Please also note the information on the last page

IO-Link Interface Description

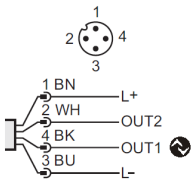
LW2720

EN

IODD-PDFCreator V 2.1.0.9
ifm-00052C-20211006-IODD1.1, V1.00.18

Table of Contents

1 Device variant

LW2720 Non-contact level transmitter, 10...10000 mm		

2 Communication

Vendor ID	310 / Bytes 1-54 (hex: 01-36)
Device ID	1324 / Bytes 0-5-44 (hex: 00-05-2C)
Bit rate	COM2
Minimum cycle time	6 ms
SIO mode supported	Yes
Block parameterization	No
Data storage	Yes
Supported profiles	Measuring Sensor Identification and Diagnosis Switching Signal Channel

NOTE:
If the Vendor ID and Device ID is referenced in your PLC system, then it is ensured that
- the connected Device type is correct
- the IO-Link datastorage is enabled
- your application is still able to work, even your Device has been exchanged with a successor model.

For process value update rate, as well as further information concerning sensor performance, see datasheet

3 Parameter overview

Parameter	Index	Subindex	Type	Factory setting	page
Vendor name	16		StringT (19 Byte)	ifm electronic gmbh	8
Vendor text	17		StringT (11 Byte)	www.ifm.com	8
Product Name	18		StringT (6 Byte)	LW2720	8
Product ID	19		StringT (6 Byte)	LW2720	8
Product Text	20		StringT (29 Byte)	Non-contact level transmitter	8
Serial Number	21		StringT (16 Byte)		8
Hardware Revision	22		StringT (2 Byte)		8
Firmware Revision	23		StringT (64 Byte)		8
Application-specific Tag	24		StringT (32 Byte)	***	8
Function Tag	25		StringT (32 Byte)	***	8
Location Tag	26		StringT (32 Byte)	***	8
Device Status	36		UIntegerT (8 Bit)	0 (Device is OK)	16
Detailed Device Status	37		OctetStringT (3 Byte) [11]	0x00,0x00,0x00	16
Process data input	40		RecordT (32 Bit)		9
SSC1 Param	60		RecordT (32 Bit)		12
SP1	60	1	IntegerT (16 Bit)	200	
SP2	60	2	IntegerT (16 Bit)	0	
SSC1 Config	61		RecordT (32 Bit)		11
Logic	61	1	UIntegerT (8 Bit)	0 (High active / no)	
Mode	61	2	UIntegerT (8 Bit)	1 (Single point)	
Hysteresis	61	3	IntegerT (16 Bit)	50	
SSC2 Param	62		RecordT (32 Bit)		14
SP1	62	1	IntegerT (16 Bit)	200	
SP2	62	2	IntegerT (16 Bit)	0	
SSC2 Config	63		RecordT (32 Bit)		12
Logic	63	1	UIntegerT (8 Bit)	0 (High active / no)	
Mode	63	2	UIntegerT (8 Bit)	1 (Single point)	
Hysteresis	63	3	IntegerT (16 Bit)	50	
P-n	500		UIntegerT (8 Bit)	0 (PnP)	10
dAP	510		IntegerT (16 Bit)	20	14
FOU2	532		UIntegerT (8 Bit)	4 (OFF)	14
Internal temperature	543		IntegerT (16 Bit)		19
Active Events	545		RecordT (32 Bit)		17
Param configuration fault	546		UIntegerT (32 Bit) [10]	0 (OK)	18
uni	551		UIntegerT (8 Bit)	0 (m)	10
S-On	570		UIntegerT (8 Bit)	0 (Off)	15
S.Tim	571		UIntegerT (8 Bit)	10 (60 min)	14
S.Lvl	572		IntegerT (16 Bit)	5000	14
ou1	580		UIntegerT (8 Bit)	32 (SSC1)	10
dS1	581		UIntegerT (16 Bit)	0	11
dr1	582		UIntegerT (16 Bit)	0	11
ou2	590		UIntegerT (8 Bit)	1 (I / Analog signal 4…20 mA)	10
dS2	591		UIntegerT (16 Bit)	0	13
dr2	592		UIntegerT (16 Bit)	0	13
ASP2	630		IntegerT (16 Bit)	0	14

