

IO-Link Interface Description

TA2417
TA2437
TA2447
TA2107
TA2117

EN



Device variant

TA2417 Temperature transmitter, -50.0...150 °C, Length 50 mm, Process connection G 1/2, hygienisch, hygienic		
TA2437 Temperature transmitter, -50.0...150 °C, Length 100 mm, Process connection G 1/2, hygienisch, hygienic		
TA2447 Temperature transmitter, -50.0...150 °C, Length 150 mm, Process connection G 1/2, hygienisch, hygienic		
TA2107 Temperature transmitter, -50.0...150 °C, Length 25 mm, Process connection G 1/4, hygienisch, hygienic		
TA2117 Temperature transmitter, -50.0...150 °C, Length 50 mm, Process connection G 1/4, hygienisch, hygienic		

Vendor ID	310 / Bytes 1-54 (hex: 01-36)
Device ID	559 / Bytes 0-2-47 (hex: 00-02-2F)
Bit rate	COM2
Minimum cycle time	2.3 ms
SIO mode supported	No
Block parameterization	Yes
Data storage	Yes
Supported profiles	1 / hex: 0x1 Smart Sensor Profil 32768 / hex: 0x8000 Device Identification 32770 / hex: 0x8002 Process Data Variable



NOTE:

If the Vendor ID and Device ID is referenced in your PLC system, then it is ensured that

- the connected Device type is correct
- the IO-Link datastorage is enabled
- your application is still able to work, even your Device has been exchanged with a successor model



Device variant



For process value update rate, as well as further information concerning sensor performance, see datasheet.



Unit conversion



This list provides conversion formulas to convert the transmitted IO-Link raw data into physical units.

Process Data Input/Output

Value in [°C]

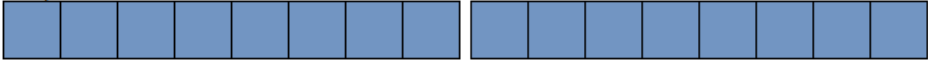
= MeasurementValue * 0.1

Value in [°F]

= MeasurementValue * 0.18 + 32



Process data

Process data input		RecordT (16 Bit)
Temperature		IntegerT (16 Bit)
Current temperature		
Value range [°C]	(-536 to 1574) * 0.1 1700 1575 to 1699 -699 to -537 -700	(cr.OL, PDInvalid) (OL) (UL) (cr.UL, PDInvalid)
Temperature		
Offset 0		



Data is transmitted in BigEndian format.
The position of the process data bytes is shown according device transmit sequence.
The content in your PLCs input buffer may vary according your PLCs data format.
Please do not apply any byte swap feature.
Example function blocks incl. documentation are available on www.ifm.com --> Startup Packages.



Parameter overview

Parameter	Index	Subindex	Type	Factory setting	page
Device Access Locks	12		RecordT (16 Bit)	false (Unlocked)	9
Vendor name	16		StringT (19 Byte)	ifm electronic gmbh	8
Product Name	18		StringT (24 Byte)		8
Product Text	20		StringT (23 Byte)	Temperature transmitter	8
Serial Number	21		StringT (12 Byte)		8
Hardware Revision	22		StringT (2 Byte)		8
Firmware Revision	23		StringT (5 Byte)		8
Application-specific Tag	24		StringT (16 Byte)	***	8
Device Status	36		UIntegerT (8 Bit)	0 (Device is OK)	10
Detailed Device Status	37		OctetStringT (3 Byte) [5]	0x00,0x00,0x00	10
Process data input	40		RecordT (16 Bit)		
FOU2	532		UIntegerT (8 Bit)	4 (OFF)	9
uni	551		UIntegerT (8 Bit)	0 (°C)	9
ou2	590		UIntegerT (8 Bit)	1 (I / Analog signal 4...20 mA)	9
ASP2	630		IntegerT (16 Bit)	0	9
AEP2	631		IntegerT (16 Bit)	1000	9
coF	5001		IntegerT (16 Bit)	0	9



System Command



Command interface for applications. A positive acknowledge indicates the complete and correct finalization of the requested function. System Command information:

- Address: Index 2, Subindex 0
- Datatype: UInteger (8 Bit)
- AccessRight: Write Only

#	Text	Description
1	Upload Start	Start block parameter upload
2	Upload End	End block parameter upload
3	Download Start	Start block parameter download
4	Download End	Stop block parameter download
5	Store	Finalize block parameterization and start Data Storage
6	Break	Cancel block parameterization
130	Restore Factory Settings	
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	



