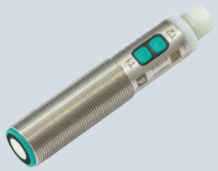


IO-Link Parameter Datasheet

Ultrasonic sensor

UC1000-18GS-IUEP-IO-V15

PEPPERL+FUCHS

IO-Link

Support: fa-info@pepperl-fuchs.com
Internet: www.pepperl-fuchs.com

DOCT-7041 - Version 1.00.000 / 2020-11-03

General Information

Device Identification	
Vendor ID	1 (0x0001)
Device ID	3147268 (0x300604)

Features	
Data Storage	Yes
Block Parameterization	Yes

Communication Characteristics	
IO-Link revision	V1.1 (specification V1.1.2)
IO-Link backward compatibility	n/a
Data transmission rate	COM2 (38.4 kbit/s)
Min. cycle time	3.0 ms
Process data input	4 byte
Process data output	n/a
SIO mode support	no
Compatible master port type	Class A, Class B (see NOTE)

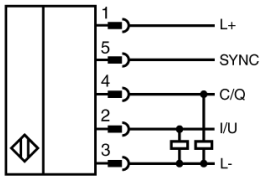
NOTE: For use at master with port class B, use 3-pole adapter or 3-wire cable.

Profile	
Identification & Diagnosis	16384 (0x4000)
Smart Sensor – SSP 3.1	10 (0x000A)
Smart Sensor – SSP 0	1 (0x0001)
- Function Class – Switching Signal Channel	32769 (0x8001)

Supported Product Variants

Product ID	*Product Name*	*Description*	*Connector*
304928-100003	UC1000-18GS-IUEP-IO-V15	Sensing range: 70 ... 1000 mm, switching output, push-pull, configurable, analog output, current / voltage, configurable, M12 plug, 5-pin	Plug, M12, 5-pin

Connection

Connection Diagram	*Description*
	**Plug, M12, 5-pole** 1: Brown - +24V 2: White - I/U 3: Blue - 0V 4: Black - C/Q 5: Grey - SYNC

Process Data

Process Data Input

Sub	Name	Data type	Length	Bitoffs.	Value	Unit	Description
.1	Measurement Value	Integer	16 bit	16	0 .. 1500 *32764*	mm	Shows the current measurement value. *No measurement data*
.2	Scale	Integer	8 bit	8	*-3*		Shows the multiplier for the measurement value - 10exp(scale).
.3	SSC1 - Switching Signal	Bool	1 bit	0	*0* *1*		Shows the current status of the switching signal 1. *Low* *High*
.4	SSC2 - Switching Signal	Bool	1 bit	1	*0* *1*		Shows the current status of the switching signal 1. *Low* *High*

NOTE: The process data input content can be accessed in addition over parameter 'Process Data Input' at index 40 (0x28)

Parameter Data

Identification

Index	Parameter	Access	Data type	Length	Default	Description	DS	R
16 (0x10)	Vendor Name	ro	String	13 byte	Pepperl+Fuchs	The vendor name that is assigned to a Vendor ID.		
17 (0x11)	Vendor Text	ro	String	29 byte	www.pepperl-fuchs.com/io-link	Additional information about the vendor.		
18 (0x12)	Product Name	ro	String	max. 30 byte	*See table Supported Product Variants*	Complete product name.		
19 (0x13)	Product ID	ro	String	13 byte	*See table Supported Product Variants*	Vendor-specific product or type identification (e.g., item number or model number).		
20 (0x14)	Product Text	ro	String	max. 30 byte	Ultrasonic sensor	Additional product information for the device.		
21 (0x15)	Serial Number	ro	String	14 byte		Unique, vendor-specific identifier of the individual device.		
22 (0x16)	Hardware Revision	ro	String	7 byte	HW**.**	Unique, vendor-specific identifier of the hardware revision of the individual device.		
23 (0x17)	Firmware Revision	ro	String	7 byte	FW**.**	Unique, vendor-specific identifier of the firmware revision of the individual device.		
24 (0x18)	Application Specific Tag	rw	String	max. 32 byte	Your automation, our passion.	Possibility to mark a device with user- or application-specific information.	Y	F
25 (0x19)	Function Tag	rw	String	max. 32 byte	***	Possibility to mark a device with function-specific information.	Y	F
26 (0x1A)	Location Tag	rw	String	max. 32 byte	***	Possibility to mark a device with location-specific information.	Y	F
191 (0xBF)	Unique Product ID	ro	String	max. 128 byte		Provides a unique instance identification compliant to DIN-SPEC 91406.		