3 Parameter overview

Parameter	Index	Subindex	Type	Factory setting	page
AEP2	631		IntegerT (16 Bit)	200	14
Input Voltage	940		IntegerT (16 Bit)		18
Current	944		IntegerT (16 Bit)		18
Reference height	1604		UIntegerT (16 Bit)	40 (Initial value)	10
Tank offset	1611		IntegerT (16 Bit)	0	10
Upper blind zone	1612		IntegerT (16 Bit)	0	10
Alert mode delay time	1613		IntegerT (16 Bit)	180	15
Detection threshold	1614		IntegerT (16 Bit)	100	15
Echo Peaks	1615		RecordT (400 Bit)		21
Measurement Variables	1616		RecordT (160 Bit)		19
Negative Level	13375		UIntegerT (32 Bit)	7 (Equals Zero)	10
MDC Descr	16512		RecordT (88 Bit)		15
Lower limit	16512	1	IntegerT (32 Bit)	0 (0)	
Upper limit	16512	2	IntegerT (32 Bit)	15000 (15000)	
Unit code	16512	3	UIntegerT (16 Bit)	1010 (m)	
Scale	16512	4	IntegerT (8 Bit)	-3 (-3)	

4 System Commands

System Command information
- Address: Index 2, Subindex 0
- Datatype: UInteger (8 Bit)
- AccessRight: Write Only

System Commands	Text	Description
1	Upload Start	Start block parameter upload
2	Upload End	End block parameter upload
3	Download Start	Start block parameter download
4	Download End	Stop block parameter download
5	Store	Finalize block parameterization and start Data Storage
6	Break	Cancel block parameterization
130	Restore Factory Settings	Press to restore the factory configuration
176	Start simulation	Press to start the level simulation
177	Stop simulation	Press to stop the level simulation
240	IO-Link 1.1 system test command 240, Event 8DFE appears	
241	IO-Link 1.1 system test command 241, Event 8DFE disappears	
242	IO-Link 1.1 system test command 242, Event 8DFF appears	
243	IO-Link 1.1 system test command 243, Event 8DFF disappears	

5 Identification

Vendor name	Index 16	Subindex 0	StringT (19 Byte)	ReadOnly
The vendor name that is assigned to a Vendor ID.				
Factory setting	**ifm electronic gmbh**			

Vendor text	Index 17	Subindex 0	StringT (11 Byte)	ReadOnly
Additional information about the vendor.				
Factory setting	**www.ifm.com**			

Product Name	Index 18	Subindex 0	StringT (6 Byte)	ReadOnly
Complete product name.				
Factory setting	**LW2720**			

Product ID	Index 19	Subindex 0	StringT (6 Byte)	ReadOnly
Vendor-specific product or type identification (e.g., item number or model number).				
Factory setting	**LW2720**			

Product Text	Index 20	Subindex 0	StringT (29 Byte)	ReadOnly
Additional product information for the device.				
Factory setting	**Non-contact level transmitter**			

Serial Number	Index 21	Subindex 0	StringT (16 Byte)	ReadOnly
Unique, vendor-specific identifier of the individual device.				

Hardware Revision	Index 22	Subindex 0	StringT (2 Byte)	ReadOnly
Unique, vendor-specific identifier of the hardware revision of the individual device.				

Firmware Revision	Index 23	Subindex 0	StringT (64 Byte)	ReadOnly
Unique, vendor-specific identifier of the firmware revision of the individual device.				

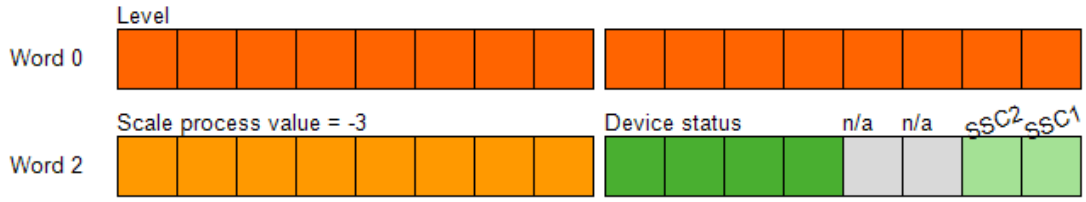
Application-specific Tag	Index 24	Subindex 0	StringT (32 Byte)	ReadWrite
Possibility to mark a device with user- or application-specific information.				
Factory setting	***			

Function Tag	Index 25	Subindex 0	StringT (32 Byte)	ReadWrite
Plant designation, describes the device functionality				
Factory setting	***			

Location Tag	Index 26	Subindex 0	StringT (32 Byte)	ReadWrite
Location designation, identifies the device location				
Factory setting	***			

6 Observation

Process data input			RecordT (32 Bit)
Level			IntegerT (16 Bit)
Measured Level Value			
Value range [m]	(-10000 to 15000) * 0.001		
	32764	(NoData)	
Device status			UIntegerT (4 Bit)
Current device status, a copy of the parameter [Device Status, Index 36] in the process data channel			
Value range	0	(Device is OK)	
	1	(Maintenance required)	
	2	(Out of specification)	
	3	(Functional check)	
	4	(Failure)	
SSC2			BooleanT
Switching signal channel 2, status			
Value range	false	(Inactive)	
	true	(Active)	
SSC1			BooleanT
Switching signal channel 1, status			
Value range	false	(Inactive)	
	true	(Active)	



-Scale process value: This value enables a PLC function block to calculate the process data (from WORD 0) into the unit [m]
-n/a: Not available area. Used to cover structured process data mapping

Process data displayed according device sort order.
Please note: Siemens PLCs swap the high and low byte when using byte addressing.

