



PLC Integration of KRT3B_2130

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

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1 Legal information

1.1 Disclaimer

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2 About this document

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

2.1 Purpose of use

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

These instructions are intended to provide support during the commissioning of a Leuze IO-Link sensor using standard software from Siemens. The described module is part of this standard software.

2.2 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.

3 General use of function block

3.1 Short description

The function block "FB_Leuze_IOL_ KRT3B_2130" simplifies the usage of Leuze IO-Link devices on Beckhoff (TwinCAT 3.x) PLC controls. This 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.

3.2 Calling and designation



Fig. 3.1: Example of module call

3.3 Configuration

Tab. 3.1: Parameter IN

Parameter	Data type	Description
bExecute	Bool	Positive trigger: Start data transfer
bRW	Bool	Read or write the selected IO-Link parameter. FALSE: Read parameter TRUE: Write Parameter
nPort	T_AmsPort	Port number of the ADS device.
sNetId	T_AmsNetID	String containing the AMS network identifier of the target device to which the ADS command is directed. Beckhoff EL6224/EP6224: AoeNetId of the IO-Link Master
nIdxGroup	UDInt	Index group number.
tTimeOut	Time	Time, after a Timeout-Error is triggered.

Tab. 3.2: Parameter INOUT

Parameter	Data type	Description
stDeviceData	ST_Leuze_IOL_ KRT3B_2130	Sensor data

See structure description of ST_Leuze_IOL_ KRT3B_2130 in chapter 7.

Tab. 3.3: Parameter OUT

Parameter	Data type	Description
bDone	Bool	Indicates whether data is valid.

Parameter	Data type	Description
bBusy	Bool	Request in process. FALSE: Request is terminated TRUE: Request is being processed
bError	Bool	Error flag FALSE: No error TRUE: Error detected
stErrorCode	ST_Leuze_IOL_Error	Status of the function block

See structure description of ST_Leuze_IOL_Error in chapter 6.

3.4 Method of function

The function block uses the data structure "ST_Leuze_IOL_KRT3B_2130". The PLC data structure contains the values of all IO-Link variables. Before you can use it, the structure must be instantiated by a data block. 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.

The desired parameters can be selected via the input variables. Depending on the device definition, IO-Link parameters are read or writable. The input variable must be "bRW" = FALSE to read parameter. The value that should be written can be defined in the data structure, as soon as the input parameter "bRW" = TRUE. You start each transfer by calling up the "FB_Leuze_IOL_KRT3B_2130" with a positive trigger at the "bExecute" input. As long as there is no valid answer the output "bBusy" 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 "bDone" = TRUE output shows that the transmission was successful. The outputs retain there states as long as there is no new positive trigger at the "bExecute" input again.

The function block allows you to read or write multiple IO-Link parameters sequentially (multi-selection). Please note that it may happen, that a single parameter can not be written. The function block aborts at this point and it is possible, that the IO-Link device contains an inconsistent set of parameters.

3.5 Behavior when error occurs

An error bit (bError) is set and an error code (ST_Leuze_IOL_Error) 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.

4 Integration into the PLC project

The function block "FB_Leuze_IOL_ KRT3B_2130" is a part of the TwinCAT V3.x library. The library can be installed by using the Library Repository. Afterwards the library can be added to your project (References --> Add library...).

Integration step by step:

- Download the library
- Open the Library repository in Library Manager tab in Beckhoff TwinCAT
- Click Install... and select downloaded library
- Open Add library in Library Manager tab
- Find installed library under Leuze electronic GmbH + Co. KG

NOTICE	
	If several devices connect to the IO-Link Master, you can only exchange acyclic data (service data) with one device at the same time. Due this restriction, the service data communication blocks must to be blocked against each other.

5 Process data parser function

The function F_Leuze_PD_KRT3B_2130 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.

5.1 Calling and designation



Fig. 5.1: Example of process data parsing function call

5.2 Configuration

Tab. 5.1: Parameters

Parameter name	Declaration	Data type	Description
aProcessData	INPUT	ARRAY OF BYTE	Raw process data of the IO-Link device.
bError	OUTPUT	BOOL	Error flag FALSE: No error TRUE: Error detected
F_Leuze_PD_KRT3B_2130	OUTPUT	ST_Leuze_PD_KRT3B_2130	Reference to the instance of the data structure ST_Leuze_PD_KRT3B_2130. The structure includes the disaggregated values of the process data.

See structure description of ST_Leuze_PD_KRT3B_2130 in chapter 7.

6 Error description

The parameter "ErrorCode" can be interpreted using the PLC data type ST_Leuze_IOL_Error. This data type contains the following error information:

Tab. 6.1: ST_Leuze_IOL_Error description

Parameter name	Data type	Description
ErrorStatus.nBlockError	WORD	Error number representing FB where error occurred
ErrorStatus.nAdsReadError	UDINT	ADS read error code
ErrorStatus.nAdsWriteError	UDINT	ADS write error code
ErrorStatus.nIndex	INT	IO-Link index to which the error code refers
ErrorStatus.nSubIndex	INT	IO-Link sub-index to which the error code refers

Tab. 6.2: Error description for nBlockError

Error code (nBlockError)	Error description
0x0000	No error
0x8001	Time out error occurred
0x8002	No parameter selected
0x8003	Error in FB_Leuze_IOL_AdsReadWrite block

For additional information see the Beckhoff ADS Return Codes (<https://infosys.beckhoff.com>).