Diagnosis

Index .sub	Parameter	Access	Data type	Length	Bitoffs.	Default	Value	Unit	Description	DS	R
36 (0x24)	Device Status	ro	UInteger	8 bit		0	*0* *1* *2* *3* *4*		Indicator for the current device condition and diagnosis state. *Device is OK* *Maintenance required* *Out of specification* *Functional check* *Failure*		F
37 (0x25)	Detailed Device Status	ro	Array [S0]	9 byte					List of all currently pending events in the device.		F
.1	Element 1		Octetstr	3 byte	24	0					
.2	Element 2		Octetstr	3 byte	12	0					
.3	Element 3		Octetstr	3 byte	0	0					
127 (0x7F)	Indication Control	rw	Record [S0]	8 bit					Provides control functions for diagnosis purposes for indicators or display.		F
.1	Locator Indication	rw	Boolean	1 bit	0	0	*0* *1*		Enables a defined flashing pattern of the indicator LEDs for better spotting a sensor in field application. *Disabled* *Enabled*		F
224 (0xE0)	Operating Hours	ro	UInteger	32 bit			0 .. 2^{32}-1		Shows the overall hours of operation since initial commissioning.		
232 (0xE8)	Device Characteristic	ro	Record [S0]	6 byte					Shows relevant key characteristics of the device for use in applications.		
.1	Measurement Range Min	ro	Integer	16 bit	32				Shows the minimum specified measurement range.		
.2	Measurement Range Max	ro	Integer	16 bit	16				Shows the maximum specified measurement range.		
.3	Supply Current Requirement	ro	UInteger	16 bit	0			mA	Shows the maximum specified supply current for the device excluding load.		
16512 (0x4080)	Measurement Data Channel Descriptor	ro	Record [S0]	11 byte					Descriptor containing characteristic data of the measurement data channel (process data MV).		
.1	Lower Limit	ro	Integer	32 bit	56				Shows the upper value of measurement range.		
.2	Upper Limit	ro	Integer	32 bit	24				Shows the maximum specified measurement range.		
.3	Unit Code	ro	UInteger	16 bit	8				Shows the unique code for the physical unit.		
.4	Scale	ro	Integer	8 bit	0				Shows the multiplier for measurement value - 10exp(scale).		

