IO-Link Interface Description

Sorio 3SV Digital / IO-Link

EN

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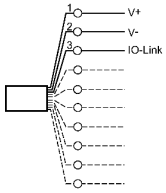
1 Device variant

Sorio 3SV Digital / IO-Link Valve control top		

2 Communication

Vendor ID	1370 / Bytes 5-90 (hex: 05-5A)
Device ID	2 / Bytes 0-2 (hex: 00-02)
Bit rate	COM2
Minimum cycle time	5 ms
SIO mode supported	Yes
Block parameterization	Yes
Data storage	Yes
Supported profiles	BLOB, Binary Large Objects Identification and Diagnosis

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 (11 Byte)	Definox SAS	10
Product Name	18		StringT (27 Byte)	Sorio 3SV Digital / IO-Link	10
Product Text	20		StringT (17 Byte)	Valve control top	10
Serial Number	21		StringT (12 Byte)		10
Hardware Revision	22		StringT (2 Byte)		10
Firmware Revision	23		StringT (16 Byte)		10
Application-specific Tag	24		StringT (32 Byte)	***	10
Function Tag	25		StringT (32 Byte)	***	10
Location Tag	26		StringT (32 Byte)	***	10
Device Status	36		UIntegerT (8 Bit)	0 (Device is OK)	14
Process data input	40		RecordT (32 Bit)		12
Process data output	41		RecordT (8 Bit)		13
BLOB	49		IntegerT (16 Bit)	-4096 (Teaching)	25
ProdDate	65		StringT (4 Byte)		10
Button lock	70		UIntegerT (8 Bit)	0 (disabled)	15
Interlock	71		UIntegerT (8 Bit)	0 (disabled)	15
Solenoid trigger source	72		UIntegerT (8 Bit)	0 (DI-PLC)	15
Safety stop	73		UIntegerT (8 Bit)	1 (enabled)	15
Manual Setup Position	75		UIntegerT (8 Bit)		14
Reset type	76		UIntegerT (8 Bit)		14
Position tolerance band	80		UIntegerT (8 Bit)	16 (Tolerance: ±1.6mm)	15
Warning tolerance area	81		UIntegerT (8 Bit)	0 (No warning area)	15
Time Limit	82		UIntegerT (16 Bit)	10000	15
Valve Cycle Counter Limit	83		UIntegerT (32 Bit)	0	16
Water Hammer Counter Li...	84		UIntegerT (16 Bit)	0	16
Operating Time Limit	85		UIntegerT (16 Bit)	0	16
Travel Accumulator Limit	86		UIntegerT (16 Bit)	0	16
Active events	88		RecordT (32 Bit)		24
RGB LED Mode/Intensity ...	90		RecordT (16 Bit)		16
Mode	90	1	UIntegerT (8 Bit)	2 (Valve mode + error)	
Intensity	90	2	UIntegerT (8 Bit)	100 (100%)	
RGB LED Settings	91		RecordT (24 Bit)		17
External RGB LED #1...	91	1	UIntegerT (8 Bit)	1 (White)	
External RGB LED #2...	91	2	UIntegerT (8 Bit)	1 (White)	
External RGB LED #3...	91	3	UIntegerT (8 Bit)	1 (White)	
RGB LED colour	92		RecordT (16 Bit)		18
Locating	92	1	UIntegerT (8 Bit)	6 (Blue Flashing)	
Warning	92	2	UIntegerT (8 Bit)	7 (Yellow)	
RGB LED colour	93		RecordT (24 Bit)		19
Valve Energized	93	1	UIntegerT (8 Bit)	3 (Green)	
Valve De-energized	93	2	UIntegerT (8 Bit)	9 (Cyan)	
Without Position	93	3	UIntegerT (8 Bit)	0 (OFF)	
RGB LED colour	94		RecordT (16 Bit)		20
Upper Seat Lift	94	1	UIntegerT (8 Bit)	4 (Green Flashing)	
Lower Seat Lift	94	2	UIntegerT (8 Bit)	10 (Cyan Flashing)	

3 Parameter overview

Parameter	Index	Subindex	Type	Factory setting	page
Active Setup	100		UIntegerT (8 Bit)	0 (No Setup)	14
Taught de-energized pos...	101		RecordT (48 Bit)		21
Sensor target posit...	101	1	IntegerT (16 Bit)	0 (No Setup)	
Taught energized position	102		RecordT (48 Bit)		21
Sensor target posit...	102	1	IntegerT (16 Bit)	0 (No Setup)	
Taught lower seat lift ...	103		RecordT (48 Bit)		21
Sensor target posit...	103	1	IntegerT (16 Bit)	0 (No Setup)	
Taught upper seat lift ...	104		RecordT (48 Bit)		21
Sensor target posit...	104	1	IntegerT (16 Bit)	0 (No Setup)	
External sensor logic	104	3	UIntegerT (8 Bit)	0 (No external sensor)	
Stroke duration (energi...	105		RecordT (96 Bit)		20
SV1	105	1	IntegerT (32 Bit)	0 (No Setup)	
SV2	105	2	IntegerT (32 Bit)	0 (No Setup)	
SV3	105	3	IntegerT (32 Bit)	0 (No Setup)	
Stroke duration (de-ene...	106		RecordT (96 Bit)		21
SV1	106	1	IntegerT (32 Bit)	0 (No Setup)	
SV2	106	2	IntegerT (32 Bit)	0 (No Setup)	
SV3	106	3	IntegerT (32 Bit)	0 (No Setup)	
Alert Counters	110		RecordT (64 Bit)		22
Warnings	110	1	UIntegerT (32 Bit)	0	
Errors	110	2	UIntegerT (32 Bit)	0	
Teach Function Counter	111		RecordT (48 Bit)		22
Total Teach Counter	111	1	UIntegerT (32 Bit)	0	
Resettable Teach Co...	111	2	UIntegerT (16 Bit)	0	
Travel Accumulator	112		RecordT (48 Bit)		22
Total Travel Accumu...	112	1	UIntegerT (32 Bit)	0	
Resettable Travel A...	112	2	UIntegerT (16 Bit)	0	
Resettable Water Hammer...	113		UIntegerT (16 Bit)		22
Valve cycle counter	114		RecordT (128 Bit)		23
Resettable Valve Cy...	114	1	IntegerT (32 Bit)	0	
SV1 Cycle Counter	114	2	IntegerT (32 Bit)	0	
SV2 Cycle Counter	114	3	IntegerT (32 Bit)	0	
SV3 Cycle Counter	114	4	IntegerT (32 Bit)	0	
Latest energized positi...	115		RecordT (80 Bit)		25
#1	115	1	IntegerT (16 Bit)	0 (No Data)	
#2	115	2	IntegerT (16 Bit)	0 (No Data)	
#3	115	3	IntegerT (16 Bit)	0 (No Data)	
#4	115	4	IntegerT (16 Bit)	0 (No Data)	
#5	115	5	IntegerT (16 Bit)	0 (No Data)	
Latest de-energized pos...	116		RecordT (80 Bit)		26
#1	116	1	IntegerT (16 Bit)	0 (No Data)	
#2	116	2	IntegerT (16 Bit)	0 (No Data)	
#3	116	3	IntegerT (16 Bit)	0 (No Data)	
#4	116	4	IntegerT (16 Bit)	0 (No Data)	
#5	116	5	IntegerT (16 Bit)	0 (No Data)	

