

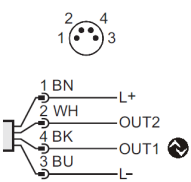



## IO-Link Interface Description

### VS\_W

EN

## Device variant

<p><b>VS_W</b></p> <p><b>Electronic pressure sensor, -100000...0 Pa / -1000...0 mbar</b></p>		
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Vendor ID	234 / Bytes 234 (hex: EA)		
Device ID	100617 / Bytes 0-1-137-9 (hex: 00-01-89-09)		
Bit rate	COM3		
Minimum cycle time	0.6 ms		
Process Data	4 Bytes (Input 4 Bytes / Output 0 Bytes)		
SIO mode supported	Yes		
Block parameterization	Yes		
Data storage	Yes		
Supported profiles	16	/ hex: 0x10	Smart Sensor - SSP 4.1.1
	48	/ hex: 0x30	BLOB transfer
	16384	/ hex: 0x4000	Identification and Diagnosis
	32788	/ hex: 0x8014	Function - Quantity detection
	33025	/ hex: 0x8101	Locator
	33026	/ hex: 0x8102	Product URI



### 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

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

### Pressure

Value in [mbar]	= Transferred value	* 0.1
Value in [%]	= Transferred value	* -0.01
Value in [kgf/cm <sup>2</sup> ]	= Transferred value	* 0.00010197
Value in [mmHg]	= Transferred value	* 0.0750064
Value in [kPa]	= Transferred value	* 0.01

## Process data

### Process data

Process data input: 4 Bytes

Process data output: 0 Byte

### Process data input

RecordT (32 Bit)

#### Pressure

IntegerT (16 Bit)

#### Current pressure

Value range [Pa] (-10000 to 500) \* 10  
32760 (OL - overload) 0x7FF8  
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)

### SSC1.2

BooleanT

Current status of the digital signal [SSC1.2]

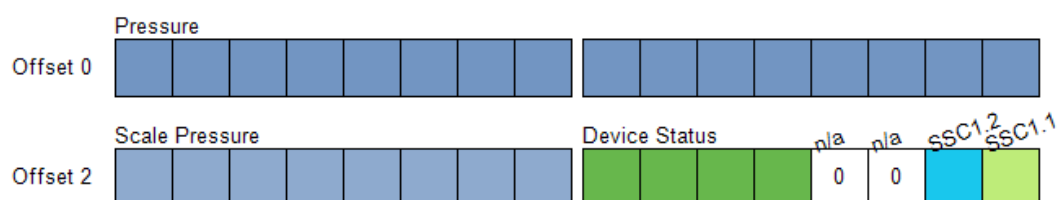
Value range false (OFF)  
true (On)

### SSC1.1

BooleanT

Current status of the digital signal [SSC1.1]

Value range false (OFF)  
true (On)



Scale Pressure: A PLC function block calculates the process data (from WORD 0) into the profiled unit [Pa]



Data is transmitted in BigEndian format.  
The position of the process data bytes is shown according to the device transmission sequence.  
The content of your PLCs input buffer may vary according to your PLCs data format.  
Please do not apply any byte swap feature.

