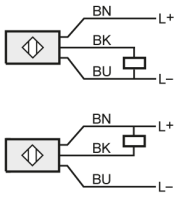
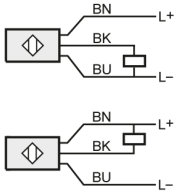
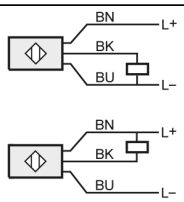
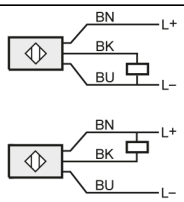
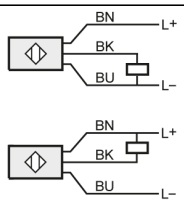
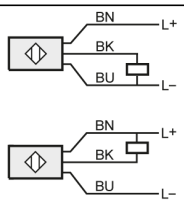
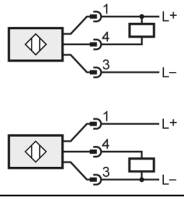
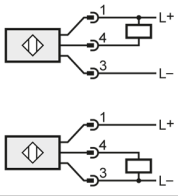
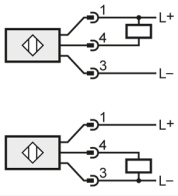
IO-Link Interface Description

KI5303
KI5305
KI5324
KI6001
KI6002
KI5309
KI5311
KI6000
KI6005
KI6007

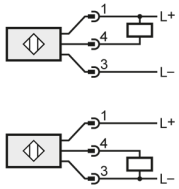
EN

IODD-PDFCreator V 2.3.0.3
ifm-0002B1-20230420-IODD1.1, V1.3.14.36

Device variant

KI5303 **Capacitive sensor**		
KI5305 **Capacitive sensor**		
KI5324 **Capacitive sensor**		
KI6001 **Capacitive sensor**		
KI6002 **Capacitive sensor**		
KI6005 **Capacitive sensor**		
KI5309 **Capacitive sensor**		
KI5311 **Capacitive sensor**		
KI6000 **Capacitive sensor**		

Device variant

KI6007 **Capacitive sensor**		

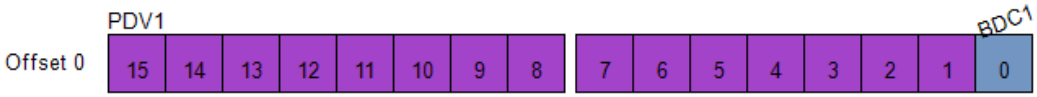
Vendor ID	310 / Bytes 1-54 (hex: 01-36)
Device ID	689 / Bytes 0-2-177 (hex: 00-02-B1)
Bit rate	COM2
Minimum cycle time	20 ms
SIO mode supported	Yes
Block parameterization	Yes
Data storage	Yes
Supported profiles	1 / hex: 0x1 Smart Sensor Profil 32768 / hex: 0x8000 Device Identification 32769 / hex: 0x8001 Switching Signal Channel 32770 / hex: 0x8002 Process Data Variable 32771 / hex: 0x8003 Device Diagnosis

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

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

Process data

Process data input			RecordT (16 Bit)
PDV1			IntegerT (15 Bit)
Current process data 1			
Value range	(0 to 10000)		
BDC1			BooleanT
Status depends on [Conf_FC-BDC1]			
Value range	false true	(inactive) (active)	



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)	8
Vendor name	16		StringT (19 Byte)	ifm electronic gmbh	7
Product Name	18		StringT (6 Byte)		7
Product Text	20		StringT (17 Byte)	Capacitive Sensor	7
Serial Number	21		StringT (12 Byte)		7
Hardware Revision	22		StringT (16 Byte)		7
Firmware Revision	23		StringT (16 Byte)		7
Application-specific Tag	24		StringT (32 Byte)	***	7
Device Status	36		UIntegerT (8 Bit)	0 (Device is OK)	10
Detailed Device Status	37		OctetStringT (3 Byte) [8]	0x00,0x00,0x00	10
Process data input	40		RecordT (16 Bit)		
Setpoints_FC-BDC1	60		RecordT (32 Bit)		8
Switch Point 1	60	1	IntegerT (16 Bit)	16368 (LoadDefault)	
Switch Point 2	60	2	IntegerT (16 Bit)	16368 (LoadDefault)	
Conf_FC-BDC1	61		RecordT (32 Bit)		8
Switch point logic	61	1	UIntegerT (8 Bit)	0 (no / Closing Contact)	
Switch point mode	61	2	UIntegerT (8 Bit)	1 (Sng.P / Single point)	
Switch point hyster...	61	3	UIntegerT (16 Bit)	32	
BDC1_dS	370		UIntegerT (16 Bit)	0	8
BDC1_dr	371		UIntegerT (16 Bit)	0	8
P-n	500		UIntegerT (8 Bit)	0 (PnP)	9
Number_Of_Powercycles	541		UIntegerT (16 Bit)	0	10
Operating_Hours	542		UIntegerT (16 Bit)	0	10
BitCoded_ActiveEvents	545		RecordT (32 Bit)		10
ParaConfigFaultCollection	546		UIntegerT (32 Bit) [10]	0 (OK)	10
L-r	548		UIntegerT (8 Bit)	1 (local)	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 (6 Byte)	ReadOnly
Complete product name.				

