

# IO-Link KRT3B\_55 PLC Integration

IO-Link service data function block + process data parser  
function for Beckhoff (TwinCAT 3.x) PLC controls in  
combination with a EtherCAT IO-Link Master

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# 1. About this document

Please read this chapter carefully before working with this documentation and the Leuze IO-Link device.

## 1.1. Function of this document

These instructions have been designed for the technical personnel for the use of the IO-Link PLC blocks.

These instructions do not provide instructions for operating the machine, the system or the vehicle on which IO-Link devices are, or will be, integrated. Information on this is to be found in the appropriate operating instructions of the machine, the system or the vehicle.

## 1.2. Target group

These instructions are addressed to programming engineers and the operators of machines and systems which are operated by one or several IO-Link devices. They also address people, who connect the IO-Link device via an IO-Link-Master-Gateway to a PLC-Control for data exchange.

## 1.3. Scope

These function blocks are device type-specific and only suitable for the following Leuze IO-Link devices.

**Device family: contrast scanner**

**Device ID: 2130**



-KRTM 3B/L6.1121-S8 (50135163)



-KRTM 55/L6.1121,200-S12  
(50135164)

**The function block "FB\_Leuze\_KRT3B\_55\_EC"** interprets the call-up of the acyclic service data.

**The function "F\_Leuze\_PDInParser\_KRT3B\_55"** interprets the process data telegram sent from the IO-Link device.

The functionality of these PLC blocks depends on the IO-Link parameter set described by the IODD. This means, that these blocks also may be used for other Leuze devices (e.g. new device variants) with identical IO-Link parameter sets.

## 2. Service data function block

The function block "FB\_Leuze\_KRT3B\_55\_EC" simplifies the usage of Leuze IO-Link devices on Beckhoff (TwinCAT 3.x) PLC controls. The FB supports IO-Link Masters which can be connected via EtherCAT to the PLC system.

The function block is device type-specific and thus only suitable for the appropriate Leuze IO-Link devices. The FB interprets the call-up of the acyclic service data between the PLC and the IO-Link device.

The IO-Link function block can only be used in combination with the listed helper functions / libraries.

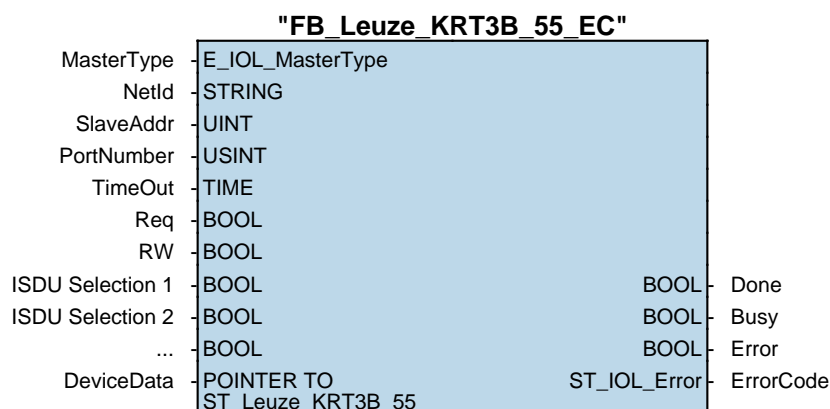
### 2.1. Block specifications

Block name:	FB_Leuze_KRT3B_55_EC
Version:	1.0.0.0
Used libraries:	IO-Link Base (> V2.0.0.0)
Used structures:	ST_Leuze_KRT3B_55 ST_IOL_Error
Call up:	Cyclic
Programming language:	Structured text (ST)
Based on the IODD:	Leuze_electronic-KRT3B_2130-20161208-IODD1.1.xml (V1.1)



#### Attention!

The function block uses the library "IO-Link base" in the version V2.0.0.0. Please ensure, that you have installed the added it to your PLC project. The IO-Link base library is backward compatible and can also be used with older IO-Link function blocks.



### 2.2. Method of function

The function block uses the data structure "ST\_Leuze\_KRT3B\_55". The data structure contains the values of all IO-Link variables. Before you can use it, the structure must be instantiated in the PLC program. Each IO-Link FB parameter has a data point representing it in this data structure. This data

point will be actualized every time a read request was executed successfully.

