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IO-Link Implementation

		IO-Link Version 1.0	IO-Link Version 1.1
Vendor ID		234 (0x00EA)	
Device ID	SCTSi with up to 4 ejectors	100265 (0x0187A9)	100261 (0x0187A5)
	SCTSi with up to 8 ejectors	100266 (0x0187AA)	100262 (0x0187A6)
	SCTSi with up to 12 ejectors	100267 (0x0187AB)	100263 (0x0187A7)
	SCTSi with up to 16 ejectors	100268 (0x0187AC)	100264 (0x0187A8)
SIO-Mode		no	
Baudrate		38.4 kBd (COM2)	
Minimum cycle time	SCTSi with up to 4 ejectors	4.2 ms	
	SCTSi with up to 8 ejectors	4.8 ms	
	SCTSi with up to 12 ejectors	5.4 ms	
	SCTSi with up to 16 ejectors	6.0 ms	
Processdata input	SCTSi with up to 4 ejectors	5 byte	
	SCTSi with up to 8 ejectors	6 byte	
	SCTSi with up to 12 ejectors	7 byte	
	SCTSi with up to 16 ejectors	8 byte	
Processdata output	SCTSi with up to 4 ejectors	3 byte	
	SCTSi with up to 8 ejectors	4 byte	
	SCTSi with up to 12 ejectors	5 byte	
	SCTSi with up to 16 ejectors	6 byte	

Process Data

Process Data In	Name	Bit		Access		Remark
PD In Byte 0	Number of device which generatetd a condition monitoring or error event	4 … 0		ro		number of device which generated a warning or error 0: no warning or error 1 … 16: number of SCPS ejector 17: Contol-Unit 18 … 31: reserved
	EPC-Select acknowledged	5		ro		Acknowledge that EPC values 1 and 2 have been switched according to EPC-Select: 0 - EPC-Select = 00 1 - otherwise
	Device status	7 … 6		ro		00 - [green] Device is working optimally 01 - [yellow] Device is working, maintenance necessary 10 - [orange] Device is working, but there are warnings in the Control-Unit 11 - [red] Device is not working properly, there are errors in the Control-Unit
PD In Byte 1	EPC value 1	7…0		ro		EPC value 1 (byte) - holds 8bit value as selected by EPC-Select 0/1 For Device-Select 00: 00 - Error-Byte [ISDU 130.17] 01 - Warning-Byte [ISDU 146.17] 10 - reserved 11 - reserved For Device-Select 01 … 16: 00 - Error-Byte [ISDU 130.#] 01 - Warning-Byte [ISDU 146.#] 10 - reserved 11 - Leakage of last cycle (mbar/sec)
PD In Byte 2	EPC value 2, high-byte	7…0		ro		For Device-Select 00: 00 - Primary supply voltage (0.1 Volt) 01 - Auxiliary supply voltage (0.1 Volt) 10 - reserved 11 - Total Air cons. of last cycle (0.1 NL) For Device-Select 01 … 16: 00 - System vacuum (mbar) 01 - Evacuation time t1 (msec) 10 - Last free-flow vacuum (mbar) 11 - Air consump of last cycle (0.1 NL)
PD In Byte 3	EPC value 2, low-byte	7…0		ro		
PD In Byte 4	Air saving function (H1) Ejector #1	0		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #1	1		ro		Vacuum is over H2 & not yet under H2-h2
	Air saving function (H1) Ejector #2	2		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #2	3		ro		Vacuum is over H2 & not yet under H2-h2
	Air saving function (H1) Ejector #3	4		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #3	5		ro		Vacuum is over H2 & not yet under H2-h2
	Air saving function (H1) Ejector #4	6		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #4	7		ro		Vacuum is over H2 & not yet under H2-h2
PD In Byte 5 (if available - see PD-In length) (for up to 8 ejectors)	Air saving function (H1) Ejector #5	0		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #5	1		ro		Vacuum is over H2 & not yet under H2-h2
	Air saving function (H1) Ejector #6	2		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #6	3		ro		Vacuum is over H2 & not yet under H2-h2
	Air saving function (H1) Ejector #7	4		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #7	5		ro		Vacuum is over H2 & not yet under H2-h2
	Air saving function (H1) Ejector #8	6		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #8	7		ro		Vacuum is over H2 & not yet under H2-h2
PD In Byte 6 (if available - see PD-In length) (for up to 12 ejectors)	Air saving function (H1) Ejector #9	0		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #9	1		ro		Vacuum is over H2 & not yet under H2-h2
	Air saving function (H1) Ejector #10	2		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #10	3		ro		Vacuum is over H2 & not yet under H2-h2
