

5 Function description

5.1 Process image

The 4IOL-modules provide a maximum of 16 or respectively 32 byte of process input data (incl. 2 byte status information) and a maximum of 16 or respectively 32 byte of process output data (incl. 2 byte control data) in total for all 4 for channels.

The process image can be adapted application-specifically via the module's parameterization, see **Process Data Mapping (Seite 19)**.

Device	Process input data	Process output data
BL20-E-4IOL	16 byte	16 byte
BL67-4IOL	16 byte	16 byte
BL20-E-4IOL-10	32 byte	32 byte

5.1.1 Process input data

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Status	0	XSG8	XSG7	XSG6	XSG5	DI4	DI3	DI2	DI1
	1	OC8	OC7	OC6	OC5	DVS4	DVS3	DVS2	DVS1
Process input data	2 to 15/31	Mapped process input data							

Name	Value	Meaning
DIx		Digital input
	0	No signal at DI
	1	Input signal at DI
XSGx		XSG input
	0	No input signal at XSG
	1	Input signal at XSG
DVSx		Input value valid (Data Valid Signal)
	0	IO-Link data invalid Possible causes: <ul style="list-style-type: none"> – Sensor supply is below the admissible range, – IO-Link port is parameterized as simple digital input, – No device connected to the masters, – No input data received from the connected device (only valid for devices with an input data length > 0), – No reaction from the connected device to the sending of output data (only valid for devices with an output data length > 0), – The connected device sends an error "process input data invalid.
	1	IO-Link data valid

Name	Value	Meaning
OCx	Overcurrent XSG channel	
	0	No overcurrent
	1	Overcurrent at the output (if the XSG channel is used as output)
Mapped process input data		
Process input data of the connected device It depends on the parameterization of the channel which data are shown in which order (see parameter "process input data length" and "process input data mapping").		

5.1.2 Process output data

	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Control	0	XSG8	XSG7	XSG6	XSG5	DD4	DD3	DD2	DD1
	1	reserved							
Process output data	2 to 15/31	Mapped process output data							

Name	Value	Meaning
DDx	Deactivate diagnostics	
	0	no Diagnostic messages are sent depending on the setting of the parameter "Deactive diagnostics".
	1	Yes All diagnostic messages are suppressed. Possible application: Deactivation and activation of the diagnostic messages by means of a program via the process data. In case of tool changing applications, no diagnostic data are sent which otherwise would lead to machine downtimes.
XSGx	XSG output	
	0	off Output inactive
	1	on Output active, max. output current 0.6 A
Process output data		
Mapped process output data of the connected device. It depends on the parameterization of the channel which data are shown in which order (see parameter "process output data length" and "process output data mapping").		





5.1.3 Process Data Mapping

The mapping of process data can be adapted application-specifically via the master's parameterization.

Depending on the used fieldbus, it can be necessary to swap process data word-wise, double word-wise or completely in order to align them to the data structure in the PLC.

The process data mapping is determined channel by channel through the parameters "process input data mapping" "process output data mapping", "process input data length" and "process output data length" (see **Parameters (Seite 20)**).

Example: mapping for field buses with Little Endian-format:

Mapping by Master → field bus→ PLC		Process input data mapping IO-Link device			Devices at channel 1... 4	Channel parameterization (S. S. 23)	
		Byte A		Byte A			
Byte 0	Status						
Byte 1	Control						
Byte 2	Distance	Low byte	Distance	High byte		2 byte process data (swap 16 bit)	
Byte 3		High byte		Low byte			
Byte 4	Digital signal	1... 8	Digital signal	1... 8		2 byte process data (direct)	
Byte 5	Digital signal	9...15	Digital signal	9 ...15			
Byte 6	Angle x-axis	Low byte	Angle x-axis	High byte		4 byte process data (swap 16 bit)	
Byte 7		High byte		Low byte			
Byte 8	Angle y-axis	Low byte	Angle y-axis	High byte			
Byte 9		High byte		Low byte			
Byte 10	Diagnosis		Counter/ position value	MSByte		4 byte process data (swap all)	
Byte 11	Counter/ position value	Low byte		High byte			
Byte 12		High byte	Low byte				
Byte 13		MSByte	Diagnosis				
Byte 14	reserved						
Byte 15	reserved						

A Low byte, the lowest byte Low-Byte
 High byte High-Byte
 MSByte: Most Significant Byte