

IO-Link Data Dictionary

RECBi 1-C

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J. Schmalz GmbH
Johannes-Schmalz-Str. 1, D 72293 Glatten
Tel.: +49(0)7443/2403-0
Fax: +49(0)7443/2403-259
info@schmalz.de





IO-Link Implementation

Vendor ID	234 (0xEA)
Device ID	100282 (0x0187BA)
SIO-Mode	yes
IO-Link Revision	1.1 (compatible with 1.0)
IO-Link Bitrate	38.4 kBit/sec (COM2)
Minimum Cycle Time	7 ms
Process Data Input	16 bytes
Process Data Output	4 bytes

Process Data

Process data In		Bits	Access	Remark
PD in byte 0	Reserved	0...3	ro	Reserved
	Reserved	4..5	ro	Reserved
	Device Status	6..7	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	SP2 (part present)	0	ro	Vacuum is above SP2 & not yet below rP2
	SP1 (air saving function)	1	ro	Vacuum is above SP1 & not yet below rP1
	SP3 (part detached)	2	ro	The part has been detached after a suction cycle
	CM-Autoset	3	ro	Acknowledge that the Autoset function has been completed
	Reserved	4..7	ro	not used
PD in byte 2	Errors High-Byte	0..7	ro	Bit 0 = Short circuit at OUT2 Bit 1 = reserved Bit 2 = reserved Bit 3 = Measurement range overrun Bit 4 = reserved Bit 5 = reserved Bit 6 = reserved Bit 7 = IO-Link communication interruption
PD in byte 3	Errors Low-Byte	0..7	ro	Bit 0 = IO-Link startup check: data corruption Bit 1 = reserved Bit 2 = Primary voltage too low Bit 3 = Primary voltage too high Bit 4 = Auxiliary voltage too low Bit 5 = reserved Bit 6 = reserved Bit 7 = reserved
PD in byte 4	Warnings High-Byte	0..7	ro	Bit 0 = General input pressure out of operating range Bit 1 = reserved Bit 2 = reserved Bit 3 = reserved Bit 4 = reserved Bit 5 = reserved Bit 6 = reserved Bit 7 = reserved
PD in byte 5	Warnings Low-Byte	0..7	ro	Bit 0 = Valve protection Bit 1 = Evacuation time above limit Bit 2 = Leakage rate above limit Bit 3 = SP1 not reached in suction cycle Bit 4 = Free Flow Vacuum over SP2 Bit 5 = Primary Voltage US out of operating range Bit 6 = reserved Bit 7 = reserved
PD in byte 6	Vacuum High-Byte	0..7	ro	System vacuum [mbar]
PD in byte 7	Vacuum Low-Byte	0..7	ro	
PD in byte 8	Reserved	0..7	ro	not used
PD in byte 9	Reserved	0..7	ro	not used
PD in byte 10	Reserved	0..7	ro	not used
PD in byte 11	Reserved	0..7	ro	not used
PD in byte 12	Reserved	0..7	ro	not used
PD in byte 13	Reserved	0..7	ro	not used
PD in byte 14	Reserved	0..7	ro	not used
PD in byte 15	Reserved	0..7	ro	not used
Process data Out		Bits	Access	Remark
PD out byte 0	Vacuum	0	wo	Vacuum on/off
	Blow-off	1	wo	Activate Blow-off
	Setting Mode	2	wo	Vacuum on/off with continuous suction disabled (regardless of dCS parameter)
	CM-Autoset	3	wo	Perform CM Autoset function (teach permissible leakage and permissible evacuation time)
	Reserved	4..7	wo	not used
PD out byte 1	Input Pressure	0..7	wo	Pressure value from external sensor [0.1 bar]
PD out byte 2	Reserved	0..7	wo	not used
PD out byte 3	Profile Set	0..1	wo	Profile selection
	Reserved	2..7	wo	not used

ISDU Parameters

ISDU Index		Subindex	Parameter	Size	Value Range	Access	Default Value	Remark
dec	hex	dec						
			Identification					
			Device Management					
16	0x0010	0	Vendor name	0...32 bytes	-	ro	J. Schmalz GmbH	Manufacturer designation
17	0x0011	0	Vendor text	0...32 bytes	-	ro	Innovative Vacuum Solutions	Internet address
18	0x0012	0	Product name	0...32 bytes	-	ro	RECBi_1C	Product name
19	0x0013	0	Product ID	0...32 bytes	-	ro	'RECBi_1C	Product variant name
20	0x0014	0	Product text	0...32 bytes	-	ro	RECBi 24V-DC 1-C	Order-code
21	0x0015	0	Serial number	9 bytes	-	ro	000000001	Serial number
22	0x0016	0	Hardware revision	2 bytes	-	ro	00	Hardware revision
23	0x0017	0	Firmware revision	4 bytes	-	ro	1.0	Firmware revision

