

TAKEX

INDEXLIST

IO-Link Fiber Sensor

TAKENAKA ELECTRONIC INDUSTRIAL CO.,LTD.

Head office : 5-22 Higashino Kitainoue-cho, Yamashina-ku,
Kyoto 607-8141, Japan
Telephone : +81-75-581-7111
FAX : +81-75-581-7118

1 Physical Layer

Model	F85RN-ILP
IO-Link Version	V.1.1
Communication mode	COM2 (38.4kbps)
Minimum cycle time	3.6 ms
Process Data Length	4 Byte
Vendor ID	929
Device ID	0x010001 (65537)

2 Connection Specifications

Pin No.	Symbol	Color	Description
1	L+	Brown	Operating Voltage
2	OUT	White	Auxiliary output ※1
3	L-	Blue	GND
4	Q/C	Black	PNP output / IO-Link output

※1 Selectable between NPN, PNP output and disabled.

3 Process Data

Process Data In Mode: 0

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
Received Signal															
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Excess Gain			Not Used			Proximity Alarm 0: Enough margin 1: No margin		Margin Alarm 0: Enough margin 1: No margin		Triggered 0: OFF 1: ON					

Process Data In Mode: 1

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
Temperature (Inside the sensor) Contrast Level															
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Excess Gain			Not Used			Proximity Alarm 0: Enough margin 1: No margin		Margin Alarm 0: Enough margin 1: No margin		Triggered 0: OFF 1: ON					

Process Data In Mode: 2

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
Counter Value															
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Excess Gain			Not Used			Proximity Alarm 0: Enough margin 1: No margin		Margin Alarm 0: Enough margin 1: No margin		Triggered 0: OFF 1: ON					

Process Data In Mode: 3

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
On Duration Off Duration															
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Off Duration			Not used			Proximity Alarm 0: Enough margin 1: No margin		Margin Alarm 0: Enough margin 1: No margin		Triggered 0: OFF 1: ON					

Process Data In Mode: 4

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
Operation Voltage (This Unit contains 10 times the value of Operation Voltage. For example, it is 245 when "24.5V")															
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Not used						Proximity Alarm 0: Enough margin 1: No margin		Margin Alarm 0: Enough margin 1: No margin		Triggered 0: OFF 1: ON					

Process Data In Mode: 5

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
Speed Actual															
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Excess Gain			Not used			Proximity Alarm 0: Enough margin 1: No margin		Margin Alarm 0: Enough margin 1: No margin		Triggered 0: OFF 1: ON					

4 Service Data

Index	Sub Index	Name	Data Type	Length	Access	Data Storage	Default Value	Allowed Value
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Identification

Device Information

16	—	Vendor Name	String	—	R	—	Takenaka Electronic Industrial	
17	—	Vendor Text	String	—	R	—	www.takex-elec.co.jp	
18	—	Product Name	String	—	R	—	F85RN-ILP	
19	—	Product ID	String	—	R	—	F85RN-ILP	
21	—	Serial Number	String	16byte	R	—	F8P0WYZZZZ WW: week YY: year ZZZZ: unit number	
195	—	Device Name	String	15byte	R	—	Fiber Sensor	

User Specific Information

24	—	Application Specific Tag	String	32byte	R/W	○	*****	
192	—	User Tag 1	String	16byte	R/W	○	0000000000000000	
193	—	User Tag 2	String	16byte	R/W	○	0000000000000000	

Revision Information

22	—	Hardware Version	String	—	R	—	1.0	
23	—	Software Version	String	—	R	—	1.0	

Parameter

Device Access Locks

12	2	Device Access Locks Data Storage Lock	Bool	1bit	R	—	0: false	—
12	4	Device Access Locks Local User Interface Lock	Bool	1bit	R/W	○	0: false	0: false 1: true (Cannot be unlocked by button operation.)
79	0	Key Lock	Bool	1bit	R/W	○	0: false	0: false 1: true (Can be unlocked by button operation.)