3 Parameter overview

Parameter	Index	Subindex	Type	Factory setting	page
Latest energize time du...	117		RecordT (160 Bit)		26
#1	117	1	IntegerT (32 Bit)	0 (No Data)	
#2	117	2	IntegerT (32 Bit)	0 (No Data)	
#3	117	3	IntegerT (32 Bit)	0 (No Data)	
#4	117	4	IntegerT (32 Bit)	0 (No Data)	
#5	117	5	IntegerT (32 Bit)	0 (No Data)	
Latest energize time du...	118		RecordT (160 Bit)		27
#1	118	1	IntegerT (32 Bit)	0 (No Data)	
#2	118	2	IntegerT (32 Bit)	0 (No Data)	
#3	118	3	IntegerT (32 Bit)	0 (No Data)	
#4	118	4	IntegerT (32 Bit)	0 (No Data)	
#5	118	5	IntegerT (32 Bit)	0 (No Data)	
Latest energize time du...	119		RecordT (160 Bit)		27
#1	119	1	IntegerT (32 Bit)	0 (No Data)	
#2	119	2	IntegerT (32 Bit)	0 (No Data)	
#3	119	3	IntegerT (32 Bit)	0 (No Data)	
#4	119	4	IntegerT (32 Bit)	0 (No Data)	
#5	119	5	IntegerT (32 Bit)	0 (No Data)	
Latest de-energize time...	120		RecordT (160 Bit)		28
#1	120	1	IntegerT (32 Bit)	0 (No Data)	
#2	120	2	IntegerT (32 Bit)	0 (No Data)	
#3	120	3	IntegerT (32 Bit)	0 (No Data)	
#4	120	4	IntegerT (32 Bit)	0 (No Data)	
#5	120	5	IntegerT (32 Bit)	0 (No Data)	
Latest de-energize time...	121		RecordT (160 Bit)		29
#1	121	1	IntegerT (32 Bit)	0 (No Data)	
#2	121	2	IntegerT (32 Bit)	0 (No Data)	
#3	121	3	IntegerT (32 Bit)	0 (No Data)	
#4	121	4	IntegerT (32 Bit)	0 (No Data)	
#5	121	5	IntegerT (32 Bit)	0 (No Data)	
Latest de-energize time...	122		RecordT (160 Bit)		29
#1	122	1	IntegerT (32 Bit)	0 (No Data)	
#2	122	2	IntegerT (32 Bit)	0 (No Data)	
#3	122	3	IntegerT (32 Bit)	0 (No Data)	
#4	122	4	IntegerT (32 Bit)	0 (No Data)	
#5	122	5	IntegerT (32 Bit)	0 (No Data)	
Operating Hours	123		RecordT (80 Bit)		23
Total	123	1	IntegerT (32 Bit)	0	
Resettable	123	2	UIntegerT (16 Bit)	0	
Timeout Error Counter	124		RecordT (48 Bit)		23
Total Main	124	1	UIntegerT (16 Bit)	0	
Total Upper Seat Lift	124	2	UIntegerT (16 Bit)	0	
Total Lower Seat Lift	124	3	UIntegerT (16 Bit)	0	
Resettable timeout Erro...	125		RecordT (48 Bit)		23
Resettable Main	125	1	UIntegerT (16 Bit)		

3 Parameter overview

Parameter	Index	Subindex	Type	Factory setting	page
Resettable Upper Se...	125	2	UIntegerT (16 Bit)		
Resettable Lower Se...	125	3	UIntegerT (16 Bit)		
Temperature	126		RecordT (48 Bit)		24
Current	126	1	IntegerT (16 Bit)		
Minimum	126	2	IntegerT (16 Bit)		
Maximum	126	3	IntegerT (16 Bit)		
Supply voltage	127		RecordT (32 Bit)		24
Current	127	1	UIntegerT (16 Bit)		
Minimum	127	2	UIntegerT (16 Bit)		

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	
208	Auto Setup	
209	Manual Setup position	
210	Manual Setup activation	
211	Setup abort	
212	Reset selected counter	
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 (11 Byte)	ReadOnly
The vendor name that is assigned to a Vendor ID.				
Factory setting	**Definox SAS**			

Product Name	Index 18	Subindex 0	StringT (27 Byte)	ReadOnly
Complete product name.				
Factory setting	**Sorio 3SV Digital / IO-Link**			

Product Text	Index 20	Subindex 0	StringT (17 Byte)	ReadOnly
Additional product information for the device.				
Factory setting	**Valve control top**			

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 (16 Byte)	ReadOnly
Unique, vendor-specific identifier of the firmware revision of the individual device.				