240	0x00F0	0	Unique device identification	9	bytes	-	ro	-	Unique ID
250	0x00FA	0	Article number	14	bytes	-	ro	10.02.03.00394	Order-number
252	0x00FC	0	Production date	3	bytes	-	ro	C22	Date code of production (month and year, month is letter coded)
⊞ Device Localization									
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
242	0x00F2	0	Equipment identification	1...64	bytes	-	rw	***	User string to store identification name from schematic
246	0x00F6	0	Geolocation	1...64	bytes	-	rw	***	User string to store geolocation from handheld device
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
253	0x00FD	0	Installation date	1...16	bytes	-	rw	***	User string to store date of installation
⊞ Parameter									
	⊞	Device Settings							
		⊞	Commands						
2	0x0002	0	System command	1	byte	5, 129, 131, 165, 167, 168, 169	wo	-	0x81 (dec 129): Reset application 0x83 (dec 131): Back to box (IO-Link-Communciation will be stopped, restart by power cycle is needed) 0xA5 (dec 165): Calibrate vacuum sensor 0xA7 (dec 167): Reset erasable counters 0xA8 (dec 168): Reset voltages min/max 0xA9 (dec 169): Reset vacuum min/max
⊞ Access Control									
90	0x005A	0	Extended device access locks	1	byte	0-255	rw	0	Bit 0: NFC write lock Bit 1: NFC disable Bit 2: Not used Bit 3: reserved Bit 4: IO-Link event lock (suppress sending IO-Link events) Bit 5-7: Not used
91	0x005B	0	Pin-Code NFC	2	bytes	0-999	ro	0	Pin-Code for NFC write
⊞ Initial Settings									
69	0x0045	0	Blow-Off mode	1	byte	0-2	rw	0	0 = Externally controlled drop-off 1 = Internally controlled drop-off – time-dependent 2 = Externally controlled drop-off – time-dependent
73	0x0049	1	Signal type: SIO outputs of the device	1	byte	0-1	rw	0	0 = PNP, 1 = NPN
73	0x0049	2	Signal type: SIO inputs of the device	1	byte	0-1	rw	0	0 = PNP, 1 = NPN
75	0x004B	0	Output filter, switch-off delay for SP2 and SP1	2	bytes	0-999	rw	10	Unit: 1ms
⊞ Process Settings									
⊞ Production Setup - Profile P0									
68	0x0044	0	Air-Saving function	1	byte	0-2	rw	1	0 = not active (off) 1 = active (on) 2 = active with supervision (onS)
78	0x004E	0	Disable continous sucking	1	byte	0-1	rw	0	0 = off, 1 = on
100	0x0064	0	Switchpoint 1 (SP1)	2	bytes	999 > SP1 > rP1	rw	750	Unit: 1mbar
101	0x0065	0	Resetpoint 1 (rP1)	2	bytes	SP1 > rP1 > SP2	rw	600	Unit: 1mbar
102	0x0066	0	Switchpoint 2 (SP2)	2	bytes	rP1 > SP2 > rP2	rw	550	Unit: 1mbar
103	0x0067	0	Resetpoint 2 (rP2)	2	bytes	SP2 > rP2 >= 10	rw	540	Unit: 1mbar
106	0x006A	0	Duration automatic blow	2	bytes	10-9999	rw	200	Unit: 1ms
107	0x006B	0	Permissable evacuation time	2	bytes	0-9999	rw	2000	Unit: 1ms no evacuation time warning if set to 0
108	0x006C	0	Permissable leakage rate	2	bytes	0-999	rw	250	Unit: 1mbar/s no leakage rate warning if set to 0
119	0x0077	0	Profile name	0...16	bytes	-	rw	***	Name of profile
⊞ Production Setup - Profile P1									
180	0x00B4	0	Air-Saving function	1	byte	0-2	rw	0	0 = not active (off) 1 = active (on) 2 = active with supervision (onS)
181	0x00B5	0	Disable continous sucking	1	byte	0-1	rw	0	0 = off, 1 = on
182	0x00B6	0	Switchpoint 1 (SP1)	2	bytes	999 > SP1 > rP1	rw	750	Unit: 1mbar
183	0x00B7	0	Resetpoint 1 (rp1)	2	bytes	SP1 > rP1 > SP2	rw	600	Unit: 1mbar
184	0x00B8	0	Switchpoint 2 (SP2)	2	bytes	rP1 > SP2 > rP2	rw	550	Unit: 1mbar
185	0x00B9	0	Resetpoint 2 (rp2)	2	bytes	SP2 > rP2 >= 10	rw	540	Unit: 1mbar
186	0x00BA	0	Duration automatic blow	2	bytes	10-9999	rw	200	Unit: 1ms
187	0x00BB	0	Permissable evacuation time	2	bytes	0-9999	rw	2000	Unit: 1ms, no evacuation time warning if set to 0
188	0x00BC	0	Permissable leakage rate	2	bytes	0-999	rw	250	Unit: 1ms, no leakage rate warning if set to 0
199	0x00C7	0	Profile name	0...16	bytes	-	rw	***	Name of profile
⊞ Production Setup - Profile P2									
200	0x00C8	0	Air-Saving function	1	byte	0-2	rw	0	0 = not active (off) 1 = active (on) 2 = active with supervision (onS)
201	0x00C9	0	Disable continous sucking	1	byte	0-1	rw	0	0 = off, 1 = on
202	0x00CA	0	Switchpoint 1 (SP1)	2	bytes	999 > SP1 > rP1	rw	750	Unit: 1mbar
203	0x00CB	0	Resetpoint 1 (rp1)	2	bytes	SP1 > rP1 > SP2	rw	600	Unit: 1mbar
204	0x00CC	0	Switchpoint 2 (SP2)	2	bytes	rP1 > SP2 > rP2	rw	550	Unit: 1mbar
205	0x00CD	0	Resetpoint 2 (rp2)	2	bytes	SP2 > rP2 >= 10	rw	540	Unit: 1mbar
206	0x00CE	0	Duration automatic blow	2	bytes	10-9999	rw	200	Unit: 1ms
207	0x00CF	0	Permissable evacuation time	2	bytes	0-9999	rw	2000	Unit: 1ms, no evacuation time warning if set to 0
208	0x00D0	0	Permissable leakage rate	2	bytes	0-999	rw	250	Unit: 1ms, no leakage rate warning if set to 0
219	0x00DB	0	Profile name	0...16	bytes	-	rw	***	Name of profile
⊞ Production Setup - Profile P3									
220	0x00DC	0	Air-Saving function	1	byte	0-2	rw	0	0 = not active (off) 1 = active (on) 2 = active with supervision (onS)