Identification

Vendor name	Index 16	Subindex 0	StringT (19 Byte)	ReadOnly
The vendor name that is assigned to a Vendor ID.				
Factory setting	ifm electronic gmbh			
Product Name	Index 18	Subindex 0	StringT (24 Byte)	ReadOnly
Complete product name.				
Product Text	Index 20	Subindex 0	StringT (23 Byte)	ReadOnly
Additional product information for the device.				
Factory setting	Temperature transmitter			
Serial Number	Index 21	Subindex 0	StringT (12 Byte)	ReadOnly
Unique, vendor-specific identifier of the individual device.				
Hardware Revision	Index 22	Subindex 0	StringT (2 Byte)	ReadOnly
Unique, vendor-specific identifier of the hardware revision of the individual device.				
Firmware Revision	Index 23	Subindex 0	StringT (5 Byte)	ReadOnly
Unique, vendor-specific identifier of the firmware revision of the individual device.				
Application-specific Tag	Index 24	Subindex 0	StringT (16 Byte)	ReadWrite
Possibility to mark a device with user- or application-specific information.				
Factory setting	***			



Parameters

Device Access Locks		Index 12	Subindex 0	RecordT (16 Bit)	ReadWrite
The access to the device parameters can be restricted by setting appropriate flags within this parameter.					
Factory setting	false				
bitOffset 1	Data Storage		This lock prevents the write access to the device parameters via the data		
Value range	true		(Locked)		
	false		(Unlocked)		
					

FOU2	Index 532	Subindex 0	UIntegerT (8 Bit)	ReadWrite
[OUT 2] behaviour in case of fault				
Factory setting	4	(OFF)		
Value range	2 4	(On) (OFF)		

uni	Index 551	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Selection of the physical unit				
Factory setting	0	(°C)		
Value range	0 1	(°C) (°F)		

ou2	Index 590	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Output configuration [OUT 2]				
Factory setting	1	(I / Analog signal 4...20 mA)		
Value range	1 10	(I / Analog signal 4...20 mA) (InEG / Analog signal 20...4 mA)		

ASP2	Index 630	Subindex 0	IntegerT (16 Bit)	ReadWrite
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				
Factory setting	0			
Value range [°C]	(-500 to 1450) * 0.1			

AEP2	Index 631	Subindex 0	IntegerT (16 Bit)	ReadWrite
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				
Factory setting	1000			
Value range [°C]	(-450 to 1500) * 0.1			

coF	Index 5001	Subindex 0	IntegerT (16 Bit)	ReadWrite
Zero-point calibration (Calibration offset)				
Factory setting	0			
Value range [°C]	(-100 to 100) * 0.1			



Diagnosis

Device Status	Index 36	Subindex 0	UIntegerT (8 Bit)	ReadOnly
Indicator for the current device condition and diagnosis state.				
Factory setting	0	(Device is OK)		
Value range	0	(Device is OK)		
	1	(Maintenance required)		
	2	(Out of specification)		
	3	(Functional check)		
	4	(Failure)		

Detailed Device Status	Index 37	Subindex 0	OctetStringT (3 Byte) [5]	ReadOnly
List of all currently pending events in the device.				
Factory setting	0x00,0x00,0x00			



Events

Code	Device status	PQ *	Class	Name	Description
0x8C10 35856d	2 (Out of specification)	valid	Warning	Process variable range overrun	Process data uncertain
0x8C30 35888d	2 (Out of specification)	valid	Warning	Process variable range underrun	Process data uncertain
0x8DFE 36350d	1 (Maintenance required)	valid	Warning	Test Event 1	Event appears by setting index 2 to value 240, Event disappears by setting index 2 to value 241
0x8DFF 36351d	1 (Maintenance required)	valid	Warning	Test Event 2	Event appears by setting index 2 to value 242, Event disappears by setting index 2 to value 243



Events are raised by the device itself to notify irregular device states.
PQ* = Process data quality.



Error types

Code	Name	Description
0x8000 32768d	Device application error - no details	Service was denied by the technology-specific application. No detailed root-cause information is available.
0x8011 32785d	Index not available	Read or write access attempt to a non-existing index.
0x8012 32786d	Subindex not available	Read or write access attempt to a non-existing subindex of an existing index.
0x8020 32800d	Service temporarily not available	Parameter not accessible due to the current state of the technology-specific application.
0x8023 32803d	Access denied	Write access to a read-only parameter or read access to write-only parameter.
0x8030 32816d	Parameter value out of range	Written parameter value is outside of the permitted value range.
0x8033 32819d	Parameter length overrun	Written parameter is longer than specified.
0x8034 32820d	Parameter length underrun	Written parameter is shorter than specified.
0x8035 32821d	Function unavailable	Written command is not supported by the technology-specific application.
0x8036 32822d	Function temporarily unavailable	Written command is unavailable due to the current state of the technology-specific application.
0x8040 32832d	Invalid parameter set	Written single parameter value collides with other existing parameter settings.
0x8041 32833d	Inconsistent parameter set	Parameter set inconsistencies at the end of block parameter transfer. Device plausibility check failed.
0x8082 32898d	Application not ready	Read or write access denied. The technology-specific application is temporarily unavailable.



Error types are used for the ISDU response. Values unequal '0' indicate the cause of a failed ISDU read or write service.