	Air saving function (H1) Ejector #11	4		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #11	5		ro		Vacuum is over H2 & not yet under H2-h2
	Air saving function (H1) Ejector #12	6		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #12	7		ro		Vacuum is over H2 & not yet under H2-h2
PD In Byte 7 (if available - see PD-In length) (for up to 16 ejectors)	Air saving function (H1) Ejector #13	0		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #13	1		ro		Vacuum is over H2 & not yet under H2-h2
	Air saving function (H1) Ejector #14	2		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #14	3		ro		Vacuum is over H2 & not yet under H2-h2

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	Air saving function (H1) Ejector #15	4		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #15	5		ro		Vacuum is over H2 & not yet under H2-h2
	Air saving function (H1) Ejector #16	6		ro		Vacuum is over H1 & not yet under H1-h1
	Part present (H2) Ejector #16	7		ro		Vacuum is over H2 & not yet under H2-h2
Process Data Out	Name	Bit		Access		Remark
PD Out Byte 0	Device-Select	4 … 0		wo		number of device which will send EPC Data 0: Contol-Unit 1 … 16: number of SCPS ejector 17 … 31: reserved
	-	5		wo		reserved
	EPC-Select 0	6		wo		function of EPC values 1 and 2 (see PD In Byte 1…3) for selected device
	EPC-Select 1	7		wo		
PD Out Byte 1	Input pressure	7…0		wo		Pressure value from external sensor (unit: 0.1 bar)
PD Out Byte 2	Vacuum Ejector #1	0		wo		Vacuum on/off
	Blow-off Ejector #1	1		wo		Activate Blow-off
	Vacuum Ejector #2	2		wo		Vacuum on/off
	Blow-off Ejector #2	3		wo		Activate Blow-off
	Vacuum Ejector #3	4		wo		Vacuum on/off
	Blow-off Ejector #3	5		wo		Activate Blow-off
	Vacuum Ejector #4	6		wo		Vacuum on/off
	Blow-off Ejector #4	7		wo		Activate Blow-off
PD Out Byte 3 (if available - see PD Out length) (for up to 8 ejectors)	Vacuum Ejector #5	0		wo		Vacuum on/off
	Blow-off Ejector #5	1		wo		Activate Blow-off
	Vacuum Ejector #6	2		wo		Vacuum on/off
	Blow-off Ejector #6	3		wo		Activate Blow-off
	Vacuum Ejector #7	4		wo		Vacuum on/off
	Blow-off Ejector #7	5		wo		Activate Blow-off
	Vacuum Ejector #8	6		wo		Vacuum on/off
	Blow-off Ejector #8	7		wo		Activate Blow-off
PD Out Byte 4 (if available - see PD Out length) (for up to 12 ejectors)	Vacuum Ejector #9	0		wo		Vacuum on/off
	Blow-off Ejector #9	1		wo		Activate Blow-off
	Vacuum Ejector #10	2		wo		Vacuum on/off
	Blow-off Ejector #10	3		wo		Activate Blow-off
	Vacuum Ejector #11	4		wo		Vacuum on/off
	Blow-off Ejector #11	5		wo		Activate Blow-off
	Vacuum Ejector #12	6		wo		Vacuum on/off
	Blow-off Ejector #12	7		wo		Activate Blow-off
PD Out Byte 5 (if available - see PD Out length) (for up to 16 ejectors)	Vacuum Ejector #13	0		wo		Vacuum on/off
	Blow-off Ejector #13	1		wo		Activate Blow-off
	Vacuum Ejector #14	2		wo		Vacuum on/off
	Blow-off Ejector #14	3		wo		Activate Blow-off
	Vacuum Ejector #15	4		wo		Vacuum on/off
	Blow-off Ejector #15	5		wo		Activate Blow-off
	Vacuum Ejector #16	6		wo		Vacuum on/off
	Blow-off Ejector #16	7		wo		Activate Blow-off

ISDU Parameters

ISDU Index dec	ISDU Index hex	Subindex dec	Parameter	Data width	Value range	Access	Default value	Remark
Identification								
			Device Management					
16	0x0010	0	Vendor name	15 bytes		ro	J. Schmalz GmbH	Manufacturer designation
17	0x0011	0	Vendor text	15 bytes		ro	www.schmalz.com	Internet address
18	0x0012	0	Product name	32 bytes		ro	SCTSi-IOL	General product name
19	0x0013	0	Product ID	1...32 bytes		ro	SCTSi-IOL	Product variant name
20	0x0014	0	Product text	30 bytes		ro	SCTSi-IOL	Order-Code (partial); for complete Order-Code read Index 0xFE
21	0x0015	0	Serial number	9 bytes		ro	000000001	Serial number
22	0x0016	0	Hardware revision	2 bytes		ro	04	Hardware revison
23	0x0017	0	Firmware revision	4 bytes		ro	1.07	Firmware revision
240	0x00F0	0	Unique ID	20 bytes		ro		unique device identification number
241	0x00F1	0	Device type and features	11 bytes		ro		type code of device features
250	0x00FA	0	Article number	14 bytes		ro	10.02.02.*	Order-Nr.
