EN

Parameter and Process Data

AFIx-####.####.1###

IO-Link

Subject to change without notice
Available as PDF version only
Status: 09.01.2023
www.baumer.com

IO-Link
AFIx-####.####.1###

Device ID

Product	Hex	Decimal
AFIx	0x03EF	1009

IO-Link Version: V 1.1
Data Storage: Yes
Block Parameter: Yes
Min. Cycle Time: 8.4 ms
SIO-Mode: Yes
COM-Mode: Yes

Process Data (Length: 128 Bit)

Subindex	Bit Offset	Name	Data type	Bit length	Range
1	126-127	Temperature unit	Uint	2 bit	0 = Fahrenheit 1 = Celsius
2	121	Active Alarms	Boolean	1 bit	0 = false/off 1 = true/on
3	120	Switch Output 1	Boolean	1 bit	0 = false/off 1 = true/on
4	104	Current out channel 2, Temperature	Uint	16 bit	0 - 23000µA
5	88	Current out channel 1, Concentration/Conductivity	Uint	16 bit	0 - 23000µA
6	72	Media Temperature	Int	16 bit	-327.00 - 327.00 °C
7	40	Conductivity value	Float	32 bit	>0 mS
8	8	Concentration value	Float	32 bit	>0 %
9	0	Active range	Uint	8 bit	1-4