221	0x00DD	0	Disable continous sucking	1	byte	0-1	rw	0	0 = off 1 = on
222	0x00DE	0	Switchpoint 1 (SP1)	2	bytes	999 > SP1 > rP1	rw	750	Unit: 1mbar
223	0x00DF	0	Resetpoint 1 (rp1)	2	bytes	SP1 > rP1 > SP2	rw	600	Unit: 1mbar
224	0x00E0	0	Switchpoint 2 (SP2)	2	bytes	rP1 > SP2 > rP2	rw	550	Unit: 1mbar
225	0x00E1	0	Resetpoint 2 (rp2)	2	bytes	SP2 > rP2 >= 10	rw	540	Unit: 1mbar
226	0x00E2	0	Duration automatic blow	2	bytes	10-9999	rw	200	Unit: 1ms
227	0x00E3	0	Permissable evacuation time	2	bytes	0-9999	rw	2000	Unit: 1ms no evacuation time warning if set to 0
228	0x00E4	0	Permissable leakage rate	2	bytes	0-999	rw	250	Unit: 1ms no leakage rate warning if set to 0
239	0x00EF	0	Profile name	0...16	bytes	-	rw	***	Name of profile
⊞ Observation									
	⊞	Monitoring							
64	0x0040	1	System vacuum live	2	bytes		ro		Unit: 1mbar
		2	System vacuum min	2	bytes	-	ro	-	Unit: 1mbar
		3	System vacuum max	2	bytes		ro		Unit: 1mbar
66	0x0042	1	Primary supply voltage live	2	bytes		ro		Unit: 0.1V
		2	Primary supply voltage min	2	bytes	-	ro	-	Unit: 0.1V
		3	Primary supply voltage max	2	bytes		ro		Unit: 0.1V
275	0x0113	0	Active profile	1	byte	0-3	ro	-	Number of active profile
⊞ Communication Mode									
564	0x0234	0	Communication mode	1	byte	-	ro	-	0x00 = SIO mode 0x11 = IO-Link revision 1.1
⊞ Diagnosis									
	⊞	Device Status							
36	0x0024	0	Device status	1	byte	-	ro	-	0 = Device is operating properly (= Green) 1 = Maintenance required (= Yellow) 2 = Out of Spec (= Orange) 3 = unused 4 = Failure (= Red)
37	0x0025	0	Detailed device status	1	byte	-	ro	-	Information about currently pending events (Event-List)
130	0x0082	0	Active errors	2	bytes	-	ro	-	Bit 0 = IO-Link startup check: data corruption Bit 1 = reserved Bit 2 = Primary voltage too low Bit 3 = Primary voltage too high Bit 4 = Auxiliary voltage too low Bit 5 = reserved Bit 6 = reserved Bit 7 = reserved Bit 8 = Short circuit at OUT2 Bit 9 = reserved Bit 10 = reserved Bit 11 = Measurement range overrun Bit 12 = reserved Bit 13 = reserved Bit 14 = reserved Bit 15 = IO-Link communication interruption
⊞ Condition Monitoring [CM]									
146	0x0092	0	Condition monitoring	2	bytes	-	ro	-	Bit 0 = Valve protection Bit 1 = Evacuation time above limit Bit 2 = Leakage rate above limit Bit 3 = SP1 not reached in suction cycle Bit 4 = Free Flow Vacuum over SP2 Bit 5 = Primary Voltage US out of operating range Bit 6 = reserved Bit 7 = reserved Bit 8 = General input pressure out of operating range Bit 9-15 = reserved
⊞ Counters									
140	0x008C	0	Vacuum on counter	4	bytes	-	ro	-	Counter for Vacuum on (non-erasable)
141	0x008D	0	Valve operating counter	4	bytes	-	ro	-	Counter for valve operating (non-erasable)
142	0x008E	0	Condition monitoring counter	4	bytes	-	ro	-	Counter for condition monitorings (non-erasable)
143	0x008F	0	Vacuum on counter	4	bytes	-	ro	-	Counter for Vacuum on (erasable)
144	0x0090	0	Valve operating counter	4	bytes	-	ro	-	Counter for valve operating (erasable)
145	0x0091	0	Condition monitoring counter	4	bytes	-	ro	-	Counter for condition monitorings (erasable)
⊞ Timing									
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
166	0x00A6	0	Total cycle time of last cycle	4	bytes	-	ro	-	Unit: 1ms
⊞ Energy Monitoring [EM]									
155	0x009B	0	Air-Consumption of last suction-cycle	1	byte	-	ro	-	Unit: 1%
156	0x009C	0	Air-Consumption of last suction-cycle	2	bytes	-	ro	-	Unit: 0.1 L std.
157	0x009D	0	Energy-Consumption of last suction-cycle	2	bytes	-	ro	-	Unit: 1Ws
⊞ Predictive Maintenance [PM]									
160	0x00A0	0	Leakage rate of last suction-cycle	2	bytes	-	ro	-	Unit: 1mbar/s
161	0x00A1	0	Free-Flow vacuum	2	bytes	-	ro	-	Unit: 1mbar/s
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%
164	0x00A4	0	Max reached vacuum of last cycle	2	bytes	-	ro	-	Unit: 1mbar
165	0x00A5	0	Min reached input pressure of last cycle	2	bytes	-	ro	-	Unit: 1mbar