7 Data structures

Tab. 7.1: ST_Leuze_IOL_KRT3B_2130

Parameter name	Data type	Description
stDeviceData.stSelection.stCommands.bDeviceReset	BOOL	[WRITE_ONLY] Device Reset
stDeviceData.stSelection.stCommands.bApplicationReset	BOOL	[WRITE_ONLY] Application Reset
stDeviceData.stSelection.stCommands.bRestoreFactorySettings	BOOL	[WRITE_ONLY] Restore Factory Settings
stDeviceData.stSelection.stCommands.bSensitivityIncreaseByOneStep	BOOL	[WRITE_ONLY] sensitivity increase by one step
stDeviceData.stSelection.stCommands.bSensitivityDecreaseByOneStep	BOOL	[WRITE_ONLY] sensitivity decrease by one step
stDeviceData.stSelection.stCommands.bStatic2PointTeachStartWithBackground	BOOL	[WRITE_ONLY] static 2-point teach start with background
stDeviceData.stSelection.stCommands.bDynamic2PointTeachStartWithBackground	BOOL	[WRITE_ONLY] dynamic 2-point teach start with background
stDeviceData.stSelection.stCommands.bTestFunction	BOOL	[WRITE_ONLY] test function
stDeviceData.stSelection.stCommands.bFinalize2PointTeach	BOOL	[WRITE_ONLY] finalize 2-point teach
stDeviceData.stSelection.stCommands.bSaveCurrentWorkingParameter	BOOL	[WRITE_ONLY] save current working parameter
stDeviceData.stSelection.stCommands.bRestoreLastSavedWorkingParameter	BOOL	[WRITE_ONLY] restore last saved working parameter
stDeviceData.stSelection.stCommands.bSaveCurrentWorkingParameterToMemoryIndex	BOOL	[WRITE_ONLY] save current working parameter to memory index
stDeviceData.stSelection.stCommands.bLoadSavedWorkingParameterFromMemoryIndex	BOOL	[WRITE_ONLY] load saved working parameter from memory index
stDeviceData.stSelection.stDirectParameters1.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stDirectParameters1.bReserved_1	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bMasterCycleTime	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bMinCycleTime	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bMSequenceCapability	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bIoLinkVersionId	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bProcessDataInputLength	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bProcessDataOutputLength	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bVendorId1	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bVendorId2	BOOL	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stSelection.stDirectParameters1.bDeviceId1	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bDeviceId2	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bDeviceId3	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bReserved_13	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bReserved_14	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bReserved_15	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters2.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter1	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter2	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter3	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter4	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter5	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter6	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter7	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter8	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter9	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter10	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter11	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter12	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter13	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter14	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter15	BOOL	[READ_WRITE]
stDeviceData.stSelection.stDirectParameters2.bDeviceSpecificParameter16	BOOL	[READ_WRITE]
stDeviceData.stSelection.bStandardCommand	BOOL	[WRITE_ONLY]
stDeviceData.stSelection.stDeviceAccessLocks.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.bVendorName	BOOL	[READ_ONLY]
stDeviceData.stSelection.bVendorText	BOOL	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stSelection.bProductName	BOOL	[READ_ONLY]
stDeviceData.stSelection.bProductId	BOOL	[READ_ONLY]
stDeviceData.stSelection.bProductText	BOOL	[READ_ONLY]
stDeviceData.stSelection.bSerialNumber	BOOL	[READ_ONLY]
stDeviceData.stSelection.bHardwareVersion	BOOL	[READ_ONLY]
stDeviceData.stSelection.bFirmwareVersion	BOOL	[READ_ONLY]
stDeviceData.stSelection.bApplicationSpecificTag	BOOL	[READ_WRITE]
stDeviceData.stSelection.bEasytuneLockState	BOOL	[READ_WRITE] EasyTune lock state
stDeviceData.stSelection.bTeachButtonLockState	BOOL	[READ_WRITE] button lock state
stDeviceData.stSelection.bSwitchingOutput1Function	BOOL	[READ_WRITE] inversion of the switching output 1
stDeviceData.stSelection.bSwitchingOutput2Function	BOOL	[READ_WRITE] function switching output 2
stDeviceData.stSelection.bTimerUnit	BOOL	[READ_WRITE] timer unit
stDeviceData.stSelection.bFunctionOfTimerUnit	BOOL	[READ_WRITE] function of timer unit
stDeviceData.stSelection.bTime_76	BOOL	[READ_WRITE] time
stDeviceData.stSelection.bColorsAtTeach	BOOL	[READ_WRITE] selection of the transmitter color
stDeviceData.stSelection.bPositionOfSwitchingThreshold1PointTeachIoLink	BOOL	[READ_WRITE] sensitivity setting at static/dynamic 1-point teach - IO-Link
stDeviceData.stSelection.bPositionOfSwitchingThreshold2PointTeachIoLink	BOOL	[READ_WRITE] sensitivity setting at static/dynamic 2-point teach - IO-Link
stDeviceData.stSelection.bPositionOfSwitchingThreshold1PointTeachButtonSensitivity1	BOOL	[READ_WRITE] sensitivity setting at static/dynamic 1-point teach - button - sensitivity 1
stDeviceData.stSelection.bPositionOfSwitchingThreshold1PointTeachButtonSensitivity2	BOOL	[READ_WRITE] sensitivity setting at static/dynamic 1-point teach - button - sensitivity 2
stDeviceData.stSelection.bPositionOfSwitchingThreshold2PointTeachButtonSensitivity1	BOOL	[READ_WRITE] sensitivity setting at static/dynamic 2-point teach - button - sensitivity 1
stDeviceData.stSelection.bPositionOfSwitchingThreshold2PointTeachButtonSensitivity2	BOOL	[READ_WRITE] sensitivity setting at static/dynamic 2-point teach - button - sensitivity 2
stDeviceData.stSelection.bAnalysisDepth	BOOL	[READ_WRITE] number of scans considered for the switching output to toggle
stDeviceData.stSelection.stWorkingParameter0.bAll	BOOL	[READ_WRITE] all parameters of complex data type

Parameter name	Data type	Description
stDeviceData.stSelection.stWorkingParameter1.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter2.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter3.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter4.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter5.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter6.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter7.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter8.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter9.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter10.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter11.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter12.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter13.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter14.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter15.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter16.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter17.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter18.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter19.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter20.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter21.bAll	BOOL	[READ_WRITE] all parameters of complex data type

