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the innovative family

P1PWxxx

Contrast Sensor

IO-Link

Interface Description

Subject to change without notice
Available as PDF version only
Status: 16.07.2024
www.wenglor.com

P1PWxxx

Vendor ID

Product	hex	dec	hex (Bytes)	dec (Bytes)
wenglor sensoric GmbH	0x0057	87	00 57	0 87

Device ID

Product	hex	dec	hex (Bytes)	dec (Bytes)
P1PW001	0x080F01	528129	08 0F 01	8 15 1
P1PW002	0x080F02	528130	08 0F 02	8 15 2
P1PW003	0x080F03	528131	08 0F 03	8 15 3
P1PW004	0x080F04	528132	08 0F 04	8 15 4
P1PW005	0x080F05	528133	08 0F 05	8 15 5
P1PW006	0x080F06	528134	08 0F 06	8 15 6

IO-Link-Information

IO-Link Version:	V1.1.3
Data Storage:	Yes
Blockparameter:	Yes
Min Cycle time:	5.5 ms
SIO-Mode:	Yes
COM-Mode:	COM2
ISDU:	Yes
Process data In (Device to Master):	72 Bit
Process data Out (Master to Device):	8 Bit

IO-Link-Profile

Common Profile
Function Class Identification
Function Class Diagnosis
Smart Sensor Profil - Transducer Disable

Process data (Length: 72 Bit)

Process Data Input (Device to Master)

Subindex	Name	Bit Offset	Length	Range
1	Red Channel	56	16 Bit	0…1023
2	Green Channel	40	16 Bit	0…1023
3	Blue Channel	24	16 Bit	0…1023
4	Lightness Channel	8	16 Bit	0…1023
5	Selected Channel and Power	4	4 Bit	0 = Red Channel / Low power 1 = Red channel / Medium power 2 = Red channel / High Power 3 = Green Channel / Low power 4 = Green Channel / Medium Power 5 = Green Channel / High Power 6 = Blue Channel / Low power 7 = Blue Channel / Medium Power 8 = Blue Channel / High Power 9 = Lightness Channel / Low power 10 = Lightness Channel / Medium power 11 = Lightness Channel / High power 12 = Color mode / Low power 13 = Color mode / Medium power 14 = Color mode / High Power
6	Teach Ongoing	3	1 Bit	0 = false 1 = true
7	Error	2	1 Bit	0 = false 1 = true
8	Warning	1	1 Bit	0 = false 1 = true
9	SSC1	0	1 Bit	0 = false 1 = true

	Octet 0 (MSB)								Octet 1 (LSB)								Octet 2 (MSB)								Octet 3 (LSB)							
Subindex	1																2															
Bit Offset	71	70	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40
							Red Channel 0…1023																Green Channel 0 … 1023									

	Octet 4 (MSB)								Octet 5 (LSB)								Octet 6 (MSB)								Octet 7 (LSB)							
Subindex	3																4															
Bit Offset	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8
							Blue Channel 0 … 1023																Lightness Channel 0 … 1023									

	Octet 8							
Subindex	5				6	7	8	9
Bit Offset	7	6	5	4	3	2	1	0

Process Data (Length: 8 Bit)

Master to Device

Subindex	Name	Bit Offset	Length	Range
1	Emitted Light	0	1 Bit	0 = On 1 = Off
2	Find Me	1	1 Bit	0 = Off 1 = Blinking
3	Teach SSC1	2	1 Bit	0 = Off 1 = On
4	Selected Memory Bank	4	4 Bit	0 = No Selection 1 … 10 - Bank 0…9

