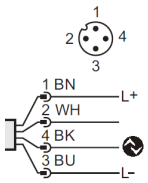
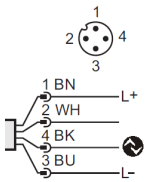
IO-Link Interface Description

LDH112
LDH122

EN

IODD-PDFCreator V 2.3.0.16
ifm-0004E1-20240124-IODD1.1, V1.0.1
ifm electronic gmbh

Device variant

LDH112 **Oil humidity sensor / IO-Link** **G1/2"**		
LDH122 **Oil humidity sensor / IO-Link** **1/2"NPT**		

Vendor ID	310 / Bytes 1-54 (hex: 01-36)
Device ID	1249 / Bytes 0-4-225 (hex: 00-04-E1)
Bit rate	COM2
Minimum cycle time	4,5 ms
SIO mode supported	No
Block parameterization	Yes
Data storage	Yes
Supported profiles	16384 / hex: 0x4000 Identification and Diagnosis 32778 / hex: 0x800A Measurement Data Channel (standard resolution)

NOTE:
If the Vendor ID and Device ID are specified in your PLC system, it is ensured that
- the correct device is connected,
- the IO-Link data storage is enabled,
- your application is still able to function, even if your device is replaced by a successor model at a later date

For the process value update rate, as well as further information regarding sensor performance, see data sheet.

Unit conversion

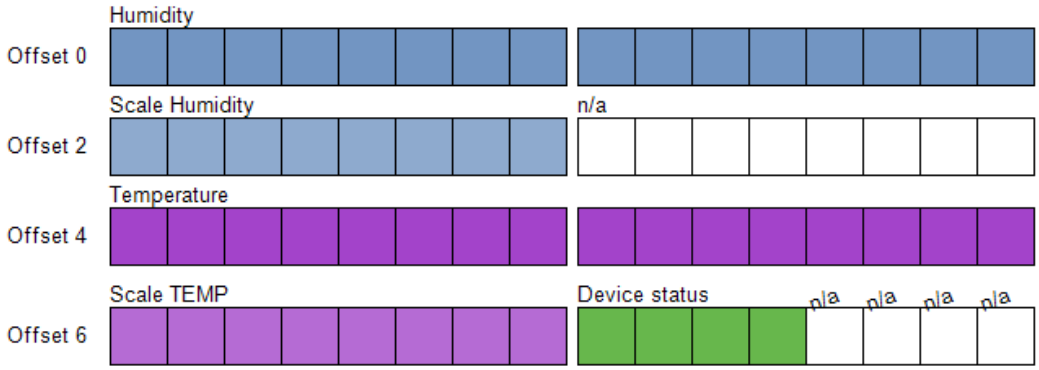
This list provides conversion formulas to convert the transmitted IO-Link raw data into physical units.

Temperature

Value in [°C]	=	Transferred value	*	0.1
Value in [°F]	=	Transferred value	*	0.18 + 32

Process data

Process data input		RecordT (64 Bit)
Humidity		IntegerT (16 Bit)
Current Humidity		
Value range [%]	(0 to 1000) * 0.1	
Temperature		IntegerT (16 Bit)
Current temperature		
Value range [°C]	(-400 to 1200) * 0.1	
	-32760	(UL - underload) 0x8008
	32760	(OL - overload) 0x7FF8
	-32762	(cr.UL - critical underload) 0x8006
	32762	(cr.OL - critical overload) 0x7FFA
	32764	(NoData) 0x7FFC
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)



Scale Humidity: A PLC function block calculates the humidity part of the process data (from WORD 0) into the profiled unit [%]
Scale TEMP: A PLC function block calculates the temperature part of the process data (from WORD 4) into the profiled unit [°C]

Data is transmitted in BigEndian format.
The position of the process data bytes is shown according to the device transmission sequence.
The content ofyour PLCs input buffer may vary according to your PLCs data format.
Please do not apply any byte swap feature.
Example function blocks incl. documentation are available on www.ifm.com --> Startup Packages

