

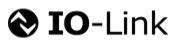
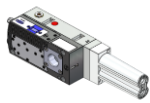
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IO-Link Implementation		
Vendor ID		234 (0x00EA)
Device ID		100248 (0x018798)
SIO-Mode		Yes
IO-Link Revision		1.1
IO-Link Bitrate		38.4 kBit/sec (COM2)
Minimum Cycle Time		3.4 ms
Process Data Input		4 bytes
Process Data Output		2 bytes

Process Data							
Process Data Input	Name	Bits	Data Type		Access	Special Values	Remark
PD In Byte 0	Signal SP2 (part present)	0	Boolean		ro		Vacuum is over SP2 & not yet under rP2
	Signal SP1 (air saving function)	1	Boolean		ro		Vacuum is over SP1 & not yet under rP1
	reserved	2	Boolean		ro		not used
	CM autoset acknowledged	3	Boolean		ro		Acknowledge that the Autoset function has been completed
	reserved	4	Boolean		ro		Reserved
	Signal SP3 (part detached)	5	Boolean		ro		The part has been detached after a suction cycle
	Device status	7 ... 6	2 bit integer		ro		00 - [green] Device is working optimally 01 - [yellow] Device is working but there are warnings 10 - [orange] Device is working but there are severe warnings 11 - [red] Device is not working properly
PD In Byte 1	Warnings	7... 0	8 bit integer		ro		ISDU 146, bits 0-7
PD In Byte 2	Current vacuum, high-byte	7... 0	16 bit integer		ro		Unit: 1mbar
PD In Byte 3	Current vacuum, low-byte	7... 0					
Process Data Out	Name	Bit		Access	Availability	Special Values	Remark
PD Out Byte 0	Vacuum	0	Boolean		wo		Vacuum on/off
	Blow-off	1	Boolean		wo		Activate Blow-off
	Setting mode	2	Boolean		wo		Vacuum on/off with continuous suction disabled (regardless of dCS parameter)
	CM autoset	3	Boolean		wo		Perform CM Autoset function (teach permissible leakage and permissible evacuation time)
	Reserved 0	4	Boolean		wo		Reserved
	Reserved 1	5	Boolean		wo		
	Profile-set 0	6	Boolean		wo		Select Production Profile (2-bit binary coded) (see ISDU parameter areas P0 to P3)
	Profile-set 1	7	Boolean		wo		
PD Out Byte 1	Input pressure	7... 0	8 bit integer		wo		Pressure value from external sensor (unit: 0.1 bar)

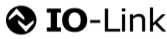
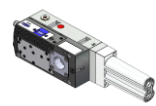
ISDU Parameters									
ISDU Index		Subindex	Display Appearance	Parameter	Size	Value Range	Access	Default Value / Example	Remark
dec	hex	dec							
Identification									
16	0x0010	0		Vendor name	1...32 bytes		ro	J. Schmalz GmbH	Manufacturer designation
17	0x0011	0		Vendor text	1...32 bytes		ro	Beyond Gravity	Vendor text
18	0x0012	0		Product name	1...32 bytes		ro	SCPLi	Product name
19	0x0013	0		Product ID	1...32 bytes		ro	SCPLi	Product variant name
20	0x0014	0		Product text	1...32 bytes		ro	SCPLi *	Order-code
21	0x0015	0	Snr	Serial number	9 bytes		ro	000000001	Serial number
22	0x0016	0		Hardware revision	2 bytes		ro	03	Hardware revision
23	0x0017	0	SoC	Firmware revision	4 bytes		ro	0.0D	Firmware revision
24	0x0018	0		Application specific tag	1...32 bytes		rw	***	User string to store location or tooling information
25	0x0019	0		Function tag	1...32 bytes		rw	***	User string to store location or tooling information
26	0x001A	0		Location tag	1...32 bytes		rw	***	User string to store location or tooling information
17342	0x43BE	0		Hardware Identification Key	5 bytes		ro		Identifies the hardware for compatibility check with the firmware to be installed.