	Octet 0 (MSB)							
Subindex	4					3	2	1
Bit Offset	7	6	5	4	3	2	1	0

Parameter

Name	Index (hex)	Index (dec)	Sub-index	R/W	Data type	Data Storage	Dynamic	Modify others	Banked	Default value	Range
Identification											
Vendor Name	0x0010	**16**	0	R	String					wenglor sensoric GmbH	
Vendor Text	0x0011	**17**	0	R	String					the innovative family	
Product Name	0x0012	**18**	0	R	String					P1PW00x	
Product ID	0x0013	**19**	0	R	String					P1PW00x	
Product Text	0x0014	**20**	0	R	String					Contrast Sensor	
Serial Number	0x0015	**21**	0	R	String					—	
Hardware Version	0x0016	**22**	0	R	String					—	
Firmware Version	0x0017	**23**	0	R	String					—	
Tags											
Application Specific Tag	0x0018	**24**	0	R/W	String 32 Byte	X				***	
Function Tag	0x0019	**25**	0	R/W	String 32 Byte	X				***	
Location Tag	0x001A	**26**	0	R/W	String 32 Byte	X				***	
Sensor Localisation											
Find Me	0x1200	**4608**	0	R/W	Uint8		X			0 = Off	0 = Off 1 = Blinking
Reset Functions											
System Command	0x0002	**2**	0	W	Uint8			X		—	Device Reset = 0x80 (128) Application Reset = 0x81 (129) Restore Factory Settings = 0x82 (130) Back-to-box = 0x83 (131)
Device Settings											
Device Access Locks.Local Parameterization Lock	0x000C	**12**	3	R/W	Bool	X				0 = unlocked	0 = unlocked 1 = locked
Selected Memory Bank	0x0400	**1024**	0	R/W	Uint8	X		X		0 = Bank 0	0 = Bank 0 1 = Bank 1 … 9 = Bank 9
Memory Bank Name	0x0401	**1025**	0	R/W	String 32 Byte	X			X	***	
Operating Mode	0x0402	**1026**	0	R/W	Uint8	X		X	X	P1PW001,P1PW002: 0 = Print-Mark Mode P1PW003, P1PW004: 1 = Contrast Mode P1PW005, P1PW006: 2 = Color Mode	0 = Print-Mark Mode 1 = Contrast Mode 2 = Color Mode
Measurement Value Settings											
Emitted Light	0x00E0	**224**	0	R/W	Uint8	X			X	0 = On	0 = On 1 = Off
Noise Filter	0x00D0	**208**	0	R/W	Uint32	X			X	2 = Minimum	0 = Maximum 1 = Medium 2 = Minimum
Hysteresis	0x0300	**768**	0	R/W	Uint8	X			X	1 = Medium	0 = Maximum 1 = Medium 2 = Minimum
SSC1 (Operating Mode = Print-Mark Mode)											
SSC1 Teach Mode	0x0290	**656**	0	R/W	Uint8	X		X	X	0 = Two Point Teach	0 = Two Point Teach 1 = Dynamic Teach 2 = Jump Detection
SSC1 Teach-in	0x0200	**512**	0	W							2 = Teach-In 3 = Start Dynamic Teach 4 = Stop Dynamic Teach

Name	Index (hex)	Index (dec)	Sub-index	R/W	Data type	Data Storage	Dynamic	Modify others	Banked	Default value	Range
SSC1 Teach Status	0x01F0	**496**	0	R	Uint8					0 = Idle	0 = Idle 1 = Ongoing 2 = Last teach failed 3 = Last teach successful 4 = Last teach warning 5 = Teach type changed 6 = Last teach canceled 7 = Last teach not possible: Emitter disabled 8 = Last teach not possible: Jump Detection enabled 9 = Locked
SSC1 Configuration Mode	0x01F3	**499**	0	R	Uint8	X				0 = Auto	0 = Auto 1 = Manual
SSC1 Selected Light Intensity	0x0116	**278**	0	R/W	Uint8	X		X	X	2 = High	0 = Low 1 = Medium 2 = High
SSC1 Selected Channel	0x0119	**281**	0	R/W	Uint8	X		X	X	1 = Green Channel	0 = Red Channel 1 = Green Channel 2 = Blue Channel
SSC1 Mark Type	0x011A	**282**	0	R/W	Uint8	X		X	X	0 = Dark	0 = Dark 1 = Bright
SSC1 Sensitivity	0x0115	**277**	0	R/W	Uint8	X		X	X	20%	5 … 90 %
SSC1 Switching Point	0x01F4	**500**	0	R/W	Uint16	X	X	X	X		0 … 1023
SSC1 Dynamic (SSC1 Mode = Dynamic)											
SSC1 Dynamic Teach Duration	0x01F1	**497**	0	R/W	Uint16	X			X	60 s	10 … 600 s
SSC1 Dynamic Teach Strategy	0x01F2	**498**	0	R/W	Uint8	X			X	0 = Dark Mark	0 = Dark Mark 1 = Bright Mark
SSC1 Jump Detection (SSC1 Mode = Jump Detection)											
SSC1 Selected Light Intensity	0x02AE	**686**	0	R/W	Uint8	X			X	2 = High	0 = Low 1 = Medium 2 = High
SSC1 Selected Channel	0x02AF	**687**	0	R/W	Uint8	X			X	1 = Green Channel	0 = Red Channel 1 = Green Channel 2 = Blue Channel
SSC1 Signal Jump Minimum	0x02A0	**672**	0	R/W	Uint16	X			X	50	20 … 500
SSC1 Signal Jump Direction	0x02A2	**674**	0	R/W	Uint8	X			X	1 = Negative	0 = Positive 1 = Negative 2 = Both
SSC1 Signal Jump Cycle Offset	0x02A4	**676**	0	R/W	Uint16	X			X	1000	10 … 4000
SSC1 Signal Jump Impulse	0x02A3	**675**	0	R/W	Uint16	X			X	0 = Hold	0 = Hold 1 … 10000 ms
SSC1 Maximum Recorded Signal Jump	0x02BF	**703**	0	R	Uint32		X				0 … 5000
SSC1 Signal Jump Comand	0x02C0	**704**	0	W	Uint8						1 = Reset Maximum Recorded Signal Jump
SSC1 (Operating Mode = Contrast Mode)											
SSC1 Teach Mode	0x0291	**657**	0	R/W	Uint8	X		X	X	3 = Window Teach	2 = Jump Detection 3 = Window Teach
SSC1 Teach-in	0x0200	**512**	0	W							1 = Do Teach