Parameter name	Data type	Description
stDeviceData.stSelection.stWorkingParameter22.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter23.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter24.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter25.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter26.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter27.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter28.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter29.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stWorkingParameter.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.stTeachButtonFunction.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.bActiveTransmitter	BOOL	[READ_WRITE] active transmitter
stDeviceData.stSelection.bAmplification	BOOL	[READ_WRITE] amplification setting
stDeviceData.stSelection.bBackgroundValue	BOOL	[READ_WRITE] background value
stDeviceData.stSelection.bMarkValue	BOOL	[READ_WRITE] mark value
stDeviceData.stSelection.bHighSwitchingThreshold	BOOL	[READ_WRITE] upper value of the switching threshold including hysteresis, relative to the reference value
stDeviceData.stSelection.bLowSwitchingThreshold	BOOL	[READ_WRITE] lower value of the switching threshold including hysteresis, relative to the reference value
stDeviceData.stSelection.bBackgroundOffsetValue	BOOL	[READ_WRITE] is determined from the background signal at static 1-point teach
stDeviceData.stSelection.bNumberOfMarks	BOOL	[READ_WRITE] internal mark counter, can be reset to 0
stDeviceData.stSelection.bWorkingParameterMemoryIndex	BOOL	[READ_WRITE] working parameter memory index
stDeviceData.stSelection.bMeasuredValue	BOOL	[READ_ONLY] measured value
stDeviceData.stData.stCommands.nDeviceReset	UINT	[WRITE_ONLY] Device Reset

Parameter name	Data type	Description
stDeviceData.stData.stCommands.nApplicationReset	UINT	[WRITE_ONLY] Application Reset
stDeviceData.stData.stCommands.nRestoreFactorySettings	UINT	[WRITE_ONLY] Restore Factory Settings
stDeviceData.stData.stCommands.nSensitivityIncreaseByOneStep	UINT	[WRITE_ONLY] sensitivity increase by one step
stDeviceData.stData.stCommands.nSensitivityDecreaseByOneStep	UINT	[WRITE_ONLY] sensitivity decrease by one step
stDeviceData.stData.stCommands.nStatic2PointTeachStartWithBackground	UINT	[WRITE_ONLY] static 2-point teach start with background
stDeviceData.stData.stCommands.nDynamic2PointTeachStartWithBackground	UINT	[WRITE_ONLY] dynamic 2-point teach start with background
stDeviceData.stData.stCommands.nTestFunction	UINT	[WRITE_ONLY] test function
stDeviceData.stData.stCommands.nFinalize2PointTeach	UINT	[WRITE_ONLY] finalize 2-point teach
stDeviceData.stData.stCommands.nSaveCurrentWorkingParameter	UINT	[WRITE_ONLY] save current working parameter
stDeviceData.stData.stCommands.nRestoreLastSavedWorkingParameter	UINT	[WRITE_ONLY] restore last saved working parameter
stDeviceData.stData.stCommands.nSaveCurrentWorkingParameterToMemoryIndex	UINT	[WRITE_ONLY] save current working parameter to memory index
stDeviceData.stData.stCommands.nLoadSavedWorkingParameterFromMemoryIndex	UINT	[WRITE_ONLY] load saved working parameter from memory index
stDeviceData.stData.stDirectParameters1.nReserved_1	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nMasterCycleTime	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nMinCycleTime	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nMSequenceCapability	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nIoLinkVersionId	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nProcessDataInputLength	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nProcessDataOutputLength	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nVendorId1	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nVendorId2	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nDeviceId1	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nDeviceId2	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nDeviceId3	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nReserved_13	UINT	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stData.stDirectParameters1.nReserved_14	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nReserved_15	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter1	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter2	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter3	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter4	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter5	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter6	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter7	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter8	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter9	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter10	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter11	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter12	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter13	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter14	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter15	UINT	[READ_WRITE]
stDeviceData.stData.stDirectParameters2.nDeviceSpecificParameter16	UINT	[READ_WRITE]
stDeviceData.stData.nStandardCommand	UINT	[WRITE_ONLY]
stDeviceData.stData.stDeviceAccessLocks.bParameterWriteAccessLock	BOOL	[READ_WRITE]
stDeviceData.stData.stDeviceAccessLocks.bDataStorageLock	BOOL	[READ_WRITE]
stDeviceData.stData.stDeviceAccessLocks.bLocalParameterizationLock	BOOL	[READ_WRITE]
stDeviceData.stData.stDeviceAccessLocks.bLocalUserInterfaceLock	BOOL	[READ_WRITE]
stDeviceData.stData.sVendorName	STRING	[READ_ONLY]
stDeviceData.stData.sVendorText	STRING	[READ_ONLY]
stDeviceData.stData.sProductName	STRING	[READ_ONLY]
stDeviceData.stData.sProductId	STRING	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stData.sProductText	STRING	[READ_ONLY]
stDeviceData.stData.sSerialNumber	STRING	[READ_ONLY]
stDeviceData.stData.sHardwareVersion	STRING	[READ_ONLY]
stDeviceData.stData.sFirmwareVersion	STRING	[READ_ONLY]
stDeviceData.stData.sApplicationSpecificTag	STRING	[READ_WRITE]
stDeviceData.stData.bEasytuneLockState	BOOL	[READ_WRITE] EasyTune lock state
stDeviceData.stData.bTeachButtonLockState	BOOL	[READ_WRITE] button lock state
stDeviceData.stData.nSwitchingOutput1Function	UINT	[READ_WRITE] inversion of the switching output 1
stDeviceData.stData.nSwitchingOutput2Function	UINT	[READ_WRITE] function switching output 2
stDeviceData.stData.bTimerUnit	BOOL	[READ_WRITE] timer unit
stDeviceData.stData.nFunctionOfTimerUnit	UINT	[READ_WRITE] function of timer unit
stDeviceData.stData.nTime_76	UINT	[READ_WRITE] time
stDeviceData.stData.nColorsAtTeach	UINT	[READ_WRITE] selection of the transmitter color
stDeviceData.stData.nPositionOfSwitchingThreshold1PointTeachIoLink	UINT	[READ_WRITE] sensitivity setting at static/dynamic 1-point teach - IO-Link
stDeviceData.stData.nPositionOfSwitchingThreshold2PointTeachIoLink	UINT	[READ_WRITE] sensitivity setting at static/dynamic 2-point teach - IO-Link
stDeviceData.stData.nPositionOfSwitchingThreshold1PointTeachButtonSensitivity1	UINT	[READ_WRITE] sensitivity setting at static/dynamic 1-point teach - button - sensitivity 1
stDeviceData.stData.nPositionOfSwitchingThreshold1PointTeachButtonSensitivity2	UINT	[READ_WRITE] sensitivity setting at static/dynamic 1-point teach - button - sensitivity 2
stDeviceData.stData.nPositionOfSwitchingThreshold2PointTeachButtonSensitivity1	UINT	[READ_WRITE] sensitivity setting at static/dynamic 2-point teach - button - sensitivity 1
stDeviceData.stData.nPositionOfSwitchingThreshold2PointTeachButtonSensitivity2	UINT	[READ_WRITE] sensitivity setting at static/dynamic 2-point teach - button - sensitivity 2
stDeviceData.stData.nAnalysisDepth	UINT	[READ_WRITE] number of scans considered for the switching output to toggle
stDeviceData.stData.stWorkingParameter0.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter0.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter0.nBackgroundValue	UINT	[READ_WRITE]