A desired parameter can be selected via the input variables. Depending on the device definition, IO-Link parameters are read or writable. The input variable must be "RW" = FALSE to read parameter. The value that should be written can be defined in the data structure, as soon as the input parameter "RW" = TRUE. You start each transfer by calling up the "FB\_Leuze\_KRT3B\_55\_EC" with a positive trigger at the "Req" input. As long as there is no valid answer the output "Busy" is TRUE. In the case that the chosen timeout period has elapsed a timeout error will be generated and the thread will be terminated. The "Done" = TRUE output shows that the transmission was successful. The outputs retain there states as long as there is no new positive trigger at the "Req" input again.

## 2.3. Behavior when error occurs

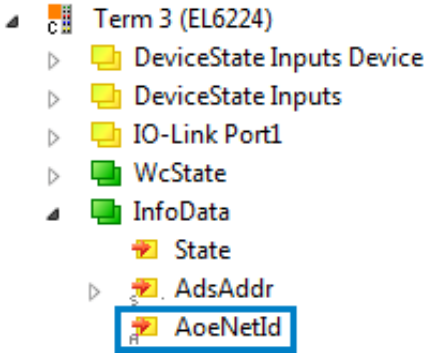
An error bit (Error) is set and an error code (ErrorCode) generated, if there is a spurious input value or an incorrect input connection of the FB. In this case, no further processing is carried out, until the input has been corrected.

## 2.4. Communication parameter

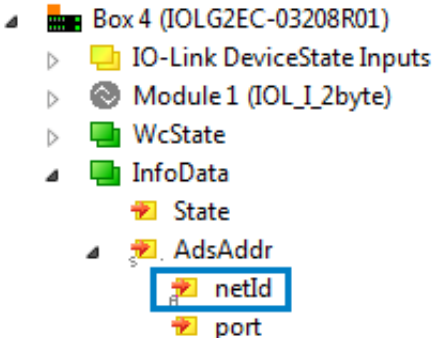
Because of dependencies in the communication between the PLC and the IO-Link Master only the following EtherCAT IO-Link Masters are supported:

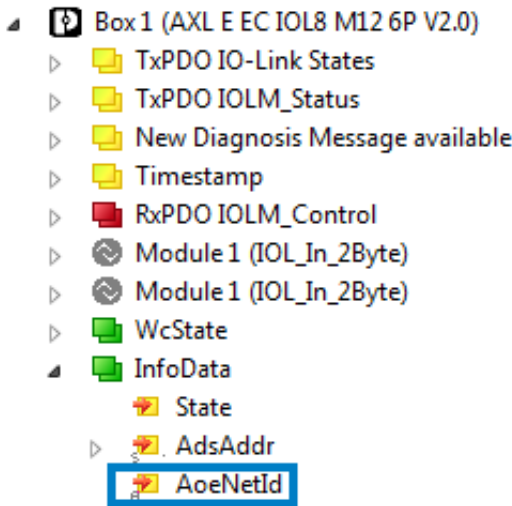
- Beckhoff EL6224/EP6224 (MasterType = 0 [eBECKHOFF\_6224])
- SICK IOLG2EC (MasterType = 1 [eSICK\_IOLG2EC])
- Phoenix Axioline (MasterType = 1 [ePHOENIX\_AXIOLINE])

Depending on the selected "MasterType" the communication parameters must be configured as follows.

Input option	MasterType = 0 (Beckhoff EL6224/EP6224)
MasterType:	0 (Enum: eBECKHOFF_6224)
NetId:	
SlaveAddr:	0
PortNumber:	Port number beginning with 1

Input option	MasterType = 1 (SICK IOLG2EC)
MasterType:	1 (Enum: eSICK_IOLG2EC)

NetId:	
SlaveAddr:	<div> <div>General</div> <div>EtherCAT</div> <div>Process Data</div> <div>Slots</div> </div> <div> <div>Type:</div> <div>IOLG2EC-03208R01</div> </div> <div> <div>Product/Revision:</div> <div>20618 / 1</div> </div> <div> <div>Auto Inc Addr:</div> <div>FFFD</div> </div> <div> <div>EtherCAT Addr:</div> <div><input type="checkbox"/> 1004</div> </div>
PortNumber:	Port number beginning with 1

Input option	MasterType = 2 (Phoenix Axioline)
MasterType:	2 (Enum: ePHOENIX_AXIOLINE)
NetId:	
SlaveAddr:	0
PortNumber:	Port number beginning with 1