Name	Index (hex)	Index (dec)	Sub-index	R/W	Data type	Data Storage	Dynamic	Modify others	Banked	Default value	Range
SSC1 Teach Status	0x01F0	**496**	0	R	Uint8					0 = Idle	0 = Idle 1 = Ongoing 2 = Last teach failed 3 = Last teach successful 4 = Last teach warning 5 = Teach type changed 6 = Last teach canceled 7 = Last teach not possible: emitter disabled 8 = Last teach not possible: Jump Detection enabled 9 = Locked
SSC1 Configuration Mode	0x01F9	505	0	R	Uint8					0 = Auto	0 = Auto 1 = Manual
SSC1 Selected Light Intensity	0x0117	279	0	R/W	Uint8	X		X	X	2 = High	0 = Low 1 = Medium 2 = High
SSC1 Switch Point	0x01F5	501	0	R/W	Uint16	X	X	X	X		0…1023
SSC1 Window Size	0x01F7	503	0	R/W	Uint8	X			X	10 %	2…50 %
SSC1 Jump Detection (SSC1 Mode = Jump Detection)											
SSC1 Selected Light Intensity	0x02BE	702	0	R/W	Uint8	X			X	2 = High	0 = Low 1 = Medium 2 = High
SSC1 Signal Jump Minimum	0x02B0	688	0	R/W	Uint16	X			X	50	60 … 1500
SSC1 Signal Jump Direction	0x02B2	690	0	R/W	Uint8	X			X	1 = Negative	0 = Positive 1 = Negative 2 = Both
SSC1 Signal Jump Cycle Offset	0x02B4	692	0	R/W	Uint16	X			X	1000	10 … 4000
SSC1 Signal Jump Impulse	0x02B3	691	0	R/W	Uint16	X			X	0 = Hold	0 = Hold 1 … 10000 ms
SSC1 Maximum Recorded Signal Jump	0x02BF	703	0	R	Uint32		X				0 … 5000
SSC1 Signal Jump Comand	0x02C0	704	0	W	Uint8						1 = Reset Maximum Recorded Signal Jump
SSC1 (Operating Mode = Color Mode)											
SSC1 Teach-in	0x0200	512	0	W				X			1 = Do Teach
SSC1 Teach Status	0x01F0	496	0	R	Uint8					0 = Idle	0 = Idle 1 = Ongoing 2 = Last teach failed 3 = Last teach successful 4 = Last teach warning 5 = Teach type changed 6 = Last teach canceled 7 = Last teach not possible: emitter disabled 8 = Last teach not possible: Jump Detection enabled 9 = Locked
SSC1 Configuration Mode	0x01FA	506	0	R	Uint8					0 = Auto	0 = Auto 1 = Manual
SSC1 Selected Light Intensity	0x0118	**280**	0	R/W	Uint8	X		X	X	2 = High	0 = Low 1 = Medium 2 = High
SSC1 Switch Point	0x01F6	**502**	0	R/W	Array x3 Uint16	X		X	X	150	0 … 1023
SSC1 Window Size	0x01F8	**504**	0	R/W	Array x3 Uint8	X		X	X	10 %	2 .. 50 %

