

SA

Vendor ID 310 / 0x0136 - Bytes: 01 54 / 0x01 0x36
 Device ID 547 / 0x000223 - Bytes: 00 02 35 / 0x00 0x02 0x23
 Vendor name ifm electronic gmbh
 Vendor text www.ifm.com
 Vendor URL <http://www.ifm.com/ifmgb/web/io-link-download.htm>

**Communication**

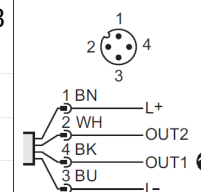
IO-Link revision V1.1
 Bit rate COM2
 Minimum cycle time 3.000 ms
 SIO mode supported Yes

Features

Block parametrization Yes
 Data storage Yes

Device variant

SA5030_GAS	Flow monitor, absolutely (Air), 2...100 m/s, IO-Link, CRN, GL, cULus (Limited Voltage / Current), M18 x 1, 5
SA5040_GAS	Flow monitor, absolutely (Air), 2...100 m/s, IO-Link, cULus (Limited Voltage / Current), M18 x 1, 5
SA2000_GAS	Flow monitor, absolutely (Air), 2...100 m/s, IO-Link, cULus (Limited Voltage / Current), G 1/2"
SA5000_GAS	Flow monitor, absolutely (Air), 2...100 m/s, IO-Link, cULus (Limited Voltage / Current), M18 x 1, 5
SA4100_GAS	Flow monitor, absolutely (Air), 2...100 m/s, IO-Link, cULus (Limited Voltage / Current), Ø 8 mm
SA4300_GAS	Flow monitor, absolutely (Air), 2...100 m/s, IO-Link, cULus (Limited Voltage / Current), Ø 8 mm



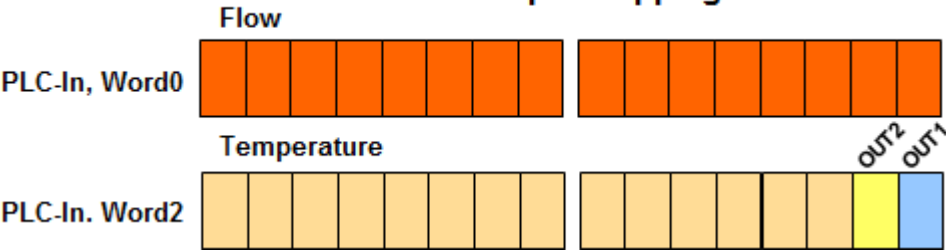
Process data

Total bit length = 32

(Process data input)

Name	Description	Data type	Bit offset	Bit length	Value range	Gradient	Offset	Unit
Flow	Current flow	IntegerT	16	16	0 to 12000 (32760) OL	0.01	0	m/s
Temperature	Current temperature	IntegerT	2	14	-440 to 1240 (-8184) UL (8184) OL	0.1	0	°C
OUT2	Status depends on [OU2]	BooleanT	1		(false) inactive (true) active			
OUT1	Status depends on [OU1]	BooleanT	0		(false) inactive (true) active			

PLC input mapping



Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
Standard Command		2	Sub 0	UIntegerT	8 Bit	wo		<p>(130) Restore Factory Settings</p> <p>(161) Reset [Hi.F] and [Lo.F] memory</p> <p>(162) Reset [Lo.F] memory</p> <p>(163) Reset [Hi.F] memory</p> <p>(165) Reset [Hi.T] and [Lo.T] memory</p> <p>(166) Reset [Lo.T] memory</p> <p>(167) Reset [Hi.T] memory</p> <p>(240) IO-Link 1.1 system test command 240, Event 8DFE appears</p> <p>(241) IO-Link 1.1 system test command 241, Event 8DFE disappears</p> <p>(242) IO-Link 1.1 system test command 242, Event 8DFF appears</p> <p>(243) IO-Link 1.1 system test command 243, Event 8DFF disappears</p>			