ProdDate	Index 65	Subindex 0	StringT (4 Byte)	ReadOnly
Production date (YYWW)				

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
Description of the device function				
Factory setting	***			

Location Tag	Index 26	Subindex 0	StringT (32 Byte)	ReadWrite
Description of the physical device location				
Factory setting	***			

6 Observation

6.1 Process Data Input/Output

Process data input			RecordT (32 Bit)
Sensor target position			IntegerT (16 Bit)
Current position of the magnet (Bitoffset: 16 / Length: 16).			
Value range [mm]	(120 To 1180) * 0.1		
	32764	(NoData)	
LED array			UIntegerT (5 Bit)
Current state of LED array (Bitoffset: 11 / Length: 5).			
Value range	0	(No setup mode)	
	1	(Status mode)	
	2	(Auto setup)	
	4	(Manual setup)	
	5	(Pigging mode)	
	8	(Tolerance mode)	
	9	(Warning tolerance band (#9))	
	10	(Water hammer limit exceeded (#10))	
	11	(Position time limit exceeded (#11))	
	12	(Travel accumulator limit exceeded (#12))	
	13	(Valve cycle counter limit exceeded (#13))	
	14	(Operating time limit exceeded (#14))	
	15	(Locked button (#15))	
	16	(Sensor target missing (#16))	
	17	(Pilot valve issue (#17))	
	18	(Pneumatic part issue (#18))	
	19	(Setup sensor issue (#19))	
	20	(Position not reached (#20))	
	21	(Unexpected valve movement (#21))	
	22	(External sensor missing (#22))	
	23	(Solenoid valve 1 missing (#23))	
	24	(Solenoid valve 2 missing (#24))	
	25	(Solenoid valve 3 missing (#25))	
	26	(Interlock in effect (#26))	
	27	(Hardware fault (#27))	
	28	(Setup aborted (#28))	
	29	(Pigging configuration fault (#29))	
	30	(Low supply voltage (#30))	
	31	(Safety Stop active (#31))	
SV3			BooleanT
Current state of solenoid 3 (Bitoffset: 10 / Length: 1).			
Value range	false	(inactive)	
	true	(active)	
SV2			BooleanT
Current state of solenoid 2 (Bitoffset: 9 / Length: 1).			
Value range	false	(inactive)	
	true	(active)	
SV1			BooleanT
Current state of solenoid 1 (Bitoffset: 8 / Length: 1).			
Value range	false	(inactive)	
	true	(active)	
LOW_L			BooleanT
Lower seat lift (Bitoffset: 3 / Length: 1).			
Value range	false	(inactive)	
	true	(active)	
UPP_L			BooleanT
Upper seat lift (Bitoffset: 2 / Length: 1).			
Value range	false	(inactive)	
	true	(active)	

6 Observation

EN	BooleanT
Main (energized) position (Bitoffset: 1 / Length: 1).	
Value range	false (inactive) true (active)

DE-EN	BooleanT
De-Energized position (Bitoffset: 0 / Length: 1).	
Value range	false (inactive) true (active)

Device status	UIntegerT (4 Bit)
Current device status, a copy of the variable [Device Status] in the process data channel (Bitoffset: 4 / Length: 4).	
Value range	0 (Device is OK) 1 (Maintenance required) 2 (Out of specification) 3 (Functional check) 4 (Failure)

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

Process data output	**RecordT (8 Bit)**

SV1	BooleanT
Trigger solenoid valve 1 (Bitoffset: 0 / Length: 1).	
Value range	false (Disable) true (Enable)

SV2	BooleanT
Trigger solenoid valve 2 (Bitoffset: 1 / Length: 1).	
Value range	false (Disable) true (Enable)

SV3	BooleanT
Trigger solenoid valve 3 (Bitoffset: 2 / Length: 1).	
Value range	false (Disable) true (Enable)

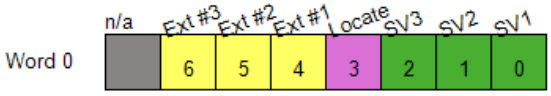
Locate	BooleanT
Locate the valve by visual feedback (Bitoffset: 3 / Length: 1).	
Value range	false (Disable) true (Enable)

Ext #1	BooleanT
External RGB LED #1 (Bitoffset: 4 / Length: 1).	
Value range	false (Disable) true (Enable)

Ext #2	BooleanT
External RGB LED #1 (Bitoffset: 5 / Length: 1).	
Value range	false (Disable) true (Enable)

6 Observation

Ext #3	BooleanT
External RGB LED #1 (Bitoffset: 6 / Length: 1).	
Value range	false (Disable) true (Enable)



-n/a: Not available area. Used to cover structured process data mapping

7 Parameter

7.1 Commands

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)			

7.1.1 Setup

Active Setup	Index 100	Subindex 0	UIntegerT (8 Bit)	ReadOnly
Type of the currently active setup.				
Factory setting	**0**	**(No Setup)**		
Value range	0	(No Setup)		
	1	(Auto Setup)		
	2	(Manual Setup)		
	3	(Pigging Mode)		

Manual Setup Position	Index 75	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Select a setup position and write it to the device. Then bring valve in position and press the button below to teach the selected position.				
Value range	0	(Main de-energized)		
	1	(Main energized)		
	2	(Upper seat energized)		
	3	(Lower seat energized)		

7.1.2 Reset Options

Reset type	Index 76	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Select the counter to be resetted and write it to the device. Then press the button below to perform the selected reset.				
Value range	0	(Travel Accumulator Reset)		
	1	(Valve Cycle Counter Reset)		
	2	(Operation Time Reset)		
	3	(Teaching Counter Reset)		
	4	(Time Error Counter Main Reset)		
	7	(Water Hammer Counter Reset)		

7.2 Settings

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)			

7 Parameter

7.2.1 Device Settings

Solenoid trigger source	Index 72	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Choose the source of the external solenoid trigger.				
Factory setting	**0**	**(DI-PLC)**		
Value range	0	(DI-PLC)		
	1	(IOL-PDOut)		