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)		8
Product ID	19		StringT (6 Byte)		8
Product Text	20		StringT (19 Byte)	Oil humidity sensor	8
Serial Number	21		StringT (12 Byte)		8
Hardware Revision	22		StringT (2 Byte)		8
Firmware Revision	23		StringT (5 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)		11
Detailed Device Status	37		OctetStringT (3 Byte) [8]	0x00,0x00,0x00	11
Process data input	40		RecordT (64 Bit)		4
Humidity	40	1	IntegerT (16 Bit)		
Temperature	40	2	IntegerT (16 Bit)		
Device status	40	3	UIntegerT (4 Bit)		
Temperature Histogram	540		RecordT (704 Bit)		13
cr.UL	540	1	IntegerT (32 Bit)		
UL	540	2	IntegerT (32 Bit)		
< -40 °C / < -...	540	3	IntegerT (32 Bit)		
-40 ... -30 °C / ...	540	4	IntegerT (32 Bit)		
-30 ... -20 °C / ...	540	5	IntegerT (32 Bit)		
-20 ... -10 °C / ...	540	6	IntegerT (32 Bit)		
-10 ... 0 °C / ...	540	7	IntegerT (32 Bit)		
0 ... 10 °C / 3...	540	8	IntegerT (32 Bit)		
10 ... 20 °C / ...	540	9	IntegerT (32 Bit)		
20 ... 30 °C / ...	540	10	IntegerT (32 Bit)		
30 ... 40 °C / ...	540	11	IntegerT (32 Bit)		
40 ... 50 °C / 1...	540	12	IntegerT (32 Bit)		
50 ... 60 °C / 1...	540	13	IntegerT (32 Bit)		
60 ... 70 °C / 1...	540	14	IntegerT (32 Bit)		
70 ... 80 °C / 1...	540	15	IntegerT (32 Bit)		
80 ... 90 °C / 1...	540	16	IntegerT (32 Bit)		
90 ... 100 °C / 1...	540	17	IntegerT (32 Bit)		
100 ... 110 °C / ...	540	18	IntegerT (32 Bit)		
110 ... 120 °C / ...	540	19	IntegerT (32 Bit)		
> 120 °C / > ...	540	20	IntegerT (32 Bit)		
OL	540	21	IntegerT (32 Bit)		
cr.OL	540	22	IntegerT (32 Bit)		
Power cycles	541		IntegerT (32 Bit)	0	11
Operating hours	542		IntegerT (32 Bit)	0	11
Internal temperature	543		IntegerT (16 Bit)		11
Active Events	545		RecordT (32 Bit)		11
Bit_31	545	1	BooleanT		