Octet 0

Bit Offset	127	126	-	-	-	-	121	120
	Temp unit		-	-	-	-	Alarms	SW1

Octet 1

Bit Offset	119	118	117	116	115	114	113	112
	Current out channel 2							

Octet 2

Bit Offset	111	110	109	108	107	106	105	104
	Current out channel 2							

Octet 3

Bit Offset	103	102	101	100	99	98	97	96
	Current out channel 1							

Octet 4

Bit Offset	95	94	93	92	91	90	89	88
	Current out channel 1							

Octet 5

Bit Offset	87	86	85	84	83	82	81	80
	Media Temperature							

Octet 6

Bit Offset	79	78	77	76	75	74	73	72
	Media Temperature							

Octet 7

Bit Offset	71	70	69	68	67	66	65	64
	Conductivity value							

Octet 8

Bit Offset	63	62	61	60	59	58	57	56
	Conductivity value							

Octet 9

Bit Offset	55	54	53	52	51	50	49	48
	Conductivity value							

Octet 10

Bit Offset	47	46	45	44	43	42	41	40
	Conductivity value							

Octet 11

Bit Offset	39	38	37	36	35	34	33	32
	Concentration value							

Octet 12

Bit Offset	31	30	29	28	27	26	25	24
	Concentration value							

Octet 13

Bit Offset	23	22	21	20	19	18	17	16
	Concentration value							

Octet 14

Bit Offset	15	14	13	12	11	10	9	8
	Concentration value							

Octet 15

Bit Offset	7	6	5	4	3	2	1	0
	Active range							

Index	Subindex	Name	Data type	Access rights	Byte length	Value range	Description
System commands							
2	0	System Command	U08	W	1		Command Code Definition Public: 0x00 – 0x9F Vendor specific 0xA0 – 0xFF - 130 (0x82): Factory Reset. - 160 (0xA0): Calibrated Temperature Sensor - 161 (0xA1): Calibrate Conductivity Sensor - 162 (0xA2): Reset User Calibration - 163 (0xA3): Measure Media point 1 - 164 (0xA3): Measure Media point 2 - 165 (0xA3): Measure Media point 3 - 167 (0xA3): Calibrate Media in 3 points - 170 (0xA3): Calibrate resistance point1 - 171 (0xA3): Calibrate resistance point2 - 172 (0xA3): Calibrate resistance point3 - 173 (0xA3): End resistance calibration
12	0	Device locks	Uint16	R/W	2		0x0004 = Local param 0x0008 = Local user
General information of sensors							
13	1	Profile Characteristics, DeviceProfileID	Uint16	R	2		0x0001, Smart Sensor Profile
13	2	Profile Characteristics, FunctionClasses	Uint16	R	2		0x8000, Identification FunctionClass
13	3	Profile Characteristics, FunctionClasses	Uint16	R	2		0x8001, SSC FunctionClass
13	4	Profile Characteristics, FunctionClasses	Uint16	R	2		0x8002, PDV FunctionClass
13	5	Profile Characteristics, FunctionClasses	Uint16	R	2		0x8003, Diagnosis FunctionClass
14	1	PDInputDescriptor	Uint24	R	3		02 08 00
14	2	PDInputDescriptor	Uint24	R	3		04 20 08
14	3	PDInputDescriptor	Uint24	R	3		04 20 28
14	4	PDInputDescriptor	Uint24	R	3		02 10 48
14	5	PDInputDescriptor	Uint24	R	3		02 10 58
14	6	PDInputDescriptor	Uint24	R	3		02 10 68
14	7	PDInputDescriptor	Uint24	R	3		02 02 78
14	8	PDInputDescriptor	Uint24	R	3		01 06 7A
16	0	Vendor Name	String	R	18	ASCII	Baumer A/S
17	0	Vendor Text	String	R	14	ASCII	www.baumer.com
18	0	Product Name	String	R	32	ASCII	Baumer Article AFIX-XXX.XXX.XXX/XXXX
19	0	Product Id	String	R	16	ASCII	Baumer Article AFI4 or AFI5
20	0	Device Text	String Max 32 Chars	R	32	ASCII	Sensor specific.
21	0	Serial number	String	R	16	ASCII	AFIx Serial Number Eg: 18017
22	0	Hardware revision	String	R	2	ASCII	AFIx Hardware revision Eg: 20
23	0	Firmware revision	String	R	14	ASCII	AFIx Firmware revision Eg: 00.01.01-30.21

24	0	Application Specific Tag	String	R/W	16	ASCII	The application specific tag can be used by the end user to store data that is specific to the end users application. The value does not influence the sensor operation. Length: Max 16.
25	0	Function Specific Tag	String	R/W	32	ASCII	The function specific tag can be used by the end user to store data that is specific to the end users application. The value does not influence the sensor operation. Length: Max 32.
26	0	Location Tag	String	R/W	32	ASCII	The location tag can be used by the end user to store data that is specific to the end users application. The value does not influence the sensor operation. Length: Max 32.
36	1	Status / Diagnosis	Uint8	R	1	0-0xFF	0x00 = OK. 0x01 = Maintenance-Required 0x02 = Out-of-Specification 0x03 = Functional-Check 0x04 = Failure 0x05-0xFF = Reserved
37	1	Detailed Device Status[0]	Uint8	R	3		0x01 = Alarms for IOL uC
			Uint8				0x00
			Uint8				0x30 = Short circuit 0x50 = IOL maintanance
		Detailed Device Status[1]	Uint8		3		0x02 = Alarms for Measuring uC
			Uint8				0x00
			Uint8				Bit1 = Wire break (0x02) Bit3 = Temperature exceeded (0x08)
86	1	Part Number	String	R	16	ASCII	Part article number / Material number
104	4	User Date, Day	Uint8	R/W	1	1-31	A user write and readable day tag
104	5	User Date, Month	Uint8	R/W	1	1-12	A user write and readable month tag
104	6	User Date, Year	Uint16	R/W	2	1900-2100	A user write and readable year tag
118	4	Production Date, Day	Uint8	R	1	1-31	A readable production day tag
118	5	Production Date, Month	Uint8	R	1	1-12	A readable production month tag
118	6	Production Date, Year	Uint16	R	2	1900-2100	A readable production year tag
Sensor functions							
60	1	Switch 1 trigger value min, Conductivity / Concentration range 1	Float32	R/W	4	0-65535	Read / Write min trigger value for switch 1, range select 1. [mS/cm or %]
60	2	Switch 1 trigger value max, Conductivity / Concentration range 1	Float32	R/W	4	0-65535	Read / Write max trigger value for switch 1, range select 1. [mS/cm or %]
61	1	Switch 1 output polarity	Uint8	R/W	1	0-1	Read / Write switch output polarity 0 = Normally open / Active high. 1 = Normally closed / Active low.
61	3	Switch 1 trigger frequency hysteresis, Conductivity / Concentration range 1	Uint8	R/W	1	0-65535	Read / Write hysteresis for switch 1 trigger, range select 1. [µS/cm or 0,001%]
62	1	Switch 1 trigger value min, Conductivity / Concentration range 2	Float32	R/W	4	0-65535	Read / Write min trigger value for switch 1, range select 2. [mS/cm or %]
62	2	Switch 1 trigger value max, Conductivity / Concentration range 2	Float32	R/W	4	0-65535	Read / Write max trigger value for switch 1, range select 2. [mS/cm or %]
63	3	Switch 1 trigger frequency hysteresis, Conductivity / Concentration range 2	Uint8	R/W	1	0-65535	Read / Write hysteresis for switch 1 trigger, range select 2. [µS/cm or 0,001%]