## 2.5. Parameter

Parameter name	Declaration	Data type	Description
MasterType	INPUT	E_IOL_M asterType	Selection of the IO-Link Master 0= Beckhoff EL6224/EP6224 1= SICK IOLG2EC 2= Phoenix Axioline

Parameter name	Declaration	Data type	Description
NetId	INPUT	STRING	Beckhoff EL6224/EP6224: AoeNetId of the IO-Link Master  SICK IOLG2EC: AmsNetId of the EtherCAT Master
SlaveAddr	INPUT	UINT	EtherCAT slave address of the IO-Link Masters (only required for the SICK IO-Link Master IOLG2EC, otherwise 0)
PortNumber	INPUT	USINT	Number of the port where the IO-Link device is connected to the IO-Link Master  1..255: Port number
TimeOut	INPUT	TIME	Time, after a Timeout-Error is triggered.
Req	INPUT	BOOL	Positive trigger: Start data transfer
RW	INPUT	BOOL	Read or write the selected IO-Link parameter.  FALSE: Read parameter TRUE: Write Parameter
SysCommand	INPUT	BOOL	Selection of the IO-Link parameter "Standard Command"  =====IO-Link parameter information: ===== IO-Link Index: 2 Access: Write only  Parameter values of the data structure (decimal): 128: Device Reset 130: Restore Factory Settings 192: sensitivity increase by one step 193: sensitivity decrease by one step 195: static 2-point teach start with background 197: dynamic 2-point teach start with background 198: test function 207: finalize 2-point teach 224: save current working parameter 225: restore last saved working parameter 226: save current working parameter to memory index 227: load saved working parameter from memory index
DeviceAccessLocks	INPUT	BOOL	Selection of the IO-Link parameter "Device Access Locks"  =====IO-Link parameter information: ===== IO-Link Index: 12 Access: Read/Write
VendorName	INPUT	BOOL	Selection of the IO-Link parameter "Vendor Name"  =====IO-Link parameter information: ===== IO-Link Index: 16 Access: Read only
VendorText	INPUT	BOOL	Selection of the IO-Link parameter "Vendor Text"  =====IO-Link parameter information: ===== IO-Link Index: 17 Access: Read only

Parameter name	Declaration	Data type	Description
ProductName	INPUT	BOOL	Selection of the IO-Link parameter "Product Name"  =====IO-Link parameter information: ===== IO-Link Index: 18 Access: Read only
ProductID	INPUT	BOOL	Selection of the IO-Link parameter "Product ID"  =====IO-Link parameter information: ===== IO-Link Index: 19 Access: Read only
ProductText	INPUT	BOOL	Selection of the IO-Link parameter "Product Text"  =====IO-Link parameter information: ===== IO-Link Index: 20 Access: Read only
SerialNumber	INPUT	BOOL	Selection of the IO-Link parameter "Serial Number"  =====IO-Link parameter information: ===== IO-Link Index: 21 Access: Read only
HWVersion	INPUT	BOOL	Selection of the IO-Link parameter "Hardware Version"  =====IO-Link parameter information: ===== IO-Link Index: 22 Access: Read only
FWVersion	INPUT	BOOL	Selection of the IO-Link parameter "Firmware Version"  =====IO-Link parameter information: ===== IO-Link Index: 23 Access: Read only
AppliName	INPUT	BOOL	Selection of the IO-Link parameter "Application Specific Tag"  =====IO-Link parameter information: ===== IO-Link Index: 24 Access: Read/Write
EasyTuneLockState	INPUT	BOOL	Selection of the IO-Link parameter "EasyTune lock state"  =====IO-Link parameter information: ===== IO-Link Index: 70 Access: Read/Write
TeachButtonLockState	INPUT	BOOL	Selection of the IO-Link parameter "teach button lock state"  =====IO-Link parameter information: ===== IO-Link Index: 71 Access: Read/Write