Parameterization & Configuration

Index .sub	Parameter	Access	Data type	Length	Bitoffs.	Default	Value	Unit	Description	DS	R
60 (0x3C)	SSC1 Param	rw	Record	4 byte					Defines the setpoint values for switching signal channel 1.	Y	F
.1	SP1	rw	Integer	16 bit	16	90	70 .. 1500	mm	Defines the setpoint 1 value for the switching signal channel.	Y	F
.2	SP2	rw	Integer	16 bit	0	1000	70 .. 1500	Mm	Defines the setpoint 2 value for the switching signal channel.	Y	F
61 (0x3D)	SSC1 Config	rw	Record	4 byte					Defines the configuration parameter for switching signal channel 1.	Y	F
.1	Logic	rw	UInteger	8 bit	24	0	*0* *1*		Defines the logical behavior of the switching signal. *High active - Normally-open* *Low active - Normally-closed*	Y	F
.2	Mode	rw	UInteger	8 bit	16	2	*0* *1* *2* *3* *128*		Defines the evaluation mode for the switching signal. *Deactivated* *Single point* *Window* *Two point* *Centered window*	Y	F
.3	Hyst	rw	Integer	16 bit	0	0	*0* *1* *2*		Defines the hysteresis at the switchpoint. A higher hysteresis may help to improve the stability in critical applications. *Low* *Medium* *High*	Y	F
62 (0x3E)	SSC2 Param	rw	Record	4 byte					Defines the setpoint values for switching signal channel 2.	Y	F
.1	SP1	rw	Integer	16 bit	16	90	70 .. 1500	mm	Defines the setpoint 1 value for the switching signal channel.	Y	F
.2	SP2	rw	Integer	16 bit	0	500	70 .. 1500	mm	Defines the setpoint 2 value for the switching signal channel.	Y	F
63 (0x3F)	SSC2 Config	rw	Record	4 byte					Defines the configuration parameter for switching signal channel 2.	Y	F
.1	Logic	rw	UInteger	8 bit	24	0	*0* *1*		Defines the logical behavior of the switching signal. *High active - Normally-open* *Low active - Normally-closed*	Y	F
.2	Mode	rw	UInteger	8 bit	16	2	*0* *1* *2* *3* *128*		Defines the evaluation mode for the switching signal. *Deactivated* *Single point* *Window* *Two point* *Centered window*	Y	F
.3	Hyst	rw	Integer	16 bit	0	0	*0* *1* *2*		Defines the hysteresis at the switchpoint. A higher hysteresis may help to improve the stability in critical applications. *Low* *Medium* *High*	Y	F

Parameterization & Configuration											
Index .sub	***Parameter***	***Access***	***Data type***	***Length***	***Bitoffs.***	***Default***	***Value***	***Unit***	***Description***	***DS***	***R***
64 (0x40)	SSC1 Config Ext	rw	Record	7 byte					Defines extended configuration options for switching signal channel 1.	Y	F
.1	SP Offset	rw	Integer	16 bit	40	50	1 .. 500	mm	The setpoint offset defines the switchpoint of the sensor relative to the setpoint 1 in setpoint units.	Y	F
.2	Off Delay	rw	UInteger	16 bit	24	0	*0* *1 .. 60000*	ms	Defines the switching delay for a high-to-low transition of the switching signal. *Disabled*	Y	F
.3	On Delay	rw	UInteger	16 bit	8	0	*0* *1 .. 60000*	ms	Defines the switching delay for a low-to-high transition of the switching signal. *Disabled*	Y	F
.4	Substitute Behavior	rw	UInteger	8 bit	0	0	*0* *1* *2* *3*		Defines the behavior of the switching signal if the measurement value is 'out-of-range' or measurement is not possible. *Hold* *Max. value* *High – Closed* *Low – Open*	Y	F
65 (0x41)	SSC2 Config Ext	rw	Record	7 byte					Defines extended configuration options for switching signal channel 2.	Y	F
.1	SP Offset	rw	Integer	16 bit	40	50	1 .. 500	mm	The setpoint offset defines the switchpoint of the sensor relative to the setpoint 1 in setpoint units.	Y	F
.2	Off Delay	rw	UInteger	16 bit	24	0	*0* *1 .. 60000*	ms	Defines the switching delay for a high-to-low transition of the switching signal. *Disabled*	Y	F
.3	On Delay	rw	UInteger	16 bit	8	0	*0* *1 .. 60000*	ms	Defines the switching delay for a low-to-high transition of the switching signal. *Disabled*	Y	F
.4	Substitute Behavior	rw	UInteger	8 bit	0	0	*0* *1* *2* *3*		Defines the behavior of the switching signal if the measurement value is 'out-of-range' or measurement is not possible. *Hold* *Max. value* *High – Closed* *Low – Open*	Y	F
72 (0x48)	Analog Out Param	rw	Record	4 byte					Defines the limits for the ramp characteristic of the analog output.	Y	F
.1	SP1	rw	Integer	16 bit	16	90	70 .. 1500	mm	Defines the setpoint 1 value for the analog output ramp.	Y	F
.2	SP2	rw	Integer	16 bit	0	1000	70 .. 1500	mm	Defines the setpoint 2 value for the analog output ramp.	Y	F