16384	1	Switch 1 trigger value min, Conductivity / Concentration range 3	Float32	R/W	4	0-65535	Read / Write min trigger value for switch 1, range select 3. [mS/cm or %]
16384	2	Switch 1 trigger value max, Conductivity / Concentration range 3	Float32	R/W	4	0-65535	Read / Write max trigger value for switch 1, range select 3. [mS/cm or %]
16385	3	Switch 1 trigger frequency hysteresis, Conductivity / Concentration range 3	Uint8	R/W	1	0-65535	Read / Write hysteresis for switch 1 trigger, range select 3. [µS/cm or 0,001%]
16386	1	Switch 1 trigger value min, Conductivity / Concentration range 4	Float32	R/W	4	0-65535	Read / Write min trigger value for switch 1, range select 4. [mS/cm or %]
16386	2	Switch 1 trigger value max, Conductivity / Concentration range 4	Float32	R/W	4	0-65535	Read / Write max trigger value for switch 1, range select 4. [mS/cm or %]
16387	3	Switch 1 trigger frequency hysteresis, Conductivity / Concentration range 4	Uint8	R/W	1	0-65535	Read / Write hysteresis for switch 1 trigger, range select 4. [µS/cm or 0,001%]
16388	1	Switch 1 trigger value min, Temperature	Float32	R/W	4	-50-200	Read / Write min trigger value for switch 1, temperature input. [°C] Min/Max are defined by temperature output range; index 11025
16388	2	Switch 1 trigger value max, Temperature	Float32	R/W	4	-50-200	Read / Write max trigger value for switch 1, temperature input. [°C] Min/Max are defined by temperature output range; index 11025
16389	3	Switch 1 trigger frequency hysteresis, Temperature	Uint8	R/W	1	0-65535	Read / Write hysteresis for switch 1 trigger, temperature input. [0,001 °C]
74	1	Temperature unit	Uint16	R/W	2	13-14	Read / Write temperature unit 13 = °C. 14 = F.
77	1	Measurement mode. Select between conductivity and concentration.	Uint8	R/W	1	1, 2	Read / Write measurement mode 1 = Conductivity 2 = Concentration
77	5	Reserved	Uint8	R/W	1	0	Reserved for later use
78	1	Switch 1output mode	Uint8	R/W	1	0-3	Read / Write switch output mode 0 = OFF. 1 = Push-Pull. 2 = PNP 4 = NPN.
85	1	SSC1 Selection	Uint8	R/W	1	1, 5	Read / Write switch source selection 1 = Conductivity / Concentration 5 = Temperature
88	1	PV1 Value	Float32	R	4		Read native primary value (conductivity or concentration)
88	6	PV1 Unit	Uint16	R	2		Read native primary unit (mS/cm or %)
88	11	PV2 Value	Float32	R	4		Read channel 2 current value
88	16	PV2 Unit	Uint16	R	2		Read channel 2 current unit
88	21	PV3 Value	Float32	R	4		Read channel 1 current value
88	26	PV3 Unit	Uint16	R	2		Read channel 1 current unit
88	31	PV4 Value	Float32	R	4		Read media temperature in local unit
88	36	PV4 Unit	Uint16	R	2		Read media temperature local unit
88	41	PV5 Value	Float32	R	4		Read primary conductivity value
88	46	PV5 Unit	Uint16	R	2		Read primary conductivity unit
88	51	PV6 Value	Float32	R	4		Read primary concentration value
88	56	PV6 Unit	Uint16	R	2		Read primary concentration unit
105	1	User offset, conductivity	Float32	R/W	4	-2.0-2.0	Read / Write offset of measured conductivity value [S/cm]
105	11	User offset, temperature	Float32	R/W	4	-15000-15000	Read / Write offset of measured process temperature value. [0,01°C]
121	2	Switch Response Delay Time	Uint32	R/W	4	0-60000	Read / Write the release delay time in milliseconds for the respective switching signal channel (SSC). [ms]