Parameter overview

Parameter	Index	Subindex	Type	Factory setting	Page
Bit_30	545	2	BooleanT		
Bit_16	545	3	BooleanT		
Bit_9	545	4	BooleanT		
Bit_8	545	5	BooleanT		
Bit_5	545	6	BooleanT		
Bit_1	545	7	BooleanT		
Bit_0	545	8	BooleanT		
Param configuration fault	546		UIntegerT (32 Bit) [10]	0 (OK)	11
Hi.H	560		IntegerT (16 Bit)		9
Lo.H	561		IntegerT (16 Bit)		9
Hi.T	562		IntegerT (16 Bit)		9
Lo.T	563		IntegerT (16 Bit)		9
uni.T	841		UIntegerT (8 Bit)	0 (°C)	9
Humidity Histogram	9000		RecordT (640 Bit)		12
0 ... 5 %	9000	1	IntegerT (32 Bit)		
5 ... 10 %	9000	2	IntegerT (32 Bit)		
10 ... 15 %	9000	3	IntegerT (32 Bit)		
15 ... 20 %	9000	4	IntegerT (32 Bit)		
20 ... 25 %	9000	5	IntegerT (32 Bit)		
25 ... 30 %	9000	6	IntegerT (32 Bit)		
30 ... 35 %	9000	7	IntegerT (32 Bit)		
35 ... 40 %	9000	8	IntegerT (32 Bit)		
40 ... 45 %	9000	9	IntegerT (32 Bit)		
45 ... 50 %	9000	10	IntegerT (32 Bit)		
50 ... 55 %	9000	11	IntegerT (32 Bit)		
55 ... 60 %	9000	12	IntegerT (32 Bit)		
60 ... 65 %	9000	13	IntegerT (32 Bit)		
65 ... 70 %	9000	14	IntegerT (32 Bit)		
70 ... 75 %	9000	15	IntegerT (32 Bit)		
75 ... 80 %	9000	16	IntegerT (32 Bit)		
80 ... 85 %	9000	17	IntegerT (32 Bit)		
85 ... 90 %	9000	18	IntegerT (32 Bit)		
90 ... 95 %	9000	19	IntegerT (32 Bit)		
95 .. 100 %	9000	20	IntegerT (32 Bit)		
MDC Descr	16512		RecordT (88 Bit)		9
Lower limit	16512	1	IntegerT (32 Bit)	0 (0)	
Upper limit	16512	2	IntegerT (32 Bit)	1000 (1000)	
Unit code	16512	3	UIntegerT (16 Bit)	1342 (%)	
Scale	16512	4	IntegerT (8 Bit)	-1 (-1)	
MDC 2 Descr	16513		RecordT (88 Bit)		10
Lower limit	16513	1	IntegerT (32 Bit)	-400 (-400)	
Upper limit	16513	2	IntegerT (32 Bit)	1200 (1200)	
Unit code	16513	3	UIntegerT (16 Bit)	1001 (°C)	
Scale	16513	4	IntegerT (8 Bit)	-1 (-1)	

System Command

Command interface for applications. A positive acknowledge indicates the complete and correct finalization of the requested function.

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

#	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	
165	Reset [Hi.T] and [Lo.T] memory	
166	Reset [Lo.T] memory	
167	Reset [Hi.T] memory	
208	Reset [Hi.H] and [Lo.H] memory	
209	Reset [Lo.H] memory	
210	Reset [Hi.H] memory	
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	

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.				

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

Product Text	Index 20	Subindex 0	StringT (19 Byte)	ReadOnly
Additional product information for the device.				
Factory setting	**Oil humidity sensor**			

Serial Number	Index 21	Subindex 0	StringT (12 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 (5 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
Factory setting	***			

Location Tag	Index 26	Subindex 0	StringT (32 Byte)	ReadWrite
Factory setting	***			

Parameters

Hi.H	Index 560	Subindex 0	IntegerT (16 Bit)	ReadOnly
Maximum memory value for humidity				
Value range [%]	(0 to 1000) * 0.1			

Lo.H	Index 561	Subindex 0	IntegerT (16 Bit)	ReadOnly
Minimum memory value for humoidity				
Value range [%]	(0 to 1000) * 0.1			

Hi.T	Index 562	Subindex 0	IntegerT (16 Bit)	ReadOnly
Maximum memory value for temperature				
Value range [°C]	(-400 to 1200) * 0.1			
	-32760	(UL - underload) 0x8008		
	32760	(OL - overload) 0x7FF8		
	-32762	(cr.UL - critical underload) 0x8006		
	32762	(cr.OL - critical overload) 0x7FFA		
	32764	(NoData) 0x7FFC		

Lo.T	Index 563	Subindex 0	IntegerT (16 Bit)	ReadOnly
Minimum memory value for temperature				
Value range [°C]	(-400 to 1200) * 0.1			
	-32760	(UL - underload) 0x8008		
	32760	(OL - overload) 0x7FF8		
	-32762	(cr.UL - critical underload) 0x8006		
	32762	(cr.OL - critical overload) 0x7FFA		
	32764	(NoData) 0x7FFC		

uni.T	Index 841	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Selection of temperature unit				
Factory setting	**0**	**(°C)**		
Value range	0	(°C)		
	1	(°F)		