## Parameter overview

Parameter	Index	Subindex	Type	Factory setting	Page
Device Access Locks	12		RecordT (16 Bit)	false (Unlocked)	12
Local Parameterizat...	12		BooleanT		
Vendor name	16		StringT (15 Byte)	J. Schmalz GmbH	11
Vendor text	17		StringT (27 Byte)	Innovative Vacuum Solutions	11
Product Name	18		StringT (4 Byte)	VS_W	11
Product ID	19		StringT (4 Byte)	VS_W	11
Product Text	20		StringT (17 Byte)	VS-V-W-D M8-4 IOL	11
Serial Number	21		StringT (12 Byte)		11
Hardware Revision	22		StringT (2 Byte)		11
Firmware Revision	23		StringT (5 Byte)		11
Application-specific Tag	24		StringT (32 Byte)	***	11
Function Tag	25		StringT (32 Byte)	***	11
Location Tag	26		StringT (32 Byte)	***	11
Product URI	27		StringT (100 Byte)		11
Device Status	36		UIntegerT (8 Bit)	0 (Device is OK)	18
Detailed Device Status	37		OctetStringT (3 Byte) [11]	0x00,0x00,0x00	18
Process data input	40		RecordT (32 Bit)		4
Pressure	40		IntegerT (16 Bit)		4
Device Status	40		UIntegerT (4 Bit)		4
SSC1.2	40		BooleanT		4
SSC1.1	40		BooleanT		4
BLOB ID	49		IntegerT (16 Bit)	0 (Idle / Idle)	12
Teach Select	58		UIntegerT (8 Bit)	1 (SSC1.1)	12
Teach Result	59		RecordT (8 Bit)		12
State	59		UIntegerT (4 Bit)		12
SSC1.1 Param	60		RecordT (64 Bit)		12
SP1	60	1	IntegerT (32 Bit)	-7500	12
SP2	60	2	IntegerT (32 Bit)	-6000	12
SSC1.1 Config	61		RecordT (48 Bit)		13
Logic	61	1	UIntegerT (8 Bit)	1 (Low active)	13
Mode	61	2	UIntegerT (8 Bit)	1 (Single point)	13
Hyst	61	3	IntegerT (32 Bit)	1000	13
SSC1.2 Param	62		RecordT (64 Bit)		13
SP1	62	1	IntegerT (32 Bit)	-5500	13
SP2	62	2	IntegerT (32 Bit)	-5000	13
SSC1.2 Config	63		RecordT (48 Bit)		13
Logic	63	1	UIntegerT (8 Bit)	1 (Low active)	13
Mode	63	2	UIntegerT (8 Bit)	1 (Single point)	13
Hyst	63	3	IntegerT (32 Bit)	500	14
SSC1.1 Delay	320		RecordT (32 Bit)		14
Switching delay	320	1	UIntegerT (16 Bit)	0	14
Reset delay	320	2	UIntegerT (16 Bit)	0	14
SSC1.2 Delay	321		RecordT (32 Bit)		14
Switching delay	321	1	UIntegerT (16 Bit)	0	14
Reset delay	321	2	UIntegerT (16 Bit)	0	14

## Parameter overview

Parameter	Index	Subindex	Type	Factory setting	Page
SSC Counter	349		RecordT (64 Bit)		14
SSC1.1	349	1	IntegerT (32 Bit)		14
SSC1.2	349	2	IntegerT (32 Bit)		14
P-n	500		UIntegerT (8 Bit)	0 (PnP)	8
dAP.P	510		UIntegerT (16 Bit)	60	14
Media temperature	537		IntegerT (16 Bit)		19
Operating hours	542		IntegerT (32 Bit)		18
Internal temperature	543		IntegerT (16 Bit)		19
Active Events	545		RecordT (32 Bit)		18
Bit_31	545		BooleanT		18
Bit_30	545		BooleanT		18
Bit_16	545		BooleanT		18
Bit_15	545		BooleanT		18
Bit_14	545		BooleanT		18
Bit_9	545		BooleanT		18
Bit_8	545		BooleanT		18
Bit_4	545		BooleanT		18
Bit_2	545		BooleanT		18
Bit_1	545		BooleanT		18
Bit_0	545		BooleanT		18
Param configuration fault	546		UIntegerT (32 Bit) [10]	0 (OK)	19
Loc	550		UIntegerT (8 Bit)	1 (uLoc)	15
uni.P	551		UIntegerT (8 Bit)	1 (mbar)	8
Hi.P	560		IntegerT (16 Bit)		15
Lo.P	561		IntegerT (16 Bit)		15
S.On	570		UIntegerT (8 Bit)	0 (OFF)	15
S.Tim	571		UIntegerT (8 Bit)	2 (3 min)	15
S.PRS	572		IntegerT (16 Bit)	-5000	15
ou1	580		UIntegerT (8 Bit)	32 (SSC1.1)	15
ou2	590		UIntegerT (8 Bit)	33 (SSC1.2)	16
diS.U	800		UIntegerT (8 Bit)	1 (d2 / medium)	16
diS.R	801		UIntegerT (8 Bit)	0 (0 °)	16
diS.B	802		UIntegerT (8 Bit)	100 (100 %)	16
diS.L	803		UIntegerT (8 Bit)	4 (Bargraph SSC1.1)	16
coL.P	810		UIntegerT (8 Bit)	16 (bk/wh / Value black and white)	16
uni.T	841		UIntegerT (8 Bit)	0 (°C)	8
LanG	923		UIntegerT (8 Bit)	0 (EN)	8
Bargraph start	936		IntegerT (32 Bit)	0	16
Bargraph end	937		IntegerT (32 Bit)	-10000	17
coF	5001		IntegerT (16 Bit)	0	17
HIPS	5003		IntegerT (16 Bit)		19
HIPC	5004		UIntegerT (32 Bit)	0	19
MDC Descriptor	16512		RecordT (88 Bit)		17
Lower Value	16512		IntegerT (32 Bit)	-10000 (-10000)	17
Upper Value	16512		IntegerT (32 Bit)	0 (0)	17