Name	Index (hex)	Index (dec)	Sub-index	R/W	Data type	Data Storage	Dynamic	Modify others	Banked	Default value	Range
Pin Function											
A1 Pin Function	0x0040	**64**	0	R/W	Uint8	X		X	X	0 = Switching Output SSC 1	0 = Switching Output SSC1 1 = Error Output 2 = Warning Output 5 = Disabled
A2 Pin Function	0x0041	**65**	0	R/W	Uint8	X		X	X	6 = Antivalent Switching Output	1 = Error Output 2 = Warning Output 5 = Disabled 6 = Antivalent Switching Output
E3 Pin Function	0x0042	**66**	0	R/W	Uint8	X		X	X	4 = Teach Input	4 = Teach Input 7 = Trigger Input 5 = Disabled
Digital Outputs											
A1 (SSC, Error or Warning Output)											
A1 NO/NC	0x0210	**528**	0	R/W	Uint8	X			X	0 = NO	0 = NO 1 = NC
A1 NPN/PNP/P-P	0x0220	**544**	0	R/W	Uint8	X			X	P1PW001, P1PW003, P1PW005: 0 = PNP P1PW002, P1PW004, P1PW006: 1 = NPN	0 = PNP 1 = NPN 2 = Push-Pull
A1 On Delay	0x0050	**80**	0	R/W	Uint16	X			X	0	0 … 10000 mS
A1 Off Delay	0x0060	**96**	0	R/W	Uint16	X			X	0	0 … 10000 mS
A1 Impulse	0x0070	**112**	0	R/W	Uint16	X			X	0	0 … 10000 mS
A2 (Error or Warning Output)											
A2 NO/NC	0x0211	**529**	0	R/W	Uint8	X			X	0 = NO	0 = NO 1 = NC
A2 NPN/PNP/P-P	0x0221	**545**	0	R/W	Uint8	X			X	P1PW001, P1PW003, P1PW005: 0 = PNP P1PW002, P1PW004, P1PW006: 1 = NPN	0 = PNP 1 = NPN 2 = Push-Pull
A2 On Delay	0x0051	**81**	0	R/W	Uint16	X			X	0	0…10000 mS
A2 Off Delay	0x0061	**97**	0	R/W	Uint16	X			X	0	0…10000 mS
A2 Impulse	0x0071	**113**	0	R/W	Uint16	X			X	0	0…10000 mS
Digital Inputs											
E3 (Teach or Trigger Input)											
E3 Ub Active/Inactive	0x0262	**610**	0	R/W	Uint8	X			X	0 = Ub Active	0 = Ub Active 1 = Ub Inactive

Diagnosis

Name	Index (hex)	Index (dec)	Sub-index	R/W	Data type	Data Storage	Dynamic	Modify others	Default value	Range
Status										
Device Status	0x0024	**36**	0	R	Uint8		X		0	0 = Device is OK 1 = Maintenance required 2 = Out of specification 3 = Functional check 4 = Failure
Detailed Device Status	0x0025	**37**	0	R	Array of StringT3		X		0	Shows the pending Events (maximum 4)
Additional Status										
Additional Status Information	0x1300	**4864**	1	R	Uint32		X		0	Contaminated Optics
			2							Emitted Light Off
			3							Fatal Error
			4							Temperature Error
			5							Temperature High
			6							Temperature Low
			7							Undervoltage
			8							Power Fault
			9							Short Circuit
Device Simulation										
Simulation Mode	0x0310	**784**	0	R/W	Uint8		X		0 = off	0 = off 1 = on
Device Simulation Enabled (Simulation Mode = 1)										
Signal Value (RGBL)	0x0315	**789**	0	R/W	Array of x4 Uint16		X		65535 = Use Process Value	0 … 1023 = received signal value 65535 = Use Process Value
Simulation SSC1	0x0331	**817**	0	R/W	Uint8		X		255 = Use Process Value	0 = Off 1 = On 255 = Use process Value
Simulation Contaminated Optics	0x031C	**796**	0	R/W	Uint8		X		255 = Use Process Value	0 = Off 1 = On 255 = Use process Value
Simulation Fatal Error	0x0323	**803**	0	R/W	Uint8		X		255 = Use Process Value	0 = Off 1 = On 255 = Use process Value
Simulation Temperature Error	0x0324	**804**	0	R/W	Uint8		X		255 = Use Process Value	0 = Off 1 = On 255 = Use process Value
Simulation Temperature High	0x0325	**805**	0	R/W	Uint8		X		255 = Use Process Value	0 = Off 1 = On 255 = Use process Value
Simulation Temperature Low	0x032C	**812**	0	R/W	Uint8		X		255 = Use Process Value	0 = Off 1 = On 255 = Use process Value
Simulation Undervoltage	0x0327	**807**	0	R/W	Uint8		X		255 = Use Process Value	0 = Off 1 = On 255 = Use process Value
Simulation Power Fault	0x0329	**809**	0	R/W	Uint8		X		255 = Use Process Value	0 = Off 1 = On 255 = Use process Value
Simulation Short Circuit	0x0328	**808**	0	R/W	Uint8		X		255 = Use Process Value	0 = Off 1 = On 255 = Use process Value