Button lock	Index 70	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Enable/disable the button lock.				
Factory setting	**0**	**(disabled)**		
Value range	0	(disabled)		
	1	(enabled)		

Interlock	Index 71	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Enable/disable the interlock.				
Factory setting	**0**	**(disabled)**		
Value range	0	(disabled)		
	1	(enabled)		

Safety stop	Index 73	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Safety Stop prevents unit from mechanical damage if magnet target moves out of highest possible range.				
Factory setting	**1**	**(enabled)**		
Value range	0	(disabled)		
	1	(enabled)		

7.2.2 Tolerance and Warning Settings

Position tolerance band	Index 80	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Selection of available tolerance ranges. Same limit for all positions. Settings below 2.5mm are not applicable for warning tolerance area less than 40% and vice versa.				
Factory setting	**16**	**(Tolerance: ±1.6mm)**		
Value range	10	(Tolerance: ±1.0mm)		
	16	(Tolerance: ±1.6mm)		
	25	(Tolerance: ±2.5mm)		
	50	(Tolerance: ±5.0mm)		
	100	(Tolerance: ±10.0mm)		

Warning tolerance area	Index 81	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Warning area of position tolerance band (min. 0.5mm). Settings below 40% are not applicable for tolerance band less than 2.5mm and vice versa.				
Factory setting	**0**	**(No warning area)**		
Value range	0	(No warning area)		
	10	(Warning area: 10%)		
	20	(Warning area: 20%)		
	30	(Warning area: 30%)		
	40	(Warning area: 40%)		
	50	(Warning area: 50%)		

Time Limit	Index 82	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Tolerance range of stroke movement timinig.				
Factory setting	**10000**			
Value range [s]	(0 To 60000) * 0.001			

7 Parameter

Valve Cycle Counter Limit	Index 83	Subindex 0	UIntegerT (32 Bit)	ReadWrite
Limit of resettable Valve Cycles Counter to trigger warning.				
Factory setting	**0**			
Value range	(0 To 2000000) * 1			

Water Hammer Counter Limit	Index 84	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Limit of resettable Water Hammer Counter to trigger warning.				
Factory setting	**0**			
Value range	(0 To 65000) * 1			

Operating Time Limit	Index 85	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Limit of resettable Operating Time to trigger warning.				
Factory setting	**0**			
Value range [h]	(0 To 65000) * 1			

Travel Accumulator Limit	Index 86	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Limit of resettable Travel Accumulator to trigger warning.				
Factory setting	**0**			
Value range [m]	(0 To 65000) * 1			

7.2.3 RGB LED Settings

RGB LED Mode/Intensity Settings	Index 90	Subindex 0	RecordT (16 Bit)	ReadWrite
Sets the RGB LED mode and intensity.				
Mode		Subindex 1	UIntegerT (8 Bit)	
Select mode of RGB LED.				
Factory setting	**2**	**(Valve mode + error)**		
Value range	0	(Namur mode)		
	1	(Valve mode)		
	2	(Valve mode + error)		
	3	(Valve mode + error + warning)		
	4	(External Fixed colour)		
	5	(Off)		
Intensity		Subindex 2	UIntegerT (8 Bit)	
Intensity of the RGB LED.				
Factory setting	**100**	**(100%)**		
Value range	0	(0%)		
	10	(10%)		
	20	(20%)		
	30	(30%)		
	40	(40%)		
	50	(50%)		
	60	(60%)		
	70	(70%)		
	80	(80%)		
	90	(90%)		
	100	(100%)		

RGB LED Settings	Index 91	Subindex 0	RecordT (24 Bit)	ReadWrite
Settings of the RGB LED output.				

7 Parameter

External RGB LED #1 colour	Subindex 1	UIntegerT (8 Bit)
RGB LED colour of external control #1.		

Factory setting	**1**	**(White)**
Value range	0	(OFF)
	1	(White)
	2	(White Flashing)
	3	(Green)
	4	(Green Flashing)
	5	(Blue)
	6	(Blue Flashing)
	7	(Yellow)
	8	(Yellow Flashing)
	9	(Cyan)
	10	(Cyan Flashing)
	11	(Purple)
	12	(Purple Flashing)
	13	(Red)
	14	(Red Flashing)

External RGB LED #2 colour	Subindex 2	UIntegerT (8 Bit)
RGB LED colour of external control #2.		

Factory setting	**1**	**(White)**
Value range	0	(OFF)
	1	(White)
	2	(White Flashing)
	3	(Green)
	4	(Green Flashing)
	5	(Blue)
	6	(Blue Flashing)
	7	(Yellow)
	8	(Yellow Flashing)
	9	(Cyan)
	10	(Cyan Flashing)
	11	(Purple)
	12	(Purple Flashing)
	13	(Red)
	14	(Red Flashing)

External RGB LED #3 colour	Subindex 3	UIntegerT (8 Bit)
RGB LED colour of external control #3.		

Factory setting	**1**	**(White)**
Value range	0	(OFF)
	1	(White)
	2	(White Flashing)
	3	(Green)
	4	(Green Flashing)
	5	(Blue)
	6	(Blue Flashing)
	7	(Yellow)
	8	(Yellow Flashing)
	9	(Cyan)
	10	(Cyan Flashing)
	11	(Purple)
	12	(Purple Flashing)
	13	(Red)
	14	(Red Flashing)

RGB LED colour	**Index 92**	**Subindex 0**	**RecordT (16 Bit)**	**ReadWrite**
Choice of colours of RGB LED.				