MDC Descr	Index 16512	Subindex 0	RecordT (88 Bit)	ReadOnly
Description of the measurement data channel 'Humidity'				
Lower limit		Subindex 1	IntegerT (32 Bit)	
Lower value measurement range				
Factory setting	**0**	**(0)**		
Value range	0	(0)		
Upper limit		Subindex 2	IntegerT (32 Bit)	
Upper value measurement range				
Factory setting	**1000**	**(1000)**		
Value range	1000	(1000)		
Unit code		Subindex 3	UIntegerT (16 Bit)	
Unit code of the measurement data				
Factory setting	**1342**	**(%)**		
Value range	1342	(%)		
Scale		Subindex 4	IntegerT (8 Bit)	
Range shifting (10 scale)				
Factory setting	**-1**	**(-1)**		
Value range	-1	(-1)		

Parameters

MDC 2 Descr	Index 16513	Subindex 0	RecordT (88 Bit)	ReadOnly
Description of the 2nd measurement data channel 'Temperature'				
Lower limit		Subindex 1	IntegerT (32 Bit)	
Lower value measurement range				
Factory setting	**-400**	**(-400)**		
Value range	-400	(-400)		
Upper limit		Subindex 2	IntegerT (32 Bit)	
Upper value measurement range				
Factory setting	**1200**	**(1200)**		
Value range	1200	(1200)		
Unit code		Subindex 3	UIntegerT (16 Bit)	
Unit code of the measurement data				
Factory setting	**1001**	**(°C)**		
Value range	1001	(°C)		
Scale		Subindex 4	IntegerT (8 Bit)	
Range shifting (10 scale)				
Factory setting	**-1**	**(-1)**		
Value range	-1	(-1)		

Diagnosis

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

Detailed Device Status	Index 37	Subindex 0	OctetStringT (3 Byte) [8]	ReadOnly
List of all currently pending events in the device.				
Factory setting	**0x00,0x00,0x00**			

Operating hours	Index 542	Subindex 0	IntegerT (32 Bit)	ReadOnly
Counter of the operating hours since delivery				
Factory setting	**0**			

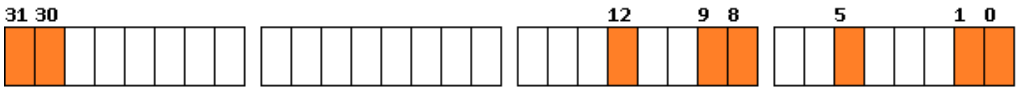
Internal temperature	Index 543	Subindex 0	IntegerT (16 Bit)	ReadOnly
Current internal temperature of the device				

Power cycles	Index 541	Subindex 0	IntegerT (32 Bit)	ReadOnly
Number of power cycles since delivery				
Factory setting	**0**			

Active Events	Index 545	Subindex 0	RecordT (32 Bit)	ReadOnly
Bit mask for current pending events				

Bit offset 31	(0x8DFF)	Test Event 2. Device Status = 1 (Maintenance required)
Bit offset 30	(0x8DFE)	Test Event 1. Device Status = 1 (Maintenance required)
Bit offset 12	(0x8C20)	Measurement range over-run
Bit offset 9	(0x8C30)	Process variable range under-run
Bit offset 8	(0x8C10)	Process variable range over-run
Bit offset 5	(0x5010)	Component malfunction
Bit offset 1	(0x6320)	Parameter error
Bit offset 0	(0x5000)	Device hardware fault

Value range	true	Event active
	false	Event inactive



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)		
	786432	(Device Access Locks, Index = 12)		
	55115776	(uni.T, Index = 841)		

Humidity Histogram	Index 9000	Subindex 0	RecordT (640 Bit)	ReadOnly
Counts the seconds, the device operated in the assigned humidity bin				
0 ... 5 %		Subindex 1	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			

