IO-Link Interface Description

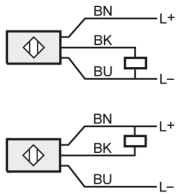
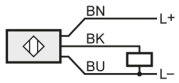
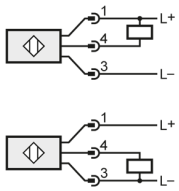
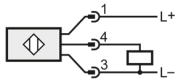
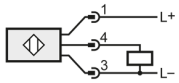
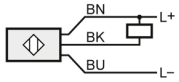
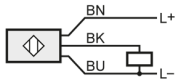
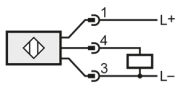
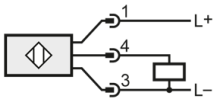
KQ6001
KQ6002
KQ6003
KQ6004
KQ6005
KQ6006
KQ6007
KQ6008
KQ6010
KQ6015
KQ6016
KQ5100
KQ5101
KQ5102
KQ5105
KQ5108

EN

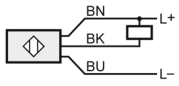
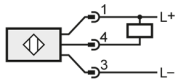
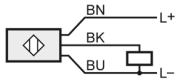
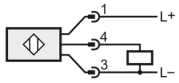
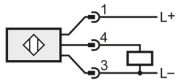
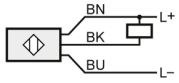
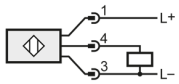
IODD-PDFCreator V 2.1.0.5
ifm-000173-20200917-IODD1.1, V1.0.12

Table of Contents

1 Device variant

KQ6001 Capacitive sensor. Connection: 1x open collector with automatic load detection (DC PNP or DC NPN); PVC cable / 2 m; 3x 0.14 mm²		
KQ6002 Capacitive sensor. Connection: 1x open collector DC PNP; PVC cable / 2 m; 3x 0.14 mm²		
KQ6003 Capacitive sensor. Connection: 1x open collector with automatic load detection (DC PNP or DC NPN); PVC cable / 0.04 m; with M8 connector		
KQ6004 Capacitive sensor. Connection: 1x open collector DC PNP; PVC cable / 0.04 m; with M8 connector		
KQ6005 Capacitive sensor. Connection: 1x open collector DC PNP; PVC cable / 0.1 m; with M12 connector		
KQ6006 Capacitive sensor. Connection: 1x open collector DC NPN; PVC cable / 2 m; 3x 0.14 mm²		
KQ6007 Capacitive sensor. Connection: 1x open collector DC PNP; PVC cable / 10 m; 3x 0.14 mm²		
KQ6008 Capacitive sensor. Connection: 1x open collector DC PNP; PVC cable / 0.04 m; with M8 connector		
KQ6010 Capacitive sensor. Connection: 1x open collector DC PNP; PVC cable / 0.04 m; with M8 connector		

1 Device variant

KQ6015 Capacitive sensor. Connection: 1x open collector DC NPN; PVC cable / 2 m; 3x 0.14 mm²		
KQ6016 Capacitive sensor. Connection: 1x open collector DC NPN; PVC cable / 2 m; with M12 connector		
KQ5100 Capacitive sensor. Connection: 1x open collector DC PNP; PVC cable / 2 m; 3x 0.14 mm²		
KQ5101 Capacitive sensor. Connection: 1x open collector DC PNP; PVC cable / 0.1 m; with M12 connector		
KQ5102 Capacitive sensor. Connection: 1x open collector DC PNP; PVC cable / 0.04 m; with M8 connector		
KQ5105 Capacitive sensor. Connection: 1x open collector DC NPN; PVC cable / 2 m; 3x 0.14 mm²		
KQ5108 Capacitive sensor. Connection: 1x open collector DC PNP; PVC cable / 0.04 m; with M8 connector		

2 Communication

Vendor ID	310 / Bytes 1-54 (hex: 01-36)
Device ID	371 / Bytes 0-1-115 (hex: 00-01-73)
Bit rate	COM1
Minimum cycle time	100,8 ms
SIO mode supported	Yes
Block parameterization	Yes
Data storage	Yes
Supported profiles	Smart Sensor Profil Switching Signal Channel Process Data Variable Teach Channel

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

3 Parameter overview

Parameter	Index	Subindex	Type	Factory setting	page
Device Access Locks	12		RecordT (16 Bit)	0	11
Vendor name	16		StringT (32 Byte)	ifm electronic gmbh	8
Product Name	18		StringT (32 Byte)		8
Product Text	20		StringT (32 Byte)	Capacitive Sensor	8
Hardware Revision	22		StringT (32 Byte)		8
Firmware Revision	23		StringT (16 Byte)		8
Application-specific Tag	24		StringT (16 Byte)	***	8
Process data input	40		RecordT (16 Bit)		9
TeachIn Channel	58		UIntegerT (8 Bit)	1 (BDC1)	10
TeachIn Status	59		UIntegerT (8 Bit)		10
SP	60		RecordT (32 Bit)		10
Switch Point 1	60	1	UIntegerT (16 Bit)		
SP	61		RecordT (32 Bit)		10
Switchpoint Logic	61	1	UIntegerT (8 Bit)		
Switchpoint Hystere...	61	3	UIntegerT (16 Bit)	18	
ProcessData limits	64		RecordT (32 Bit)		9
Min	64	1	UIntegerT (16 Bit)	0	
Max	64	2	UIntegerT (16 Bit)	1645	
Teach values	72		RecordT (32 Bit)		10
ON	72	1	UIntegerT (16 Bit)		
OFF	72	2	UIntegerT (16 Bit)		
dAP	74		UIntegerT (16 Bit)	0	11
dS	76		UIntegerT (16 Bit)	0	10
dr	78		UIntegerT (16 Bit)	0	10
Keylock	100		UIntegerT (8 Bit)	1 (unlocked)	11