Product Text	Index 20	Subindex 0	StringT (17 Byte)	ReadOnly
Additional product information for the device.				
Factory setting	**Capacitive Sensor**			

Serial Number	Index 21	Subindex 0	StringT (12 Byte)	ReadOnly
Unique, vendor-specific identifier of the individual device.				

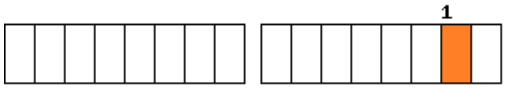
Hardware Revision	Index 22	Subindex 0	StringT (16 Byte)	ReadOnly
Unique, vendor-specific identifier of the hardware revision of the individual device.				

Firmware Revision	Index 23	Subindex 0	StringT (16 Byte)	ReadOnly
Unique, vendor-specific identifier of the firmware revision of the individual device.				

Application-specific Tag	Index 24	Subindex 0	StringT (32 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)		



Setpoints_FC-BDC1	Index 60	Subindex 0	RecordT (32 Bit)	ReadWrite
Smart Sensor Profile: BDC1 Switchpoints				
Switch Point 1		Subindex 1	IntegerT (16 Bit)	
Factory setting	**16368**	**(LoadDefault)**		
Value range	(64 to 9936) * 1 16368	 (LoadDefault)		
Switch Point 2		Subindex 2	IntegerT (16 Bit)	
Factory setting	**16368**	**(LoadDefault)**		
Value range	(64 to 9936) * 1 16368	 (LoadDefault)		

Conf_FC-BDC1	Index 61	Subindex 0	RecordT (32 Bit)	ReadWrite
Smart Sensor Profile: BDC1 Switchpoint configuration				
Switch point logic		Subindex 1	UIntegerT (8 Bit)	
Factory setting	**0**	**(no / Closing Contact)**		
Value range	0 1	(no / Closing Contact) (nc / Break Contact)		
Switch point mode		Subindex 2	UIntegerT (8 Bit)	
Factory setting	**1**	**(Sng.P / Single point)**		
Value range	1 2	(Sng.P / Single point) (Wind / Window)		
Switch point hysteresis		Subindex 3	UIntegerT (16 Bit)	
Factory setting	**32**			
Value range	(32 to 4096)			

BDC1_dS	Index 370	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Switch-On delay [BDC1]				
Factory setting	**0**			
Value range [s]	(0 to 3600) * 1			

BDC1_dr	Index 371	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Switch-Off delay [BDC1]				
Factory setting	**0**			
Value range [s]	(0 to 3600) * 1			

Parameters

P-n	Index 500	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Output polarity for the switching outputs				
Factory setting	**0**	**(PnP)**		
Value range	0 1	(PnP) (nPn)		

L-r	Index 548	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Selection of local / remote adjustment				
Factory setting	**1**	**(local)**		
Value range	0 1	(remote) (local)		

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 1 2 3 4	(Device is OK) (Maintenance required) (Out of specification) (Functional check) (Failure)		

Detailed Device Status	Index 37	Subindex 0	OctetStringT (3 Byte) [8]	ReadOnly
List of all currently pending events in the device.				
Factory setting	**0x00,0x00,0x00**			

Number_Of_Powercycles	Index 541	Subindex 0	UIntegerT (16 Bit)	ReadOnly
Number of power cycles				
Factory setting	**0**			
Value range	(0 to 65535) * 1			

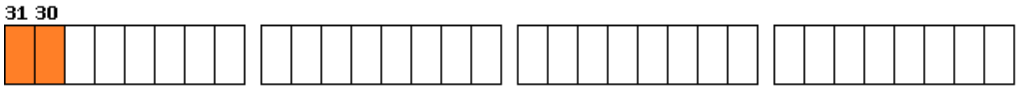
Operating_Hours	Index 542	Subindex 0	UIntegerT (16 Bit)	ReadOnly
Operating hours				
Factory setting	**0**			
Value range [h]	(0 to 65535) * 1			

BitCoded_ActiveEvents	Index 545	Subindex 0	RecordT (32 Bit)	ReadOnly
Bit mask for current pending events				

bitOffset 31 (0x8DFF)

bitOffset 30 (0x8DFE)

false Event inactive



ParaConfigFaultCollection	Index 546	Subindex 0	UIntegerT (32 Bit) [10]	ReadOnly
Displays the wrongly set parameters.				
Factory setting	**0**	**(OK)**		
Value range	0 3932160 3997696 24248320 24313856 32768000 35454976 35520512 35717120 35782656 35913728	(OK) (Setpoints_FC-BDC1) (Conf_FC-BDC1) (BDC1_dS) (BDC1_dr) (P-n) (Number_Of_Powercycles) (Operating_Hours) (BitCoded_ActiveEvents) (ParaConfigFaultCollection) (L-r)		

Events

Code	Device status	PQ *	Class	Name	Description
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.