Parameterization & Configuration

Index .sub	Parameter	Access	Data type	Length	Bitoffs.	Default	Value	Unit	Description	DS	R
97 (0x61)	Measurement Config	rw	Record	11 byte					Defines the configuration for parameters that affect the characteristics of the measurement.	Y	F
.1	Sound Beam Width	rw	UInteger	8 bit	80	2	*0* *1* *2*		Selects the configured sound beam width: small, medium or wide. *Small* *Medium* *Wide*	Y	F
.2	Small Sound Beam Width	rw	UInteger	8 bit	72	50	*10* *20* .. *90* *100*		Defines the beam width for the setting 'small' in percent. *10%* *20%* .. *90%* *100%*	Y	F
.3	Medium Sound Beam Width	rw	UInteger	8 bit	64	70	*10* *20* .. *90* *100*		Defines the beam width for the setting 'medium' in percent. *10%* *20%* .. *90%* *100%*	Y	F
.4	Wide Sound Beam Width	rw	UInteger	8 bit	56	100	*10* *20* .. *90* *100*		Defines the beam width for the setting 'wide' in percent. *10%* *20%* .. *90%* *100%*	Y	F
.5	Ultrasonic Pulse Length	rw	UInteger	8 bit	48	0	*0* *1* *2*		Defines the length of the ultrasonic burst transmitting signal. *Auto* *Short* *Long*	Y	F
.6	Sensor Cycle Time	rw	UInteger	16 bit	32	14	14 .. 60000	ms	Defines the length of a measurement cycle. If the value exceeds the needed time for a measurement, the sensor pauses for the rest of the time.	Y	F
.7	Foreground Suppression	rw	UInteger	16 bit	16	65	65 .. 1000	mm	Defines the range in front of the senor, where all received echoes are ignored.	Y	F
.8	Background Suppression	rw	UInteger	16 bit	0	1500	90 .. 1500	mm	Defines the range at the end of sensing range, where all received echoes are ignored.	Y	F
98 (0x62)	Echo Suppression	rw	Record	51 byte					Defines if the echo suppression feature is disabled or enabled.	Y	F
.1	Echo Suppression Config	rw	UInteger	8 bit	400	0	*0* *1*		If enabled, the echo suppression is activated according to the settings for the areas. *Disabled* *Enabled*	Y	F
.2	Area 1 Start	rw	Integer	16 bit	384	0	0 .. 1500	mm	Defines the start position for the respective echo suppression range.	Y	F
.3	Area 1 Amplitude	rw	UInteger	8 bit	376	0	0 .. 100	%	Defines the echo threshold level for the respective echo suppression range.	Y	F
.4	Area 1 Length	rw	Integer	16 bit	360	0	0 .. 1500	mm	Defines the range for echo suppression from the respective start position.	Y	F