## Parameter overview

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Parameter	Index	Subindex	Type	Factory setting	Page
Unit Code	16512		UIntegerT (16 Bit)	1130 (Pa)	17
Scale	16512		IntegerT (8 Bit)	1 (1)	17

## Basic settings

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

uni.P	Index 551	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Selection of pressure unit.				
Factory setting	1	(mbar)		
Value range	0 1 2 3 4	(kPa) (mbar) (mmHg) (kgf/cm <sup>2</sup> ) (%)		

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

LanG	Index 923	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Select device menu language.				
Factory setting	0	(EN)		
Value range	0 1 2 3 4 5 6 7 9	(EN) (DE) (IT) (FR) (ES) (PT) (JA) (KO) (ZH)		



## 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
65	Teach SP1	Determine setpoint 1 in a single teach procedure.
66	Teach SP2	Determine setpoint 2 in a single teach procedure.
126	Locator Start	The visual indicators of the device are switched to the localization display pattern, which makes it easier to spot a device in an application.
127	Locator Stop	The localization indication pattern is stopped. The optical indicators of the device will show again the device specific states of operation.
129	Application Reset	The parameter of the technology-specific application are set to default values. Identification parameter remain unchanged. An upload to the data storage of the master will be executed, if activated in the port configuration of the master.
131	Back-to-box	The parameter of the device are set to factory default values and communication will be inhibited until the next power cycle. Note: Directly detach the device from the master port!
161	Reset [Hi.P] and [Lo.P] memory	
162	Reset [Lo.P] memory	
163	Reset [Hi.P] memory	
169	Reset overload counter [HIPC]	
175	BLOB-Reset / Event Log	

## System Command

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176	Start simulation	
177	Stop simulation	
194	Teach tcoF	Teaches the zero-point offset. Command will be rejected, if current process data is out of range of parameter coF
228	Reset counter to zero	
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

