Version V1.0.0.2 Release date 2016-04-15

TN

Vendor ID	310 / 0x0136 - Bytes: 01 54 / 0x01 0x36
Device ID	707 / 0x0002C3 - Bytes: 00 02 195 / 0x00 0x02 0xC3
Vendor name	ifm electronic gmbh
Vendor text	www.ifm.com
Vendor URL	http://www.ifm.com/ifmgb/web/io-link-download.htm

Communication

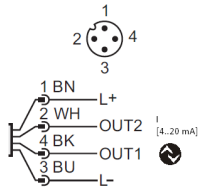
IO-Link revision	V1.1
Bit rate	COM2
Minimum cycle time	2.300 ms
SIO mode supported	Yes

Features

Block parametrization	Yes
Data storage	Yes

Device variant

TN2303	Electronic temperature sensor, -58...302 °F, Length 30 mm, IO-Link, Process connection 1/2" NPT
TN2313	Electronic temperature sensor, -58...302 °F, Length 50 mm, IO-Link, Process connection 1/2" NPT
TN2333	Electronic temperature sensor, -58...302 °F, Length 100 mm, IO-Link, Process connection 1/2" NPT
TN2343	Electronic temperature sensor, -58...302 °F, Length 150 mm, IO-Link, Process connection 1/2" NPT
TN2603	Electronic temperature sensor, -58...302 °F, Length 25 mm, IO-Link, Process connection 1/4" NPT
TN2613	Electronic temperature sensor, -58...302 °F, Length 50 mm, IO-Link, Process connection 1/4" NPT

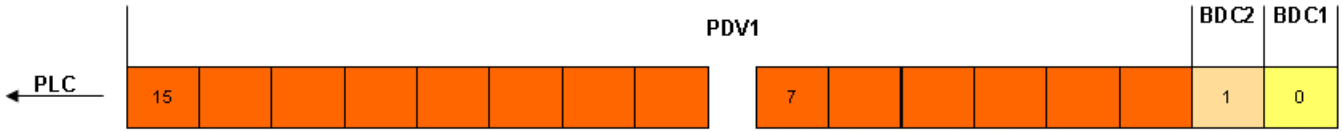


Process data

Total bit length = 16

(Process data input)

Name	Description	Data type	Bit offset	Bit length	Value range	Gradient	Offset	Unit
Temperature	Current temperature	IntegerT	2	14	(8184) OL **-580 to 3020** (-8184) UL	0.1	0	°F
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] and [Lo] memory (162) Reset [Lo] memory (163) Reset [Hi] memory (240) IO-Link 1.1 system test command 240, Event 8DFE appears (241) IO-Link 1.1 system test command 241, Event 8DFE disappears (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			

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
Device Access Locks		**12**	**Sub 0**	**RecordT**	**16 Bit**	**rw**					
								(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 6 Byte**	**ro**					
Product ID		**19**	**Sub 0**	**StringT**	**max 6 Byte**	**ro**					
Product Text		**20**	**Sub 0**	**StringT**	**max 29 Byte**	**ro**	**Electronic temperature sensor**				
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**	*******				
Device Status		**36**	**Sub 0**	**UIntegerT**	**8 Bit**	**ro**	**(0) Device is OK**				
Detailed Device Status		**37**	**Sub 0**		**21 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			

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**	(2) On (4) OFF			
FOU2	**[OUT 2] behaviour in case of fault**	**532**	**Sub 0**	**UIntegerT**	**8 Bit**	**rw**	**(4) OFF**	(2) On (4) OFF			
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 unit on the sensor display**	**551**	**Sub 0**	**UIntegerT**	**8 Bit**	**rw**	**(1) °F**	(0) °C (1) °F			
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			

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 (8) r-12 / Display colour red when the measured value is between the limit values of OUT1 and OUT2 (9) G-12 / Display colour green when the measured value is between the limit			