Parameterization & Configuration

Index .sub	Parameter	Access	Data type	Length	Bitoffs.	Default	Value	Unit	Description	DS	R
.5	Area 2 Start	rw	Integer	16 bit	344	0	0 .. 1500	mm	Defines the start position for the respective echo suppression range.	Y	F
.6	Area 2 Amplitude	rw	UInteger	8 bit	336	0	0 .. 100	%	Defines the echo threshold level for the respective echo suppression range.	Y	F
.7	Area 2 Length	rw	Integer	16 bit	320	0	0 .. 1500	mm	Defines the range for echo suppression from the respective start position.	Y	F
.8 .. .25	Area 3 .. 8 Start Amlitude Length									Y	F
.26	Area 9 Start	rw	Integer	16 bit	64	0	0 .. 1500	mm	Defines the start position for the respective echo suppression range.	Y	F
.27	Area 9 Amplitude	rw	UInteger	8 bit	56	0	0 .. 100	%	Defines the echo threshold level for the respective echo suppression range.	Y	F
.28	Area 9 Length	rw	Integer	16 bit	40	0	0 .. 1500	mm	Defines the range for echo suppression from the respective start position.	Y	F
.29	Area 10 Start	rw	Integer	16 bit	24	0	0 .. 1500	mm	Defines the start position for the respective echo suppression range.	Y	F
.30	Area 10 Amplitude	rw	UInteger	8 bit	16	0	0 .. 100	%	Defines the echo threshold level for the respective echo suppression range.	Y	F
.31	Area 10 Length	rw	Integer	16 bit	0	0	0 .. 1500	mm	Defines the range for echo suppression from the respective start position.	Y	F
99 (0x63)	Eval Config	rw	Record	8 byte					Defines the configuration settings for the evaluation of the sensor.	Y	F
.1	Echo Evaluation	rw	Integer	16 bit	56	0	*0* *1*		Defines whether the sensor uses the first or the strongest echo for evaluation purposes. The preferred setting in most applications is to evaluate the first echo. *First echo* *Strongest echo*	Y	F
.2	'No Echo' Is Error	rw	UInteger	16 bit	48	0	*0* *1*		Defines if the case 'No Echo' is considered as an error or not. *Inactive* *Active*	Y	F
.3	Eval Method	rw	UInteger	16 bit	40	1	*0* *1* *2*		Defines the method, the received echoes are evaluated with. *None* *Arithmetic average* *Low pass*	Y	F

Parameterization & Configuration											
Index .sub	***Parameter***	***Access***	***Data type***	***Length***	***Bitoffs.***	***Default***	***Value***	***Unit***	***Description***	***DS***	***R***
.4	Arithmetic Average	rw	UInteger	8 bit	32	7	*0* *1* *2* *3* *4* *5* *6* *7* *8* *9* *10* *11* *12* *13* *14* *15* *16* *17* *18*		Defines the average determination. 'Measure' defines the total number of measurements used to generate average determination. 'Skip' defines the number of measurements from this total which are excluded for average determination. *Measure 2 - Skip 0* *Measure 3 - Skip 0* *Measure 3 - Skip 1* *Measure 4 - Skip 0* *Measure 4 - Skip 1* *Measure 5 - Skip 0* *Measure 5 - Skip 1* *Measure 5 - Skip 2* *Measure 6 - Skip 0* *Measure 6 - Skip 1* *Measure 6 - Skip 2* *Measure 7 - Skip 0* *Measure 7 - Skip 1* *Measure 7 - Skip 2* *Measure 7 - Skip 3* *Measure 8 - Skip 0* *Measure 8 - Skip 1* *Measure 8 - Skip 2* *Measure 8 - Skip 3*	Y	F
.5	Low Pass Weight	rw	UInteger	8 bit	24	75	1 .. 99	%	Defines the weighting in percent with which the result of the previous measurement result is included into the current evaluation.	Y	F
.6	Low Pass Deviation	rw	UInteger	8 bit	16	10	10 .. 50	%	Defines the allowed deviation to the former measurement. Together with the parameter 'Skip Time', this parameter is used to define an acceptance filter for suppression of short disturbances.	Y	F
.7	Low Pass Skip Time	rw	UInteger	16 bit	0	0	0 .. 60000	ms	Defines the time until which measured values are skipped after an allowed deviation has been exceeded. Together with the parameter 'Low Pass Deviation', this parameter is used to define an acceptance filter for suppression of short disturbances.	Y	F
100 (0x64)	Temperature Compensation	rw	Record	2 byte					Defines the settings and methods for the temperature compensation of the sensor.	Y	F
.1	Compensation Config	rw	UInteger	8 bit	8	1	*0* *1* *2*		Defines the source for the temperature value, which is used for calculation of the measurement value. If disabled, the temperature configured in the parameter 'Operating Temperature' is used. Else, the temperature measured inside the sensor is used. *Disabled* *Enabled* *Improved compensation*	Y	F
.2	Operating Temperature	rw	Integer	8 bit	0	25	-40 .. 100	°C	Defines the temperature value used for calculation of the measurement value, if compensation is disabled.	Y	F