11008	1	ConductivityConcentrationTable range 1 Length	Uint8	R/W	1	2-30	Read / Write length of conductivity to concentration table
11008	2	ConductivityConcentrationTable range 1 Label	String	R/W	16	ASCII	Read / Write label of conductivity to concentration table
11008	9+N*2	ConductivityConcentrationTable range 1 Conductivity N*	Float32	R/W	4	0-2	Read / Write conductivity for entry N. [S/cm]
11008	10+N*2	ConductivityConcentrationTable range 1 oncentration N*	Uint16	R/W	2	0-65535	Read / Write concentration for entry N [0,01%]
11009	1	ConductivityConcentrationTable range 2 Length	Uint8	R/W	1	2-30	Read / Write length of conductivity to concentration table
11009	2	ConductivityConcentrationTable range 2 Label	String	R/W	16	ASCII	Read / Write label of conductivity to concentration table
11009	9+N*2	ConductivityConcentrationTable range 2 Conductivity N*	Float32	R/W	4	0-2	Read / Write conductivity for entry N. [S/cm]
11009	10+N*2	ConductivityConcentrationTable range 2 oncentration N*	Uint16	R/W	2	0-65535	Read / Write concentration for entry N [0,01%]
11010	1	ConductivityConcentrationTable range 3 Length	Uint8	R/W	1	2-30	Read / Write length of conductivity to concentration table
11010	2	ConductivityConcentrationTable range 3 Label	String	R/W	16	ASCII	Read / Write label of conductivity to concentration table
11010	9+N*2	ConductivityConcentrationTable range 3 Conductivity N*	Float32	R/W	4	0-2	Read / Write conductivity for entry N. [S/cm]
11010	10+N*2	ConductivityConcentrationTable range 3 oncentration N*	Uint16	R/W	2	0-65535	Read / Write concentration for entry N [0,01%]
11011	1	ConductivityConcentrationTable range 4 Length	Uint8	R/W	1	2-30	Read / Write length of conductivity to concentration table
11011	2	ConductivityConcentrationTable range 4 Label	String	R/W	16	ASCII	Read / Write label of conductivity to concentration table
11011	9+N*2	ConductivityConcentrationTable range 4 Conductivity N*	Float32	R/W	4	0-2	Read / Write conductivity for entry N. [S/cm]
11011	10+N*2	ConductivityConcentrationTable range 4 oncentration N*	Uint16	R/W	2	0-65535	Read / Write concentration for entry N [0,01%]
11012	1	Temperature Source	Int8	R/W	1	0-2	Read / Write temperature source 0 = Sensor tip 1 = External HART 2 = Fixed
11012	2	Fixed Temperature	Int16	R/W	2	-2000-150000	Read / Write fixed temperature [0,01°C]
11012	3	Range Selection	Int8	R/W	1	0-4	Read / Write forced range selection 0 = Use I/O selection 1 = Select range 1 2 = Select range 2 3 = Select range 3 4 = Select range 4
11012	4	Advanced Mode	Int8	R/W	1	0-1	Read / Write advanced mode activated 0 = Disabled, 1 = Enabled
11013	1	Temperature Coefficient 1, range 1	Float32	R/W	4	-10-10	Read / Write temperature coefficient for conductivity temperature correction % / K
11013	2	Temperature Coefficient 2, range 1	Float32	R/W	4	-10-10	Read / Write temperature coefficient for conductivity temperature correction % / K²
11013	3	ReferenceTemperature, range 1	Int16	R/W	2	-2000-150000	Read / Write target temperature for conductivity temperature correction [0,01°C]
11013	4	Input Range, range 1	Uint16	R/W	2	0-10000	Read / Write input measuring range [0,1mS/cm]
11014	1	Temperature Coefficient 1, range 2	Float32	R/W	4	-10-10	Read / Write temperature coefficient for conductivity temperature correction % / K
11014	2	Temperature Coefficient 2, range 2	Float32	R/W	4	-10-10	Read / Write temperature coefficient for conductivity temperature correction % / K²