Operating Configuration

60	1	Setpoint SP1	Unit	2byte	R/W	○	1000	0-9999
60	2	Setpoint SP2	Unit	2byte	R/W	○	300	0-9999
61	1	Polarity (Pin4)	Unit	1byte	R/W	○	0: Not Inverted	0: Not Inverted (Light On) 1: Inverted (Dark On)
61	2	Switchpoint mode	Unit	1byte	R/W	○	1: Single point mode	1: Single point mode 2: Window mode
61	3	Hysteresis	Unit	2byte	R/W	○	40	40-2000(HSP) 100-2000(STANDARD) 30-2000(LONG) 10-2000(S-LONG)
65	0	NPN/PNP Mode (Pin2)	Unit	1byte	R/W	○	2: NPN	0: Disabled 1: PNP 2: PNP

Index	Sub Index	Name	Data Type	Length	Access	Data Storage	Default Value	Allowed Value
Sensor Configuration								
67	0	Detection Speed	Unit	1byte	R/W	○	3: LONG	1: HSP (50μs) 2: STANDARD (500μs) 3: LONG (4ms) 4: S-LONG (32ms)
68	0	Light Source Level Auto Adjustment	Unit	1byte	R/W	○	1: Auto	0: Manual 1: Auto
69	0	ECO Mode	Unit	1byte	R/W	○	0: OFF	0: OFF 1: ON
70	0	Light Source Enabled	Unit	1byte	R/W	○	0: OFF	0: OFF 1: ON
71	0	Light Source Level Adjustment	Unit	1byte	R/W	○	15	1-12 (HSP) 1-15 (STANDARD, LONG, S-LONG)
78	1	Proximity Alarm Threshold	Unit	1byte	R/W	○	0: 50%	0: 50% 1: 60% 2: 70% 3: 80%
78	2	Margin Alarm Threshold	Unit	1byte	R/W	○	0: 120%	0: 120% 1: 150% 2: 200% 3: 300% 4: 400% 5: 500%
100	0	Locator Indicator Enable	Unit	1byte	R/W	○	0: OFF	0: OFF 1: ON
101	0	Received Light Indication	Unit	1byte	R/W	○	0: Standard	0: Standard Indication 1: Percent Indication 2: Zero Offset Indication
102	0	Reverse Indication	Unit	1byte	R/W	○	0: Normal	0: Normal 1: Reverse
Counter								
72	0	Counter Enabled	Unit	1byte	R/W	○	0: OFF	0: OFF 1: ON
2	160	Counter Reset	Cmd	—	R	—		
73	0	Counter Value	Unit	2byte	R	—	0	0-9999
Timer								
74	1	Timer Mode	Unit	1byte	R/W	○	0: Timer OFF	0: Timer OFF 1: On Delay 2: Off Delay 3: One-Shot 4: On-Off Delay
74	2	ON Delay Value	Unit	2byte	R/W	○	1	1-9999 ms
74	3	OFF Delay Value	Unit	2byte	R/W	○	1	1-9999 ms
74	4	OneShot Value	Unit	2byte	R/W	○	1	1-9999 ms
75	0	Duration Enabled	Unit	1byte	R/W	○	0: OFF	0: OFF 1: ON
2	161	Duration Reset	Cmd	—	R	—		
76	1	On Duration	Unit	12bit	R	—	0	0-4095 ms
76	2	Off Duration	Unit	12bit	R	—	0	0-4095 ms
Data Mapping Configuration								
77	0	Process Data In Mode	Unit	1byte	R/W	○	0	0-5 (see Process Data)
Observation								
Device Monitoring								
80	1	Received Signal On	Unit	2byte	R	—	—	0-9999
80	2	Received Signal Off	Unit	2byte	R	—	—	0-9999
81	0	Contrast Level	Unit	1byte	R	—	—	0-255
82	0	Excess Gain	Unit	1byte	R	—	—	0-255
83	0	Excess Gain Resolution	Unit	1byte	R/W	○	0: x1.0	0: x1.0 1: x10
Diagnosis								
Device Status								
36	0	Device Status	Unit	1byte	R	—	—	0: Device is OK 1: Maintenance-Required 2: Out-of-Specification 3: Functional-Check 4: Failure
37	0	Detailed Device Status	Record		R	—	—	see Event