Parameter name	Declaration	Data type	Description
SwitchingOutput1Func	INPUT	BOOL	<p>Selection of the IO-Link parameter "switching output 1 function"</p> <p>=====IO-Link parameter information: ===== IO-Link Index: 72 Access: Read/Write</p> <p>Parameter values of the data structure (decimal): 0: true on mark 1: true on background</p>
SwitchingOutput2Func	INPUT	BOOL	<p>Selection of the IO-Link parameter "switching output 2 function"</p> <p>=====IO-Link parameter information: ===== IO-Link Index: 73 Access: Read/Write</p> <p>Parameter values of the data structure (decimal): 0: inverted switching output 1 1: equal switching output 1</p>
TimerUnit	INPUT	BOOL	<p>Selection of the IO-Link parameter "timer unit"</p> <p>=====IO-Link parameter information: ===== IO-Link Index: 74 Access: Read/Write</p>
FunctionOfTimerUnit	INPUT	BOOL	<p>Selection of the IO-Link parameter "function of timer unit"</p> <p>=====IO-Link parameter information: ===== IO-Link Index: 75 Access: Read/Write</p> <p>Parameter values of the data structure (decimal): 1: on delay 2: off delay 3: pulse stretching 4: pulse suppression</p>
_Time	INPUT	BOOL	<p>Selection of the IO-Link parameter "time"</p> <p>=====IO-Link parameter information: ===== IO-Link Index: 76 Access: Read/Write</p> <p>Parameter values of the data structure (decimal): 1-50000</p>
ColorsAtTeach	INPUT	BOOL	<p>Selection of the IO-Link parameter "colors at teach"</p> <p>=====IO-Link parameter information: ===== IO-Link Index: 77 Access: Read/Write</p> <p>Parameter values of the data structure (decimal): 1: red 2: green 4: blue 3: red, green 5: red, blue 6: green, blue 7: all</p>

Parameter name	Declaration	Data type	Description
PosSwThres1PTIOL	INPUT	BOOL	Selection of the IO-Link parameter "position of switching threshold, 1-point teach, IO-Link"  =====IO-Link parameter information: ===== IO-Link Index: 78 Access: Read/Write
PosSwThres2PTIOL	INPUT	BOOL	Selection of the IO-Link parameter "position of switching threshold, 2-point teach, IO-Link"  =====IO-Link parameter information: ===== IO-Link Index: 79 Access: Read/Write  Parameter values of the data structure (decimal): 6: very close to the mark = 6% 12: close to the mark = 12% 25: toward mark = 25% 50: in the middle between the mark and background = 50% 70: in direction of the background = 70% 82: close to the background = 82% 90: very close to the background = 90% 7-11: very close to the background = 90% 13-24: very close to the background = 90% 26-49: very close to the background = 90% 51-69: very close to the background = 90% 71-81: very close to the background = 90% 83-89: very close to the background = 90% 91-94: very close to the background = 90%
PosSwThres1PTBS1	INPUT	BOOL	Selection of the IO-Link parameter "position of switching threshold, 1-point teach, button, sensitivity 1"  =====IO-Link parameter information: ===== IO-Link Index: 80 Access: Read/Write
PosSwThres1PTBS2	INPUT	BOOL	Selection of the IO-Link parameter "position of switching threshold, 1-point teach, button, sensitivity 2"  =====IO-Link parameter information: ===== IO-Link Index: 81 Access: Read/Write

Parameter name	Declaration	Data type	Description
PosSwThres2PTBS1	INPUT	BOOL	<p>Selection of the IO-Link parameter "position of switching threshold, 2-point teach, button, sensitivity 1"</p> <p>=====IO-Link parameter information: ===== IO-Link Index: 82 Access: Read/Write</p> <p>Parameter values of the data structure (decimal): 6: very close to the mark = 6% 12: close to the mark = 12% 25: toward mark = 25% 50: in the middle between the mark and background = 50% 70: in direction of the background = 70% 82: close to the background = 82% 90: very close to the background = 90% 7-11: very close to the background = 90% 13-24: very close to the background = 90% 26-49: very close to the background = 90% 51-69: very close to the background = 90% 71-81: very close to the background = 90% 83-89: very close to the background = 90% 91-94: very close to the background = 90%</p>
PosSwThres2PTBS2	INPUT	BOOL	<p>Selection of the IO-Link parameter "position of switching threshold, 2-point teach, button, sensitivity 2"</p> <p>=====IO-Link parameter information: ===== IO-Link Index: 83 Access: Read/Write</p> <p>Parameter values of the data structure (decimal): 6: very close to the mark = 6% 12: close to the mark = 12% 25: toward mark = 25% 50: in the middle between the mark and background = 50% 70: in direction of the background = 70% 82: close to the background = 82% 90: very close to the background = 90% 7-11: very close to the background = 90% 13-24: very close to the background = 90% 26-49: very close to the background = 90% 51-69: very close to the background = 90% 71-81: very close to the background = 90% 83-89: very close to the background = 90% 91-94: very close to the background = 90%</p>
AnalysisDepth	INPUT	BOOL	<p>Selection of the IO-Link parameter "analysis depth"</p> <p>=====IO-Link parameter information: ===== IO-Link Index: 84 Access: Read/Write</p> <p>Parameter values of the data structure (decimal): 1-10</p>
WorkingParameter0	INPUT	BOOL	<p>Selection of the IO-Link parameter "working parameter 0"</p> <p>=====IO-Link parameter information: ===== IO-Link Index: 100 Access: Read/Write</p>