7 Parameter

Locating		Subindex 1	UIntegerT (8 Bit)
RGB LED colour of locating function.			
Factory setting	**6**	**(Blue Flashing)**	
Value range	0	(OFF)	
	1	(White)	
	2	(White Flashing)	
	3	(Green)	
	4	(Green Flashing)	
	5	(Blue)	
	6	(Blue Flashing)	
	7	(Yellow)	
	8	(Yellow Flashing)	
	9	(Cyan)	
	10	(Cyan Flashing)	
	11	(Purple)	
	12	(Purple Flashing)	
	13	(Red)	
	14	(Red Flashing)	

Warning		Subindex 2	UIntegerT (8 Bit)
RGB LED colour of warnings.			
Factory setting	**7**	**(Yellow)**	
Value range	0	(OFF)	
	1	(White)	
	2	(White Flashing)	
	3	(Green)	
	4	(Green Flashing)	
	5	(Blue)	
	6	(Blue Flashing)	
	7	(Yellow)	
	8	(Yellow Flashing)	
	9	(Cyan)	
	10	(Cyan Flashing)	
	11	(Purple)	
	12	(Purple Flashing)	
	13	(Red)	
	14	(Red Flashing)	

RGB LED colour	Index 93	Subindex 0	RecordT (24 Bit)	ReadWrite
Choice of colours of RGB LED.				

Valve Energized		Subindex 1	UIntegerT (8 Bit)
RGB LED colour of energized position.			
Factory setting	**3**	**(Green)**	
Value range	0	(OFF)	
	1	(White)	
	3	(Green)	
	5	(Blue)	
	7	(Yellow)	
	9	(Cyan)	
	11	(Purple)	
	13	(Red)	

Valve De-energized		Subindex 2	UIntegerT (8 Bit)
RGB LED colour of de-energized position.			
Factory setting	**9**	**(Cyan)**	
Value range	0	(OFF)	
	1	(White)	
	3	(Green)	
	5	(Blue)	
	7	(Yellow)	
	9	(Cyan)	
	11	(Purple)	
	13	(Red)	

7 Parameter

Without Position		Subindex 3	UIntegerT (8 Bit)
RGB LED colour while moving or outside tolerance band.			
Factory setting	**0**	**(OFF)**	
Value range	0	(OFF)	
	1	(White)	
	3	(Green)	
	5	(Blue)	
	7	(Yellow)	
	9	(Cyan)	
	11	(Purple)	
	13	(Red)	

RGB LED colour	Index 94	Subindex 0	RecordT (16 Bit)	ReadWrite
Choice of colours of RGB LED.				
Upper Seat Lift		Subindex 1	UIntegerT (8 Bit)	
RGB LED colour indicating upper seat lift.				
Factory setting	**4**	**(Green Flashing)**		
Value range	0	(OFF)		
	1	(White)		
	2	(White Flashing)		
	3	(Green)		
	4	(Green Flashing)		
	5	(Blue)		
	6	(Blue Flashing)		
	7	(Yellow)		
	8	(Yellow Flashing)		
	9	(Cyan)		
	10	(Cyan Flashing)		
	11	(Purple)		
	12	(Purple Flashing)		
	13	(Red)		
	14	(Red Flashing)		
Lower Seat Lift		Subindex 2	UIntegerT (8 Bit)	
RGB LED colour inidicating lower seat lift.				
Factory setting	**10**	**(Cyan Flashing)**		
Value range	0	(OFF)		
	1	(White)		
	2	(White Flashing)		
	3	(Green)		
	4	(Green Flashing)		
	5	(Blue)		
	6	(Blue Flashing)		
	7	(Yellow)		
	8	(Yellow Flashing)		
	9	(Cyan)		
	10	(Cyan Flashing)		
	11	(Purple)		
	12	(Purple Flashing)		
	13	(Red)		
	14	(Red Flashing)		

8 Diagnosis

8.1 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)		
	(5 To 255) (Reserved)			

8.1.1 Setup Data

Active Setup	Index 100	Subindex 0	UIntegerT (8 Bit)	ReadOnly
Type of the currently active setup.				
Factory setting	**0**	**(No Setup)**		
Value range	0	(No Setup)		
	1	(Auto Setup)		
	2	(Manual Setup)		
	3	(Pigging Mode)		

Stroke duration (energize)	Index 105	Subindex 0	RecordT (96 Bit)	ReadOnly
Taught stroke duration of solenoid valves to energize.				
SV1		Subindex 1	IntegerT (32 Bit)	
Taught stroke duration of solenoid valve 1 to energize.				
Factory setting	**0**	**(No Setup)**		
Value range [ms]	(1 To 100000) * 1			
	0	(No Setup)		
SV2		Subindex 2	IntegerT (32 Bit)	
Taught stroke duration of solenoid valve 2 to energize.				
Factory setting	**0**	**(No Setup)**		
Value range [ms]	(1 To 100000) * 1			
	0	(No Setup)		
SV3		Subindex 3	IntegerT (32 Bit)	
Taught stroke duration of solenoid valve 3 to energize.				
Factory setting	**0**	**(No Setup)**		
Value range [ms]	(1 To 100000) * 1			
	0	(No Setup)		

Stroke duration (de-energize)	Index 106	Subindex 0	RecordT (96 Bit)	ReadOnly
Taught stroke duration of solenoid valves to de-energize.				
SV1		Subindex 1	IntegerT (32 Bit)	
Taught stroke duration of solenoid valve 1 to de-energize.				
Factory setting	**0**	**(No Setup)**		
Value range [ms]	(1 To 100000) * 1			
	0	(No Setup)		
SV2		Subindex 2	IntegerT (32 Bit)	
Taught stroke duration of solenoid valve 2 to de-energize.				
Factory setting	**0**	**(No Setup)**		
Value range [ms]	(1 To 100000) * 1			
	0	(No Setup)		

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SV3		Subindex 3	IntegerT (32 Bit)
Taught stroke duration of solenoid valve 3 to de-energize.			
Factory setting	**0**	**(No Setup)**	
Value range [ms]	(1 To 100000) * 1		
	0	(No Setup)	

Taught de-energized position	Index 101	Subindex 0	RecordT (48 Bit)	ReadOnly
Position saved in last setup of de-energized.				
Sensor target position		Subindex 1	IntegerT (16 Bit)	
Sensor target position set at last setup.				
Factory setting	**0**	**(No Setup)**		
Value range [mm]	(120 To 1180) * 0.1			
	0	(No Setup)		