Coding of IO-Link Events							
Extended Device Status ID (= IO-Link Event Code)		Extended Device Status Type		IO-Link	Event name	Remark	
dec	hex	hex	Meaning				Event Type
0	0x0000	0x10	Everything OK	(no IOL event)	Everything OK	Device is working optimally	
20736	0x5100	0x42	Critical condition	Error	General power supply fault	Primary supply voltage (US) too low	
20752	0x5110	0x42	Critical condition	Warning	Primary supply voltage over-run	Primary supply voltage (US) too high	
20754	0x5112	0x42	Critical condition	Warning	Secondary supply voltage fault	Secondary supply voltage (UA) too low	
4096	0x1000	0x42	Defect/fault	Error	General malfunction	Internal error, Bus fault	

6156	0x180C	0x22	Warning, high	Warning	Primary supply voltage out of optimal range	Condition Monitoring: primary supply voltage US outside of operating range
36096	0x8D00		Defect/fault, low	Error	Measurement range overrun	Vacuum value > 999 mbar in Ejector
36112	0x8D10		Warning, high	Warning	Valve protection active	
36128	0x8D20		Warning, low	Warning	Evacuation time t1 is greater than limit,	
36144	0x8D30		Warning, low	Warning	Leakage rate is greater than limit	
36160	0x8D40		Warning, low	Warning	SP1 was not reached	
36176	0x8D50		Warning, low	Warning	Free-flow vacuum level too high	
36192	0x8D60		Warning, low	Notification	Vacuum calibration OK	Calibration offset 0 set successfully
36208	0x8D70		Warning, low	Notification	Vacuum calibration failed	Sensor value too high or too low, offset not changed
36224	0x8D80		Defect/fault, high	Error	Data Corruption (EEPROM)	Internal error, user data corrupted
36240	0x8D90		Critical condiction, high	Warning	Supply pressure fault	Input pressure too high or too low
36272	0x8DB0			Warning	CM Autoset completed	