<b>Vendor name</b>	<b>Index 16</b>	<b>Subindex 0</b>	<b>StringT (15 Byte)</b>	<b>ReadOnly</b>
The vendor name that is assigned to a Vendor ID.				
<b>Factory setting</b>	<b>J. Schmalz GmbH</b>			
<b>Vendor text</b>	<b>Index 17</b>	<b>Subindex 0</b>	<b>StringT (27 Byte)</b>	<b>ReadOnly</b>
Additional information about the vendor.				
<b>Factory setting</b>	<b>Innovative Vacuum Solutions</b>			
<b>Product Name</b>	<b>Index 18</b>	<b>Subindex 0</b>	<b>StringT (4 Byte)</b>	<b>ReadOnly</b>
Complete product name.				
<b>Factory setting</b>	<b>VS_W</b>			
<b>Product ID</b>	<b>Index 19</b>	<b>Subindex 0</b>	<b>StringT (4 Byte)</b>	<b>ReadOnly</b>
Vendor-specific product or type identification (e.g., item number or model number).				
<b>Factory setting</b>	<b>VS_W</b>			
<b>Product Text</b>	<b>Index 20</b>	<b>Subindex 0</b>	<b>StringT (17 Byte)</b>	<b>ReadOnly</b>
Additional product information for the device.				
<b>Factory setting</b>	<b>VS-V-W-D M8-4 IOL</b>			
<b>Serial Number</b>	<b>Index 21</b>	<b>Subindex 0</b>	<b>StringT (12 Byte)</b>	<b>ReadOnly</b>
Unique, vendor-specific identifier of the individual device.				
<b>Hardware Revision</b>	<b>Index 22</b>	<b>Subindex 0</b>	<b>StringT (2 Byte)</b>	<b>ReadOnly</b>
Unique, vendor-specific identifier of the hardware revision of the individual device.				
<b>Firmware Revision</b>	<b>Index 23</b>	<b>Subindex 0</b>	<b>StringT (5 Byte)</b>	<b>ReadOnly</b>
Unique, vendor-specific identifier of the firmware revision of the individual device.				
<b>Application-specific Tag</b>	<b>Index 24</b>	<b>Subindex 0</b>	<b>StringT (32 Byte)</b>	<b>ReadWrite</b>
Possibility to mark a device with user- or application-specific information.				
<b>Factory setting</b>	<b>***</b>			
<b>Function Tag</b>	<b>Index 25</b>	<b>Subindex 0</b>	<b>StringT (32 Byte)</b>	<b>ReadWrite</b>
Possibility to mark a device with function-specific information.				
<b>Factory setting</b>	<b>***</b>			
<b>Location Tag</b>	<b>Index 26</b>	<b>Subindex 0</b>	<b>StringT (32 Byte)</b>	<b>ReadWrite</b>
Possibility to mark a device with location-specific information.				
<b>Factory setting</b>	<b>***</b>			
<b>Product URI</b>	<b>Index 27</b>	<b>Subindex 0</b>	<b>StringT (100 Byte)</b>	<b>ReadOnly</b>
Provides a unique instance identification compliant to DIN-SPEC 91406.				

## Parameters

Device Access Locks		Index 12	Subindex 0	RecordT (16 Bit)	ReadWrite
The access to the device parameters can be restricted by setting appropriate flags within this parameter.					
Factory setting	false				
Bit offset 2	Local Parameterization		This lock prevents the device settings from being changed via local operating elements on the device.		
Value range	true		(Locked)		
	false		(Unlocked)		
<div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div></div> <div>2</div>					

BLOB ID		Index 49	Subindex 0	IntegerT (16 Bit)	ReadOnly
ID of the BLOB that is currently transferred.					
Factory setting	0		(Idle / Idle)		
Value range	0 -5001		(Idle / Idle) (Read_Event-Log / Read event log)		

Teach Select		Index 58	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Selects the switching signal channel for which a teach procedure will be applied.					
Factory setting	1		(SSC1.1)		
Value range	1 2		(SSC1.1) (SSC1.2)		

Teach Result		Index 59	Subindex 0	RecordT (8 Bit)	ReadOnly
Shows the complete result information of the teach procedure including current state and result flags.					
State			Bit offset 0	UIntegerT (4 Bit)	
Indicates the current state of the teach procedure.					
Value range	0 1 2 5 7		(Idle / Idle) (SP1 success) (SP2 success) (Busy / Busy) (Error / Error)		

SSC1.1 Param		Index 60	Subindex 0	RecordT (64 Bit)	ReadWrite
Defines the setpoint values for switching signal channel 1 of sensor 1.					
SP1			Subindex 1	IntegerT (32 Bit)	
Defines the setpoint 1 value for the switching signal channel.					
Factory setting	-7500				
Value range [Pa]	(-10000 to 0) * 10				
SP2			Subindex 2	IntegerT (32 Bit)	
Defines the setpoint 2 value for the switching signal channel.					
Factory setting	-6000				
Value range [Pa]	(-10000 to 0) * 10				