Parameterization & Configuration

Index .sub	Parameter	Access	Data type	Length	Bitoffs.	Default	Value	Unit	Description	DS	R
101 (0x65)	Synchronization Type	rw	UInteger	8 bit		0	*0* *1* *2..10* *255*		Defines the type of the synchronization between multiple ultrasonic sensors, which might interfer with each other, if operated in close proximity to each other. *Auto multiplex mode* *Auto common mode* *Reserved* *External*	Y	F
114 (0x72)	Analog Out Config	rw	Record	9 byte					Provides configuration possibilities for the behavior and characteristic of the analog output such as type, mode and value ranges.	Y	F
.1	Type	rw	UInteger	16 bit	64	0	*0* *1*		Defines the analog output type. *Current* *Voltage*	Y	F
.2	Mode	rw	UInteger	16 bit	56	0	*0* *1*		Defines the characteristic of the analog output ramp. *Rising ramp* *Falling ramp*	Y	F
.3	Lower Output Value Current	rw	UInteger	8 bit	48	40	0 .. 200	mA *0.1	Defines the lower output value of the analog current output.	Y	F
.4	Upper Output Value Current	rw	UInteger	8 bit	40	200	0 .. 200	mA *0.1	Defines the upper output value of the analog current output.	Y	F
.5	Lower Output Value Voltage	rw	UInteger	8 bit	32	0	0 .. 100	V *0.1	Defines the lower output value of the analog voltage output.	Y	F
.6	Upper Output Value Voltage	rw	UInteger	8 bit	24	100	0 .. 100	V *0.1	Defines the upper output value of the analog voltage output.	Y	F
.7	Substitute Behavior	rw	UInteger	8 bit	16	1	*0* *1* *2*		Defines the behavior of the analog output, if the measurement value is 'out-of-range' or measurement is not possible. *Hold* *Max. value* *Substitute value*	Y	F
.8	Substitute Value Current	rw	UInteger	8 bit	8	36	0 .. 200	mA *0.1	Defines the substitute value for the analog current output, if substitute value is selected as substitute behavior.	Y	F
.9	Substitute Value Voltage	rw	UInteger	8 bit	0	0	0 .. 100	V *0.1	Defines the substitute value for the analog voltage output, if substitute value is selected as substitute behavior.	Y	F
117 (0x75)	Local Parameterization	rw	UInteger	8 bit		0	*0* *1* *2*		This lock prevents the device settings from being changed via local operating elements on the device. In the mode 'Time locked' the local parametrization is only possible for the first 5 minutes after power-on. *Unlocked* *Time locked* *Locked*	Y	F
120 (0x78)	Event Config	rw	Record [S0]	2 byte					Defines which event sources can trigger events.	Y	F
.2	Warning - Invalid Measurement	rw	Boolean	1 bit	1	0	*0* *1*		Enabled: an event is generated if sensor signals do not allow a valid evaluation or no measurement data are available. *Disabled* *Enabled*	Y	F
.3	Warning - Signal Error	rw	Boolean	1 bit	2	0	*0* *1*		Enabled: an event is generated if sensor signals are not valid due to e.g. interferences or inconsistent acquisition values. *Disabled* *Enabled*	Y	F