11014	3	ReferenceTemperature, range 2	Int16	R/W	2	-2000-150000	Read / Write target temperature for conductivity temperature correction [0,01°C]
11014	4	Input Range, range 2	Uint16	R/W	2	0-10000	Read / Write input measuring range [0,1mS/cm]
11015	1	Temperature Coefficient 1, range 3	Float32	R/W	4	-10-10	Read / Write temperature coefficient for conductivity temperature correction % / K
11015	2	Temperature Coefficient 2, range 3	Float32	R/W	4	-10-10	Read / Write temperature coefficient for conductivity temperature correction % / K²
11015	3	ReferenceTemperature, range 3	Int16	R/W	2	-2000-150000	Read / Write target temperature for conductivity temperature correction [0,01°C]
11015	4	Input Range, range 3	Uint16	R/W	2	0-10000	Read / Write input measuring range [0,1mS/cm]
11016	1	Temperature Coefficient 1, range 4	Float32	R/W	4	-10-10	Read / Write temperature coefficient for conductivity temperature correction % / K
11016	2	Temperature Coefficient 2, range 4	Float32	R/W	4	-10-10	Read / Write temperature coefficient for conductivity temperature correction % / K²
11016	3	ReferenceTemperature, range 4	Int16	R/W	2	-2000-150000	Read / Write target temperature for conductivity temperature correction [0,01°C]
11016	4	Input Range, range 4	Uint16	R/W	2	0-10000	Read / Write input measuring range [0,1mS/cm]
11017	1	Conductivity Output Settings Range 1, Min value	Float32	R/W	4	0-1	Read / Write Conductivity @ 4mA LRV [S/cm]
11017	2	Conductivity Output Settings Range 1, Max value	Float32	R/W	4	0-1	Read / Write Conductivity @ 20mA URV [S/cm]
11018	1	Conductivity Output Settings Range 2, Min value	Float32	R/W	4	0-1	Read / Write Conductivity @ 4mA LRV [S/cm]
11018	2	Conductivity Output Settings Range 2, Max value	Float32	R/W	4	0-1	Read / Write Conductivity @ 20mA URV [S/cm]
11019	1	Conductivity Output Settings Range 3, Min value	Float32	R/W	4	0-1	Read / Write Conductivity @ 4mA LRV [S/cm]
11019	2	Conductivity Output Settings Range 3, Max value	Float32	R/W	4	0-1	Read / Write Conductivity @ 20mA URV [S/cm]
11020	1	Conductivity Output Settings Range 4, Min value	Float32	R/W	4	0-1	Read / Write Conductivity @ 4mA LRV [S/cm]
11020	2	Conductivity Output Settings Range 4, Max value	Float32	R/W	4	0-1	Read / Write Conductivity @ 20mA URV [S/cm]
11021	1	Concentration Output Settings Range 1, Min value	Float32	R/W	4	0-1000	Read / Write Concentration @ 4mA LRV [‰]
11021	2	Concentration Output Settings Range 1, Max value	Float32	R/W	4	0-1000	Read / Write Concentration @ 20mA URV [‰]
11022	1	Concentration Output Settings Range 2, Min value	Float32	R/W	4	0-1000	Read / Write Concentration @ 4mA LRV [‰]
11022	2	Concentration Output Settings Range 2, Max value	Float32	R/W	4	0-1000	Read / Write Concentration @ 20mA URV [‰]
11023	1	Concentration Output Settings Range 3, Min value	Float32	R/W	4	0-1000	Read / Write Concentration @ 4mA LRV [‰]
11023	2	Concentration Output Settings Range 3, Max value	Float32	R/W	4	0-1000	Read / Write Concentration @ 20mA URV [‰]
11024	1	Concentration Output Settings Range 4, Min value	Float32	R/W	4	0-1000	Read / Write Concentration @ 4mA LRV [‰]
11024	2	Concentration Output Settings Range 4, Max value	Float32	R/W	4	0-1000	Read / Write Concentration @ 20mA URV [‰]
11025	1	Temperature Output Settings Range 4, Min value	Float32	R/W	4	-5000-20000	Read / Write Temperature @ 4mA LRV [0,01°C]