Taught energized position	Index 102	Subindex 0	RecordT (48 Bit)	ReadOnly
Position saved in last setup of energized.				
Sensor target position		Subindex 1	IntegerT (16 Bit)	
Sensor target position set at last setup.				
Factory setting	**0**	**(No Setup)**		
Value range [mm]	(120 To 1180) * 0.1			
	0	(No Setup)		

Taught lower seat lift position	Index 103	Subindex 0	RecordT (48 Bit)	ReadOnly
Last taught lower seat lift.				
Sensor target position		Subindex 1	IntegerT (16 Bit)	
Sensor target position set at last setup.				
Factory setting	**0**	**(No Setup)**		
Value range [mm]	(120 To 1180) * 0.1			
	0	(No Setup)		

Taught upper seat lift position	Index 104	Subindex 0	RecordT (48 Bit)	ReadOnly
Last taught upper seat lift.				
Sensor target position		Subindex 1	IntegerT (16 Bit)	
Sensor target position set at last setup.				
Factory setting	**0**	**(No Setup)**		
Value range [mm]	(120 To 1180) * 0.1			
	0	(No Setup)		
External sensor logic		Subindex 3	UIntegerT (8 Bit)	
External sensor logic/state at last upper seat lift setup.				
Factory setting	**0**	**(No external sensor)**		
Value range	0	(No external sensor)		
	1	(No external sensor)		
	2	(High active)		
	3	(Low active)		

8.2 Diagnostic Data

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)			

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Alert Counters	Index 110	Subindex 0	RecordT (64 Bit)	ReadOnly
Counters of triggered alerts.				
Warnings		Subindex 1	UIntegerT (32 Bit)	
Counter of triggered warnings.				
Factory setting	**0**			
Value range	(0 To 2000000)			
Errors		Subindex 2	UIntegerT (32 Bit)	
Counter of triggered errors.				
Factory setting	**0**			
Value range	(0 To 2000000)			

Teach Function Counter	Index 111	Subindex 0	RecordT (48 Bit)	ReadOnly
Count the amount of teach functions (setups).				
Total Teach Counter		Subindex 1	UIntegerT (32 Bit)	
Count the total amount of teach functions.				
Factory setting	**0**			
Value range	(0 To 2000000)			
Resettable Teach Counter		Subindex 2	UIntegerT (16 Bit)	
Count the amount of teach functions since last reset.				
Factory setting	**0**			
Value range	(0 To 65000)			

Travel Accumulator	Index 112	Subindex 0	RecordT (48 Bit)	ReadOnly
Travel distance in meter.				
Total Travel Accumulator		Subindex 1	UIntegerT (32 Bit)	
Total distance in meter.				
Factory setting	**0**			
Value range [m]	(0 To 2000000) * 1			
Resettable Travel Accumulator		Subindex 2	UIntegerT (16 Bit)	
Distance in meter since last reset.				
Factory setting	**0**			
Value range [m]	(0 To 65000) * 1			

Resettable Water Hammer Counter	Index 113	Subindex 0	UIntegerT (16 Bit)	ReadOnly
Count the amount of water hammers since last reset.				
Value range	(0 To 65000)			

Valve cycle counter	Index 114	Subindex 0	RecordT (128 Bit)	ReadOnly
Energize/De-energize cycle counter.				
Resettable Valve Cycle Counter		Subindex 1	IntegerT (32 Bit)	
Sum of all valve cycles on all SVs since last reset.				
Factory setting	**0**			
Value range	(0 To 2000000)			
SV1 Cycle Counter		Subindex 2	IntegerT (32 Bit)	
Total valve cycles of SV1.				
Factory setting	**0**			
Value range	(0 To 2000000)			

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SV2 Cycle Counter		Subindex 3	IntegerT (32 Bit)
Total valve cycles of SV2.			
Factory setting	**0**		
Value range	(0 To 2000000)		
SV3 Cycle Counter		Subindex 4	IntegerT (32 Bit)
Total valve cycles of SV3.			
Factory setting	**0**		
Value range	(0 To 2000000)		

Operating Hours	**Index 123**	**Subindex 0**	**RecordT (80 Bit)**	**ReadOnly**
Device operating hours				
Total		Subindex 1	IntegerT (32 Bit)	
Total operating hours of the device.				
Factory setting	**0**			
Value range [h]	(0 To 2000000) * 1			
Resettable		Subindex 2	UIntegerT (16 Bit)	
Operating hours since last reset.				
Factory setting	**0**			
Value range [h]	(0 To 65000) * 1			

Timeout Error Counter	**Index 124**	**Subindex 0**	**RecordT (48 Bit)**	**ReadOnly**
Counting violations of stroke time limit.				
Total Main		Subindex 1	UIntegerT (16 Bit)	
Counting the main timeout error.				
Factory setting	**0**			
Value range	(0 To 65000)			
Total Upper Seat Lift		Subindex 2	UIntegerT (16 Bit)	
Counting the upper seat lift timeout error.				
Factory setting	**0**			
Value range	(0 To 65000)			
Total Lower Seat Lift		Subindex 3	UIntegerT (16 Bit)	
Counting the lower eat lift timeout error.				
Factory setting	**0**			
Value range	(0 To 65000)			

Resettable timeout Error Counter	**Index 125**	**Subindex 0**	**RecordT (48 Bit)**	**ReadOnly**
Counting violations of stroke time limit since last reset.				
Resettable Main		Subindex 1	UIntegerT (16 Bit)	
Counting the main timeout error since last reset.				
Value range	(0 To 65000)			
Resettable Upper Seat Lift		Subindex 2	UIntegerT (16 Bit)	
Counting the upper seat lift timeout error since last reset.				
Value range	(0 To 65000)			
Resettable Lower Seat Lift		Subindex 3	UIntegerT (16 Bit)	
Counting the lower seat lift timeout error since last reset.				
Value range	(0 To 65000)			