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)**	values of OUT1 and OUT2 (10) r-cF / Display colour red when the measured value is between the freely definable limit values [cFL] and [cFH] (11) G-cF / Display colour green when the measured value is between the freely definable limit values [cFL] and [cFH]			
cFL	**Lower value for colour change. Parameter only active after selection of a freely definable colour window in the coLr parameter: [r-cF] or [G-cF]. The setting range corresponds to the measuring range and its maximum limit is [cFH]**	**555**	**Sub 0**	**IntegerT**	**16 Bit**	**rw**	**-580**	**-580 to 2930**	**0.1**	**0**	**°F**
cFH	**Upper value for colour change. Parameter only active after selection of a freely definable colour window in the coLr parameter: [r-cF] or [G-cF]. The setting range corresponds to the measuring**	**556**	**Sub 0**	**IntegerT**	**16 Bit**	**rw**	**3020**	**-490 to 3020**	**0.1**	**0**	**°F**

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
	range and its minimum limit is [cFL]										
Hi	**Maximum memory value**	**560**	**Sub 0**	**IntegerT**	**16 Bit**	**ro**	**()**		**0.1**	**0**	**°F**
Lo	**Minimum memory value**	**561**	**Sub 0**	**IntegerT**	**16 Bit**	**ro**	**()**		**0.1**	**0**	**°F**
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			
dS1	**Switching delay for [OUT 1]**	**581**	**Sub 0**	**UIntegerT**	**16 Bit**	**rw**	**0**	**0 to 500**	**0.1**	**0**	**s**
dr1	**Reset delay for [OUT 1]**	**582**	**Sub 0**	**UIntegerT**	**16 Bit**	**rw**	**0**	**0 to 500**	**0.1**	**0**	**s**
SP_FH1	**Switch point 1, [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**	**1400**	**-576 to 3020**	**0.1**	**0**	**°F**
rP_FL1	**Reset point 1, [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**	**1220**	**-580 to 3016**	**0.1**	**0**	**°F**

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
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 (1) I / Analog signal 4…20 mA (10) InEG / Analog signal 20...4 mA (2) U / Analog signal 0...10 V (11) UnEG / Analog signal 10...0 V			
dS2	**Switching delay for [OUT 2]**	**591**	**Sub 0**	**UIntegerT**	**16 Bit**	**rw**	**0**	**0 to 500**	**0.1**	**0**	**s**
dr2	**Reset delay for [OUT 2]**	**592**	**Sub 0**	**UIntegerT**	**16 Bit**	**rw**	**0**	**0 to 500**	**0.1**	**0**	**s**
SP_FH2	**Switch point 2, [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**	**2480**	**-576 to 3020**	**0.1**	**0**	**°F**
rP_FL2	**Reset point 2, [rP2] must be smaller than [SP2]. Please take into account the current [SP2] value.I[rP2] will be refused if above [SP2]. [rP] =**	**594**	**Sub 0**	**IntegerT**	**16 Bit**	**rw**	**2120**	**-580 to 3016**	**0.1**	**0**	**°F**

Variables

Name	Description	Index	Subindex	Data type	Length	Access rights	Default	Value range	Gradient	Offset	Unit
	[FL] and [SP] = [FH] if [OU2] = Fno, Fnc.										
ASP2	**Analogue start point 2. [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**	**-580 to 2930**	**0.1**	**0**	**°F**
AEP2	**Analogue end point 2. [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**	**3000**	**-490 to 3020**	**0.1**	**0**	**°F**
coF	**Zero-point calibration (Calibration offset)**	**681**	**Sub 0**	**IntegerT**	**16 Bit**	**rw**	**0**	**-180 to 180**	**0.1**	**0**	**°F**

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
30480 d / 77 10 h	Short circuit	Error	Check installation
35856 d / 8C 10 h	Process variable range over-run	Warning	Process data uncertain
35888 d / 8C 30 h	Process variable range under-run	Warning	Process data uncertain
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