## Parameters

SSC1.1 Config	Index 61	Subindex 0	RecordT (48 Bit)	ReadWrite
Defines the configuration parameter for switching signal channel 1 of sensor 1.				
Logic		Subindex 1	UIntegerT (8 Bit)	
Defines the logical representation of the switching signal SSC in the process data.				
<b>Factory setting</b>	<b>1</b>	<b>(Low active)</b>		
Value range	0 1	(High active) (Low active)		
Mode		Subindex 2	UIntegerT (8 Bit)	
Defines the evaluation mode for the switching signal SSC.				
<b>Factory setting</b>	<b>1</b>	<b>(Single point)</b>		
Value range	0 1 2 3	(Deactivated) (Single point) (Window) (Two point)		
Hyst		Subindex 3	IntegerT (32 Bit)	
Defines the hysteresis at the switchpoint. A higher hysteresis may help to increase stability in critical applications.				
<b>Factory setting</b>	<b>1000</b>			
Value range [Pa]	(20 to 1000) * 10 0	(Auto)		

SSC1.2 Param	Index 62	Subindex 0	RecordT (64 Bit)	ReadWrite
Defines the setpoint values for switching signal channel 2 of sensor 1.				
SP1		Subindex 1	IntegerT (32 Bit)	
Defines the setpoint 1 value for the switching signal channel.				
<b>Factory setting</b>	<b>-5500</b>			
Value range [Pa]	(-10000 to 0) * 10			
SP2		Subindex 2	IntegerT (32 Bit)	
Defines the setpoint 2 value for the switching signal channel.				
<b>Factory setting</b>	<b>-5000</b>			
Value range [Pa]	(-10000 to 0) * 10			

SSC1.2 Config	Index 63	Subindex 0	RecordT (48 Bit)	ReadWrite
Defines the configuration parameter for switching signal channel 2 of sensor 1.				
Logic		Subindex 1	UIntegerT (8 Bit)	
Defines the logical representation of the switching signal SSC in the process data.				
<b>Factory setting</b>	<b>1</b>	<b>(Low active)</b>		
Value range	0 1	(High active) (Low active)		
Mode		Subindex 2	UIntegerT (8 Bit)	
Defines the evaluation mode for the switching signal SSC.				
<b>Factory setting</b>	<b>1</b>	<b>(Single point)</b>		
Value range	0 1 2 3	(Deactivated) (Single point) (Window) (Two point)		

## Parameters

SSC1.2 Config	Index 63	Subindex 0	RecordT (48 Bit)	ReadWrite
Hyst		Subindex 3	IntegerT (32 Bit)	
Defines the hysteresis at the switchpoint. A higher hysteresis may help to increase stability in critical applications.				
<b>Factory setting</b>	<b>500</b>			
Value range [Pa]	(20 to 1000) * 10 0	(Auto)		
SSC1.1 Delay	Index 320	Subindex 0	RecordT (32 Bit)	ReadWrite
Delays for the switching signal channel 1.1.				
Switching delay		Subindex 1	UIntegerT (16 Bit)	
Set delay time for the switching.				
<b>Factory setting</b>	<b>0</b>			
Value range [s]	(0 to 9999) * 0.01			
Reset delay		Subindex 2	UIntegerT (16 Bit)	
Set delay time for the reset.				
<b>Factory setting</b>	<b>0</b>			
Value range [s]	(0 to 9999) * 0.01			
SSC1.2 Delay	Index 321	Subindex 0	RecordT (32 Bit)	ReadWrite
Delays for the switching signal channel 1.2.				
Switching delay		Subindex 1	UIntegerT (16 Bit)	
Set delay time for the switching.				
<b>Factory setting</b>	<b>0</b>			
Value range [s]	(0 to 9999) * 0.01			
Reset delay		Subindex 2	UIntegerT (16 Bit)	
Set delay time for the reset.				
<b>Factory setting</b>	<b>0</b>			
Value range [s]	(0 to 9999) * 0.01			
SSC Counter	Index 349	Subindex 0	RecordT (64 Bit)	ReadOnly
Available switching signal counters. Counts the SSC transitions from 0 to 1.				
SSC1.1		Subindex 1	IntegerT (32 Bit)	
SSC1.1 counter				
Value range	(0 to 2147482880) 2147483644	(NoData) 0x7FFFFFFC		
SSC1.2		Subindex 2	IntegerT (32 Bit)	
SSC1.2 counter				
Value range	(0 to 2147482880) 2147483644	(NoData) 0x7FFFFFFC		
dAP.P	Index 510	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Damping of the pressure signal.				
<b>Factory setting</b>	<b>60</b>			
Value range [s]	(0 to 4000) * 0.001			