Parameter name	Declaration	Data type	Description
WorkingParameter1	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 1"  =====IO-Link parameter information: ===== IO-Link Index: 101 Access: Read/Write
WorkingParameter2	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 2"  =====IO-Link parameter information: ===== IO-Link Index: 102 Access: Read/Write
WorkingParameter3	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 3"  =====IO-Link parameter information: ===== IO-Link Index: 103 Access: Read/Write
WorkingParameter4	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 4"  =====IO-Link parameter information: ===== IO-Link Index: 104 Access: Read/Write
WorkingParameter5	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 5"  =====IO-Link parameter information: ===== IO-Link Index: 105 Access: Read/Write
WorkingParameter6	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 6"  =====IO-Link parameter information: ===== IO-Link Index: 106 Access: Read/Write
WorkingParameter7	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 7"  =====IO-Link parameter information: ===== IO-Link Index: 107 Access: Read/Write
WorkingParameter8	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 8"  =====IO-Link parameter information: ===== IO-Link Index: 108 Access: Read/Write
WorkingParameter9	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 9"  =====IO-Link parameter information: ===== IO-Link Index: 109 Access: Read/Write
WorkingParameter10	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 10"  =====IO-Link parameter information: ===== IO-Link Index: 110 Access: Read/Write

Parameter name	Declaration	Data type	Description
WorkingParameter11	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 11"  =====IO-Link parameter information: ===== IO-Link Index: 111 Access: Read/Write
WorkingParameter12	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 12"  =====IO-Link parameter information: ===== IO-Link Index: 112 Access: Read/Write
WorkingParameter13	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 13"  =====IO-Link parameter information: ===== IO-Link Index: 113 Access: Read/Write
WorkingParameter14	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 14"  =====IO-Link parameter information: ===== IO-Link Index: 114 Access: Read/Write
WorkingParameter15	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 15"  =====IO-Link parameter information: ===== IO-Link Index: 115 Access: Read/Write
WorkingParameter16	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 16"  =====IO-Link parameter information: ===== IO-Link Index: 116 Access: Read/Write
WorkingParameter17	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 17"  =====IO-Link parameter information: ===== IO-Link Index: 117 Access: Read/Write
WorkingParameter18	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 18"  =====IO-Link parameter information: ===== IO-Link Index: 118 Access: Read/Write
WorkingParameter19	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 19"  =====IO-Link parameter information: ===== IO-Link Index: 119 Access: Read/Write
WorkingParameter20	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 20"  =====IO-Link parameter information: ===== IO-Link Index: 120 Access: Read/Write

Parameter name	Declaration	Data type	Description
WorkingParameter21	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 21"  =====IO-Link parameter information: ===== IO-Link Index: 121 Access: Read/Write
WorkingParameter22	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 22"  =====IO-Link parameter information: ===== IO-Link Index: 122 Access: Read/Write
WorkingParameter23	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 23"  =====IO-Link parameter information: ===== IO-Link Index: 123 Access: Read/Write
WorkingParameter24	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 24"  =====IO-Link parameter information: ===== IO-Link Index: 124 Access: Read/Write
WorkingParameter25	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 25"  =====IO-Link parameter information: ===== IO-Link Index: 125 Access: Read/Write
WorkingParameter26	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 26"  =====IO-Link parameter information: ===== IO-Link Index: 126 Access: Read/Write
WorkingParameter27	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 27"  =====IO-Link parameter information: ===== IO-Link Index: 127 Access: Read/Write
WorkingParameter28	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 28"  =====IO-Link parameter information: ===== IO-Link Index: 128 Access: Read/Write
WorkingParameter29	INPUT	BOOL	Selection of the IO-Link parameter "working parameter 29"  =====IO-Link parameter information: ===== IO-Link Index: 129 Access: Read/Write
WorkingParameter	INPUT	BOOL	Selection of the IO-Link parameter "working parameter"  =====IO-Link parameter information: ===== IO-Link Index: 130 Access: Read/Write

