	Temperature compensation	Record	2 Byte	rw			The sensor is equipped with an internal temperature unit in order to determine the ambient temperature. Thus the temperature dependency of the sound velocity in air is compensated.
1 (0x01)	Source of temperature	Bit (8)	8 Bit	rw	1	0 = Reference temperature 1 = Internal Temperature	Evaluate the data of the internal temperature unit or use the reference temperature.
2 (0x02)	Reference temperature	Bit (0)	8 Bit	rw	20	-25...70	Is the internal temperature unit deactivated, the temperature compensation is using the reference temperature. [°C]
350 (0x15E)	Synchronisation and multiplex operation	Record	3 Byte	rw			
1 (0x01)	Mode	Bit (16)	8 Bit	rw	1	0 = Inactive 1 = Active	
2 (0x02)	Sensor operation	Bit (8)	8 Bit	rw	0	0 = Synchronisation active 1 = Multiplex address 1 2 = Multiplex address 2 3 = Multiplex address 3 4 = Multiplex address 4 5 = Multiplex address 5 6 = Multiplex address 6 7 = Multiplex address 7 8 = Multiplex address 8 9 = Multiplex address 9 10 = Multiplex address 10	
3 (0x03)	Multiplex number of participants	Bit (0)	8 Bit	rw	10	2 = 2 participants 3 = 3 participants 4 = 4 participants 5 = 5 participants 6 = 6 participants 7 = 7 participants 8 = 8 participants 9 = 9 participants 10 = 10 participants	Maximum number of multiplex participants should be adjusted to correct number of participants in order to speed up multiplex operation.

DEUTSCH											
SICK spezifisch											
Index dez (hex)	Name	Format (Offset)	Länge	Zugriff <sup>1</sup>	Standard Wert	Wertebereich	Bemerkung [Einheit]				
2 (0x02)	Startpunkt der Empfindlichkeitssteigerung	Bit (16)	16 Bit	rw	606	190...5000	Diese Einstellung gilt nur bei variabler Empfindlichkeit. Die Empfindlichkeit des Sensors ist bis zu diesem Abstand minimal. [mm]				
3 (0x03)	Endpunkt der Empfindlichkeitssteigerung	Bit (0)	16 Bit	rw	28638	261...33032	Diese Einstellung gilt nur bei variabler Empfindlichkeit. Die Empfindlichkeit des Sensors ist ab diesem Abstand maximal. [mm]				
256 (0x100)	Filter	Record	2 Byte	rw							
1 (0x01)	Typ	Bit (8)	8 Bit	rw	1	0 = F00: kein Filter 1 = F01: Annäherungsfilter 2 = F02: Mittelwertfilter 3 = F03: Vordergrundfilter 4 = F04: Hintergrundfilter	Messwertfilter für die Auswertung der gemessenen Abstandswerte				
2 (0x02)	Stärke	Bit (0)	8 Bit	rw	0	0 = P00: schwache Filterwirkung 1 = P01 2 = P02 3 = P03 4 = P04 5 = P05 6 = P06 7 = P07 8 = P08 9 = P09: starke Filterwirkung	Stärke des gewählten Messwertfilters				
300 (0x12C)	Temperaturkompensation	Record	2 Byte	rw			Der Sensor ist mit einem internen Temperaturfühler ausgestattet, um die Umgebungstemperatur zu erfassen. Damit wird die Temperaturabhängigkeit der Schallgeschwindigkeit in Luft kompensiert.				
1 (0x01)	Quelle der Temperatur	Bit (8)	8 Bit	rw	1	0 = Referenztemperatur 1 = Interne Temperaturmessung	Internen Temperaturfühler auswerten oder feste Referenztemperatur verwenden				
2 (0x02)	Referenztemperatur	Bit (0)	8 Bit	rw	20	-25...70	Ist der Temperaturfühler deaktiviert, greift die Temperaturkompensation auf die feste Referenztemperatur zurück. [°C]				
350 (0x15E)	Synchronisation und Multiplexbetrieb	Record	3 Byte	rw							
1 (0x01)	Modus	Bit (16)	8 Bit	rw	1	0 = Inaktiv 1 = Aktiv					
2 (0x02)	Sensorbetriebsart	Bit (8)	8 Bit	rw	0	0 = Synchronisation aktiv 1 = Multiplexadresse 1 2 = Multiplexadresse 2 3 = Multiplexadresse 3 4 = Multiplexadresse 4 5 = Multiplexadresse 5 6 = Multiplexadresse 6 7 = Multiplexadresse 7 8 = Multiplexadresse 8 9 = Multiplexadresse 9 10 = Multiplexadresse 10					
3 (0x03)	Multiplex-Teilnehmeranzahl	Bit (0)	8 Bit	rw	10	2 = 2 Teilnehmer 3 = 3 Teilnehmer 4 = 4 Teilnehmer 5 = 5 Teilnehmer 6 = 6 Teilnehmer 7 = 7 Teilnehmer 8 = 8 Teilnehmer 9 = 9 Teilnehmer 10 = 10 Teilnehmer	Die maximale Anzahl von Multiplex-Teilnehmern sollte auf die richtige Anzahl der Teilnehmer eingestellt werden, um den Multiplexbetrieb zu beschleunigen.				