251	0x00FB	0	Article revision	2 bytes		ro	00	Article revision
252	0x00FC	0	Production date	10 bytes		ro	G16	Date of production
254	0x00FE	0	Product text (detailed)	1….64 bytes		ro	SCTSi-IOL-14-AB-4D01…	Detailed type description of the device
354	0x0162	0	Product Configuration (detailed)	1….67 bytes		ro	D00-D01-D02-D03-D04…	Detailed configuration of the device
			Device Localization					
24	0x0018	0	Application specific tag	1 … 32 bytes		rw	***	Asset-ID

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242	0x00F2	0	Equipment identification	1…64 bytes		rw	***	User string to store e.g. identification name from schematic
246	0x00F6	0	Geolocation	1…64 bytes		rw	***	User string to store geolocation from handheld device
247	0x00F7	0	IODD Web Link	1…64 bytes		rw	***	User string to store web link to IODD file
248	0x00F8	0	NFC Web Link	1…64 bytes		rw	https://myproduct.schmalz.com/#/	Web Link to NFC App (base URL for NFC tag)
249	0x00F9	0	Storage location	1…32 bytes		rw	***	User string to store storage location
253	0x00FD	0	Installation Date	1…16 bytes		rw	***	User string to store date of installation
Parameter								
Device Settings								
Commands								
2	0x0002		System command	1 byte	5, 130, 165, 167, 168	wo	0x82	0x05 (dec 5): Force upload of parameter data into the master 0x82 (dec 130): Reset device parameters to factory defaults 0xA5 (dec 165): Calibrate vacuum sensor of all ejectors 0xA7 (dec 167): Reset erasable counters in all ejectors 0xA8 (dec 168): Reset voltage min/max
Access Control								
90	0x005A	0	Extended device locks	1 byte	0 - 3	rw	0	Bit 0: NFC write lock Bit 1: NFC disable Bit 2: local Firmware update (Firmware update locked) Bit 3: local user interface locked (manual mode in ejectors locked) Bit 4: IO-Link event lock (suppress sending io-link events)
91	0x005B	0	PIN code	2 bytes	0-999	rw	0	Pass code for writing data from NFC app
Initial Settings								
110	0x006E	1…16	Blow-mode for ejectors #1-#16	16x 1 byte	0 - 2	rw	0	Blow mode setting for each ejector subindex corresponds to ejector number subindex 0 for access to full array (16 bytes) 0x00 = Externally controlled blow-off 0x01 = Internally controlled blow-off – time-dependent 0x02 = Externally controlled blow-off – time-dependent
Process Settings								
100	0x0064	1…16	Setpoint H1 for ejectors #1-#16	16x 2 bytes	998 >= H1 >= (H2+h1)	rw	750	Unit: 1 mbar. Subindex corresponds to ejector number
101	0x0065	1…16	Hysteresis h1 for ejectors #1-#16	16x 2 bytes	(H1-H2) >= h1 > 10	rw	150	Unit: 1 mbar. Subindex corresponds to ejector number
102	0x0066	1…16	Setpoint H2 for ejectors #1-#16	16x 2 bytes	(H1-h1 >= H2 >= (h2+2)	rw	550	Unit: 1 mbar. Subindex corresponds to ejector number
103	0x0067	1…16	Hysteresis h2 for ejectors #1-#16	16x 2 bytes	(H2-2) >= h2 >= 10	rw	10	Unit: 1 mbar. Subindex corresponds to ejector number
106	0x006A	1…16	Duration automatic blow for ejectors #1 - #16	16x 2 bytes	0 - 9999	rw	200	Unit: 1 ms. Subindex corresponds to ejector number
107	0x006B	1…16	Permissible evacuation time for ejectors #1 - #16	16x 2 bytes	0 - 9999	rw	2000	Unit: 1 ms. Subindex corresponds to ejector number
108	0x006C	1…16	Permissible leakage rate for ejectors #1 - #16	16x 2 bytes	0 - 999	rw	250	Unit: 1 mbar/sec. Subindex corresponds to ejector number
109	0x006D	1…16	Control-mode for ejector #1 - #16	16x 1 byte	0 - 5	rw	0x0002	Control mode settings for each ejector Subindex corresponds to ejector number subindex 0 for access to full array (16 bytes) 0x00 = control is not active, H1 in hysteresis mode 0x01 = control is not active, H1 in comparator mode 0x02 = control is active 0x03 = control is active with supervision of leakage 0x04 = control is active, continuous succing disabled 0x05 = control is active with supervision of leakage, continuous succing disabled
Observation								
Monitoring								
Process Data								
40	0x0028	0	Process Data In Copy	see PD in		ro	-	Copy of currently active process data input (length see above)
41	0x0029	0	Process Data Out Copy	see PD out		ro	-	Copy of currently active process data output (length see above)
66	0x0042	0	Primary supply voltage	6 bytes		ro	-	subindex 0 for access to all primary supply voltage values
66	0x0042	1	Primary supply voltage, live	2 bytes		ro	-	Primary supply voltage (US) as measured by the device (unit: 0.1 Volt)