11025	2	Temperature Output Settings Range 4, Max value	Float32	R/W	4	-5000-20000	Read / Write Temperature @ 20mA URV [0,01°C]
11026	1	Low er current limit, channel 2, temperature	Uint16	R/W	2	3500-23000	Read / Write Low er current limit, Temperature. [µA]
11026	2	Upper current limit, channel 2, temperature	Uint16	R/W	2	3500-23000	Read / Write Upper current limit, Temperature. [µA]
11027	1	Low er current limit, channel 1, conductivity/concentration	Uint16	R/W	2	3500-23000	Read / Write Low er current limit, Conductivity/Concentration. [µA]
11027	2	Upper current limit, channel 1, conductivity/concentration	Uint16	R/W	2	3500-23000	Read / Write Upper current limit, Conductivity/Concentration. [µA]
11027	3	Output current damping, channel 2	Float32	R/W	4	0-30	Read / Write the delay time in seconds for the analogue signal channel 2. [s]
11028	1	Current Output Error Indication Channel	Uint8	R/W	1	0-4	Read / Write analogue channel for error indication 0 = Conductivity / Concentration 1 = Temperature 2 = Both 4 = None
11028	2	Current Output Error Indication Value	Uint16	R/W	2	3500-23000	Read / Write analogue value for error indication. [µA]
11029	2	Label for undefined media	String	R/W	16	ASCII	Read / Write media label
11030	1	Label for media 1	String	R/W	16	ASCII	Read / Write media label
11030	2	Range start, media 1	Float32	R/W	4	0-2	Read / Write range start. [S/cm]
11030	3	Range stop, media 1	Float32	R/W	4	0-2	Read / Write range stop. [S/cm]
11031	1	Label for media 2	String	R/W	16	ASCII	Read / Write media label
11031	2	Range start, media 2	Float32	R/W	4	0-2	Read / Write range start. [S/cm]
11031	3	Range stop, media 2	Float32	R/W	4	0-2	Read / Write range stop. [S/cm]
11032	1	Label for media 3	String	R/W	16	ASCII	Read / Write media label
11032	2	Range start, media 3	Float32	R/W	4	0-2	Read / Write range start. [S/cm]
11032	3	Range stop, media 3	Float32	R/W	4	0-2	Read / Write range stop. [S/cm]
11033	1	Label for media 4	String	R/W	16	ASCII	Read / Write media label
11033	2	Range start, media 4	Float32	R/W	4	0-2	Read / Write range start. [S/cm]
11033	3	Range stop, media 4	Float32	R/W	4	0-2	Read / Write range stop. [S/cm]
11034	1	Active range	Uint8	R	1		Read active measuring range
11035	1	Conductivity Offset Adjustment	Float32	R/W	4	0-1	Read / Write Conductivity abs adjustment [S/cm]
11035	2	Temperature Offset Adjustment	Float32	R/W	4	-2000-15000	Read / Write Temperature abs adjustment [0,01°C]
11035	3	Media calibration, point 1, conductivity	Float32	R/W	4	0-2	Read / Write conductivity point 1, for media calibration. [S/cm]
11035	4	Media calibration, point 2, conductivity	Float32	R/W	4	0-2	Read / Write conductivity point 2, for media calibration. [S/cm]
11035	5	Media calibration, point 3, conductivity	Float32	R/W	4	0-2	Read / Write conductivity point 3, for media calibration. [S/cm]
11035	6	Media calibration, point 1, temperature	Float32	R/W	4	0-150	Read / Write temperature point 1, for media calibration. [°C]
11035	7	Media calibration, point 2, temperature	Float32	R/W	4	0-150	Read / Write temperature point 2, for media calibration. [°C]
11035	8	Media calibration, point 3, temperature	Float32	R/W	4	0-150	Read / Write temperature point 3, for media calibration. [°C]
11035	9	Installation factor	Float32	R/W	4	0-2	Read / Write gain/installation factor for compensating for pipe/system influence
11035	10	Calibration parameter, Resistance calibration value	Float32	R/W	4	0-2000000	Calibration value for resistance calibration [Ω]
11035	11	Calibration parameter, Resistance range	Uint8	R/W	1	0-4	Calibration range for resistance calibration
* N can be 1-30, and defines the index number in the conversion table.							