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
Standard Command		2	Sub 0	UIntegerT	8 Bit	wo		(255) Command without effect, for internal use only			
Device Access Locks		12	Sub 0	RecordT	16 Bit	rw					
<i>Data Storage</i>			bitOffs 1	BooleanT	1 Bit		(false)	(false) Unlocked (true) Locked			
<i>Local User Interface</i>			bitOffs 3	BooleanT	1 Bit		(false)	(false) Unlocked (true) Locked			
Vendor Name		16	Sub 0	StringT	max 19 Byte	ro	ifm electronic gmbh				
Vendor Text		17	Sub 0	StringT	max 11 Byte	ro	www.ifm.com				
Product Name		18	Sub 0	StringT	max 10 Byte	ro					
Product ID		19	Sub 0	StringT	max 6 Byte	ro					
Product Text		20	Sub 0	StringT	max 24 Byte	ro	Flow Sensor Calorimetric				
Serial Number		21	Sub 0	StringT	max 12 Byte	ro					
Hardware Version		22	Sub 0	StringT	max 2 Byte	ro					
Firmware Version		23	Sub 0	StringT	max 5 Byte	ro					
Application Specific Tag		24	Sub 0	StringT	max 32 Byte	rw	***				

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
Device Status		36	Sub 0	UIntegerT	8 Bit	ro	(0) Device is OK	(0) Device is OK (1) Maintenance required (2) Out of specification (3) Functional check (4) Failure 5 to 255 (Reserved)			
Detailed Device Status		37	Sub 0		27 Byte	ro	00 00 00 h				
P-n	Output polarity for the switching outputs	500	Sub 0	UIntegerT	8 Bit	rw	(0) PnP	(0) PnP (1) nPn			
dAP	Damping of the measured signal	510	Sub 0	UIntegerT	16 Bit	rw	6	0 to 50	0.1	0	s
SEL2	Selection of the measurand for the evaluation via [OUT 2]	521	Sub 0	UIntegerT	8 Bit	rw	(1) FLOW	(1) FLOW (2) TEMP			
FOU1	[OUT 1] behaviour in case of fault	531	Sub 0	UIntegerT	8 Bit	rw	(4) OFF	(1) OU (2) On (4) OFF			
FOU2	[OUT 2] behaviour in case of fault	532	Sub 0	UIntegerT	8 Bit	rw	(4) OFF				

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
FOU2	[OUT 2] behaviour in case of fault	532	Sub 0	UIntegerT	8 Bit	rw	(4) OFF	(1) OU (2) On (4) OFF			
BitCoded_ActiveEvents	Bit mask for current pending events	545	Sub 0	RecordT	32 Bit	ro					
<i>Bit_31</i>	Bit 31 indicates the assigned pending event		bitOffs 31	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x8DFF			
<i>Bit_30</i>	Bit 30 indicates the assigned pending event		bitOffs 30	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x8DFE			
<i>Bit_16</i>	Bit 16 indicates the assigned pending event		bitOffs 16	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x8CC3			
<i>Bit_9</i>	Bit 9 indicates the assigned pending event		bitOffs 9	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x8C30			
<i>Bit_8</i>	Bit 8 indicates the assigned pending event		bitOffs 8	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x8C10			
<i>Bit_3</i>	Bit 3 indicates the assigned pending event		bitOffs 3	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x6321			
<i>Bit_2</i>	Bit 2 indicates the assigned pending event		bitOffs 2	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x7710			
<i>Bit_1</i>	Bit 1 indicates the assigned pending event		bitOffs 1	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x6320			
<i>Bit_0</i>	Bit 0 indicates the assigned pending event		bitOffs 0	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x5000			
ParaConfigFaultCollection	Displays the wrongly set parameters	546	Sub 0			ro	0				