Parameter name	Data type	Description
stDeviceData.stData.stWorkingParameter0.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter0.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter0.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter0.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter1.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter1.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter1.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter1.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter1.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter1.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter1.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter2.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter2.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter2.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter2.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter2.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter2.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter2.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter3.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter3.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter3.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter3.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter3.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter3.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter3.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter4.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter4.nAmplification	UINT	[READ_WRITE]

Parameter name	Data type	Description
stDeviceData.stData.stWorkingParameter4.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter4.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter4.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter4.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter4.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter5.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter5.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter5.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter5.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter5.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter5.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter5.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter6.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter6.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter6.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter6.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter6.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter6.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter6.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter7.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter7.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter7.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter7.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter7.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter7.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter7.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter8.nActiveTransmitter	UINT	[READ_WRITE]

Parameter name	Data type	Description
stDeviceData.stData.stWorkingParameter8.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter8.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter8.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter8.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter8.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter8.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter9.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter9.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter9.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter9.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter9.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter9.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter9.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter10.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter10.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter10.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter10.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter10.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter10.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter10.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter11.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter11.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter11.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter11.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter11.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter11.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter11.nBackgroundOffsetValue	UINT	[READ_WRITE]

Parameter name	Data type	Description
stDeviceData.stData.stWorkingParameter12.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter12.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter12.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter12.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter12.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter12.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter12.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter13.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter13.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter13.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter13.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter13.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter13.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter13.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter14.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter14.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter14.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter14.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter14.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter14.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter14.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter15.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter15.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter15.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter15.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter15.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter15.nLowSwitchingThreshold	UINT	[READ_WRITE]

Parameter name	Data type	Description
stDeviceData.stData.stWorkingParameter15. nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter16.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter16.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter16.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter16.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter16. nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter16. nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter16. nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter17.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter17.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter17.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter17.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter17. nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter17. nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter17. nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter18.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter18.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter18.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter18.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter18. nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter18. nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter18. nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter19.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter19.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter19.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter19.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter19. nHighSwitchingThreshold	UINT	[READ_WRITE]

Parameter name	Data type	Description
stDeviceData.stData.stWorkingParameter19. nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter19. nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter20.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter20.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter20.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter20.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter20. nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter20. nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter20. nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter21.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter21.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter21.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter21.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter21. nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter21. nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter21. nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter22.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter22.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter22.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter22.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter22. nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter22. nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter22. nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter23.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter23.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter23.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter23.nMarkValue	UINT	[READ_WRITE]

Parameter name	Data type	Description
stDeviceData.stData.stWorkingParameter23. nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter23. nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter23. nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter24.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter24.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter24.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter24.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter24. nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter24. nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter24. nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter25.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter25.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter25.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter25.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter25. nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter25. nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter25. nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter26.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter26.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter26.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter26.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter26. nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter26. nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter26. nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter27.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter27.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter27.nBackgroundValue	UINT	[READ_WRITE]

Parameter name	Data type	Description
stDeviceData.stData.stWorkingParameter27.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter27.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter27.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter27.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter28.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter28.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter28.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter28.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter28.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter28.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter28.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter29.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter29.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter29.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter29.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter29.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter29.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter29.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter.nActiveTransmitter	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter.nAmplification	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter.nBackgroundValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter.nMarkValue	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter.nHighSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter.nLowSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stWorkingParameter.nBackgroundOffsetValue	UINT	[READ_WRITE]
stDeviceData.stData.stTeachButtonFunction.nFunctionTeachButtonLevel0	UINT	[READ_ONLY] at key depression <200ms
stDeviceData.stData.stTeachButtonFunction.nFunctionTeachButtonLevel1	UINT	[READ_ONLY] at key depression >200ms ... <2s

Parameter name	Data type	Description
stDeviceData.stData.stTeachButtonFunction. nFunctionTeachButtonLevel2	UINT	[READ_ONLY] at key depression >2sec ... <7sec
stDeviceData.stData.stTeachButtonFunction. nFunctionTeachButtonLevel3	UINT	[READ_ONLY] at key depression >7s ... <12s
stDeviceData.stData.stTeachButtonFunction. nFunctionTeachButtonLevel4	UINT	[READ_ONLY] at key depression >12s
stDeviceData.stData.nActiveTransmitter	UINT	[READ_WRITE] active transmitter
stDeviceData.stData.nAmplification	UINT	[READ_WRITE] amplification setting
stDeviceData.stData.nBackgroundValue	UINT	[READ_WRITE] background value
stDeviceData.stData.nMarkValue	UINT	[READ_WRITE] mark value
stDeviceData.stData.nHighSwitchingThreshold	UINT	[READ_WRITE] upper value of the switching threshold including hysteresis, relative to the reference value
stDeviceData.stData.nLowSwitchingThreshold	UINT	[READ_WRITE] lower value of the switching threshold including hysteresis, relative to the reference value
stDeviceData.stData.nBackgroundOffsetValue	UINT	[READ_WRITE] is determined from the background signal at static 1-point teach
stDeviceData.stData.nNumberOfMarks	UINT	[READ_WRITE] internal mark counter, can be reset to 0
stDeviceData.stData.nWorkingParameterMemoryIndex	UINT	[READ_WRITE] working parameter memory index
stDeviceData.stData.nMeasuredValue	UINT	[READ_ONLY] measured value