Index	Sub Index	Name	Data Type	Length	Access	Data Storage	Default Value	Allowed Value
Service Function								
59	0	Teach-in Status	Unit	1byte	R	—	—	0: IDLE 1: SP1 SUCCESS 2: SP2 SUCCESS 3: SP12 SUCCESS 4: WAIT FOR COMMAND 5: BUSY 7: ERROR
2	65	Teaching: SP1 Single Value Teach	Cmd	—	R	—		
2	67	Teaching: SP1 Two Value Teach TP1	Cmd	—	R	—		
2	68	Teaching: SP1 Two Value Teach TP2	Cmd	—	R	—		
2	71	Teaching: SP1 Dynamic Teach Start	Cmd	—	R	—		
2	72	Teaching: SP1 Dynamic Teach Stop	Cmd	—	R	—		
2	75	Teaching: SP1 Maximum Sensitivity Teach	Cmd	—	R	—		
2	76	Teaching: SP1 Window Mode Teach TP1	Cmd	—	R	—		
2	77	Teaching: SP2 Window Mode Teach TP1	Cmd	—	R	—		
2	79	Teaching: Teaching Cancel	Cmd	—	R	—		
2	128	Device Reset	Cmd	—	R	—		
2	130	Restore Factory Settings	Cmd	—	R	—		
Operating Hours								
103	1	Operating Hours - Since Inception	Unit	4byte	R	—	—	0-876000 h
103	2	Operating Hours - Since Power Up	Unit	4byte	R	—	—	0-876000 h
Temperature								
104	1	Actual	Int	1byte	R	—	—	-40 to +80°C
104	2	Maximum - Since Power Up	Int	1byte	R	—	—	-40 to +80°C
104	3	Maximum - Since Inception	Int	1byte	R	—	—	-40 to +80°C
104	4	Minimum - Since Power Up	Int	1byte	R	—	—	-40 to +80°C
104	5	Minimum - Since Inception	Int	1byte	R	—	—	-40 to +80°C
Operating Voltage								
105	1	Actual	Unit	2byte	R	—	—	0-30.0V
105	2	Maximum - Since Power Up	Unit	2byte	R	—	—	0-30.0V
105	3	Minimum - Since Power Up	Unit	2byte	R	—	—	0-30.0V
Speed								
106	1	Actual	Unit	2byte	R	—	—	0-9999
106	2	Maximum - Since Power Up	Unit	2byte	R	—	—	0-9999
Events Configuration								
107	0	Local Threshold Change Event Enabled	Bool	1bit	RW	○	0: OFF	0: OFF 1: ON
108	0	Low Margin Event Enabled	Bool	1bit	RW	○	0: OFF	0: OFF 1: ON
109	1	Light received event while LED is off	Bool	1bit	RW	○	0: OFF	0: OFF 1: ON
109	2	Threshold for the light received event while LED is off	Unit	2byte	RW	○	10	1-5000
116	1	Counter Event Enabled	Bool	1bit	RW	○	0: OFF	0: OFF 1: ON
116	2	Target Count Value	Unit	2byte	RW	○	1000	1-9999
110	1	Temperature Event Enabled	Bool	1bit	RW	○	0: OFF	0: OFF 1: ON
110	2	Low Temperature Value	Int	1byte	RW	○	-30	-30 to +80°C
110	3	High Temperature Value	Int	1byte	RW	○	80	-30 to +80°C
115	1	Operating Voltage Event Enabled	Bool	1bit	RW	○	0: OFF	0: OFF 1: ON
115	2	Low Voltage Value	Unit	1byte	RW	○	10	10-30V
115	3	High Voltage Value	Unit	1byte	RW	○	30	10-30V

5 Event

Each Event can be enabled/disabled by Index 107 to 115.

Event Code	Event Function	Type	Description
0x1800	Threshold Changed Locally	Notification	Event occurs when the threshold is changed at the sensor side (by buttons).
0x1820	Low Margin	Warning	Event occurs when a Margin Low Alarm (Process Data) is issued.
0x1830	Teaching Error	Notification	Event occurs upon teaching error.
0x1840	Counter Reached	Notification	Event occurs when a set count is reached.
0x1850	Light received event while LED is off	Warning	Event occurs when light is received while the LED is disabled.
0x4210	Low Internal Temperature	Warning	Event occurs when the inner temperature becomes lower than the value set in Index 110.
0x4220	High Internal Temperature	Warning	Event occurs when the inner temperature becomes higher than the value set in Index 110.
0x5111	Low Operating Voltage	Warning	Event occurs when the supply voltage becomes lower than the value set in Index 115.
0x5110	High Operating Voltage	Warning	Event occurs when the supply voltage becomes higher than the value set in Index 115.

※ Temperature means one inside the sensor, not ambient temperature.

- The guarantee period of this product is one year after the delivery.
- If any defect is found during the guarantee period, Takenaka will repair or replace the defective product.
- This product is an industrial sensor which issues an output upon detecting an object. It does not have any function to prevent accidents, death or injuries.
- Takenaka will not be held responsible for any damage or loss incurred due to accidents, faulty installation, abuse, misuse, improper maintenance or acts of God including lightning surge.