Diagnosis

Humidity Histogram	Index 9000	Subindex 0	RecordT (640 Bit)	ReadOnly
5 ... 10 %		Subindex 2	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
10 ... 15 %		Subindex 3	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
15 ... 20 %		Subindex 4	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
20 ... 25 %		Subindex 5	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
25 ... 30 %		Subindex 6	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
30 ... 35 %		Subindex 7	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
35 ... 40 %		Subindex 8	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
40 ... 45 %		Subindex 9	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
45 ... 50 %		Subindex 10	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
50 ... 55 %		Subindex 11	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
55 ... 60 %		Subindex 12	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
60 ... 65 %		Subindex 13	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
65 ... 70 %		Subindex 14	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
70 ... 75 %		Subindex 15	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
75 ... 80 %		Subindex 16	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
80 ... 85 %		Subindex 17	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
85 ... 90 %		Subindex 18	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
90 ... 95 %		Subindex 19	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
95 .. 100 %		Subindex 20	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			

Temperature Histogram	Index 540	Subindex 0	RecordT (704 Bit)	ReadOnly
Counts the seconds, the device operated in the assigned temperature bin				
cr.UL		Subindex 1	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			

Diagnosis

Temperature Histogram	Index 540	Subindex 0	RecordT (704 Bit)	ReadOnly
UL		Subindex 2	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
< -40 °C / < -40 °F		Subindex 3	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
-40 ... -30 °C / -40 ... -22 °F		Subindex 4	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
-30 ... -20 °C / -22 ... -4 °F		Subindex 5	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
-20 ... -10 °C / -4 ... 14 °F		Subindex 6	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
-10 ... 0 °C / 14 ... 32 °F		Subindex 7	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
0 ... 10 °C / 32 ... 50 °F		Subindex 8	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
10 ... 20 °C / 50 ... 68 °F		Subindex 9	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
20 ... 30 °C / 68 ... 86 °F		Subindex 10	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
30 ... 40 °C / 86 ... 104 °F		Subindex 11	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
40 ... 50 °C / 104 ... 122 °F		Subindex 12	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
50 ... 60 °C / 122 ... 140 °F		Subindex 13	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
60 ... 70 °C / 140 ... 158 °F		Subindex 14	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
70 ... 80 °C / 158 ... 176 °F		Subindex 15	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
80 ... 90 °C / 176 ... 194 °F		Subindex 16	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
90 ... 100 °C / 194 ... 212 °F		Subindex 17	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
100 ... 110 °C / 212 ... 230 °F		Subindex 18	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
110 ... 120 °C / 230 ... 248 °F		Subindex 19	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
> 120 °C / > 248 °F		Subindex 20	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
OL		Subindex 21	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			
cr.OL		Subindex 22	IntegerT (32 Bit)	
Value range [s]	(0 to 2147483647) * 1			

Events

Code	Device status	PQ *	Class	Name	Description
0x5000 20480d	4 (Failure)	invalid	Error	Device hardware fault	Exchange device
0x5010 20496d	3 (Functional check)	valid	Error	Component malfunction	Repair or exchange
0x6320 25376d	3 (Functional check)	invalid	Error	Parameter error	Check datasheet and values
0x8C10 35856d	2 (Out of specification)	valid	Warning	Process variable range overrun	Process data uncertain
0x8C20 35872d	3 (Functional check)	valid	Error	Measurement range exceeded	Check application
0x8C30 35888d	2 (Out of specification)	valid	Warning	Process variable range underrun	Process data uncertain
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 reported by the device itself to signal irregular device states.
PQ* = Process data quality.

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.
0x8021 32801d	Service temporarily unavailable - local control	Parameter not accessible. The device is currently in an ongoing, locally controlled operation.
0x8022 32802d	Service temporarily unavailable - device control	Parameter not accessible. The technology-specific application is currently in a remotely triggered operation.
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.
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 to '0' indicate the cause of a failed ISDU read or write procedure.