66	0x0042	2	Primary supply voltage, min	2 bytes		ro	-	min. value of primary supply voltage (unit: 0.1 Volt) - rest by ISDU 0x0002
66	0x0042	3	Primary supply voltage, max	2 bytes		ro	-	max. value of primary supply voltage (unit: 0.1 Volt) - rest by ISDU 0x0002
67	0x0043	0	Auxiliary supply voltage	6 bytes		ro	-	subindex 0 for access to all auxiliary supply voltage values
67	0x0043	1	Auxiliary supply voltage, live	2 bytes		ro	-	Auxiliary supply voltage (UA) as measured by the device (unit: 0.1 Volt)
67	0x0043	2	Auxiliary supply voltage, min	2 bytes		ro	-	min. value of auxiliary supply voltage (unit: 0.1 Volt) - rest by ISDU 0x0002
67	0x0043	3	Auxiliary supply voltage, max	2 bytes		ro	-	max. value of auxiliary supply voltage (unit: 0.1 Volt) - rest by ISDU 0x0002
148	0x0094	0	Evacuation time t0	32 bytes		ro		subindex 0 for access to all ejectors
148	0x0094	1	Evacuation time t0 for ejector #1	2 bytes	0 - 65.535	ro	0	Time from start of suction to H2 (unit: 1 ms)
148	0x0094	2	Evacuation time t0 for ejector #2	2 bytes	0 - 65.535	ro	0	
148	0x0094	3	Evacuation time t0 for ejector #3	2 bytes	0 - 65.535	ro	0	
148	0x0094	4	Evacuation time t0 for ejector #4	2 bytes	0 - 65.535	ro	0	
148	0x0094	5	Evacuation time t0 for ejector #5	2 bytes	0 - 65.535	ro	0	
148	0x0094	6	Evacuation time t0 for ejector #6	2 bytes	0 - 65.535	ro	0	
148	0x0094	7	Evacuation time t0 for ejector #7	2 bytes	0 - 65.535	ro	0	
148	0x0094	8	Evacuation time t0 for ejector #8	2 bytes	0 - 65.535	ro	0	
148	0x0094	9	Evacuation time t0 for ejector #9	2 bytes	0 - 65.535	ro	0	
148	0x0094	10	Evacuation time t0 for ejector #10	2 bytes	0 - 65.535	ro	0	
148	0x0094	11	Evacuation time t0 for ejector #11	2 bytes	0 - 65.535	ro	0	
148	0x0094	12	Evacuation time t0 for ejector #12	2 bytes	0 - 65.535	ro	0	
148	0x0094	13	Evacuation time t0 for ejector #13	2 bytes	0 - 65.535	ro	0	
148	0x0094	14	Evacuation time t0 for ejector #14	2 bytes	0 - 65.535	ro	0	
148	0x0094	15	Evacuation time t0 for ejector #15	2 bytes	0 - 65.535	ro	0	
148	0x0094	16	Evacuation time t0 for ejector #16	2 bytes	0 - 65.535	ro	0	
149	0x0095	0	Evacuation time t1	32 bytes		ro		subindex 0 for access to all ejectors

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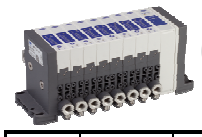
149	0x0095	1	Evacuation time t1 for ejector #1	2 bytes	0 - 65.535	ro	0	Time from start of suction to H2 (unit: 1 ms)
149	0x0095	2	Evacuation time t1 for ejector #2	2 bytes	0 - 65.535	ro	0	
149	0x0095	3	Evacuation time t1 for ejector #3	2 bytes	0 - 65.535	ro	0	
149	0x0095	4	Evacuation time t1 for ejector #4	2 bytes	0 - 65.535	ro	0	
149	0x0095	5	Evacuation time t1 for ejector #5	2 bytes	0 - 65.535	ro	0	
149	0x0095	6	Evacuation time t1 for ejector #6	2 bytes	0 - 65.535	ro	0	
149	0x0095	7	Evacuation time t1 for ejector #7	2 bytes	0 - 65.535	ro	0	
149	0x0095	8	Evacuation time t1 for ejector #8	2 bytes	0 - 65.535	ro	0	
149	0x0095	9	Evacuation time t1 for ejector #9	2 bytes	0 - 65.535	ro	0	
149	0x0095	10	Evacuation time t1 for ejector #10	2 bytes	0 - 65.535	ro	0	
149	0x0095	11	Evacuation time t1 for ejector #11	2 bytes	0 - 65.535	ro	0	
149	0x0095	12	Evacuation time t1 for ejector #12	2 bytes	0 - 65.535	ro	0	
149	0x0095	13	Evacuation time t1 for ejector #13	2 bytes	0 - 65.535	ro	0	
149	0x0095	14	Evacuation time t1 for ejector #14	2 bytes	0 - 65.535	ro	0	
149	0x0095	15	Evacuation time t1 for ejector #15	2 bytes	0 - 65.535	ro	0	
149	0x0095	16	Evacuation time t1 for ejector #16	2 bytes	0 - 65.535	ro	0	
156	0x009C	0	Air consumption per cycle	32 bytes		ro		subindex 0 for access to all ejectors
156	0x009C	1	Air consumption per cycle for ejector #1	2 bytes	0 - 65535	ro	0	Air consumption of last suction cycle (unit: 0.1 Nl)
156	0x009C	2	Air consumption per cycle for ejector #2	2 bytes	0 - 65535	ro	0	
156	0x009C	3	Air consumption per cycle for ejector #3	2 bytes	0 - 65535	ro	0	
156	0x009C	4	Air consumption per cycle for ejector #4	2 bytes	0 - 65535	ro	0	
156	0x009C	5	Air consumption per cycle for ejector #5	2 bytes	0 - 65535	ro	0	
156	0x009C	6	Air consumption per cycle for ejector #6	2 bytes	0 - 65535	ro	0	
156	0x009C	7	Air consumption per cycle for ejector #7	2 bytes	0 - 65535	ro	0	
156	0x009C	8	Air consumption per cycle for ejector #8	2 bytes	0 - 65535	ro	0	