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
Loc	[Loc] locks the local user interface to prevent unintentional changes, [Loc] is resettable at the device	550	Sub 0	UIntegerT	8 Bit	rw	(1) uLoc	(0) Loc (1) uLoc			
uni	Selection of the physical unit	551	Sub 0	UIntegerT	8 Bit	rw	(2) m³/h	(0) m/s (1) l/min (2) m³/h			
diS	Display settings	552	Sub 0	RecordT	16 Bit	rw					
<i>Display On / OFF</i>			bitOffs 7	BooleanT	1 Bit		(false) On	(false) On (true) OFF			
<i>Display orientation</i>			bitOffs 6	BooleanT	1 Bit		(false) Not rotated	(false) Not rotated (true) Rotated 180°			
<i>Update rate</i>			bitOffs 0	UIntegerT	6 Bit		(2) d2 / medium	(1) d1 / fast (2) d2 / medium (4) d3 / slow			
SELd	Selection of measurement on the sensor display	553	Sub 0	RecordT	16 Bit	rw					
<i>Displayed measurement</i>			bitOffs 0	UIntegerT	15 Bit		(1) FLOW	(1) FLOW (2) TEMP			
coLr	Assignment of the display colours 'red' and 'green' within the measuring range	554	Sub 0	UIntegerT	8 Bit	rw	(2) rEd / Display colour red (independent of the measured value)	(2) rEd / Display colour red			

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
coLr	Assignment of the display colours 'red' and 'green' within the measuring range	554	Sub 0	UIntegerT	8 Bit	rw	(2) rEd / Display colour red (independent of the measured value)	(independent of the measured value) (3) GrEn / Display colour green (independent of the measured value) (4) r1ou / Display colour red when OUT1 switches (5) G1ou / Display colour green when OUT1 switches (6) r2ou / Display colour red when OUT2 switches (7) G2ou / Display colour green when OUT2 switches			
Hi.F	Maximum memory value for flow	560	Sub 0	IntegerT	16 Bit	ro	()	0 to 12000 (32760) OL	0.01	0	m/s
Lo.F	Minimum memory value for flow	561	Sub 0	IntegerT	16 Bit	ro	()	0 to 12000 (32760) OL	0.01	0	m/s

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
Hi.T	Maximum memory value for temperature	562	Sub 0	IntegerT	16 Bit	ro	()	-440 to 1240 (-8184) UL (8184) OL	0.1	0	°C
Lo.T	Minimum memory value for temperature	563	Sub 0	IntegerT	16 Bit	ro	()	-440 to 1240 (-8184) UL (8184) OL	0.1	0	°C
ou1	Output configuration [OUT 1]	580	Sub 0	UIntegerT	8 Bit	rw	(3) Hno / Hysteresis fct normally open	(3) Hno / Hysteresis fct normally open (4) Hnc / Hysteresis fct normally closed (5) Fno / Window fct normally open (6) Fnc / Window fct normally closed (17) FRQ / Frequency output			
dS1	Switching delay for [OUT 1]	581	Sub 0	UIntegerT	16 Bit	rw	0	0 to 600	0.1	0	s
dr1	Reset delay for [OUT 1]	582	Sub 0	UIntegerT	16 Bit	rw	0	0 to 600	0.1	0	s
SP_FH1_FLOW	Switch point 1 / Flow, [SP1] must be greater than [rP1]. Please take into account the current [rP1] value. [SP1] will be refused if below [rP1]. [SP]	583	Sub 0	IntegerT	16 Bit	rw	2000	660 to 10040	0.01	0	m/s

