Version V1.3.23.543158 Release date 2016-09-12

SA

Vendor ID	310 / 0x0136 - Bytes: 01 54 / 0x01 0x36
Device ID	540 / 0x00021C - Bytes: 00 02 28 / 0x00 0x02 0x1C
Vendor name	ifm electronic gmbh
Vendor text	www.ifm.com
Vendor URL	http://www.ifm.com/ifmgb/web/io-link-download.htm

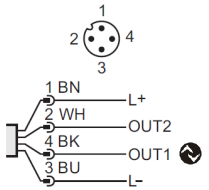
Communication

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

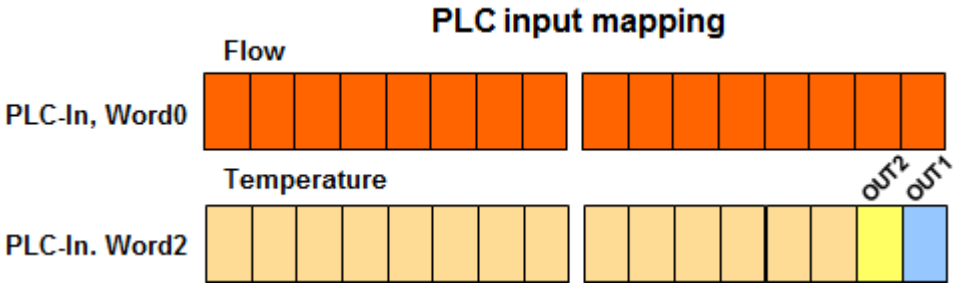
SA5030_LIQU	Flow monitor, absolutely (Liquids), 0.04...3.00 m/s, IO-Link, CRN, GL, cULus (Limited Voltage / Current), M18 x 1, 5		
SA5040_LIQU	Flow monitor, absolutely (Liquids), 0.04...3.00 m/s, IO-Link, cULus (Limited Voltage / Current), M18 x 1, 5		
SA2000_LIQU	Flow monitor, absolutely (Liquids), 0.04...3.00 m/s, IO-Link, cULus (Limited Voltage / Current), G 1/2"		
SA5000_LIQU	Flow monitor, absolutely (Liquids), 0.04...3.00 m/s, IO-Link, cULus (Limited Voltage / Current), M18 x 1, 5		
SA4100_LIQU	Flow monitor, absolutely (Liquids), 0.04...3.00 m/s, IO-Link, cULus (Limited Voltage / Current), Ø 8 mm		
SA4300_LIQU	Flow monitor, absolutely (Liquids), 0.04...3.00 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 360** (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			



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**		(130) Restore Factory Settings (161) Reset [Hi.F] and [Lo.F] memory (162) Reset [Lo.F] memory (163) Reset [Hi.F] memory (165) Reset [Hi.T] and [Lo.T] memory (166) Reset [Lo.T] memory (167) Reset [Hi.T] memory (184) Set MEdI SET_MEDI_H2O (185) Set MEdI SET_MEDI_GLYC (186) Set MEdI SET_MEDI_OIL1 (187) Set MEdI SET_MEDI_OIL2 (240) IO-Link 1.1 system test command 240, Event 8DFE appears (241) IO-Link 1.1 system test command 241, Event 8DFE disappears			

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**		(242) IO-Link 1.1 system test command 242, Event 8DFF appears (243) IO-Link 1.1 system test command 243, Event 8DFF disappears (255) Command without effect, for internal use only			
Device Access Locks		**12**	**Sub 0**	**RecordT**	**16 Bit**	**rw**					
Data Storage			bitOffs 1	BooleanT	1 Bit		(false)	(false) Unlocked (true) Locked			
Local User Interface			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 11 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**					

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
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**	***				
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			

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
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**	(1) OU (2) On (4) OFF			
BitCoded_ActiveEvents	**Bit mask for current pending events**	**545**	**Sub 0**	**RecordT**	**32 Bit**	**ro**					
Bit_31	Bit 31 indicates the assigned pending event		bitOffs 31	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x8DFF			
Bit_30	Bit 30 indicates the assigned pending event		bitOffs 30	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x8DFE			
Bit_16	Bit 16 indicates the assigned pending event		bitOffs 16	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x8CC3			
Bit_9	Bit 9 indicates the assigned pending event		bitOffs 9	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x8C30			
Bit_8	Bit 8 indicates the assigned pending event		bitOffs 8	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x8C10			
Bit_3	Bit 3 indicates the assigned pending event		bitOffs 3	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x6321			
Bit_2	Bit 2 indicates the assigned pending event		bitOffs 2	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x7710			
Bit_1	Bit 1 indicates the assigned pending event		bitOffs 1	BooleanT	1 Bit		(0) noEv	(0) noEv (1) 0x6320			