7 Parameter

7.1 Basic settings

uni	Index 551	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Selection of the displayed unit				
Factory setting	**0**	**(m)**		
Value range	0	(m)		
	1	(inch)		

Reference height	Index 1604	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Distance between the Tank Reference Point (typically same as Device Reference Point) and Zero Level.				
Factory setting	**40**	**(Initial value)**		
Value range [m]	(200 to 15000) * 0.001			
	40	(Initial value)		

Tank offset	Index 1611	Subindex 0	IntegerT (16 Bit)	ReadWrite
Distance between the Zero Level point and the tank bottom				
Factory setting	**0**			
Value range [m]	(-10000 to 10000) * 0.001			

Upper blind zone	Index 1612	Subindex 0	IntegerT (16 Bit)	ReadWrite
Defines how close to the transmitter reference point a level value is accepted. You can change this value to block out disturbing echoes close to the antenna. View the Echo Peaks to find out if there are disturbing echoes close to the tank top				
Factory setting	**0**			
Value range [m]	(0 to 10000) * 0.001			

Negative Level	Index 13375	Subindex 0	UIntegerT (32 Bit)	ReadWrite
If the Tank offset > is 0, the level value can be negative. This parameter determines whether negative level values will be displayed or whether they are to be equal to zero. For further information please see the operating instructions.				
Factory setting	**7**	**(Equals Zero)**		
Value range	6	(Allowed)		
	7	(Equals Zero)		

7.2 Output configuration

P-n	Index 500	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Output polarity for the switching outputs				
Factory setting	**0**	**(PnP)**		
Value range	0	(PnP)		
	1	(nPn)		

ou1	Index 580	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Output configuration [OUT1]				
Factory setting	**32**	**(SSC1)**		
Value range	32	(SSC1)		
	16	(OFF / Output Off)		

ou2	Index 590	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Output configuration [OUT2]				
Factory setting	**1**	**(I / Analog signal 4…20 mA)**		
Value range	1	(I / Analog signal 4…20 mA)		
	33	(SSC2)		
	16	(OFF / Output Off)		

7 Parameter

7.3 Mode - Deactivated

SSC1 Config	Index 61	Subindex 0	RecordT (32 Bit)	ReadWrite
Switching signal channel 1, configuration				
Logic		Subindex 1	UIntegerT (8 Bit)	
Setpoint logic				
Factory setting Value range	**0** 0 1	**(High active / no)** (High active / no) (Low active / nc)		
Mode		Subindex 2	UIntegerT (8 Bit)	
Setpoint mode				
Factory setting Value range	**1** 0 1 2 3	**(Single point)** (Deactivated) (Single point) (Window) (Two point)		
Hysteresis		Subindex 3	IntegerT (16 Bit)	
Setpoint hysteresis				
Factory setting Value range [m]	**50** (0 to 500) * 0.001			

7.4 Switching signal channel 1

7.4.1 Mode - Single point

dS1	Index 581	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Switching delay for [OUT1]				
Factory setting Value range [s]	**0** (0 to 60) * 1.0			

dr1	Index 582	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Reset delay for [OUT1]				
Factory setting Value range [s]	**0** (0 to 60) * 1.0			

SSC1 Param	Index 60	Subindex 0	RecordT (32 Bit)	ReadWrite
Switching signal channel 1, parameter				
SP1		Subindex 1	IntegerT (16 Bit)	
Setpoint 1				
Factory setting Value range [m]	**200** (5 to 15000) * 0.001			
SP2		Subindex 2	IntegerT (16 Bit)	
Setpoint 2				
Factory setting Value range [m]	**0** (0 to 14995) * 0.001			

7 Parameter

7.5 Switching signal channel 1

7.5.1 Mode - Window

dS1	Index 581	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Switching delay for [OUT1]				
Factory setting Value range [s]	**0** (0 to 60) * 1.0			

dr1	Index 582	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Reset delay for [OUT1]				
Factory setting Value range [s]	**0** (0 to 60) * 1.0			

7.6 Switching signal channel 1

7.6.1 Mode - Two Point

dS1	Index 581	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Switching delay for [OUT1]				
Factory setting Value range [s]	**0** (0 to 60) * 1.0			

dr1	Index 582	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Reset delay for [OUT1]				
Factory setting Value range [s]	**0** (0 to 60) * 1.0			