Tab. 7.2: ST_Leuze_PD_KRT3B_2130

Parameter name	Data type	Description
ST_Leuze_PD_KRT3B_2130.nMeasurementValue_11	UINT	
ST_Leuze_PD_KRT3B_2130.nActiveTransmitter	UINT	
ST_Leuze_PD_KRT3B_2130.nSwitchingThreshold	UINT	
ST_Leuze_PD_KRT3B_2130.bSensorOperation	BOOL	
ST_Leuze_PD_KRT3B_2130.bMeasurementValue_0	BOOL	

8 Parameter descriptions

Tab. 8.1: IODD parameter descriptions

(AR - Access Rights, R - Read only, W - Write only, RW - Read and Write, NS - Not specified)

Parameter	Index	Subindex	Data type	Default	AR	Description
Commands			RecordT		W	
Device Reset			UIntegerT	128	W	Device Reset
Application Reset			UIntegerT	129	W	Application Reset
Restore Factory Settings			UIntegerT	130	W	Restore Factory Settings
sensitivity increase by one step			UIntegerT	192	W	sensitivity increase by one step
sensitivity decrease by one step			UIntegerT	193	W	sensitivity decrease by one step
static 2-point teach start with background			UIntegerT	195	W	static 2-point teach start with background
dynamic 2-point teach start with background			UIntegerT	197	W	dynamic 2-point teach start with background
test function			UIntegerT	198	W	test function
finalize 2-point teach			UIntegerT	207	W	finalize 2-point teach
save current working parameter			UIntegerT	224	W	save current working parameter
restore last saved working parameter			UIntegerT	225	W	restore last saved working parameter
save current working parameter to memory index			UIntegerT	226	W	save current working parameter to memory index
load saved working parameter from memory index			UIntegerT	227	W	load saved working parameter from memory index
Direct Parameters 1	0	0	RecordT		RW	
Reserved	0	1	UIntegerT		R	
Master Cycle Time	0	2	UIntegerT		R	
Min Cycle Time	0	3	UIntegerT		R	
M-Sequence Capability	0	4	UIntegerT		R	
IO-Link Version ID	0	5	UIntegerT	17	R	
Process Data Input Length	0	6	UIntegerT		R	
Process Data Output Length	0	7	UIntegerT		R	
Vendor ID 1	0	8	UIntegerT		R	
Vendor ID 2	0	9	UIntegerT		R	

Parameter	Index	Subindex	Data type	Default	AR	Description
Device ID 1	0	10	UIntegerT		R	
Device ID 2	0	11	UIntegerT		R	
Device ID 3	0	12	UIntegerT		R	
Reserved	0	13	UIntegerT		R	
Reserved	0	14	UIntegerT		R	
Reserved	0	15	UIntegerT		R	
Standard Command	0	16	UIntegerT		W	(0 ... 63): Reserved 128: Device Reset 129: Application Reset 130: Restore Factory Settings (131 ... 159): Reserved
Direct Parameters 2	1	0	RecordT		RW	
Device Specific Parameter 1	1	1	UIntegerT		RW	
Device Specific Parameter 2	1	2	UIntegerT		RW	
Device Specific Parameter 3	1	3	UIntegerT		RW	
Device Specific Parameter 4	1	4	UIntegerT		RW	
Device Specific Parameter 5	1	5	UIntegerT		RW	
Device Specific Parameter 6	1	6	UIntegerT		RW	
Device Specific Parameter 7	1	7	UIntegerT		RW	
Device Specific Parameter 8	1	8	UIntegerT		RW	
Device Specific Parameter 9	1	9	UIntegerT		RW	
Device Specific Parameter 10	1	10	UIntegerT		RW	
Device Specific Parameter 11	1	11	UIntegerT		RW	
Device Specific Parameter 12	1	12	UIntegerT		RW	
Device Specific Parameter 13	1	13	UIntegerT		RW	
Device Specific Parameter 14	1	14	UIntegerT		RW	
Device Specific Parameter 15	1	15	UIntegerT		RW	
Device Specific Parameter 16	1	16	UIntegerT		RW	

Parameter	Index	Subindex	Data type	Default	AR	Description
Standard Command	2	0	UIntegerT		W	(0 ... 63): Reserved 128: Device Reset 129: Application Reset 130: Restore Factory Settings (131 ... 159): Reserved 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
Device Access Locks	12	0	RecordT		RW	
Parameter (write) Access Lock	12	1	BooleanT		RW	
Data Storage Lock	12	2	BooleanT		RW	
Local Parameterization Lock	12	3	BooleanT		RW	
Local User Interface Lock	12	4	BooleanT		RW	
Vendor Name	16	0	StringT		R	
Vendor Text	17	0	StringT		R	
Product Name	18	0	StringT		R	
Product ID	19	0	StringT		R	
Product Text	20	0	StringT		R	
Serial Number	21	0	StringT		R	
Hardware Version	22	0	StringT		R	
Firmware Version	23	0	StringT		R	
Application Specific Tag	24	0	StringT		RW	
EasyTune lock state	70	0	BooleanT	false	RW	EasyTune lock state False: off True: on
teach button lock state	71	0	BooleanT	false	RW	button lock state False: off True: on