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
BitCoded_ActiveEvents	**Bit mask for current pending events**	**545**	**Sub 0**	**RecordT**	**32 Bit**	**ro**					
Bit_0	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**				
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**	**(1) l/min**	(0) m/s (1) l/min (2) m³/h			
diS	**Display settings**	**552**	**Sub 0**	**RecordT**	**16 Bit**	**rw**					
Display On / OFF			bitOffs 7	BooleanT	1 Bit		(false) On	(false) On (true) OFF			
Display orientation			bitOffs 6	BooleanT	1 Bit		(false) Not rotated	(false) Not rotated (true) Rotated 180°			
Update rate			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**					
Displayed measurement			bitOffs 0	UIntegerT	15 Bit		(1) FLOW	(1) FLOW (2) TEMP			

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)**	(2) rEd / Display colour red (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 360** (32760) OL	**0.01**	**0**	**m/s**
Lo.F	**Minimum memory value for flow**	**561**	**Sub 0**	**IntegerT**	**16 Bit**	**ro**	**()**	**0 to 360**	**0.01**	**0**	**m/s**

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
Lo.F	**Minimum memory value for flow**	**561**	**Sub 0**	**IntegerT**	**16 Bit**	**ro**	**()**	(32760) OL	**0.01**	**0**	**m/s**
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**

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
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] = [FH] and [rP] = [FL] if [OU1] = Fno, Fnc**	**583**	**Sub 0**	**IntegerT**	**16 Bit**	**rw**	**60**	**18 to 300**	**0.01**	**0**	**m/s**
rP_FL1_FLOW	**Reset point 1 / Flow, [rP1] must be smaller than [SP1]. Please take into account the current [SP1] value.I[rP1] will be refused if above [SP1]. [rP] = [FL] and [SP] = [FH] if [OU1] = Fno, Fnc**	**584**	**Sub 0**	**IntegerT**	**16 Bit**	**rw**	**46**	**4 to 286**	**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**

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
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] = [FH] and [rP] = [FL] if [OU2] = Fno, Fnc**	**593**	**Sub 0**	**IntegerT**	**16 Bit**	**rw**	**120**	**18 to 300**	**0.01**	**0**	**m/s**
rP_FL2_FLOW	**Reset point 2 / Flow, [rP2] must be smaller than [SP2]. Please take into account the current [SP2] value.I[rP2] will be refused if above [SP2]. [rP] = [FL] and [SP] = [FH] if [OU2] = Fno, Fnc**	**594**	**Sub 0**	**IntegerT**	**16 Bit**	**rw**	**106**	**4 to 286**	**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.I[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]**	**630**	**Sub 0**	**IntegerT**	**16 Bit**	**rw**	**0**	**0 to 242**	**0.01**	**0**	**m/s**

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
	please refer to the operating instructions										
AEP2_FLOW	**Analogue end point 2 / Flow. [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**	**631**	**Sub 0**	**IntegerT**	**16 Bit**	**rw**	**300**	**58 to 300**	**0.01**	**0**	**m/s**
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**	**(0) H2O**	(0) H2O (1) GLYC (2) OIL.1 (3) OIL.2			
ModE	**Current set operating mode**	**689**	**Sub 0**	**UIntegerT**	**8 Bit**	**ro**	**(1) LIQU**				

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
ModE	**Current set operating mode**	**689**	**Sub 0**	**UIntegerT**	**8 Bit**	**ro**	**(1) LIQU**	(0) REL (1) LIQU (2) GAS			
FEP1_FLOW	**Flow on [OUT1] at [FrP1]**	**721**	**Sub 0**	**IntegerT**	**16 Bit**	**rw**	**300**	**64 to 300**	**0.01**	**0**	**m/s**
FEP2_FLOW	**Flow on [OUT2] at [FrP2]**	**731**	**Sub 0**	**IntegerT**	**16 Bit**	**rw**	**300**	**64 to 300**	**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**
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**	**l/min**
VolFlow.Max	**Peak volume flow**	**3010**	**Sub 0**	**Float32T**		**ro**		**0 to 100000**	**1**	**0**	**l/min**
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

Events

Code	Name	Type	Description
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