Temperature	**Index 126**	**Subindex 0**	**RecordT (48 Bit)**	**ReadOnly**
Temperature monitoring				

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Current		Subindex 1	IntegerT (16 Bit)
Current core temperature			
Value range [°C]	(-20 To 100) * 1		
Minimum		Subindex 2	IntegerT (16 Bit)
Minimum temperature to date			
Value range [°C]	(-20 To 100) * 1		
Maximum		Subindex 3	IntegerT (16 Bit)
Maximum temperature to date			
Value range [°C]	(-20 To 100) * 1		

Supply voltage	Index 127	Subindex 0	RecordT (32 Bit)	ReadOnly
Device supply voltage.				
Current		Subindex 1	UIntegerT (16 Bit)	
Internal voltage.				
Value range [V]	(0 To 300) * 0.1 32764	(No Data)		
Minimum		Subindex 2	UIntegerT (16 Bit)	
Internal minimum voltage.				
Value range [V]	(0 To 300) * 0.1 32764	(No Data)		

Active events	Index 88	Subindex 0	RecordT (32 Bit)	ReadOnly
Bit mask of current pending IO-Link events				
0x8DFF		bitOffset 5	BooleanT	
Test Event 2				
Factory setting Value range	**0** 0 1	**(Inactive)** (Inactive) (Active)		
0x8DFE		bitOffset 4	BooleanT	
Test Event 1				
Factory setting Value range	**0** 0 1	**(Inactive)** (Inactive) (Active)		
0x5111		bitOffset 3	BooleanT	
Supply voltage underrun				
Factory setting Value range	**0** 0 1	**(Inactive)** (Inactive) (Active)		
0x4220		bitOffset 2	BooleanT	
Temperature underrun				
Factory setting Value range	**0** 0 1	**(Inactive)** (Inactive) (Active)		
0x4210		bitOffset 1	BooleanT	
Temperature overrun				
Factory setting Value range	**0** 0 1	**(Inactive)** (Inactive) (Active)		
0x5010		bitOffset 0	BooleanT	
Component malfunction				
Factory setting Value range	**0** 0 1	**(Inactive)** (Inactive) (Active)		

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BLOB	Index 49	Subindex 0	IntegerT (16 Bit)	ReadOnly
Status of data package readout.				
Factory setting	**-4096**	**(Teaching)**		
Value range	0	(Idle)		
	-4096	(Teaching)		
	-4097	(Position)		
	-4098	(Events)		
	-4099	(Counter)		

8.3 Latest valve state information

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)			

Latest energized position (main)	Index 115	Subindex 0	RecordT (80 Bit)	ReadOnly
FIFO: last 5 energized positions				
#1		Subindex 1	IntegerT (16 Bit)	
Latest energized position #1				
Factory setting	**0**	**(No Data)**		
Value range [mm]	(120 To 1180) * 0.1			
	0	(No Data)		
#2		Subindex 2	IntegerT (16 Bit)	
Latest energized position #2				
Factory setting	**0**	**(No Data)**		
Value range [mm]	(120 To 1180) * 0.1			
	0	(No Data)		
#3		Subindex 3	IntegerT (16 Bit)	
Latest energized position #3				
Factory setting	**0**	**(No Data)**		
Value range [mm]	(120 To 1180) * 0.1			
	0	(No Data)		
#4		Subindex 4	IntegerT (16 Bit)	
Latest energized position #4				
Factory setting	**0**	**(No Data)**		
Value range [mm]	(120 To 1180) * 0.1			
	0	(No Data)		
#5		Subindex 5	IntegerT (16 Bit)	
Latest energized position #5				
Factory setting	**0**	**(No Data)**		
Value range [mm]	(120 To 1180) * 0.1			
	0	(No Data)		

Latest de-energized position	Index 116	Subindex 0	RecordT (80 Bit)	ReadOnly
FIFO: last 5 de-energized positions				
#1		Subindex 1	IntegerT (16 Bit)	
Latest de-energized position #1				
Factory setting	**0**	**(No Data)**		
Value range [mm]	(120 To 1180) * 0.1			
	0	(No Data)		

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#2		Subindex 2	IntegerT (16 Bit)
Latest de-energized position #2			
Factory setting	**0**	**(No Data)**	
Value range [mm]	(120 To 1180) * 0.1		
	0	(No Data)	
#3		Subindex 3	IntegerT (16 Bit)
Latest de-energized position #3			
Factory setting	**0**	**(No Data)**	
Value range [mm]	(120 To 1180) * 0.1		
	0	(No Data)	
#4		Subindex 4	IntegerT (16 Bit)
Latest de-energized position #4			
Factory setting	**0**	**(No Data)**	
Value range [mm]	(120 To 1180) * 0.1		
	0	(No Data)	
#5		Subindex 5	IntegerT (16 Bit)
Latest de-energized position #5			
Factory setting	**0**	**(No Data)**	
Value range [mm]	(120 To 1180) * 0.1		
	0	(No Data)	

Latest energize time duration SV1	**Index 117**	**Subindex 0**	**RecordT (160 Bit)**	**ReadOnly**
FIFO: last 5 energize time durations of SV1				
#1		Subindex 1	IntegerT (32 Bit)	
Latest energize time duration SV1 #1				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647) * 1			
	0	(No Data)		
#2		Subindex 2	IntegerT (32 Bit)	
Latest energize time duration SV1 #2				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647) * 1			
	0	(No Data)		
#3		Subindex 3	IntegerT (32 Bit)	
Latest energize time duration SV1 #3				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647) * 1			
	0	(No Data)		
#4		Subindex 4	IntegerT (32 Bit)	
Latest energize time duration SV1 #4				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647) * 1			
	0	(No Data)		
#5		Subindex 5	IntegerT (32 Bit)	
Latest energize time duration SV1 #5				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647) * 1			
	0	(No Data)		

Latest energize time duration SV2	**Index 118**	**Subindex 0**	**RecordT (160 Bit)**	**ReadOnly**
FIFO: last 5 energize time durations of SV2				