## Parameters

Loc	Index 550	Subindex 0	UIntegerT (8 Bit)	ReadWrite
[Loc] locks the local user interface to prevent unintentional changes, [Loc] is resettable at the device.				
<b>Factory setting</b>	<b>1</b>	<b>(uLoc)</b>		
Value range	0 1	(Loc) (uLoc)		
Hi.P	Index 560	Subindex 0	IntegerT (16 Bit)	ReadOnly
Maximum memory value for pressure.				
Value range [Pa]	(-10000 to 500) * 10 32760 32764	(OL - overload) 0x7FF8 (NoData) 0x7FFC		
Lo.P	Index 561	Subindex 0	IntegerT (16 Bit)	ReadOnly
Minimum memory value for pressure.				
Value range [Pa]	(-10000 to 500) * 10 32760 32764	(OL - overload) 0x7FF8 (NoData) 0x7FFC		
S.On	Index 570	Subindex 0	UIntegerT (8 Bit)	ReadOnly
Simulation state.				
<b>Factory setting</b>	<b>0</b>	<b>(OFF)</b>		
Value range	0 1	(OFF) (On)		
S.Tim	Index 571	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Simulation duration.				
<b>Factory setting</b>	<b>2</b>	<b>(3 min)</b>		
Value range	0 1 2 3 4 5 6 7 8 9 10	(1 min) (2 min) (3 min) (4 min) (5 min) (10 min) (15 min) (20 min) (30 min) (45 min) (60 min)		
S.PRS	Index 572	Subindex 0	IntegerT (16 Bit)	ReadWrite
Simulation of pressure.				
<b>Factory setting</b>	<b>-5000</b>			
Value range [Pa]	(-10000 to 500) * 10 32760 32764	(OL - overload) 0x7FF8 (Err) 0x7FFC		
ou1	Index 580	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Output configuration [OUT 1].				
<b>Factory setting</b>	<b>32</b>	<b>(SSC1.1)</b>		
Value range	32 16	(SSC1.1) (OFF / Output Off)		

## Parameters

ou2	Index 590	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Output configuration [OUT 2].				
Factory setting	33	(SSC1.2)		
Value range	33 16	(SSC1.2) (OFF / Output Off)		
diS.U	Index 800	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Current display update rate.				
Factory setting	1	(d2 / medium)		
Value range	0 1 2	(d1 / fast) (d2 / medium) (d3 / slow)		
diS.R	Index 801	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Current display rotation clockwise.				
Factory setting	0	(0 °)		
Value range	0 1 2 3	(0 °) (90 °) (180 °) (270 °)		
diS.B	Index 802	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Current display brightness.				
Factory setting	100	(100 %)		
Value range	25 50 75 100 0	(25 %) (50 %) (75 %) (100 %) (OFF)		
diS.L	Index 803	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Current layout of the display.				
Factory setting	4	(Bargraph SSC1.1)		
Value range	0 1 2 3 4 5 6 7	(PV) (App.Spec.Tag) (SSC1.1-Param_SP1) (SSC1.1-Param_SP2) (Bargraph SSC1.1) (SSC Counter1) (Hi.P) (Lo.P)		
coL.P	Index 810	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Colour configuration pressure.				
Factory setting	16	(bk/wh / Value black and white)		
Value range	16 4 5	(bk/wh / Value black and white) (r1ou / Value red when OUT1 switches) (G1ou / Value green when OUT1 switches)		
Bargraph start	Index 936	Subindex 0	IntegerT (32 Bit)	ReadWrite
Start of the bargraph scaling.				
Factory setting	0			
Value range [Pa]	(-9980 to 0) * 10			