7.7 Mode - Deactivated

SSC2 Config	Index 63	Subindex 0	RecordT (32 Bit)	ReadWrite
Switching signal channel 2, configuration				
Logic		Subindex 1	UIntegerT (8 Bit)	
Setpoint logic				
Factory setting Value range	**0** 0 1	**(High active / no)** (High active / no) (Low active / nc)		
Mode		Subindex 2	UIntegerT (8 Bit)	
Setpoint mode				
Factory setting Value range	**1** 0 1 2 3	**(Single point)** (Deactivated) (Single point) (Window) (Two point)		
Hysteresis		Subindex 3	IntegerT (16 Bit)	
Setpoint hysteresis				
Factory setting Value range [m]	**50** (0 to 500) * 0.001			

7 Parameter

7.8 Switching signal channel 2

7.8.1 Mode - Single point

dS2	Index 591	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Switching delay for [OUT2]				
Factory setting Value range [s]	**0** (0 to 60) * 1.0			

dr2	Index 592	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Reset delay for [OUT2]				
Factory setting Value range [s]	**0** (0 to 60) * 1.0			

SSC2 Param	Index 62	Subindex 0	RecordT (32 Bit)	ReadWrite
Switching signal channel 2, parameter				
SP1		Subindex 1	IntegerT (16 Bit)	
Setpoint 1				
Factory setting Value range [m]	**200** (5 to 15000) * 0.001			
SP2		Subindex 2	IntegerT (16 Bit)	
Setpoint 2				
Factory setting Value range [m]	**0** (0 to 14995) * 0.001			

7.9 Switching signal channel 2

7.9.1 Mode - Window

dS2	Index 591	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Switching delay for [OUT2]				
Factory setting Value range [s]	**0** (0 to 60) * 1.0			

dr2	Index 592	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Reset delay for [OUT2]				
Factory setting Value range [s]	**0** (0 to 60) * 1.0			

7.10 Switching signal channel 2

7.10.1 Mode - Two Point

dS2	Index 591	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Switching delay for [OUT2]				
Factory setting Value range [s]	**0** (0 to 60) * 1.0			

7 Parameter

dr2	Index 592	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Reset delay for [OUT2]				
Factory setting	**0**			
Value range [s]	(0 to 60) * 1.0			

7.11 Analog Output 2

7.11.1 Analog Output 2

ASP2	Index 630	Subindex 0	IntegerT (16 Bit)	ReadWrite
Analogue start point 2 / Level. Defines the Level Value where the analogue current is 4 mA. For further information please see the operating instructions.				
Factory setting	**0**			
Value range [m]	(0 to 14000) * 0.001			

AEP2	Index 631	Subindex 0	IntegerT (16 Bit)	ReadWrite
Analogue end point 2 / Level. Defines the Level Value where the analogue current is 20 mA. For further information please see the operating instructions.				
Factory setting	**200**			
Value range [m]	(200 to 15000) * 0.001			

7.12 Fault Configuration Output 2

FOU2	Index 532	Subindex 0	UIntegerT (8 Bit)	ReadWrite
[OUT2] behaviour in case of fault				
Factory setting	**4**	**(OFF)**		
Value range	2	(On)		
	4	(OFF)		

7.13 Damping

dAP	Index 510	Subindex 0	IntegerT (16 Bit)	ReadWrite
Damping of the measured signal				
Factory setting	**20**			
Value range [s]	(0 to 6000) * 0.1			

7.14 Simulation

S.Lvl	Index 572	Subindex 0	IntegerT (16 Bit)	ReadWrite
Enter the desired Simulated Level Value. Please note: This value is excluded from IO-Link data storage mechanism, it will not be be stored in the Master				
Factory setting	**5000**			
Value range [m]	(0 to 15000) * 0.001			

S.Tim	Index 571	Subindex 0	UIntegerT (8 Bit)	ReadOnly
Simulation duration				
Factory setting	**10**	**(60 min)**		
Value range	10	(60 min)		

7 Parameter

S-On	Index 570	Subindex 0	UIntegerT (8 Bit)	ReadOnly
Simulation Status				
Factory setting Value range	**0** 0 1	**(Off)** (Off) (On)		

7.15 Service

Alert mode delay time	Index 1613	Subindex 0	IntegerT (16 Bit)	ReadWrite
The maximum time set from when the measurement is lost until it is communicated				
Factory setting Value range	**180** (0 to 1000) [s]			

Detection threshold	Index 1614	Subindex 0	IntegerT (16 Bit)	ReadWrite
Threshold for which a returned echo Signal Strength needs to be above to be considered the product surface				
Factory setting Value range [mV]	**100** (0 to 20000) * 1			

MDC Descr	Index 16512	Subindex 0	RecordT (88 Bit)	ReadOnly
Description of the measurement data channel				
Lower limit		Subindex 1	IntegerT (32 Bit)	
Lower value measurement range				
Factory setting Value range	**0** 0	**(0)** (0)		
Upper limit		Subindex 2	IntegerT (32 Bit)	
Upper value measurement range				
Factory setting Value range	**15000** 15000	**(15000)** (15000)		
Unit code		Subindex 3	UIntegerT (16 Bit)	
Unit code of the measurement data				
Factory setting Value range	**1010** 1010	**(m)** (m)		
Scale		Subindex 4	IntegerT (8 Bit)	
Range shifting (10 scale)				
Factory setting Value range	**-3** -3	**(-3)** (-3)		