240	0x00F0	0		Unique device identification	9 bytes		ro		Unique device identification number
248	0x00F8	0		NFC web link	1...64 bytes	http://... https://...	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
250	0x00FA	0	Art	Article number	14 bytes		ro	10.02.02.*	Order-number
251	0x00FB	0		Article revision	2 bytes		ro	00	Article revision
252	0x00FC	0		Production date	3 bytes		ro	B26	Date code of production (month+year, month is letter coded, e.g. F18 = July 2018)
253	0x00FD	0		Installation date	1...16 bytes		rw	***	User string to store date of installation
Parameter									
Service Functions									
2	0x0002	0		System command	1 byte	5, 129, 131, 165, 167, 168, 169	wo		0x05 (dec 5): Force upload of parameter data into the master 0x81 (dec 129): Reset application 0x83 (dec 131): Back to box 0xA5 (dec 165): Calibrate vacuum sensor 0xA7 (dec 167): Reset erasable counters ct1, ct2, ct3 0xA8 (dec 168): Reset voltages HI/LO 0xA9 (dec 169): Reset vacuum/pressure HI/LO
Access Locks									
12	0x000C	0		Device access locks	2 bytes	0, 4	rw	0	Bit 0-1: reserved Bit 2: Local parameterization lock (lock menu editing) Bit 3-15: reserved
90	0x005A	0	nFc	Extended device access locks	1 byte		rw	0	Bit 0: NFC write lock Bit 1: NFC disable Bit 2: Not used Bit 3: local user interface locked (manual mode locked) Bit 4: IO-Link event lock (suppress sending IO-Link events) Bit 5-7: Not used
77	0x004D	0	Pin	Pin-code display	2 bytes	0 - 999	rw	0	0 = Menu editing unlocked >0 = Menu editing locked with pin-code
91	0x005B	0		Pin-code NFC	2 bytes	0 - 999	rw	0	Pin-code for NFC write



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Initial Setup										
69	0x0045	0	bLo	Blow-off mode	1 byte	0 - 2	rw	0	0 = Externally controlled blow-off (-E-) 1 = Internally controlled blow-off – time-dependent (I-t) 2 = Externally controlled blow-off – time-dependent (E-t)	
71	0x0047	0	Ou2	Output 2 function	1 byte	0 - 1	rw	0	0 = NO 1 = NC	
73	0x0049	0	P-n	Signal type	1 byte	0 - 1	rw	0	0 = PNP 1 = NPN	
74	0x004A	0	uni	Display unit	1 byte	0 - 3	rw	0	0 = mbar 1 = kPa 2 = inHg 3 = psi	
75	0x004B	0	dLY	Output filter	2 byte	0 - 999	rw	10	Unit: 1 ms	
76	0x004C	0	Eco	Eco-Mode	1 byte	0 - 2	rw	0	0 = off 1 = on (full eco mode with display switching off completely) 2 = Lo (medium eco mode with display dimmed to 50%)	
79	0x004F	0	dIS	Display rotation	1 byte	0 - 1	rw	0	0 = standard 1 = rotated	
Process Settings										
275	0x0113	0	P-n	Number of active profile	1 byte	0-3	ro		Number of the active profile: 0 - 3	
Production Setup - Profile P0										
68	0x0044	0	Ctr	Air saving function	1 byte	0 - 2	rw	1	0 = not active (off) 1 = active (on) 2 = active with supervision (onS)	
78	0x004E	0	dCS	Disable continuous suction	1 byte	0 - 1	rw	0	0 = off 1 = on	
100	0x0064	0	SP1	Switchpoint 1 (SP1)	2 bytes	999 > SP1 > rP1	rw	750	Unit: 1 mbar	
101	0x0065	0	rP1	Resetpoint 1 (rP1)	2 bytes	SP1 > rP1 > SP2	rw	600	Unit: 1 mbar	
102	0x0066	0	SP2	Switchpoint 2 (SP2)	2 bytes	rP1 > SP2 > rP2	rw	550	Unit: 1 mbar	
103	0x0067	0	rP2	Reset Point 2 (rP2)	2 bytes	SP2 > rP2 >= 10	rw	540	Unit: 1 mbar	
106	0x006A	0	tbl	Duration automatic blow	2 bytes	10 - 9999	rw	200	Unit: 1 ms	
107	0x006B	0	t-1	Permissible evacuation time	2 bytes	0 - 9999	rw	2000	Unit: 1 ms. No t-1 Warning if set to 0	
108	0x006C	0	-L-	Permissible leakage rate	2 bytes	0 - 999	rw	250	Unit: 1 mbar/sec. No -L- Warning if set to 0	
119	0x0077	0		Profile name	1...32 bytes		rw	***		
Production Setup - Profile P1										
180	0x00B4	0		Air saving function	1 byte	0 - 2	rw	1	Profile P-1 (selected by PD Out 0 - Profile-Set = 1)	
181	0x00B5	0		Disable continuous suction	1 byte	0 - 1	rw	0		
182	0x00B6	0		Switchpoint 1 (SP1)	2 bytes	999 > SP1 > rP1	rw	750		
183	0x00B7	0		Resetpoint 1 (rP1)	2 bytes	SP1 > rP1 > SP2	rw	600		
184	0x00B8	0		Switchpoint 2 (SP2)	2 bytes	rP1 > SP2 > rP2	rw	550		
185	0x00B9	0		Reset Point 2 (rP2)	2 bytes	SP2 > rP2 >= 10	rw	540		
186	0x00BA	0		Duration automatic blow	2 bytes	10 - 9999	rw	200		