156	0x009C	9	Air consumption per cycle for ejector #9	2 bytes	0 - 65535	ro	0	
156	0x009C	10	Air consumption per cycle for ejector #10	2 bytes	0 - 65535	ro	0	
156	0x009C	11	Air consumption per cycle for ejector #11	2 bytes	0 - 65535	ro	0	
156	0x009C	12	Air consumption per cycle for ejector #12	2 bytes	0 - 65535	ro	0	
156	0x009C	13	Air consumption per cycle for ejector #13	2 bytes	0 - 65535	ro	0	
156	0x009C	14	Air consumption per cycle for ejector #14	2 bytes	0 - 65535	ro	0	
156	0x009C	15	Air consumption per cycle for ejector #15	2 bytes	0 - 65535	ro	0	
156	0x009C	16	Air consumption per cycle for ejector #16	2 bytes	0 - 65535	ro	0	
160	0x00A0	0	Leakage rate	32 bytes		ro		subindex 0 for access to all ejectors
160	0x00A0	1	Leakage rate for ejector #1	2 bytes	0 - 8000	ro	0	Leakage of last suction cycle (unit: 1 mbar/sec)
160	0x00A0	2	Leakage rate for ejector #2	2 bytes	0 - 8000	ro	0	
160	0x00A0	3	Leakage rate for ejector #3	2 bytes	0 - 8000	ro	0	
160	0x00A0	4	Leakage rate for ejector #4	2 bytes	0 - 8000	ro	0	
160	0x00A0	5	Leakage rate for ejector #5	2 bytes	0 - 8000	ro	0	
160	0x00A0	6	Leakage rate for ejector #6	2 bytes	0 - 8000	ro	0	
160	0x00A0	7	Leakage rate for ejector #7	2 bytes	0 - 8000	ro	0	
160	0x00A0	8	Leakage rate for ejector #8	2 bytes	0 - 8000	ro	0	
160	0x00A0	9	Leakage rate for ejector #9	2 bytes	0 - 8000	ro	0	
160	0x00A0	10	Leakage rate for ejector #10	2 bytes	0 - 8000	ro	0	
160	0x00A0	11	Leakage rate for ejector #11	2 bytes	0 - 8000	ro	0	
160	0x00A0	12	Leakage rate for ejector #12	2 bytes	0 - 8000	ro	0	
160	0x00A0	13	Leakage rate for ejector #13	2 bytes	0 - 8000	ro	0	
160	0x00A0	14	Leakage rate for ejector #14	2 bytes	0 - 8000	ro	0	
160	0x00A0	15	Leakage rate for ejector #15	2 bytes	0 - 8000	ro	0	
160	0x00A0	16	Leakage rate for ejector #16	2 bytes	0 - 8000	ro	0	
161	0x00A1	0	Free-flow vacuum	32 bytes		ro		subindex 0 for access to all ejectors
161	0x00A1	1	Free-flow vacuum for ejector #1	2 bytes	0 - 999	ro	0	Last measured free-flow vacuum (unit: 1 mbar)
161	0x00A1	2	Free-flow vacuum for ejector #2	2 bytes	0 - 999	ro	0	
161	0x00A1	3	Free-flow vacuum for ejector #3	2 bytes	0 - 999	ro	0	
161	0x00A1	4	Free-flow vacuum for ejector #4	2 bytes	0 - 999	ro	0	
161	0x00A1	5	Free-flow vacuum for ejector #5	2 bytes	0 - 999	ro	0	
161	0x00A1	6	Free-flow vacuum for ejector #6	2 bytes	0 - 999	ro	0	
161	0x00A1	7	Free-flow vacuum for ejector #7	2 bytes	0 - 999	ro	0	
161	0x00A1	8	Free-flow vacuum for ejector #8	2 bytes	0 - 999	ro	0	
161	0x00A1	9	Free-flow vacuum for ejector #9	2 bytes	0 - 999	ro	0	
161	0x00A1	10	Free-flow vacuum for ejector #10	2 bytes	0 - 999	ro	0	
161	0x00A1	11	Free-flow vacuum for ejector #11	2 bytes	0 - 999	ro	0	
161	0x00A1	12	Free-flow vacuum for ejector #12	2 bytes	0 - 999	ro	0	
161	0x00A1	13	Free-flow vacuum for ejector #13	2 bytes	0 - 999	ro	0	
161	0x00A1	14	Free-flow vacuum for ejector #14	2 bytes	0 - 999	ro	0	
161	0x00A1	15	Free-flow vacuum for ejector #15	2 bytes	0 - 999	ro	0	
161	0x00A1	16	Free-flow vacuum for ejector #16	2 bytes	0 - 999	ro	0	
164	0x00A4	0	max. reached vacuum in cycle	32 bytes		ro		subindex 0 for access to all ejectors
164	0x00A4	1	max. reached vacuum in cycle for ejector #1	2 bytes	0 - 999	ro	0	
164	0x00A4	2	max. reached vacuum in cycle for ejector #2	2 bytes	0 - 999	ro	0	



IO-Link

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164	0x00A4	3	max. reached vacuum in cycle for ejector #3	2 bytes	0 - 999	ro	0	will only be measured with control-mode (ISDU 0x006D) = 1
164	0x00A4	4	max. reached vacuum in cycle for ejector #4	2 bytes	0 - 999	ro	0	
164	0x00A4	5	max. reached vacuum in cycle for ejector #5	2 bytes	0 - 999	ro	0	
164	0x00A4	6	max. reached vacuum in cycle for ejector #6	2 bytes	0 - 999	ro	0	
164	0x00A4	7	max. reached vacuum in cycle for ejector #7	2 bytes	0 - 999	ro	0	
164	0x00A4	8	max. reached vacuum in cycle for ejector #8	2 bytes	0 - 999	ro	0	
164	0x00A4	9	max. reached vacuum in cycle for ejector #9	2 bytes	0 - 999	ro	0	
164	0x00A4	10	max. reached vacuum in cycle for ejector #10	2 bytes	0 - 999	ro	0	
164	0x00A4	11	max. reached vacuum in cycle for ejector #11	2 bytes	0 - 999	ro	0	
164	0x00A4	12	max. reached vacuum in cycle for ejector #12	2 bytes	0 - 999	ro	0	
164	0x00A4	13	max. reached vacuum in cycle for ejector #13	2 bytes	0 - 999	ro	0	