8 Diagnosis

Device Status	Index 36	Subindex 0	UIntegerT (8 Bit)	ReadOnly
Indicator for the current device condition and diagnosis state.				
Factory setting	**0**	**(Device is OK)**		
Value range	0	(Device is OK)		
	1	(Maintenance required)		
	2	(Out of specification)		
	3	(Functional check)		
	4	(Failure)		
	(5 to 255) (Reserved)			

Detailed Device Status	Index 37	Subindex 0	OctetStringT (3 Byte) [11]	ReadOnly
List of all currently pending events in the device.				
Factory setting	**0x00,0x00,0x00**			

Active Events	Index 545	Subindex 0	RecordT (32 Bit)	ReadOnly
Bit mask for current pending events				
Bit_31		bitOffset 31	BooleanT	
Test Event 2 - Event disappears by setting index 2 to value 243. Device Status = 1 (Maintenance required)				
Value range	0	(noEv)		
	1	(0x8DFF)		
Bit_30		bitOffset 30	BooleanT	
Test Event 1 - Event disappears by setting index 2 to value 241. Device Status = 1 (Maintenance required)				
Value range	0	(noEv)		
	1	(0x8DFE)		
Bit_22		bitOffset 22	BooleanT	
Master is overloading the Device EEPROM memory - Reconfigure the Master and Restart the Device. Device Status = 1 (Maintenance required)				
Value range	0	(noEv)		
	1	(0x8CE8)		
Bit_21		bitOffset 21	BooleanT	
Device memory failure - Restore factory settings. Device Status = 4 (Failure)				
Value range	0	(noEv)		
	1	(0x8CE9)		
Bit_20		bitOffset 20	BooleanT	
Device software fault - Check firmware revision. Device Status = 4 (Failure)				
Value range	0	(noEv)		
	1	(0x6000)		
Bit_19		bitOffset 19	BooleanT	
Primary supply voltage under-run - Check valid voltage range. Device Status = 2 (Out of Specification)				
Value range	0	(noEv)		
	1	(0x5111)		
Bit_18		bitOffset 18	BooleanT	
Primary supply voltage over-run - Check valid voltage range. Device Status = 2 (Out of Specification)				
Value range	0	(noEv)		
	1	(0x5110)		
Bit_17		bitOffset 17	BooleanT	
General power supply fault - Check availability. Device Status = 4 (Failure)				
Value range	0	(noEv)		
	1	(0x5100)		
Bit_16		bitOffset 16	BooleanT	
Simulation active - Check operating mode. Device Status = 3 (Functional check)				
Value range	0	(noEv)		
	1	(0x8C01)		

8 Diagnosis

Bit_15		bitOffset 15	BooleanT
Device temperature over-run - Clear source of heat. Device Status = 2 (Out of Specification)			
Value range	0	(noEv)	
	1	(0x4210)	
Bit_14		bitOffset 14	BooleanT
Device temperature under-run - Insulate Device. Device Status = 2 (Out of Specification)			
Value range	0	(noEv)	
	1	(0x4220)	
Bit_13		bitOffset 13	BooleanT
Maintenance required – Cleaning. Device Status = 1 (Maintenance required)			
Value range	0	(noEv)	
	1	(0x8C40)	
Bit_10		bitOffset 10	BooleanT
No reflection signal - Correct device. Device Status = 4 (Failure)			
Value range	0	(noEv)	
	1	(0x8CBC)	
Bit_3		bitOffset 3	BooleanT
Parameter missing - Please set the Reference height. Device status = 3 (Functional check)			
Value range	0	(noEv)	
	1	(0x6321)	
Bit_2		bitOffset 2	BooleanT
Short circuit - Check installation. Device Status = 2 (Out of Specification)			
Value range	0	(noEv)	
	1	(0x7710)	
Bit_1		bitOffset 1	BooleanT
Parameter error - Check datasheet and values. Device Status = 4 (Failure)			
Value range	0	(noEv)	
	1	(0x6320)	
Bit_0		bitOffset 0	BooleanT
Device hardware fault - Exchange device. Device Status = 4 (Failure)			
Value range	0	(noEv)	
	1	(0x5000)	