## Parameters

Bargraph end	Index 937	Subindex 0	IntegerT (32 Bit)	ReadWrite
End of the bargraph scaling.				
<b>Factory setting</b>	<b>-10000</b>			
Value range [Pa]	(-10000 to -20) * 10			

coF	Index 5001	Subindex 0	IntegerT (16 Bit)	ReadWrite
Zero-point calibration (Calibration offset) .				
<b>Factory setting</b>	<b>0</b>			
Value range [%]	(-500 to 500) * 0.01			

MDC Descriptor	Index 16512	Subindex 0	RecordT (88 Bit)	ReadOnly
Descriptor for the characteristic of the measurement data channel (process data MV).				
Lower Value		Bit offset 56	IntegerT (32 Bit)	
Shows the lower value of measurement range.				
<b>Factory setting</b>	<b>-10000</b>	<b>(-10000)</b>		
Value range	-10000	(-10000)		
Upper Value		Bit offset 24	IntegerT (32 Bit)	
Shows the upper value of measurement range.				
<b>Factory setting</b>	<b>0</b>	<b>(0)</b>		
Value range	0	(0)		
Unit Code		Bit offset 8	UIntegerT (16 Bit)	
Shows the unique code for the physical unit.				
<b>Factory setting</b>	<b>1130</b>	<b>(Pa)</b>		
Value range	1130	(Pa)		
Scale		Bit offset 0	IntegerT (8 Bit)	
Shows the multiplier for measurement value - 10exp(scale).				
<b>Factory setting</b>	<b>1</b>	<b>(1)</b>		
Value range	1	(1)		

## Diagnosis

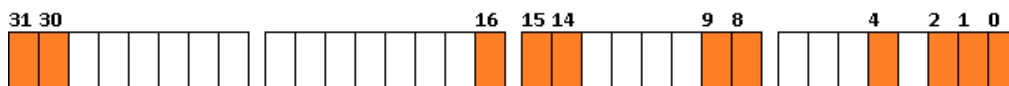
Device Status	Index 36	Subindex 0	UIntegerT (8 Bit)	ReadOnly
Indicator for the current device condition and diagnosis state.				
Factory setting	0	(Device is OK)		
Value range	0	(Device is OK)		
	1	(Maintenance required)		
	2	(Out of specification)		
	3	(Functional check)		
	4	(Failure)		

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			

Operating hours	Index 542	Subindex 0	IntegerT (32 Bit)	ReadOnly
Counter of the operating hours since delivery.				
Value range [h]	(0 to 2147482880) * 1 2147483644	(NoData) 0x7FFFFFFC		

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 16	(0x8C01)	Simulation active		
Bit offset 15	(0x4210)	Device temperature overrun		
Bit offset 14	(0x4220)	Device temperature underrun		
Bit offset 9	(0x8C30)	Process variable range underrun		
Bit offset 8	(0x8C10)	Process variable range overrun		
Bit offset 4	(0x4000)	Temperature fault		
Bit offset 2	(0x7710)	Short circuit		
Bit offset 1	(0x6320)	Parameter error		
Bit offset 0	(0x5000)	Device hardware fault		

Value range      true      Event active  
                      false      Event inactive