4 System Commands

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

System Commands	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
65	Teach empty state	
75	Teach full state	
76	Adjustment teach empty state	
130	Restore Factory Settings	

5 Identification

Vendor name	Index 16	Subindex 0	StringT (32 Byte)	ReadOnly
The vendor name that is assigned to a Vendor ID.				
Factory setting	**ifm electronic gmbh**			

Product Name	Index 18	Subindex 0	StringT (32 Byte)	ReadOnly
Complete product name.				
Factory setting				

Product Text	Index 20	Subindex 0	StringT (32 Byte)	ReadOnly
Additional product information for the device.				
Factory setting	**Capacitive Sensor**			

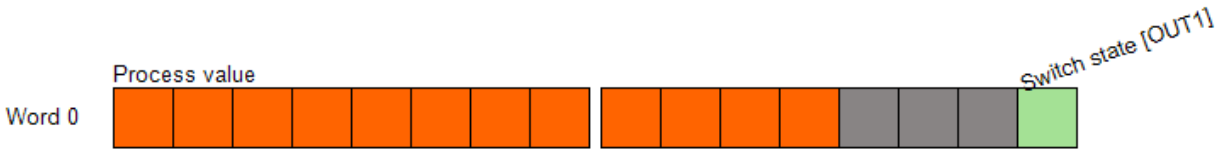
Hardware Revision	Index 22	Subindex 0	StringT (32 Byte)	ReadOnly
Unique, vendor-specific identifier of the hardware revision of the individual device.				
Factory setting				

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

Application-specific Tag	Index 24	Subindex 0	StringT (16 Byte)	ReadWrite
Possibility to mark a device with user- or application-specific information.				
Factory setting	***			

6 Observation

Process data input			RecordT (16 Bit)
Process value			IntegerT (12 Bit)
Fig. PDV1. Current process value.			
Value range	(0 To 1645) * 1		
Switch state [OUT1]			BooleanT
Fig. BDC1. State depends on settings for BDC1.			
Value range	false true	(inactive) (active)	



Process data displayed according device sort order.
Please note: Siemens PLCs swap the high and low byte when using byte addressing.

6.1 Process data limit values

ProcessData limits	Index 64	Subindex 0	RecordT (32 Bit)	ReadOnly
Process data limit values				
Min		Subindex 1	UIntegerT (16 Bit)	
Factory setting Value range	**0** 0			
Max		Subindex 2	UIntegerT (16 Bit)	
Factory setting Value range	**1645** 1645			

7 Parameter

7.1 Teach

TeachIn Channel	Index 58	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Factory setting	**1**	**(BDC1)**		
Value range	1	(BDC1)		

TeachIn Status	Index 59	Subindex 0	UIntegerT (8 Bit)	ReadOnly
Value range	(0 To 255)			

Teach values	Index 72	Subindex 0	RecordT (32 Bit)	ReadOnly
Values from/for teaching procedure				
ON		Subindex 1	UIntegerT (16 Bit)	
Value range	(0 To 1645) * 1			
OFF		Subindex 2	UIntegerT (16 Bit)	
Value range	(0 To 1645) * 1			

7.2 Switchpoint configuration

SP	Index 60	Subindex 0	RecordT (32 Bit)	ReadWrite
Smart Sensor Profile: BDC1 Switchpoints				
Switch Point 1		Subindex 1	UIntegerT (16 Bit)	
Value range	(0 To 1645) * 1			

SP	Index 61	Subindex 0	RecordT (32 Bit)	ReadWrite
Smart Sensor Profile: BDC1 Switchpoint configuration				
Switchpoint Logic		Subindex 1	UIntegerT (8 Bit)	
Value range	0 1	(closing contact) (break contact)		
Switchpoint Hysteresis		Subindex 3	UIntegerT (16 Bit)	
Factory setting	**18**			
Value range	(0 To 1645) * 1			

7.2.1 Delay Time

dS	Index 76	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Switch-On delay				
Factory setting	**0**			
Value range [s]	(0 To 3600) * 1			

dr	Index 78	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Switch-Off delay				
Factory setting	**0**			
Value range [s]	(0 To 3600) * 1			

7 Parameter

7.3 Damping

dAP	Index 74	Subindex 0	UIntegerT (16 Bit)	ReadWrite
Damping process value, takes effect on switching output (100 ms steps)				
Factory setting	**0**			
Value range [ms]	(0 To 2000) * 1			

7.4 Setup

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.				
Data Storage		bitOffset 1	BooleanT	
This lock prevents the write access to the device parameters via the data storage mechanism.				
Factory setting	**0**			
Value range	true	(Locked)		
	false	(Unlocked)		
Local Parameterization		bitOffset 2	BooleanT	
This lock prevents the device settings from being changed via local operating elements on the device.				
Factory setting	**0**			
Value range	true	(Locked)		
	false	(Unlocked)		

Keylock	Index 100	Subindex 0	UIntegerT (8 Bit)	ReadWrite
Factory setting	**1**	**(unlocked)**		
Value range	0	(locked)		
	1	(unlocked)		

8 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