Parameter name	Declaration	Data type	Description
TeachButtonFunction	INPUT	BOOL	Selection of the IO-Link parameter "teach button function"  =====IO-Link parameter information: ===== IO-Link Index: 150 Access: Read only
ActiveTransmitter	INPUT	BOOL	Selection of the IO-Link parameter "active transmitter"  =====IO-Link parameter information: ===== IO-Link Index: 170 Access: Read/Write  Parameter values of the data structure (decimal): 0: red 1: green 2: blue
Amplification	INPUT	BOOL	Selection of the IO-Link parameter "amplification"  =====IO-Link parameter information: ===== IO-Link Index: 171 Access: Read/Write
BackgroundValue	INPUT	BOOL	Selection of the IO-Link parameter "background value"  =====IO-Link parameter information: ===== IO-Link Index: 172 Access: Read/Write
MarkValue	INPUT	BOOL	Selection of the IO-Link parameter "mark value"  =====IO-Link parameter information: ===== IO-Link Index: 173 Access: Read/Write
HighSwitchingThresho	INPUT	BOOL	Selection of the IO-Link parameter "high switching threshold"  =====IO-Link parameter information: ===== IO-Link Index: 174 Access: Read/Write
LowSwitchingThreshol	INPUT	BOOL	Selection of the IO-Link parameter "low switching threshold"  =====IO-Link parameter information: ===== IO-Link Index: 175 Access: Read/Write
BackgroundOffsetValu	INPUT	BOOL	Selection of the IO-Link parameter "background offset value"  =====IO-Link parameter information: ===== IO-Link Index: 176 Access: Read/Write
NumberOfMarks	INPUT	BOOL	Selection of the IO-Link parameter "number of marks"  =====IO-Link parameter information: ===== IO-Link Index: 177 Access: Read/Write

Parameter name	Declaration	Data type	Description
WorkingParamMemIdx	INPUT	BOOL	Selection of the IO-Link parameter "working parameter memory index"  =====IO-Link parameter information: ===== IO-Link Index: 178 Access: Read/Write  Parameter values of the data structure (decimal): 0-29
MeasuredValue	INPUT	BOOL	Selection of the IO-Link parameter "measured value"  =====IO-Link parameter information: ===== IO-Link Index: 200 Access: Read only
DeviceData	INPUT	POINTER TO ST_Leuze _KRT3B_ 55	Pointer to the instance of the device data structure FB_Leuze_KRT3B_55_EC.  Example: VAR stDeviceData: ST_Leuze_KRT3B_55; END_VAR  DeviceData:= ADR(stDeviceData);
Done	OUTPUT	BOOL	Indicates whether data is valid
Busy	OUTPUT	BOOL	Request in process.  FALSE: Request is terminated TRUE: Request is being processed
Error	OUTPUT	BOOL	Error flag  FALSE: No error TRUE: Error detected
ErrorCode	OUTPUT	ST_IOL_ Error	Error code

## 2.6. Error description

### 2.6.1. Error code (ErrorCode)

The parameter "ErrorCode" can be interpreted using the data structure ST\_IOL\_Error . The structure contains the following error information:

Parameter name	Data type	Description
nCommunicationError	DWORD	Communication errors (see ADS Return Codes)
nBlockError	DWORD	Function block errors
nIOLMError	WORD	This error code is not supported by the master
nIOLError	WORD	IO-Link error. Contains the IOL Error_Code the IOL Add_Error_Code (see IO-Link specification) and the device specific error codes

Error code (nBlockError)	Error code
0x0000	No error
0x0001	Only one parameter can be selected at the same time
0x0002	The function block was initiated without any choice of parameter
0x0003	Chosen parameter cannot be read