Parameter	Index	Subindex	Data type	Default	AR	Description
switching output 1 function	72	0	UIntegerT	0	RW	inversion of the switching output 1 0: true on mark 1: true on background
switching output 2 function	73	0	UIntegerT	0	RW	function switching output 2 0: inverted switching output 1 1: equal switching output 1
timer unit	74	0	BooleanT	false	RW	timer unit False: off True: on
function of timer unit	75	0	UIntegerT	3	RW	function of timer unit 1: on delay 2: off delay 3: pulse stretching 4: pulse suppression
time	76	0	UIntegerT	200	RW	time (1 ... 50000)
colors at teach	77	0	UIntegerT	7	RW	selection of the transmitter color 1: red 2: green 4: blue 3: red, green 5: red, blue 6: green, blue 7: all
position of switching threshold, 1-point teach, IO-Link	78	0	UIntegerT	256	RW	sensitivity setting at static/dynamic 1-point teach - IO-Link
position of switching threshold, 2-point teach, IO-Link	79	0	UIntegerT	50	RW	sensitivity setting at static/dynamic 2-point teach - IO-Link 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), (13 ... 24), (26 ... 49), (51 ... 69), (71 ... 81), (83 ... 89), (91 ... 94)
position of switching threshold, 1-point teach, button, sensitivity 1	80	0	UIntegerT	256	RW	sensitivity setting at static/dynamic 1-point teach - button - sensitivity 1
position of switching threshold, 1-point teach, button, sensitivity 2	81	0	UIntegerT	128	RW	sensitivity setting at static/dynamic 1-point teach - button - sensitivity 2

Parameter	Index	Subindex	Data type	Default	AR	Description
position of switching threshold, 2-point teach, button, sensitivity 1	82	0	UIntegerT	50	RW	sensitivity setting at static/dynamic 2-point teach - button - sensitivity 1 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), (13 ... 24), (26 ... 49), (51 ... 69), (71 ... 81), (83 ... 89), (91 ... 94)
position of switching threshold, 2-point teach, button, sensitivity 2	83	0	UIntegerT	12	RW	sensitivity setting at static/dynamic 2-point teach - button - sensitivity 2 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), (13 ... 24), (26 ... 49), (51 ... 69), (71 ... 81), (83 ... 89), (91 ... 94)
analysis depth	84	0	UIntegerT	2	RW	number of scans considered for the switching output to toggle (1 ... 10)
working parameter 0	100	0	RecordT		RW	working parameter 0
active transmitter	100	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	100	2	UIntegerT		RW	
background value	100	3	UIntegerT		RW	
mark value	100	4	UIntegerT		RW	
high switching threshold	100	5	UIntegerT		RW	
low switching threshold	100	6	UIntegerT		RW	

Parameter	Index	Subindex	Data type	Default	AR	Description
background offset value	100	7	UIntegerT		RW	
working parameter 1	101	0	RecordT		RW	working parameter 1
active transmitter	101	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	101	2	UIntegerT		RW	
background value	101	3	UIntegerT		RW	
mark value	101	4	UIntegerT		RW	
high switching threshold	101	5	UIntegerT		RW	
low switching threshold	101	6	UIntegerT		RW	
background offset value	101	7	UIntegerT		RW	
working parameter 2	102	0	RecordT		RW	working parameter 2
active transmitter	102	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	102	2	UIntegerT		RW	
background value	102	3	UIntegerT		RW	
mark value	102	4	UIntegerT		RW	
high switching threshold	102	5	UIntegerT		RW	
low switching threshold	102	6	UIntegerT		RW	
background offset value	102	7	UIntegerT		RW	
working parameter 3	103	0	RecordT		RW	working parameter 3
active transmitter	103	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	103	2	UIntegerT		RW	
background value	103	3	UIntegerT		RW	
mark value	103	4	UIntegerT		RW	
high switching threshold	103	5	UIntegerT		RW	
low switching threshold	103	6	UIntegerT		RW	
background offset value	103	7	UIntegerT		RW	
working parameter 4	104	0	RecordT		RW	working parameter 4

Parameter	Index	Subindex	Data type	Default	AR	Description
active transmitter	104	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	104	2	UIntegerT		RW	
background value	104	3	UIntegerT		RW	
mark value	104	4	UIntegerT		RW	
high switching threshold	104	5	UIntegerT		RW	
low switching threshold	104	6	UIntegerT		RW	
background offset value	104	7	UIntegerT		RW	
working parameter 5	105	0	RecordT		RW	working parameter 5
active transmitter	105	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	105	2	UIntegerT		RW	
background value	105	3	UIntegerT		RW	
mark value	105	4	UIntegerT		RW	
high switching threshold	105	5	UIntegerT		RW	
low switching threshold	105	6	UIntegerT		RW	
background offset value	105	7	UIntegerT		RW	
working parameter 6	106	0	RecordT		RW	working parameter 6
active transmitter	106	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	106	2	UIntegerT		RW	
background value	106	3	UIntegerT		RW	
mark value	106	4	UIntegerT		RW	
high switching threshold	106	5	UIntegerT		RW	
low switching threshold	106	6	UIntegerT		RW	
background offset value	106	7	UIntegerT		RW	
working parameter 7	107	0	RecordT		RW	working parameter 7
active transmitter	107	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	107	2	UIntegerT		RW	

Parameter	Index	Subindex	Data type	Default	AR	Description
background value	107	3	UIntegerT		RW	
mark value	107	4	UIntegerT		RW	
high switching threshold	107	5	UIntegerT		RW	
low switching threshold	107	6	UIntegerT		RW	
background offset value	107	7	UIntegerT		RW	
working parameter 8	108	0	RecordT		RW	working parameter 8
active transmitter	108	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	108	2	UIntegerT		RW	
background value	108	3	UIntegerT		RW	
mark value	108	4	UIntegerT		RW	
high switching threshold	108	5	UIntegerT		RW	
low switching threshold	108	6	UIntegerT		RW	
background offset value	108	7	UIntegerT		RW	
working parameter 9	109	0	RecordT		RW	working parameter 9
active transmitter	109	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	109	2	UIntegerT		RW	
background value	109	3	UIntegerT		RW	
mark value	109	4	UIntegerT		RW	
high switching threshold	109	5	UIntegerT		RW	
low switching threshold	109	6	UIntegerT		RW	
background offset value	109	7	UIntegerT		RW	
working parameter 10	110	0	RecordT		RW	working parameter 10
active transmitter	110	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	110	2	UIntegerT		RW	
background value	110	3	UIntegerT		RW	
mark value	110	4	UIntegerT		RW	