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
	= [FH] and [rP] = [FL] if [OU1] = Fno, Fnc										
rP_FL1_FLOW	Reset point 1 / Flow, [rP1] must be smaller than [SP1]. Please take into account the current [SP1] value. [rP1] will be refused if above [SP1]. [rP] = [FL] and [SP] = [FH] if [OU1] = Fno, Fnc	584	Sub 0	IntegerT	16 Bit	rw	1500	200 to 9600	0.01	0	m/s
ou2	Output configuration [OUT 2]	590	Sub 0	UIntegerT	8 Bit	rw	(1) I / Analog signal 4...20 mA	(3) Hno / Hysteresis fct normally open (4) Hnc / Hysteresis fct normally closed (5) Fno / Window fct normally open (6) Fnc / Window fct normally closed (17) FRQ / Frequency output (1) I / Analog signal 4...20 mA			
ds2	Switching delay for [OUT 2]	591	Sub 0	UIntegerT	16 Bit	rw	0	0 to 600	0.1	0	s
dr2	Reset delay for [OUT 2]	592	Sub 0	UIntegerT	16 Bit	rw	0	0 to 600	0.1	0	s
SP_FH2_FLOW	Switch point 2 / Flow, [SP2] must be greater than [rP2]. Please take into account the current [rP2] value. [SP2] will be refused if below [rP2]. [SP]	593	Sub 0	IntegerT	16 Bit	rw	4000	660 to 10040	0.01	0	m/s

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
	= [FH] and [rP] = [FL] if [OU2] = Fno, Fnc										
rP_FL2_FLOW	Reset point 2 / Flow, [rP2] must be smaller than [SP2]. Please take into account the current [SP2] value. [rP2] will be refused if above [SP2]. [rP] = [FL] and [SP] = [FH] if [OU2] = Fno, Fnc	594	Sub 0	IntegerT	16 Bit	rw	3500	200 to 9600	0.01	0	m/s
SP_FH2_TEMP	Switch point 2 / Temperature, [SP2] must be greater than [rP2]. Please take into account the current [rP2] value. [SP2] will be refused if below [rP2]. [SP] = [FH] and [rP] = [FL] if [OU2] = Fno, Fnc	595	Sub 0	IntegerT	16 Bit	rw	280	-180 to 1000	0.1	0	°C
rP_FL2_TEMP	Reset point 2 / Temperature, [rP2] must be smaller than [SP2]. Please take into account the current [SP2] value. [rP2] will be refused if above [SP2]. [rP] = [FL] and [SP] = [FH] if [OU2] = Fno, Fnc	596	Sub 0	IntegerT	16 Bit	rw	260	-200 to 980	0.1	0	°C
ASP2_FLOW	Analogue start point 2 / Flow. [ASP2] must be smaller than [AEP2]. Please take into account the current [AEP2]. For info on the minimum hysteresis [AEP2]-[ASP2] please refer to the operating instructions	630	Sub 0	IntegerT	16 Bit	rw	0	0 to 8100	0.01	0	m/s
AEP2_FLOW	Analogue end point 2 / Flow. [AEP2] must be greater than [ASP2]. Please take into	631	Sub 0	IntegerT	16 Bit	rw	10000	1900 to 10000	0.01	0	m/s

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
	account the current [ASP2]. For info on the min hysteresis [AEP2]-[ASP2] please refer to the operating instructions										
ASP2_TEMP	Analogue start point 2 / Temperature. [ASP2] must be smaller than [AEP2]. Please take into account the current [AEP2]. For info on the minimum hysteresis [AEP2]-[ASP2] please refer to the operating instructions	632	Sub 0	IntegerT	16 Bit	rw	-200	-200 to 760	0.1	0	°C
AEP2_TEMP	Analogue end point 2 / Temperature. [AEP2] must be greater than [ASP2]. Please take into account the current [ASP2]. For info on the min hysteresis [AEP2]-[ASP2] please refer to the operating instructions	633	Sub 0	IntegerT	16 Bit	rw	1000	40 to 1000	0.1	0	°C
MEdI	Current set medium	686	Sub 0	UIntegerT	8 Bit	ro	(4) AIR	(4) AIR			
ModE	Current set operating mode	689	Sub 0	UIntegerT	8 Bit	ro	(2) GAS	(0) REL (1) LIQU (2) GAS			
FEP1_FLOW	Flow on [OUT1] at [FrP1]	721	Sub 0	IntegerT	16 Bit	rw	10000	2200 to 10000	0.01	0	m/s
FEP2_FLOW	Flow on [OUT2] at [FrP2]	731	Sub 0	IntegerT	16 Bit	rw	10000	2200 to 10000	0.01	0	m/s
FSP2_TEMP	Temperature on [OUT2] at 0 Hz	732	Sub 0	IntegerT	16 Bit	rw	-200	-200 to 760	0.1	0	°C