187	0x00BB	0		Permissible evacuation time	2 bytes	0 - 9999	rw	2000		
188	0x00BC	0		Permissible leakage rate	2 bytes	0 - 999	rw	250		
199	0x00C7	0		Profile name	1...32 bytes		rw	***		
Production Setup - Profile P2										
200	0x00C8	0		Air saving function	1 byte	0 - 2	rw	1	Profile P-2 (selected by PD Out 0 - Profile-Set = 2)	
201	0x00C9	0		Disable continuous suction	1 byte	0 - 1	rw	0		
202	0x00CA	0		Switchpoint 1 (SP1)	2 bytes	999 > SP1 > rP1	rw	750		
203	0x00CB	0		Resetpoint 1 (rP1)	2 bytes	SP1 > rP1 > SP2	rw	600		
204	0x00CC	0		Switchpoint 2 (SP2)	2 bytes	rP1 > SP2 > rP2	rw	550		
205	0x00CD	0		Reset Point 2 (rP2)	2 bytes	SP2 > rP2 >= 10	rw	540		
206	0x00CE	0		Duration automatic blow	2 bytes	10 - 9999	rw	200		
207	0x00CF	0		Permissible evacuation time	2 bytes	0 - 9999	rw	2000		
208	0x00D0	0		Permissible leakage rate	2 bytes	0 - 999	rw	250		
219	0x00DB	0		Profile name	1...32 bytes		rw	***		
Production Setup - Profile P3										
220	0x00DC	0		Air saving function	1 byte	0 - 2	rw	1	Profile P-3 (selected by PD Out 0 - Profile-Set = 3)	
221	0x00DD	0		Disable continuous suction	1 byte	0 - 1	rw	0		
222	0x00DE	0		Switchpoint 1 (SP1)	2 bytes	999 > SP1 > rP1	rw	750		
223	0x00DF	0		Resetpoint 1 (rP1)	2 bytes	SP1 > rP1 > SP2	rw	600		
224	0x00E0	0		Switchpoint 2 (SP2)	2 bytes	rP1 > SP2 > rP2	rw	550		
225	0x00E1	0		Reset Point 2 (rP2)	2 bytes	SP2 > rP2 >= 10	rw	540		
226	0x00E2	0		Duration automatic blow	2 bytes	10 - 9999	rw	200		
227	0x00E3	0		Permissible evacuation time	2 bytes	0 - 9999	rw	2000		
228	0x00E4	0		Permissible leakage rate	2 bytes	0 - 999	rw	250		
239	0x00EF	0		Profile name	1...32 bytes		rw	***		
Observation										
Monitoring										
64	0x0040	1		System vacuum live	2 bytes		ro		Unit: 1mbar	
64	0x0040	2		System vacuum min	2 bytes		ro		Unit: 1mbar	
64	0x0040	3		System vacuum max	2 bytes		ro		Unit: 1mbar	
65	0x0041	1		Input pressure live	2 bytes		ro		Unit: 1mbar	
65	0x0041	2		Input pressure min	2 bytes		ro		Unit: 1mbar	
65	0x0041	3		Input pressure max	2 bytes		ro		Unit: 1mbar	
66	0x0042	1		Primary supply voltage live	2 bytes		ro		Unit: 0.1V	
66	0x0042	2		Primary supply voltage min	2 bytes		ro		Unit: 0.1V	
66	0x0042	3		Primary supply voltage max	2 bytes		ro		Unit: 0.1V	
148	0x0094	0		Evacuation time t0 of last suction-cycle	2 bytes		ro		Unit: 1ms Time from suction start to reaching SP2	
149	0x0095	0		Evacuation time t1 of last suction-cycle	2 bytes		ro		Unit: 1ms Time from reaching SP2 to reaching SP1	
160	0x00A0	0		Leakage rate of last suction-cycle	2 bytes		ro		Unit: 1mbar/sec	
161	0x00A1	0		Free-flow vacuum	2 bytes		ro		Unit: 1mbar	
164	0x00A4	0		Max reached vacuum of last suction-cycle	2 bytes		ro		Unit: 1mbar	
165	0x00A5	0		Min reached input pressure	2 bytes		ro		Unit: 1mbar	
Counters										
140	0x008C	0	cc1	Vacuum on counter	4 bytes		ro		Counter for Vacuum on (non-erasable, stored every 1000 counts)	
141	0x008D	0	cc2	Valve operating counter	4 bytes		ro		Counter for valve operating (non-erasable, stored every 1000 counts)	



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142	0x008E	0	cc3	Condition monitoring counter	4 bytes		ro		Counter for condition monitorings (non-erasable, stored every 1000 counts)
143	0x008F	0	ct1	Vacuum on counter	4 bytes		ro		Counter for Vacuum on (erasable, stored every 1000 counts)
144	0x0090	0	ct2	Valve operating counter	4 bytes		ro		Counter for valve operating (erasable, stored every 1000 counts)
145	0x0091	0	ct3	Condition monitoring	4 bytes		ro		Counter for condition monitorings (erasable, stored every 1000 counts)
⊞ Diagnosis									
⊞ Device Status									
32	0x0020	0		Error count	2 bytes		ro		Number of errors since last power-up
36	0x0024	0		Device status	1 byte		ro		0 = Device is operating properly 1 = Maintenance required 2 = Out of specification 3 = Functional check 4 = Failure
37	0x0025	0		Detailed device status	96 bytes		ro		Information about currently pending events (Event-List) Byte 0 = Type of Event 1 Byte 1...2 = ID of Event 1 Byte 3 = Type of Event 2 Byte 4...5 = ID of Event 2 etc.