8 Diagnosis

Param configuration fault	Index 546	Subindex 0	UIntegerT (32 Bit) [10]	ReadOnly
Displays the incorrectly set parameters				
Factory setting	**0**	**(OK)**		
Value range	0	(OK)		
	32768000	(P-n, Index = 500)		
	33423360	(dAP, Index = 510)		
	34865152	(FOU2, Index = 532)		
	36110336	(uni, Index = 551)		
	37486592	(S-Lvl, Index = 572)		
	3997696	(SSC1 Config, Index = 61)		
	3997697	(SSC1 Config, Index = 61, Subindex = 1)		
	3997698	(SSC1 Config, Index = 61, Subindex = 2)		
	3997699	(SSC1 Config, Index = 61, Subindex = 3)		
	3932160	(SSC1 Param, Index = 60)		
	3932161	(SSC1 Param, Index = 60, Subindex = 1)		
	3932162	(SSC1 Param, Index = 60, Subindex = 2)		
	4128768	(SSC2 Config, Index = 63)		
	4128769	(SSC2 Config, Index = 63, Subindex = 1)		
	4128770	(SSC2 Config, Index = 63, Subindex = 2)		
	4128771	(SSC2 Config, Index = 63, Subindex = 3)		
	4063232	(SSC2 Param, Index = 62)		
	4063233	(SSC2 Param, Index = 62, Subindex = 1)		
	4063234	(SSC2 Param, Index = 62, Subindex = 2)		
	38010880	(ou1, Index = 580)		
	38076416	(dS1, Index = 581)		
	38141952	(dr1, Index = 582)		
	38666240	(ou2, Index = 590)		
	38731776	(dS2, Index = 591)		
	38797312	(dr2, Index = 592)		
	105119744	(Reference height, Index = 1604)		
	105578496	(Tank offset, Index = 1611)		
	105644032	(Upper blind zone, Index = 1612)		
	105709568	(Alert mode delay time, Index = 1613)		
	105775104	(Detection threshold, Index = 1614)		

Input Voltage	Index 940	Subindex 0	IntegerT (16 Bit)	ReadOnly
The measured Power Supply voltage				
Value range [V]	(0 to 360) * 0.1			

Current	Index 944	Subindex 0	IntegerT (16 Bit)	ReadOnly
The Analog Output 2 Loop Current.				
Value range [mA]	(0 to 225) * 0.1			

8.1 Measurement Variables

Measurement Variables	Index 1616	Subindex 0	RecordT (160 Bit)	ReadOnly
Measurement Variables				
Level		bitOffset 128	Float32T	
The Level Value (The Reference Distance - Measured Distance)				
Value range [m]	(-10.0 to 15.0) * 1.0			
Level Status		bitOffset 120	UIntegerT (8 Bit)	
Measurement Status, Good, Bad, Degraded or Simulated				
Value range	0	(Good)		
	1	(Simulated)		
	2	(Degraded)		
	3	(Bad)		
Distance		bitOffset 88	Float32T	
The Distance from the Transmitter reference point to the surface				
Value range [m]	(0.0 to 15.0) * 1.0			

8 Diagnosis

Distance Status		bitOffset 80	UIntegerT (8 Bit)
Measurement Status, Good, Bad, Degraded or Simulated			
Value range	0 1 2 3	(Good) (Simulated) (Degraded) (Bad)	
Signal Strength		bitOffset 48	Float32T
The reflected Signal Strength from the surface			
Value range [mV]	(0.0 to 100000.0) * 1.0		
Signal Strength Status		bitOffset 40	UIntegerT (8 Bit)
Measurement Status, Good, Bad, Degraded or Simulated			
Value range	0 1 2 3	(Good) (Simulated) (Degraded) (Bad)	

8.2 Electronics Temperature

Internal temperature	Index 543	Subindex 0	IntegerT (16 Bit)	ReadOnly
Current internal temperature of the device				
Value range [°C]	(-600 to 1000) * 0.1			

8.3 Echo Peaks

Echo Peaks	Index 1615	Subindex 0	RecordT (400 Bit)	ReadOnly
Found Echo Peaks				
Echo 1 Type		bitOffset 392	UIntegerT (8 Bit)	
The Classified Echo Type				
Value range	0 1 2 6	(Unknown) (Suppressed) (Surface) (Tank Bottom Echo)		
Echo 1 Distance		bitOffset 376	UIntegerT (16 Bit)	
The measured distance from the Transmitter reference point to the reflection				
Value range [m]	(0 to 15000) * 0.001			
Echo 1 Signal Strength		bitOffset 360	UIntegerT (16 Bit)	
The measured Signal Strength of the reflection				
Value range [mV]	(0 to 65535) * 1.0			
Echo 2 Type		bitOffset 352	UIntegerT (8 Bit)	
The Classified Echo Type				
Value range	0 1 2 6	(Unknown) (Suppressed) (Surface) (Tank Bottom Echo)		
Echo 2 Distance		bitOffset 336	UIntegerT (16 Bit)	
The measured distance from the Transmitter reference point to the reflection				
Value range [m]	(0 to 15000) * 0.001			
Echo 2 Signal Strength		bitOffset 320	UIntegerT (16 Bit)	
The measured Signal Strength of the reflection				
Value range [mV]	(0 to 65535) * 1.0			