164	0x00A4	14	max. reached vacuum in cycle for ejector #14	2 bytes	0 - 999	ro	0	
164	0x00A4	15	max. reached vacuum in cycle for ejector #15	2 bytes	0 - 999	ro	0	
164	0x00A4	16	max. reached vacuum in cycle for ejector #16	2 bytes	0 - 999	ro	0	
			Communication Mode					
564	0x0234	0	Communication Mode	1 byte		ro		Currently active communication mode: 0x10 = IO-Link Revision 1.0 (set by master) 0x11 = IO-Link Revision 1.1 (set by master)
			Counters					
140	0x008C	0	Ejectors vacuum-on counter	64 bytes		ro		subindex 0 for access to all ejectors
140	0x008C	1	vacuum-on counter for ejector #1	4 bytes	0 - 999 mio	ro	0	Total number of suction cycles
140	0x008C	2	vacuum-on counter for ejector #2	4 bytes	0 - 999 mio	ro	0	
140	0x008C	3	vacuum-on counter for ejector #3	4 bytes	0 - 999 mio	ro	0	
140	0x008C	4	vacuum-on counter for ejector #4	4 bytes	0 - 999 mio	ro	0	
140	0x008C	5	vacuum-on counter for ejector #5	4 bytes	0 - 999 mio	ro	0	
140	0x008C	6	vacuum-on counter for ejector #6	4 bytes	0 - 999 mio	ro	0	
140	0x008C	7	vacuum-on counter for ejector #7	4 bytes	0 - 999 mio	ro	0	
140	0x008C	8	vacuum-on counter for ejector #8	4 bytes	0 - 999 mio	ro	0	
140	0x008C	9	vacuum-on counter for ejector #9	4 bytes	0 - 999 mio	ro	0	
140	0x008C	10	vacuum-on counter for ejector #10	4 bytes	0 - 999 mio	ro	0	
140	0x008C	11	vacuum-on counter for ejector #11	4 bytes	0 - 999 mio	ro	0	
140	0x008C	12	vacuum-on counter for ejector #12	4 bytes	0 - 999 mio	ro	0	
140	0x008C	13	vacuum-on counter for ejector #13	4 bytes	0 - 999 mio	ro	0	
140	0x008C	14	vacuum-on counter for ejector #14	4 bytes	0 - 999 mio	ro	0	
140	0x008C	15	vacuum-on counter for ejector #15	4 bytes	0 - 999 mio	ro	0	
140	0x008C	16	vacuum-on counter for ejector #16	4 bytes	0 - 999 mio	ro	0	
141	0x008D	0	Ejectors valve operating counter	64 bytes		ro		subindex 0 for access to all ejectors
141	0x008D	1	valve operating counter for ejector #1	4 bytes	0 - 999 mio	ro	0	Total number of times the suction valve has been switched on
141	0x008D	2	valve operating counter for ejector #2	4 bytes	0 - 999 mio	ro	0	
141	0x008D	3	valve operating counter for ejector #3	4 bytes	0 - 999 mio	ro	0	
141	0x008D	4	valve operating counter for ejector #4	4 bytes	0 - 999 mio	ro	0	
141	0x008D	5	valve operating counter for ejector #5	4 bytes	0 - 999 mio	ro	0	
141	0x008D	6	valve operating counter for ejector #6	4 bytes	0 - 999 mio	ro	0	
141	0x008D	7	valve operating counter for ejector #7	4 bytes	0 - 999 mio	ro	0	
141	0x008D	8	valve operating counter for ejector #8	4 bytes	0 - 999 mio	ro	0	
141	0x008D	9	valve operating counter for ejector #9	4 bytes	0 - 999 mio	ro	0	
141	0x008D	10	valve operating counter for ejector #10	4 bytes	0 - 999 mio	ro	0	
141	0x008D	11	valve operating counter for ejector #11	4 bytes	0 - 999 mio	ro	0	
141	0x008D	12	valve operating counter for ejector #12	4 bytes	0 - 999 mio	ro	0	
141	0x008D	13	valve operating counter for ejector #13	4 bytes	0 - 999 mio	ro	0	
141	0x008D	14	valve operating counter for ejector #14	4 bytes	0 - 999 mio	ro	0	
141	0x008D	15	valve operating counter for ejector #15	4 bytes	0 - 999 mio	ro	0	
141	0x008D	16	valve operating counter for ejector #16	4 bytes	0 - 999 mio	ro	0	
143	0x008F	0	Ejectors vacuum-on counter (erasable)	64 bytes		ro		subindex 0 for access to all ejectors
143	0x008F	1	erasable vacuum-on counter for ejector #1	4 bytes	0 - 999 mio	ro	0	number of suction cycles (since latest erasing)
143	0x008F	2	erasable vacuum-on counter for ejector #2	4 bytes	0 - 999 mio	ro	0	
143	0x008F	3	erasable vacuum-on counter for ejector #3	4 bytes	0 - 999 mio	ro	0	
143	0x008F	4	erasable vacuum-on counter for ejector #4	4 bytes	0 - 999 mio	ro	0	
143	0x008F	5	erasable vacuum-on counter for ejector #5	4 bytes	0 - 999 mio	ro	0	
143	0x008F	6	erasable vacuum-on counter for ejector #6	4 bytes	0 - 999 mio	ro	0	
143	0x008F	7	erasable vacuum-on counter for ejector #7	4 bytes	0 - 999 mio	ro	0	
143	0x008F	8	erasable vacuum-on counter for ejector #8	4 bytes	0 - 999 mio	ro	0	
143	0x008F	9	erasable vacuum-on counter for ejector #9	4 bytes	0 - 999 mio	ro	0	
143	0x008F	10	erasable vacuum-on counter for ejector #10	4 bytes	0 - 999 mio	ro	0	
143	0x008F	11	erasable vacuum-on counter for ejector #11	4 bytes	0 - 999 mio	ro	0	