## Diagnosis

Param configuration fault	Index 546	Subindex 0	UIntegerT (32 Bit) [10]	ReadOnly
Displays the incorrectly set parameters.				
<b>Factory setting</b>	<b>0</b>	<b>(OK)</b>		
Value range	0	(OK)		
	786432	(Device Access Locks, Index = 12)		
	38010880	(ou1, Index = 580)		
	36110336	(uni.P, Index = 551)		
	33423360	(dAP.P, Index = 510)		
	32768000	(P-n, Index = 500)		
	327745536	(coF, Index = 5001)		
	37486592	(S.PRS, Index = 572)		
	37421056	(S.Tim, Index = 571)		
	60489728	(LanG, Index = 923)		
	52494336	(diS.R, Index = 801)		
	52559872	(diS.B, Index = 802)		
	52625408	(diS.L, Index = 803)		
	61341696	(Bargraph start, Index = 936)		
	61407232	(Bargraph end, Index = 937)		
	53084160	(coL.P, Index = 810)		
	52428800	(diS.U, Index = 800)		
	38666240	(ou2, Index = 590)		
	327876608	(HIPS, Index = 5003)		
	36044800	(Loc, Index = 550)		
	3997696	(SSC1.1 Config, Index = 61)		
	3997697	(SSC1.1 Config, Index = 61, Subindex = 1)		
	3997698	(SSC1.1 Config, Index = 61, Subindex = 2)		
	3997699	(SSC1.1 Config, Index = 61, Subindex = 3)		
	20971520	(SSC1.1 Delay, Index = 320)		
	20971521	(SSC1.1 Delay, Index = 320, Subindex = 1)		
	20971522	(SSC1.1 Delay, Index = 320, Subindex = 2)		
	3932160	(SSC1.1 Param, Index = 60)		
	3932161	(SSC1.1 Param, Index = 60, Subindex = 1)		
	3932162	(SSC1.1 Param, Index = 60, Subindex = 2)		
	4128768	(SSC1.2 Config, Index = 63)		
	4128769	(SSC1.2 Config, Index = 63, Subindex = 1)		
	4128770	(SSC1.2 Config, Index = 63, Subindex = 2)		
	4128771	(SSC1.2 Config, Index = 63, Subindex = 3)		
	21037056	(SSC1.2 Delay, Index = 321)		
	21037057	(SSC1.2 Delay, Index = 321, Subindex = 1)		
	21037058	(SSC1.2 Delay, Index = 321, Subindex = 2)		
	4063232	(SSC1.2 Param, Index = 62)		
	4063233	(SSC1.2 Param, Index = 62, Subindex = 1)		
	4063234	(SSC1.2 Param, Index = 62, Subindex = 2)		
	3801088	(Teach Select, Index = 58)		
	55115776	(uni.T, Index = 841)		

HIPC	Index 5004	Subindex 0	UIntegerT (32 Bit)	ReadOnly
Pressure overload counter.				
<b>Factory setting</b>	<b>0</b>			
Value range	(0 to 4294967295) * 1			

HIPS	Index 5003	Subindex 0	IntegerT (16 Bit)	ReadWrite
Configuration of pressure overload counter switch point.				
Value range [Pa]	(-10000 to 500) * 10			

Internal temperature	Index 543	Subindex 0	IntegerT (16 Bit)	ReadOnly
Current internal temperature of the device.				
Value range [°C]	(0 to 92) * 1			
	-32760	(UL - underload) 0x8008		
	32760	(OL - overload) 0x7FF8		
	32764	(NoData) 0x7FFC		

Media temperature	Index 537	Subindex 0	IntegerT (16 Bit)	ReadOnly
Current media temperature.				
Value range [°C]	(0 to 60) * 1			
	-32760	(UL - underload) 0x8008		
	32760	(OL - overload) 0x7FF8		
	32764	(NoData) 0x7FFC		

## Events

Code	Device status	PQ *	Class	Name	Description
0x4000 16384d	3 (Functional check)	valid	Error	Temperature fault	Overload
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
0x6320 25376d	3 (Functional check)	invalid	Error	Parameter error	Check datasheet and values
0x7710 30480d	3 (Functional check)	valid	Error	Short circuit	Check installation
0x8C01 35841d	3 (Functional check)	valid	Warning	Simulation active	Check operating mode
0x8C10 35856d	2 (Out of specification)	valid	Warning	Process variable range overrun	Process data uncertain
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.
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 to '0' indicate the cause of a failed ISDU read or write procedure.

## ErrorTypes

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The table shows all IO-Link ISDU error codes.  
The device does not need to support all listed error types.