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
FEP2_TEMP	Temperature on [OUT2] at [FrP2]	733	Sub 0	IntegerT	16 Bit	rw	1000	40 to 1000	0.1	0	°C
FrP1	Absolute frequency maximum for [OUT 1]	760	Sub 0	IntegerT	16 Bit	rw	100	100 to 1000	1	0	Hz
FrP2	Absolute frequency maximum for [OUT 2]	765	Sub 0	IntegerT	16 Bit	rw	100	100 to 1000	1	0	Hz
diA	Diameter of pipe	3007	Sub 0	UIntegerT	16 Bit	rw	50	15 to 400	1	0	mm
CGA	Calibration gain	3008	Sub 0	IntegerT	16 Bit	rw	100	60 to 140	1	0	%
VolFlow	Current volume flow	3009	Sub 0	Float32T		ro		0 to 100000	1	0	m³/h
VolFlow.Max	Peak volume flow	3010	Sub 0	Float32T		ro		0 to 100000	1	0	m³/h
TipVelocity	Flow velocity at the sensor tip	3013	Sub 0	IntegerT	16 Bit	ro		0 to 20000	0.01	0	m/s

Events

Code	Name	Type	Description
20480 d / 50 00 h	Device hardware fault	Error	Device Exchange
25376 d / 63 20 h	Parameter error	Error	Check data sheet and values
25377 d / 63 21 h	Parameter missing	Error	Check data sheet
30480 d / 77 10 h	Short circuit	Error	Check installation
35856 d / 8C 10 h	Process variable range over-run	Warning	Process data uncertain. Note: This Event will not be transmitted via IO-Link Event mechanism. It is only available by reading Index 37 (DetailedDeviceStatus) oder 545 (BitCoded_ActiveEvents)
35888 d / 8C 30 h	Process variable range under-run	Warning	Process data uncertain. Note: This Event will not be transmitted via IO-Link Event mechanism. It is only available by reading Index 37 (DetailedDeviceStatus) oder 545 (BitCoded_ActiveEvents)
36035 d / 8C C3 h	Display function failure	Warning	Replace device
36350 d / 8D FE h	Test Event 1	Warning	Event appears by setting index 2 to value 240, Event disappears by setting index 2 to value 241
36351 d / 8D FF h	Test Event 2	Warning	Event appears by setting index 2 to value 242, Event disappears by setting index 2 to value 243

Error types

Error code	Name	Description
32768 d / 80 00 h	Device application error - no details	Service has been refused by the device application and no detailed information of the incident is available
32785 d / 80 11 h	Index not available	Access occurs to a not existing index
32786 d / 80 12 h	Subindex not available	Access occurs to a not existing subindex
32800 d / 80 20 h	Service temporarily not available	Parameter is not accessible due to the current state of the device application
32803 d / 80 23 h	Access denied	Write access on a read-only parameter
32816 d / 80 30 h	Parameter value out of range	Written parameter value is outside its permitted value range
32819 d / 80 33 h	Parameter length overrun	Written parameter length is above its predefined length
32820 d / 80 34 h	Parameter length underrun	Written parameter length is below its predefined length
32821 d / 80 35 h	Function not available	Written command is not supported by the device application
32822 d / 80 36 h	Function temporarily unavailable	Written command is not available due to the current state of the device application
32832 d / 80 40 h	Invalid parameter set	Written single parameter collides with other actual parameter settings
32833 d / 80 41 h	Inconsistent parameter set	Parameter inconsistencies were found at the end of block parameter transfer, device plausibility check failed
32898 d / 80 82 h	Application not ready	Read or write service is refused due to a temporarily unavailable application