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#1		Subindex 1	IntegerT (32 Bit)
Latest energize time duration SV2 #1			
Factory setting	**0**	**(No Data)**	
Value range [ms]	(1 To 2147483647)	* 1	
	0	(No Data)	
#2		Subindex 2	IntegerT (32 Bit)
Latest energize time duration SV2 #2			
Factory setting	**0**	**(No Data)**	
Value range [ms]	(1 To 2147483647)	* 1	
	0	(No Data)	
#3		Subindex 3	IntegerT (32 Bit)
Latest energize time duration SV2 #3			
Factory setting	**0**	**(No Data)**	
Value range [ms]	(1 To 2147483647)	* 1	
	0	(No Data)	
#4		Subindex 4	IntegerT (32 Bit)
Latest energize time duration SV2 #4			
Factory setting	**0**	**(No Data)**	
Value range [ms]	(1 To 2147483647)	* 1	
	0	(No Data)	
#5		Subindex 5	IntegerT (32 Bit)
Latest energize time duration SV2 #5			
Factory setting	**0**	**(No Data)**	
Value range [ms]	(1 To 2147483647)	* 1	
	0	(No Data)	

Latest energize time duration SV3	**Index 119**	**Subindex 0**	**RecordT (160 Bit)**	**ReadOnly**
FIFO: last 5 energize time durations of SV3				
#1		Subindex 1	IntegerT (32 Bit)	
Latest energize time duration SV3 #1				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647)	* 1		
	0	(No Data)		
#2		Subindex 2	IntegerT (32 Bit)	
Latest energize time duration SV3 #2				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647)	* 1		
	0	(No Data)		
#3		Subindex 3	IntegerT (32 Bit)	
Latest energize time duration SV3 #3				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647)	* 1		
	0	(No Data)		
#4		Subindex 4	IntegerT (32 Bit)	
Latest energize time duration SV3 #4				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647)	* 1		
	0	(No Data)		
#5		Subindex 5	IntegerT (32 Bit)	
Latest energize time duration SV3 #5				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647)	* 1		
	0	(No Data)		

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Latest de-energize time duration SV1	Index 120	Subindex 0	RecordT (160 Bit)	ReadOnly
FIFO: last 5 de-energize time durations of SV1				
#1		Subindex 1	IntegerT (32 Bit)	
Latest de-energize time duration SV1 #1				
Factory setting Value range [ms]	**0** (1 To 2147483647) 0	**(No Data)** * 1 (No Data)		
#2		Subindex 2	IntegerT (32 Bit)	
Latest de-energize time duration SV1 #2				
Factory setting Value range [ms]	**0** (1 To 2147483647) 0	**(No Data)** * 1 (No Data)		
#3		Subindex 3	IntegerT (32 Bit)	
Latest de-energize time duration SV1 #3				
Factory setting Value range [ms]	**0** (1 To 2147483647) 0	**(No Data)** * 1 (No Data)		
#4		Subindex 4	IntegerT (32 Bit)	
Latest de-energize time duration SV1 #4				
Factory setting Value range [ms]	**0** (1 To 2147483647) 0	**(No Data)** * 1 (No Data)		
#5		Subindex 5	IntegerT (32 Bit)	
Latest de-energize time duration SV1 #5				
Factory setting Value range [ms]	**0** (1 To 2147483647) 0	**(No Data)** * 1 (No Data)		

Latest de-energize time duration SV2	Index 121	Subindex 0	RecordT (160 Bit)	ReadOnly
FIFO: last 5 de-energize time durations of SV2				
#1		Subindex 1	IntegerT (32 Bit)	
Latest de-energize time duration SV2 #1				
Factory setting Value range [ms]	**0** (1 To 2147483647) 0	**(No Data)** * 1 (No Data)		
#2		Subindex 2	IntegerT (32 Bit)	
Latest de-energize time duration SV2 #2				
Factory setting Value range [ms]	**0** (1 To 2147483647) 0	**(No Data)** * 1 (No Data)		
#3		Subindex 3	IntegerT (32 Bit)	
Latest de-energize time duration SV2 #3				
Factory setting Value range [ms]	**0** (1 To 2147483647) 0	**(No Data)** * 1 (No Data)		
#4		Subindex 4	IntegerT (32 Bit)	
Latest de-energize time duration SV2 #4				
Factory setting Value range [ms]	**0** (1 To 2147483647) 0	**(No Data)** * 1 (No Data)		

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#5		Subindex 5	IntegerT (32 Bit)
Latest de-energize time duration SV2 #5			
Factory setting	**0**	**(No Data)**	
Value range [ms]	(1 To 2147483647)	* 1	
	0	(No Data)	

Latest de-energize time duration SV3	Index 122	Subindex 0	RecordT (160 Bit)	ReadOnly
FIFO: last 5 de-energize time durations of SV3				
#1		Subindex 1	IntegerT (32 Bit)	
Latest de-energize time duration SV3 #1				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647)	* 1		
	0	(No Data)		
#2		Subindex 2	IntegerT (32 Bit)	
Latest de-energize time duration SV3 #2				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647)	* 1		
	0	(No Data)		
#3		Subindex 3	IntegerT (32 Bit)	
Latest de-energize time duration SV3 #3				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647)	* 1		
	0	(No Data)		
#4		Subindex 4	IntegerT (32 Bit)	
Latest de-energize time duration SV3 #4				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647)	* 1		
	0	(No Data)		
#5		Subindex 5	IntegerT (32 Bit)	
Latest de-energize time duration SV3 #5				
Factory setting	**0**	**(No Data)**		
Value range [ms]	(1 To 2147483647)	* 1		
	0	(No Data)		

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
0x5010 20496d	3 (Functional check)	valid	Error	Component malfunction	Repair or exchange
0x5111 20753d	2 (Out of specification)	valid	Warning	Primary supply voltage underrun	Check valid voltage range
0x8DFE 36350d	1 (Maintenance required)	valid	Warning	Test Event 1	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	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.
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.