143	0x008F	12	erasable vacuum-on counter for ejector #12	4 bytes	0 - 999 mio	ro	0	
143	0x008F	13	erasable vacuum-on counter for ejector #13	4 bytes	0 - 999 mio	ro	0	
143	0x008F	14	erasable vacuum-on counter for ejector #14	4 bytes	0 - 999 mio	ro	0	
143	0x008F	15	erasable vacuum-on counter for ejector #15	4 bytes	0 - 999 mio	ro	0	
143	0x008F	16	erasable vacuum-on counter for ejector #16	4 bytes	0 - 999 mio	ro	0	

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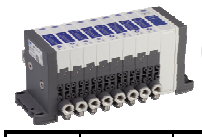
144	0x0090	0	Ejectors valve operating counter (erasable)	64 bytes		ro		subindex 0 for access to all ejectors
144	0x0090	1	erasable valve operating counter for ejector #1	4 bytes	0 - 999 mio	ro	0	number of suction cycles (since latest erasing)
144	0x0090	2	erasable valve operating counter for ejector #2	4 bytes	0 - 999 mio	ro	0	
144	0x0090	3	erasable valve operating counter for ejector #3	4 bytes	0 - 999 mio	ro	0	
144	0x0090	4	erasable valve operating counter for ejector #4	4 bytes	0 - 999 mio	ro	0	
144	0x0090	5	erasable valve operating counter for ejector #5	4 bytes	0 - 999 mio	ro	0	
144	0x0090	6	erasable valve operating counter for ejector #6	4 bytes	0 - 999 mio	ro	0	
144	0x0090	7	erasable valve operating counter for ejector #7	4 bytes	0 - 999 mio	ro	0	
144	0x0090	8	erasable valve operating counter for ejector #8	4 bytes	0 - 999 mio	ro	0	
144	0x0090	9	erasable valve operating counter for ejector #9	4 bytes	0 - 999 mio	ro	0	
144	0x0090	10	erasable valve operating counter for ejector #10	4 bytes	0 - 999 mio	ro	0	
144	0x0090	11	erasable valve operating counter for ejector #11	4 bytes	0 - 999 mio	ro	0	
144	0x0090	12	erasable valve operating counter for ejector #12	4 bytes	0 - 999 mio	ro	0	
144	0x0090	13	erasable valve operating counter for ejector #13	4 bytes	0 - 999 mio	ro	0	
144	0x0090	14	erasable valve operating counter for ejector #14	4 bytes	0 - 999 mio	ro	0	
144	0x0090	15	erasable valve operating counter for ejector #15	4 bytes	0 - 999 mio	ro	0	
144	0x0090	16	erasable valve operating counter for ejector #16	4 bytes	0 - 999 mio	ro	0	
Diagnosis								
Device Status								
32	0x0020	0	Error count	2 bytes		ro		Number of errors since last power-up
36	0x0024	0	IO-Link Device Status	1 byte		ro		Status codes according to IO-Link specification V1.1: 0 = device is operating properly 1 = maintenance required 2 = out of specification 3 = functional check 4 = failure
138	0x008A	1	Extended Device Status - Event Category	1 byte		ro		Categorisation of current device status: 0x10: Device is operation properly 0x21: Warning, low 0x22: Warning, high 0x41: Critical condition, low 0x42: Critical condition, high 0x81: Defect/fault, low 0x82: Defect/fault, high
138	0x008A	2	Extended Device Status - Event Code	2 bytes		ro		Event Code of current device status (see table below)
139	0x008B	1	NFC Status	1 byte		ro	0	Result of last NFC activity: 0x00: data valid, write finished successfully 0x23: write failed: write access locked 0x30: write failed: parameter(s) out of range 0x41: write failed: parameter set inconsistent 0xA1: write failed:invalid authorisation 0xA2: NFC not available 0xA3: write failed: invalid data structure 0xA5: write pending 0xA6: NFC internal error
130	0x0082	1	Errors of ejector #1	2 byte		ro	0	For each ejector: Bit 00: Measurement range overrun
130	0x0082	2	Errors of ejector #2	2 byte		ro	0	
130	0x0082	3	Errors of ejector #3	2 byte		ro	0	
130	0x0082	4	Errors of ejector #4	2 byte		ro	0	
130	0x0082	5	Errors of ejector #5	2 byte		ro	0	
130	0x0082	6	Errors of ejector #6	2 byte		ro	0	
130	0x0082	7	Errors of ejector #7	2 byte		ro	0	
130	0x0082	8	Errors of ejector #8	2 byte		ro	0	
130	0x0082	9	Errors of ejector #9	2 byte		ro	0	
130	0x0082	10	Errors of ejector #10	2 byte		ro	0	
130	0x0082	11	Errors of ejector #11	2 byte		ro	0	
130	0x0082	12	Errors of ejector #12	2 byte		ro	0	
130	0x0082	13	Errors of ejector #13	2 byte		ro	0	
130	0x0082	14	Errors of ejector #14	2 byte		ro	0	
130	0x0082	15	Errors of ejector #15	2 byte		ro	0	
130	0x0082	16	Errors of ejector #16	2 byte		ro	0	
130	0x0082	17	Errors of Control-Unit	2 bytes		ro	0	Bit 00: Internal error: data corruption Bit 01: Internal error: bus fault Bit 02: Primary voltage too low Bit 03: Primary voltage too high Bit 04: Secondary voltage too low Bit 05: Secondary voltage too high Bit 06: Supply pressure too low or too high Bit 07-15: reserved