Parameter	Index	Subindex	Data type	Default	AR	Description
high switching threshold	110	5	UIntegerT		RW	
low switching threshold	110	6	UIntegerT		RW	
background offset value	110	7	UIntegerT		RW	
working parameter 11	111	0	RecordT		RW	working parameter 11
active transmitter	111	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	111	2	UIntegerT		RW	
background value	111	3	UIntegerT		RW	
mark value	111	4	UIntegerT		RW	
high switching threshold	111	5	UIntegerT		RW	
low switching threshold	111	6	UIntegerT		RW	
background offset value	111	7	UIntegerT		RW	
working parameter 12	112	0	RecordT		RW	working parameter 12
active transmitter	112	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	112	2	UIntegerT		RW	
background value	112	3	UIntegerT		RW	
mark value	112	4	UIntegerT		RW	
high switching threshold	112	5	UIntegerT		RW	
low switching threshold	112	6	UIntegerT		RW	
background offset value	112	7	UIntegerT		RW	
working parameter 13	113	0	RecordT		RW	working parameter 13
active transmitter	113	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	113	2	UIntegerT		RW	
background value	113	3	UIntegerT		RW	
mark value	113	4	UIntegerT		RW	
high switching threshold	113	5	UIntegerT		RW	
low switching threshold	113	6	UIntegerT		RW	

Parameter	Index	Subindex	Data type	Default	AR	Description
background offset value	113	7	UIntegerT		RW	
working parameter 14	114	0	RecordT		RW	working parameter 14
active transmitter	114	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	114	2	UIntegerT		RW	
background value	114	3	UIntegerT		RW	
mark value	114	4	UIntegerT		RW	
high switching threshold	114	5	UIntegerT		RW	
low switching threshold	114	6	UIntegerT		RW	
background offset value	114	7	UIntegerT		RW	
working parameter 15	115	0	RecordT		RW	working parameter 15
active transmitter	115	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	115	2	UIntegerT		RW	
background value	115	3	UIntegerT		RW	
mark value	115	4	UIntegerT		RW	
high switching threshold	115	5	UIntegerT		RW	
low switching threshold	115	6	UIntegerT		RW	
background offset value	115	7	UIntegerT		RW	
working parameter 16	116	0	RecordT		RW	working parameter 16
active transmitter	116	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	116	2	UIntegerT		RW	
background value	116	3	UIntegerT		RW	
mark value	116	4	UIntegerT		RW	
high switching threshold	116	5	UIntegerT		RW	
low switching threshold	116	6	UIntegerT		RW	
background offset value	116	7	UIntegerT		RW	
working parameter 17	117	0	RecordT		RW	working parameter 17

Parameter	Index	Subindex	Data type	Default	AR	Description
active transmitter	117	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	117	2	UIntegerT		RW	
background value	117	3	UIntegerT		RW	
mark value	117	4	UIntegerT		RW	
high switching threshold	117	5	UIntegerT		RW	
low switching threshold	117	6	UIntegerT		RW	
background offset value	117	7	UIntegerT		RW	
working parameter 18	118	0	RecordT		RW	working parameter 18
active transmitter	118	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	118	2	UIntegerT		RW	
background value	118	3	UIntegerT		RW	
mark value	118	4	UIntegerT		RW	
high switching threshold	118	5	UIntegerT		RW	
low switching threshold	118	6	UIntegerT		RW	
background offset value	118	7	UIntegerT		RW	
working parameter 19	119	0	RecordT		RW	working parameter 19
active transmitter	119	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	119	2	UIntegerT		RW	
background value	119	3	UIntegerT		RW	
mark value	119	4	UIntegerT		RW	
high switching threshold	119	5	UIntegerT		RW	
low switching threshold	119	6	UIntegerT		RW	
background offset value	119	7	UIntegerT		RW	
working parameter 20	120	0	RecordT		RW	working parameter 20
active transmitter	120	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	120	2	UIntegerT		RW	

Parameter	Index	Subindex	Data type	Default	AR	Description
background value	120	3	UIntegerT		RW	
mark value	120	4	UIntegerT		RW	
high switching threshold	120	5	UIntegerT		RW	
low switching threshold	120	6	UIntegerT		RW	
background offset value	120	7	UIntegerT		RW	
working parameter 21	121	0	RecordT		RW	working parameter 21
active transmitter	121	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	121	2	UIntegerT		RW	
background value	121	3	UIntegerT		RW	
mark value	121	4	UIntegerT		RW	
high switching threshold	121	5	UIntegerT		RW	
low switching threshold	121	6	UIntegerT		RW	
background offset value	121	7	UIntegerT		RW	
working parameter 22	122	0	RecordT		RW	working parameter 22
active transmitter	122	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	122	2	UIntegerT		RW	
background value	122	3	UIntegerT		RW	
mark value	122	4	UIntegerT		RW	
high switching threshold	122	5	UIntegerT		RW	
low switching threshold	122	6	UIntegerT		RW	
background offset value	122	7	UIntegerT		RW	
working parameter 23	123	0	RecordT		RW	working parameter 23
active transmitter	123	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	123	2	UIntegerT		RW	
background value	123	3	UIntegerT		RW	
mark value	123	4	UIntegerT		RW	

Parameter	Index	Subindex	Data type	Default	AR	Description
high switching threshold	123	5	UIntegerT		RW	
low switching threshold	123	6	UIntegerT		RW	
background offset value	123	7	UIntegerT		RW	
working parameter 24	124	0	RecordT		RW	working parameter 24
active transmitter	124	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	124	2	UIntegerT		RW	
background value	124	3	UIntegerT		RW	
mark value	124	4	UIntegerT		RW	
high switching threshold	124	5	UIntegerT		RW	
low switching threshold	124	6	UIntegerT		RW	
background offset value	124	7	UIntegerT		RW	
working parameter 25	125	0	RecordT		RW	working parameter 25
active transmitter	125	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	125	2	UIntegerT		RW	
background value	125	3	UIntegerT		RW	
mark value	125	4	UIntegerT		RW	
high switching threshold	125	5	UIntegerT		RW	
low switching threshold	125	6	UIntegerT		RW	
background offset value	125	7	UIntegerT		RW	
working parameter 26	126	0	RecordT		RW	working parameter 26
active transmitter	126	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	126	2	UIntegerT		RW	
background value	126	3	UIntegerT		RW	
mark value	126	4	UIntegerT		RW	
high switching threshold	126	5	UIntegerT		RW	
low switching threshold	126	6	UIntegerT		RW	