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Echo 3 Type		bitOffset 312	UIntegerT (8 Bit)
The Classified Echo Type			
Value range	0	(Unknown)	
	1	(Suppressed)	
	2	(Surface)	
	6	(Tank Bottom Echo)	
Echo 3 Distance		bitOffset 296	UIntegerT (16 Bit)
The measured distance from the Transmitter reference point to the reflection			
Value range [m]	(0 to 15000) * 0.001		
Echo 3 Signal Strength		bitOffset 280	UIntegerT (16 Bit)
The measured Signal Strength of the reflection			
Value range [mV]	(0 to 65535) * 1.0		
Echo 4 Type		bitOffset 272	UIntegerT (8 Bit)
The Classified Echo Type			
Value range	0	(Unknown)	
	1	(Suppressed)	
	2	(Surface)	
	6	(Tank Bottom Echo)	
Echo 4 Distance		bitOffset 256	UIntegerT (16 Bit)
The measured distance from the Transmitter reference point to the reflection			
Value range [m]	(0 to 15000) * 0.001		
Echo 4 Signal Strength		bitOffset 240	UIntegerT (16 Bit)
The measured Signal Strength of the reflection			
Value range [mV]	(0 to 65535) * 1.0		
Echo 5 Type		bitOffset 232	UIntegerT (8 Bit)
The Classified Echo Type			
Value range	0	(Unknown)	
	1	(Suppressed)	
	2	(Surface)	
	6	(Tank Bottom Echo)	
Echo 5 Distance		bitOffset 216	UIntegerT (16 Bit)
The measured distance from the Transmitter reference point to the reflection			
Value range [m]	(0 to 15000) * 0.001		
Echo 5 Signal Strength		bitOffset 200	UIntegerT (16 Bit)
The measured Signal Strength of the reflection			
Value range [mV]	(0 to 65535) * 1.0		
Echo 6 Type		bitOffset 192	UIntegerT (8 Bit)
The Classified Echo Type			
Value range	0	(Unknown)	
	1	(Suppressed)	
	2	(Surface)	
	6	(Tank Bottom Echo)	
Echo 6 Distance		bitOffset 176	UIntegerT (16 Bit)
The measured distance from the Transmitter reference point to the reflection			
Value range [m]	(0 to 15000) * 0.001		
Echo 6 Signal Strength		bitOffset 160	UIntegerT (16 Bit)
The measured Signal Strength of the reflection			
Value range [mV]	(0 to 65535) * 1.0		

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Echo 7 Type		bitOffset 152	UIntegerT (8 Bit)
The Classified Echo Type			
Value range	0 1 2 6	(Unknown) (Suppressed) (Surface) (Tank Bottom Echo)	
Echo 7 Distance		bitOffset 136	UIntegerT (16 Bit)
The measured distance from the Transmitter reference point to the reflection			
Value range [m]	(0 to 15000) * 0.001		
Echo 7 Signal Strength		bitOffset 120	UIntegerT (16 Bit)
The measured Signal Strength of the reflection			
Value range [mV]	(0 to 65535) * 1.0		
Echo 8 Type		bitOffset 112	UIntegerT (8 Bit)
The Classified Echo Type			
Value range	0 1 2 6	(Unknown) (Suppressed) (Surface) (Tank Bottom Echo)	
Echo 8 Distance		bitOffset 96	UIntegerT (16 Bit)
The measured distance from the Transmitter reference point to the reflection			
Value range [m]	(0 to 15000) * 0.001		
Echo 8 Signal Strength		bitOffset 80	UIntegerT (16 Bit)
The measured Signal Strength of the reflection			
Value range [mV]	(0 to 65535) * 1.0		
Echo 9 Type		bitOffset 72	UIntegerT (8 Bit)
The Classified Echo Type			
Value range	0 1 2 6	(Unknown) (Suppressed) (Surface) (Tank Bottom Echo)	
Echo 9 Distance		bitOffset 56	UIntegerT (16 Bit)
The measured distance from the Transmitter reference point to the reflection			
Value range [m]	(0 to 15000) * 0.001		
Echo 9 Signal Strength		bitOffset 40	UIntegerT (16 Bit)
The measured Signal Strength of the reflection			
Value range [mV]	(0 to 65535) * 1.0		
Echo 10 Type		bitOffset 32	UIntegerT (8 Bit)
The Classified Echo Type			
Value range	0 1 2 6	(Unknown) (Suppressed) (Surface) (Tank Bottom Echo)	
Echo 10 Distance		bitOffset 16	UIntegerT (16 Bit)
The measured distance from the Transmitter reference point to the reflection			
Value range [m]	(0 to 15000) * 0.001		
Echo 10 Signal Strength		bitOffset 0	UIntegerT (16 Bit)
The measured Signal Strength of the reflection			
Value range [mV]	(0 to 65535) * 1.0		