Condition Monitoring [CM]								
146	0x0092	0	Condition Monitoring of the system	17 bytes		ro		subindex 0 for access to all ejectors and the Control-Unit
146	0x0092	1	Condition Monitoring ejector #1	1byte	0-99	ro	0	Bit 0 = valve protection active Bit 1 = Evacuation time greater than limit Bit 2 = Lekeage rate greater than limit Bit 3 = H1 not reached in suction cycle Bit 4 = Free flow vacuum too high
146	0x0092	2	Condition Monitoring ejector #2	1byte	0-99	ro	0	
146	0x0092	3	Condition Monitoring ejector #3	1byte	0-99	ro	0	
146	0x0092	4	Condition Monitoring ejector #4	1byte	0-99	ro	0	
146	0x0092	5	Condition Monitoring ejector #5	1byte	0-99	ro	0	
146	0x0092	6	Condition Monitoring ejector #6	1byte	0-99	ro	0	
146	0x0092	7	Condition Monitoring ejector #7	1byte	0-99	ro	0	
146	0x0092	8	Condition Monitoring ejector #8	1byte	0-99	ro	0	
146	0x0092	9	Condition Monitoring ejector #9	1byte	0-99	ro	0	



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146	0x0092	10	Condition Monitoring ejector #10	1byte	0-99	ro	0	Bit 5 = Manual Mode Active
146	0x0092	11	Condition Monitoring ejector #11	1byte	0-99	ro	0	
146	0x0092	12	Condition Monitoring ejector #12	1byte	0-99	ro	0	
146	0x0092	13	Condition Monitoring ejector #13	1byte	0-99	ro	0	
146	0x0092	14	Condition Monitoring ejector #14	1byte	0-99	ro	0	
146	0x0092	15	Condition Monitoring ejector #15	1byte	0-99	ro	0	
146	0x0092	16	Condition Monitoring ejector #16	1byte	0-99	ro	0	
146	0x0092	17	Condition Monitoring of Control-Unit	1byte	0-99	ro	0	Bit 0 = Primary Voltage limit Bit 1 = Secondary voltage limit Bit 2 = Input pressure limit (3,5 … 5bar)

Event Codes of IO-Link Events and ISDU 138 (Extended Device Status)

Event code	Event name	IO-Link Event Type	Extended Device Status Category	Remark
Control-Unit				
0x5100	General power supply fault	Error	Critical condiction, high	Primary supply voltage (US) too low
0x5110	Primary supply voltage over-run	Warning	Critical condiction, high	Primary supply voltage (US) too high
0x5112	Secondary supply voltage fault	Warning	Critical condiction, high	Secondary supply voltage (UA) too low
0x1812	Secondary supply voltage over-run	Warning	Critical condiction, high	Secondary supply voltage (UA) too high
0x1802	Supply pressure fault	Warning	Critical condiction, high	Input pressure too high or too low
0x1811	Data Corruption	Error	Defect/fault, high	Internal error, user data corrupted
0x1000	General malfunction	Error	Defect/fault, high	Internal error, Bus fault
0x1800	Vacuum calibration OK	Notification	-	Calibration offset 0 set successfully
0x1801	Vacuum calibration failed	Notification	-	Sensor value too high or too low, offset not changed
0x8C01	Simulation active	Warning	Warning, low	Manual mode is active in at least one ejector
0x180C	Primary supply voltage out of optimal range	Warning	Warning, high	Condition Monitoring: primary supply voltage US outside of operating range
0x180D	Secondary supply voltage out of optimal range	Warning	Warning, high	Condition Monitoring: secondary supply voltage outside of operating range
0x180E	Supply pressure out of optimal range	Warning	Warning, high	Condition Monitoring: supply pressure outside of operating range
Ejectors				
0x8D00	Measurement range overrun, Ejector #1	Error	Defect/fault, low	Vacuum value > 999 mbar in Ejector #1
…				
0x8D0F	Measurement range overrun, Ejector #16	Error	Defect/fault, low	Vacuum value > 999 mbar in Ejector #16
0x8D10	Valve protection active, Ejector #1	Warning	Warning, high	
…				
0x8D1F	Valve protection active, Ejector #16	Warning	Warning, high	
0x8D20	Evacuation time t1 is greater than limit, Ejector #1	Warning	Warning, low	
…				
0x8D2F	Evacuation time t1 is greater than limit, Ejector #16	Warning	Warning, low	
0x8D30	Leakage rate is greater than limit, Ejector #1	Warning	Warning, low	
…				
0x8D3F	Leakage rate is greater than limit, Ejector #16	Warning	Warning, low	
0x8D40	H1 was not reached, Ejector #1	Warning	Warning, high	
…				
0x8D4F	H1 was not reached, Ejector #16	Warning	Warning, high	
0x8D50	Free-flow vacuum level too high, Ejector #1	Warning	Warning, low	
…				
0x8D5F	Free-flow vacuum level too high, Ejector #16	Warning	Warning, low	