Parameter	Index	Subindex	Data type	Default	AR	Description
background offset value	126	7	UIntegerT		RW	
working parameter 27	127	0	RecordT		RW	working parameter 27
active transmitter	127	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	127	2	UIntegerT		RW	
background value	127	3	UIntegerT		RW	
mark value	127	4	UIntegerT		RW	
high switching threshold	127	5	UIntegerT		RW	
low switching threshold	127	6	UIntegerT		RW	
background offset value	127	7	UIntegerT		RW	
working parameter 28	128	0	RecordT		RW	working parameter 28
active transmitter	128	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	128	2	UIntegerT		RW	
background value	128	3	UIntegerT		RW	
mark value	128	4	UIntegerT		RW	
high switching threshold	128	5	UIntegerT		RW	
low switching threshold	128	6	UIntegerT		RW	
background offset value	128	7	UIntegerT		RW	
working parameter 29	129	0	RecordT		RW	working parameter 29
active transmitter	129	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	129	2	UIntegerT		RW	
background value	129	3	UIntegerT		RW	
mark value	129	4	UIntegerT		RW	
high switching threshold	129	5	UIntegerT		RW	
low switching threshold	129	6	UIntegerT		RW	
background offset value	129	7	UIntegerT		RW	
working parameter	130	0	RecordT		RW	working parameter

Parameter	Index	Subindex	Data type	Default	AR	Description
active transmitter	130	1	UIntegerT		RW	0: red 1: green 2: blue
amplification	130	2	UIntegerT		RW	
background value	130	3	UIntegerT		RW	
mark value	130	4	UIntegerT		RW	
high switching threshold	130	5	UIntegerT		RW	
low switching threshold	130	6	UIntegerT		RW	
background offset value	130	7	UIntegerT		RW	
teach button function	150	0	RecordT		R	teach button function
function teach button level 0	150	1	UIntegerT		R	at key depression <200ms 0: no function 1: EasyTune sensitivity + 2: EasyTune sensitivity - 3: static 1-point teach - sensitivity 1 4: static 1-point - sensitivity 2 5: static 2-point teach - sensitivity 1 6: static 2-point teach - sensitivity 2 7: dynamic 2-point teach - sensitivity 1 8: dynamic 2-point teach - sensitivity 2 9: function switching output 1 12: timer module on / off
function teach button level 1	150	2	UIntegerT		R	at key depression >200ms ... <2s 0: no function 1: EasyTune sensitivity + 2: EasyTune sensitivity - 3: static 1-point teach - sensitivity 1 4: static 1-point - sensitivity 2 5: static 2-point teach - sensitivity 1 6: static 2-point teach - sensitivity 2 7: dynamic 2-point teach - sensitivity 1 8: dynamic 2-point teach - sensitivity 2 9: function switching output 1 12: timer module on / off
function teach button level 2	150	3	UIntegerT		R	at key depression >2sec ... <7sec 0: no function 1: EasyTune sensitivity + 2: EasyTune sensitivity - 3: static 1-point teach - sensitivity 1 4: static 1-point - sensitivity 2 5: static 2-point teach - sensitivity 1 6: static 2-point teach - sensitivity 2 7: dynamic 2-point teach - sensitivity 1 8: dynamic 2-point teach - sensitivity 2 9: function switching output 1 12: timer module on / off

Parameter	Index	Subindex	Data type	Default	AR	Description
function teach button level 3	150	4	UIntegerT		R	at key depression >7s ... <12s 0: no function 1: EasyTune sensitivity + 2: EasyTune sensitivity - 3: static 1-point teach - sensitivity 1 4: static 1-point - sensitivity 2 5: static 2-point teach - sensitivity 1 6: static 2-point teach - sensitivity 2 7: dynamic 2-point teach - sensitivity 1 8: dynamic 2-point teach - sensitivity 2 9: function switching output 1 12: timer module on / off
function teach button level 4	150	5	UIntegerT		R	at key depression >12s 0: no function 1: EasyTune sensitivity + 2: EasyTune sensitivity - 3: static 1-point teach - sensitivity 1 4: static 1-point - sensitivity 2 5: static 2-point teach - sensitivity 1 6: static 2-point teach - sensitivity 2 7: dynamic 2-point teach - sensitivity 1 8: dynamic 2-point teach - sensitivity 2 9: function switching output 1 12: timer module on / off
active transmitter	170	0	UIntegerT		RW	active transmitter 0: red 1: green 2: blue
amplification	171	0	UIntegerT		RW	amplification setting
background value	172	0	UIntegerT		RW	background value
mark value	173	0	UIntegerT		RW	mark value
high switching threshold	174	0	UIntegerT		RW	upper value of the switching threshold including hysteresis, relative to the reference value
low switching threshold	175	0	UIntegerT		RW	lower value of the switching threshold including hysteresis, relative to the reference value
background offset value	176	0	UIntegerT		RW	is determined from the background signal at static 1-point teach
number of marks	177	0	UIntegerT	0	RW	internal mark counter, can be reset to 0
working parameter memory index	178	0	UIntegerT	0	RW	working parameter memory index (0 ... 29)
measured value	200	0	UIntegerT	0	R	measured value

9 Technical specifications

9.1 General data

Tab. 9.1: Sensor and IODD version

IODD version	V1.4
IODD release date	2018-3-19
Device family	Contrast sensor
Device ID	2130
Device name	KRTM 3B / 55
Device variants	KRTM 3B/L6.1121-S8 (50135163), KRTM 55/L6.1121,200-S12 (50135164), Markscanner / 107987993 (50138267)