130	0x0082	0		Active errors	2 bytes		ro		Bit 00: Internal error: data corruption (E01) Bit 01: reserved Bit 02: Primary voltage too low (E07) Bit 03: Primary voltage too high (E17) Bit 04-07: reserved Bit 08: short circuit at OUT2 (E12) Bit 09-10: reserved Bit 11: Measurement range overrun (FFF) Bit 12-14: reserved Bit 15: IO-Link communication interruption (E08)
⊞ Condition Monitoring [CM]									
146	0x0092	0		Condition monitoring	2 bytes		ro		Bit 0: Valve protection active Bit 1: Evacuation time t1 above limit [t-1] Bit 2: Leakage rate above limit [-L-] Bit 3: SP1 not reached in suction cycle Bit 4: Free-flow vacuum > rP2 but < SP1 Bit 5: Primary voltage US outside of optimal range Bit 6: reserved Bit 7: reserved Bit 8: Input pressure outside of operating range Bit 9-15: reserved
⊞ Energy Monitoring [EM]									
156	0x009C	0		Air consumption of last suction-cycle	2 bytes		ro		Unit: 0.1L std.
157	0x009D	0		Energy consumption of last suction-cycle	2 bytes		ro		Unit: 1 Ws
⊞ Predictive Maintenance [PM]									
162	0x00A2	0		Quality of last suction-cycle	1 byte		ro		Unit: 1 %
163	0x00A3	0		Performance of last suction-cycle	1 byte		ro		Unit: 1 %

IO-Link Events									
Extended Device Status ID (= IO-Link Event Code)		IO-Link Event Type		Display Code	Event name		Remark		
dec	hex								
0	0x0000	(no IOL event)			Everything OK		Device is working optimally		
6161	0x1811	Error		E01	Data Corruption		Internal error, user data corrupted		
35872	0x8C20	Error		FFF	Measurement range overrun		Measured vacuum value too high, sensor fault		
2457	0x0999	(no IOL event)		E08	IO-Link communication interruption		IO-Link communication is interrupted (readable via NFC)		
20736	0x5100	Error		E07	General power supply fault		Primary supply voltage (US) too low		
20752	0x5110	Warning		E17	Primary supply voltage over-run		Primary supply voltage (US) too high		
6146	0x1802	Warning			Supply pressure fault		Input pressure too high or too low		
6156	0x180C	Warning			Primary supply voltage out of optimal range		Condition Monitoring: primary supply voltage US outside of operating range		
6151	0x1807	Warning			CM: Valve protection active		Condition Monitoring: valve has switched too fast, continuous suction activated		
6152	0x1808	Warning			CM: evacuation time above limit		Condition Monitoring: evacuation time t1 is above limit [t-1]		
6153	0x1809	Warning			CM: leakage rate above limit		Condition Monitoring: leakage rate is above limit [-L-]		
6154	0x180A	Warning			CM: SP1 not reached		Condition Monitoring: vacuum level SP1 was never reached during suction cycle		
6155	0x180B	Warning			CM: free flow vacuum too high		Condition Monitoring: free flow vacuum above SP2		
35841	0x8C01	Warning			Simulation active		Manual mode is active		
6144	0x1800	Notification			Vacuum calibration OK		Calibration offset 0 set successfully		
6145	0x1801	Notification		E03	Vacuum calibration failed		Sensor value too high or too low, offset not changed		
6167	0x1817	Notification			Autoset completed successfully		Permissible leakage and permissible evacuation time have been set automatically for the active profile		
6168	0x1818	Notification			Handling Cycle Completed		Handling of the part is complete (neutral state of vacuum system reached or new suction phase begun)		
30480	0x7710	Error		E12	short circuit at OUT2		output is connect with counterpotential		