Error code (nBlockError)	Error code
0x0004	Chosen parameter cannot be written
0x0005	The value to transmit is bigger then allowed for this data type
0x0006	The value to transmit is less then allowed for this data type
0x0007	Reserved
0x0008	Reserved
0x0009	Time out error occurred
0x0100	(FB_IOL_Call_EC): IO-Link Index > 32767
0x0200	(FB_IOL_Call_EC): Invalid parameter (Length > 232)
0x0300	(FB_IOL_Call_EC): Invalid IO-Link port number (1 > PortNumber > 8)
0x0400	(FB_IOL_Call_EC): Timeout
0x0500	(FB_IOL_Call_EC): Invalid IO-Link MasterTyp

Error code (nIOLError)	Error code
0x0000	No error
0x1000	Master communication error
0x1100	ISDU time out / Device event error
0x5200	Device checksum error
0x5600	Device buffer overflow
0x5700	Master ISDU illegal service
0x8000	The requested service has been refused by the device application
0x8011	Read write access to a not existing Index
0x8012	Read write access to a not existing sub index
0x8020	Parameter is not accessible for a read or write service due to the current state in the device
0x8021	Parameter is not accessible for a read or write service due to an ongoing local operation at the device
0x8022	Parameter is not accessible for a read or write service due to an remote triggered state of the device application
0x8023	Write service tries to access a read-only parameter
0x8030	Write service to a parameter outside its permitted range of values
0x8031	Write service to a parameter above its specified value range
0x8032	Write service to a parameter below its specified value range
0x8033	Write service to a parameter above its specified length
0x8034	Write service to a parameter below its predefined length
0x8035	Write service with a command value not supported by the device application
0x8036	Write service with a command value calling a device function not available due to the current state
0x8040	The value via single parameter transfer collide with other actual parameter settings
0x8041	Inconsistent parameter set
0x8082	The read or write service is refused due to a temporarily unavailable application
0x8100	Unspecified
0x8101 ... 0x81FF	Device specific (see device description)

For additional information see the specification "IO-Link Communication" ([www.IO-Link.com](http://www.IO-Link.com)).

## 2.7. Including into the PLC project

The function block "FB\_Leuze\_KRT3B\_55\_EC" is a part of the TwinCAT V3.x "" library. The library can be installed by using the Library Repository. Afterwards it is possible to add the library to your project (References --> Add library...).

The function block uses the "IO-Link Base" communication library. Please make sure that the library has been installed and added to your project. The "IO-Link Base" library is available on [www.leuze-electronic.de](http://www.leuze-electronic.de) .

Depending on the IO-Link Master, the communication parameters of the function block must be accordingly defined (see chapter 2.4).

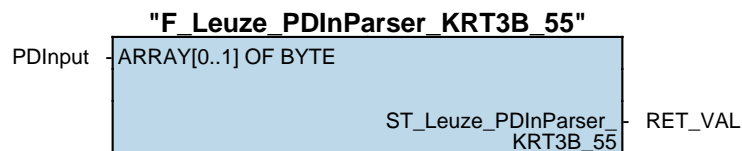
## 3. Process data parser function

The function F\_Leuze\_PDInParser\_KRT3B\_55 simplifies the interpretation of composed IO-Link process data. This data is provided as a data structure on the PLC side.

The function is device type-specific and thus only suitable for the appropriated Leuze IO-Link devices.

### 3.1. Block specifications

Block name: F\_Leuze\_PDInParser\_KRT3B\_55  
Version: 1.0  
Used structures: ST\_Leuze\_PDInParser\_KRT3B\_55  
Programming language: Structured text (ST)  
Based on the IODD: Leuze\_electronic-KRT3B\_2130-20161208-IODD1.1.xml (V1.1)



### 3.2. Parameter

Parameter name	Declaration	Data type	Description
PDInput	INPUT	ARRAY[0..1] OF BYTE	Raw process data of the IO-Link device. Please make sure that the byte order is not swapped.
RET_VAL	OUTPUT	ST_Leuze_PDInParser_KRT3B_55	Reference to the instance of the data structure ST_Leuze_PDInParser_KRT3B_55. The structure includes the disaggregated values of the process data.

### 3.3. Including into the PLC project

The function "FB\_Leuze\_KRT3B\_55\_EC" is a part of the IO-Link library. The library can be included by using the Library Repository. The function needs the process data of the IO-Link device as an input value. The process data is obtained by linking a PLC variable via AT-declaration with the process value of the IO-Link device. Please make sure that the byte order is not swapped (see picture). The output value of the function is a data structure which includes the disaggregated values of the process data.