<sup>1</sup> r = read only, w = write only, rw = read/write / r = nur lesen, w = nur schreiben, rw = lesen/schreiben

<sup>2</sup> COM values specify the bitrate (see IO-Link specification) / COM Werte spezifizieren die Baudrate (s. IO-Link Spezifikation): COM1 (4,8 kbit/s), COM2 (38,4 kbit/s), COM3 (230,4 kbit/s)



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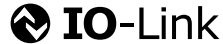
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Please note the validity of the additional operating instructions for automation functions

ENGLISH

SICK device specific							
Index dec (hex)	Name	Format (Offset)	Length	Access <sup>1</sup>	Default Value	Value / Range	Remark [Unit]
370 (0x172)	Button	Record	1 Byte	rw			
1 (0x01)	Mode	Bit (0)	8 Bit	rw	1	0 = Inactive 1 = Active	
371 (0x173)	Display	Record	1 Byte	rw			
1 (0x01)	Mode	Bit (0)	8 Bit	rw	1	0 = Inactive 1 = Active	
1000 (0x3E8)	Echo diagnosis	Record	2 Byte	ro			
1 (0x01)	Quality	Bit (0)	16 Bit	ro	0		
16512 (0x4080)	Measurement data channel description	Record	11 Byte	ro			
1 (0x01)	Lower limit	Bit (56)	32 Bit	ro	184	Lower limit of the measuring range (blind zone) [mm]	
2 (0x02)	Upper limit	Bit (24)	32 Bit	ro	5000	Upper limit of the measuring range (maximum range) [mm]	
3 (0x03)	Unit code	Bit (8)	16 Bit	ro	1013	IO-Link unit code: 1013 = [mm]	
4 (0x04)	Scale	Bit (0)	8 Bit	ro	0	Process data value * (10 ^ scale) [Unit code] = measuring value in mm	

Standard command

Index dec (hex)	Command	Access <sup>1</sup>	Value	Name	Remark [Unit]
2 (0x02)	Standard Command	wo	65	SP1 single value teach-in	
			66	SP2 single value teach-in	
			130	Restore Factory Settings	

Events

Code dec (hex)	Name	Type	Remark [Unit]
16384 (0x4000)	Temperature fault	Error	Overload
30480 (0x7710)	Short circuit	Error	Check installation
36000 (0x8CA0)	Teach-in error	Notification	Teach-in process was not successful.
36001 (0x8CA1)	Teach-in success	Notification	Teach-in process was successful.

DEUTSCH

SICK spezifisch							
Index dez (hex)	Name	Format (Offset)	Länge	Zugriff <sup>1</sup>	Standard Wert	Wertebereich	Bemerkung [Einheit]
370 (0x172)	Taster	Record	1 Byte	rw			
1 (0x01)	Modus	Bit (0)	8 Bit	rw	1	0 = Inaktiv 1 = Aktiv	
371 (0x173)	Display	Record	1 Byte	rw			
1 (0x01)	Modus	Bit (0)	8 Bit	rw	1	0 = Inaktiv 1 = Aktiv	
1000 (0x3E8)	Echo Diagnose	Record	2 Byte	ro			
1 (0x01)	Güte	Bit (0)	16 Bit	ro	0		
16512 (0x4080)	Messdatenkanalbeschreibung	Record	11 Byte	ro			
1 (0x01)	Untere Grenze	Bit (56)	32 Bit	ro	184	Untere Grenze des Messbereiches (Blindzone) [mm]	
2 (0x02)	Obere Grenze	Bit (24)	32 Bit	ro	5000	Obere Grenze des Messbereiches (Grenztastweite) [mm]	
3 (0x03)	Einheitencode	Bit (8)	16 Bit	ro	1013	IO-Link Einheitencode: 1013 = [mm]	
4 (0x04)	Skala	Bit (0)	8 Bit	ro	0	Prozessdatenwert * (10 ^ Skala) [Einheitencode] = Messwert in mm	

Standardkommando

Index dez (hex)	Standardkommando	Zugriff <sup>1</sup>	Wert	Name	Bemerkung [Einheit]
2 (0x02)	Standardkommando	wo	65	SP1 Einzelpunkt Teach-in	
			66	SP2 Einzelpunkt Teach-in	
			130	Auslieferungszustand wiederherstellen	

Events

Code dez (hex)	Name	Typ	Bemerkung [Einheit]
16384 (0x4000)	Temperaturfehler	Error	Überlast
30480 (0x7710)	Kurzschluss	Error	Überprüfen Sie die Installation
36000 (0x8CA0)	Teach-in Fehler	Notification	Ein Teach-in-Vorgang war nicht erfolgreich.
36001 (0x8CA1)	Teach-in erfolgreich	Notification	Ein Teach-in-Vorgang war erfolgreich.

<sup>1</sup> ro = read only, wo = write only, rw = read/write / ro = nur lesen, wo = nur schreiben, rw = lesen/schreiben  
<sup>2</sup> COM values specify the bitrate (see IO-Link specification) / COM Werte spezifizieren die Baudrate (s. IO-Link Spezifikation): COM1 (4,8 kbit/s), COM2 (38,4 kbit/s), COM3 (230,4 kbit/s)