9 Events

Code	Device status	PQ*	Class	Name	Description
0x4210 16912d	2 (Out of specification)	valid	Warning	Device temperature overrun	Clear source of heat
0x4220 16928d	2 (Out of specification)	valid	Warning	Device temperature underrun	Insulate device
0x5000 20480d	4 (Failure)	invalid	Error	Device hardware fault	Exchange device
0x5100 20736d	4 (Failure)	valid	Error	General power supply fault	Check availability
0x5110 20752d	2 (Out of specification)	valid	Warning	Primary supply voltage overrun	Check valid voltage range
0x5111 20753d	2 (Out of specification)	valid	Warning	Primary supply voltage underrun	Check valid voltage range
0x6000 24576d	4 (Failure)	valid	Error	Device software fault	Check firmware revision
0x6320 25376d	4 (Failure)	invalid	Error	Parameter error	Check datasheet and values
0x6321 25377d	3 (Functional check)	valid	Error	Parameter missing	Check datasheet
0x7710 30480d	2 (Out of specification)	valid	Error	Short circuit	Check installation
0x8C01 35841d	3 (Functional check)	valid	Warning	Simulation active	Check operating mode
0x8C40 35904d	unchanged	valid	Warning	Maintenance required - Cleaning	Clean device
0x8CBC 36028d	4 (Failure)	valid	Error	No reflection signa	Correct device.
0x8CE8 36072d	1 (Maintenance required)	valid	Warning	Max EEPROM write cycles expired	Reconfigure the Master and Restart the Device.
0x8CE9 36073d	4 (Failure)	valid	Error	Device Memory Failure	Restore factory settings.
0x8DFE 36350d	1 (Maintenance required)	valid	Warning	Test Event 1. Device Status = 1 (Maintenance required)	Event appears by setting index 2 to value 240, Event disappears by setting index 2 to value 241
0x8DFF 36351d	1 (Maintenance required)	valid	Warning	Test Event 2. Device Status = 1 (Maintenance required)	Event appears by setting index 2 to value 242, Event disappears by setting index 2 to value 243

Events are raised by the device itself to notify irregular device states
PQ* = Process data quality

10 Error types

Code	Name	Description
0x8000 32768d	Device application error - no details	Service was denied by the technology-specific application. No detailed root-cause information is available.
0x8011 32785d	Index not available	Read or write access attempt to a non-existing index.
0x8012 32786d	Subindex not available	Read or write access attempt to a non-existing subindex of an existing index.
0x8020 32800d	Service temporarily not available	Parameter not accessible due to the current state of the technology-specific application.
0x8023 32803d	Access denied	Write access to a read-only parameter or read access to write-only parameter.
0x8030 32816d	Parameter value out of range	Written parameter value is outside of the permitted value range.
0x8031 32817d	Parameter value above limit	Written parameter value is above its specified value range
0x8032 32818d	Parameter value below limit	Written parameter value is below its specified value range
0x8033 32819d	Parameter length overrun	Written parameter is longer than specified.
0x8034 32820d	Parameter length underrun	Written parameter is shorter than specified.
0x8035 32821d	Function unavailable	Written command is not supported by the technology-specific application
0x8036 32822d	Function temporarily unavailable	Written command is unavailable due to the current state of the technology-specific application.
0x8040 32832d	Invalid parameter set	Written single parameter value collides with other existing parameter settings.
0x8041 32833d	Inconsistent parameter set	Parameter set inconsistencies at the end of block parameter transfer. Device plausibility check failed.
0x8082 32898d	Application not ready	Read or write access denied. The technology-specific application is temporarily unavailable.

Error types are used for the ISDU response. Values unequal '0' indicate the cause of a failed ISDU read or write service.

11 Unit conversion

This list provides conversion formulas to convert the transmitted IO-Link raw data into physical units.

Process Data Input

Value in [m]	= Transmitted value	*	0.001
Value in [in]	= Transmitted value	*	0.03937007

Additional device-specific information

On delivery the device is not operational !

The IO-Link process data contains the following values

- The level value is NoData (0x7FFC, 32764 dec).
- The Device Status is Functional Check (3)
- Both SSCs are 0

Event *Parameter missing* (0x6321, 25377 dec) is pending

Set the device into operational state

Adjust parameter *Reference height*

Depending on the tank height, the parameter *Reference height* has to be considered. It has to be changed from ‘Initial value’ to the height of the applied tank.

Adjust dependent parameters to *Reference height*

- Switch point parameters *SSC1-Param.SP1*, *SSC2-Param.SP1* are initially set to the smallest expected *Reference height*.
- Analog end point Parameter *AEP2* is also initially set to the smallest expected *Reference height*.

Please readjust those parameters according your expected *Reference height*

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