Observation

Index .sub	Parameter	Access	Data type	Length	Bitoffs.	Default	Value	Unit	Description	DS	R
36 (0x24)	Device Status	ro	UInteger	8 bit		0	*0* *1* *2* *3* *4*		Indicator for the current device condition and diagnosis state. *Device is OK* *Maintenance required* *Out of specification* *Functional check* *Failure*		F
236 (0xEC)	Measurement Data	ro	Record S0	5 byte					Collection of measurement data relevant for observation of device operational state.		
.1	Measurement Value	ro	Integer	16 bit	24	0	0 .. 1500 *32764*	mm	Shows the current measurement value. *No measurement data*		
.3	SSC1 – Switching Signal 1	ro	UInteger	8 bit	8	0	*0* *1*		Shows the current status of the switching signal 1. *Low* *High*		
.4	SSC2 – Switching Signal 2	ro	UInteger	8 bit	0	0	*0* *1*		Shows the current status of the switching signal 2. *Low* *High*		

NOTE 1: The parameter data provide the attributes DS (Data Storage) and R (Reset behavior). The following rules apply:
DS: Parameter marked with 'Y' (yes) are exchanged with the master via the data storage mechanism.
R: Parameter marked with 'F' are reset to the default value upon reception of the command 'Restore Factory Settings'.

NOTE 2: Parameter with datatype Record or Array, which are marked with 'S0' can only be accessed over subindex 0 (whole parameter object). Subindex access to single items is not possible.

Command Interface

Index	Parameter	Access	Data type	Length	Value	Description
2 (0x02)	System Command	wo	UInteger	8 bit	See command value	Command interface for applications. A positive acknowledge indicates the complete and correct finalization of the requested function.

Command Value	Command	Description
130 (0x82)	Restore Factory Settings	The parameter of the device are reset to factory settings. Note: A download of the data storage may be executed on the next power cycle and overwrite the factory default settings!

Error Codes

Code	*Additional code*	*Name*	*Description*
128 (0x80)	17 (0x11)	Index not available	Read or write access attempt to a non-existing index.
128 (0x80)	18 (0x12)	Subindex not available	Read or write access attempt to a non-existing subindex of an existing index.
128 (0x80)	32 (0x20)	Service temporarily not available	Parameter not accessible due to the current state of the technology-specific application.
128 (0x80)	33 (0x21)	Service temporarily not available - local control	Parameter not accessible. The device is currently in an ongoing, locally controlled operation.
128 (0x80)	34 (0x22)	Service temporarily not available - device control	Parameter not accessible. The technology-specific application is currently in a remotely triggered operation.
128 (0x80)	35 (0x23)	Access denied	Write access to a read-only parameter or read access to write-only parameter.
128 (0x80)	48 (0x30)	Parameter value out of range	Written parameter value is outside of the permitted value range.
128 (0x80)	49 (0x31)	Parameter value above limit	Written parameter value is above its specified value range.
128 (0x80)	50 (0x32)	Parameter value below limit	Written parameter value is below its specified value range.
128 (0x80)	51 (0x33)	Parameter length overrun	Written parameter is longer than specified.
128 (0x80)	52 (0x34)	Parameter length underrun	Written parameter is shorter than specified.
128 (0x80)	53 (0x35)	Function not available	Written command is not supported by the technology-specific application.
128 (0x80)	54 (0x36)	Function temporarily unavailable	Written command is unavailable due to the current state of the technology-specific application.
128 (0x80)	64 (0x40)	Invalid parameter set	Written single parameter value collides with other existing parameter settings.
128 (0x80)	65 (0x41)	Inconsistent parameter set	Parameter set inconsistencies at the end of block parameter transfer. Device plausibility check failed.

Event Codes

Code	*Type*	*Name*	*Description*
36161 (0x8d41)	Warning	Measurement not possible, no measurement data available	Check sensor adjustment or target position.
36162 (0x8d42)	Warning	Signal acquisition disturbed	Check for excessive interference in sensor environment.
36163 (0x8d43)	Warning	Ambient temperature outside specified temperature range	Check sensor environment for heat sources.