IO-Link

PLC Integration of KRT18_2129

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_ KRT18_2129" 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

```
                    FB_Leuze_IOL_xxx
— bExecute    BOOL                         BOOL   bDone —
— sNetID     T_AmsNetID                    BOOL   bBusy —
— nPort      T_AmsPort                     BOOL   bError —
— nIdxGroup  UDINT          ST_Leuze_IOL_Error  stErrorCode —
— bRW        BOOL
— tTimeOut   TIME
— stDeviceData  ST_Leuze_IOL_xxx
```

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_ KRT18_2129	Sensor data

See structure description of ST_Leuze_IOL_ KRT18_2129 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_ KRT18_2129". 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_ KRT18_2129" 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_ KRT18_2129" 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
ℹ	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.

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5 Process data parser function

The function F_Leuze_PD_ KRT18_2129 simplifies the interpretation of composed IO-Link process data. This data is provided as a data structure on the PLC side. Some sensors supports different process data output. User must select mode of PD according to the sensors settings.

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.
nPDMode	INPUT	INT	Mode of the PD. User must select mode of PD according to the sensors settings.
bError	OUTPUT	BOOL	Error flag FALSE: No error TRUE: Error detected
F_Leuze_PD_ KRT18_2129	OUTPUT	ST_Leuze_PD_ KRT18_2129	Reference to the instance of the data structure ST_Leuze_PD_ KRT18_2129. The structure includes the disaggregated values of the process data.

See structure description of ST_Leuze_PD_ KRT18_2129 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_ KRT18_2129

Parameter name	Data type	Description
stDeviceData.stSelection.stCommands.bCmdDeviceReset	BOOL	[WRITE_ONLY] Device Reset
stDeviceData.stSelection.stCommands.bCmdApplicationReset	BOOL	[WRITE_ONLY] Application Reset
stDeviceData.stSelection.stCommands. bCmdRestoreFactorySettings	BOOL	[WRITE_ONLY] Restore Factory Settings
stDeviceData.stSelection.stCommands. bCmdClearConfigurationReservationClearDsuploadflag	BOOL	[WRITE_ONLY] Clear Configuration Reservation (Clear DsUploadFlag)
stDeviceData.stSelection.stCommands. bCmdReserveConfigurationForDsSetDsuploadflag	BOOL	[WRITE_ONLY] Reserve Configuration for DS (Set DsUploadFlag)
stDeviceData.stSelection.stCommands. bCmdSensitivityIncreaseByOneStep	BOOL	[WRITE_ONLY] Sensitivity increase by one step
stDeviceData.stSelection.stCommands. bCmdSensitivityDecreaseByOneStep	BOOL	[WRITE_ONLY] Sensitivity decrease by one step
stDeviceData.stSelection.stCommands. bCmdStatic2PointTeachStartWithMark	BOOL	[WRITE_ONLY] Static 2-point teach start with mark
stDeviceData.stSelection.stCommands. bCmdStatic2PointTeachStartWithBackground	BOOL	[WRITE_ONLY] Static 2-point teach start with background
stDeviceData.stSelection.stCommands. bCmdDynamic2PointTeachStartWithMark	BOOL	[WRITE_ONLY] Dynamic 2-point teach start with mark
stDeviceData.stSelection.stCommands. bCmdDynamic2PointTeachStartWithBackground	BOOL	[WRITE_ONLY] Dynamic 2-point teach start with background
stDeviceData.stSelection.stCommands.bCmdStatic1PointTeach	BOOL	[WRITE_ONLY] Static 1-point teach
stDeviceData.stSelection.stCommands.bCmdTeachAck	BOOL	[WRITE_ONLY] Teach Ack
stDeviceData.stSelection.stCommands.bCmdTeachFailConfirm	BOOL	[WRITE_ONLY] Teach Fail Confirm
stDeviceData.stSelection.stCommands.bCmdDoNothing	BOOL	[WRITE_ONLY] Do nothing
stDeviceData.stSelection.stDirectParameters1.bAll	BOOL	[READ_WRITE] all parameters of complex data type
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]

Parameter name	Data type	Description
stDeviceData.stSelection.stDirectParameters1. bProcessDataOutputLength	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bVendorId1	BOOL	[READ_ONLY]
stDeviceData.stSelection.stDirectParameters1.bVendorId2	BOOL	[READ_ONLY]
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]

Parameter name	Data type	Description
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]
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.bDeviceStatus	BOOL	[READ_ONLY]
stDeviceData.stSelection. bIndexOfTeachResultMemoryLocationToShow	BOOL	[READ_WRITE] the teach result of the choosen memory location will be shown in the following rows
stDeviceData.stSelection. bIndexToRecallTeachResultFromMemoryLocation	BOOL	[WRITE_ONLY] by writing the memory location n to this index the teach result from memory location n will be active from now on
stDeviceData.stSelection. bIndexToSaveTeachResultToMemoryLocation	BOOL	[WRITE_ONLY] by writing the memory location <i> to this index the current teach result is stored in memory location <i>
stDeviceData.stSelection.stTeachResultMemoryNumber0.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber1.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber2.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber3.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber4.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber5.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber6.bAll	BOOL	[READ_ONLY] all parameters of complex data type

Parameter name	Data type	Description
stDeviceData.stSelection.stTeachResultMemoryNumber7.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber8.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber9.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber10.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber11.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber12.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber13.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber14.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber15.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber16.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber17.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber18.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber19.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber20.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber21.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber22.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber23.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber24.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber25.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber26.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber27.bAll	BOOL	[READ_ONLY] all parameters of complex data type

Parameter name	Data type	Description
stDeviceData.stSelection.stTeachResultMemoryNumber28.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.stTeachResultMemoryNumber29.bAll	BOOL	[READ_ONLY] all parameters of complex data type
stDeviceData.stSelection.bTimerModuleOnOff	BOOL	[READ_WRITE] timer module on / off
stDeviceData.stSelection.bTimeBase	BOOL	[READ_WRITE] you can chose between 3 time bases (100us, 1ms, 10ms)
stDeviceData.stSelection.bTimeFactor	BOOL	[READ_WRITE] factor and time base is the time for the timer module function
stDeviceData.stSelection.bTimerModuleFunction	BOOL	[READ_WRITE] you can chose between serveral timer functions like pulse stretching etc.
stDeviceData.stSelection.bFunctionSwitchingOutput1	BOOL	[READ_WRITE] with this function you can decide if mark or background has active high level
stDeviceData.stSelection.bTrackingFunction	BOOL	[READ_WRITE] with this function you can decide if the switching level is controlled or not
stDeviceData.stSelection.bWireInputType	BOOL	[READ_ONLY] with this function you can decide if the input has npn or pnp functionality
stDeviceData.stSelection.bFunctionForButton1AtButtonLevel0	BOOL	[READ_ONLY] function for button 1 at button level0
stDeviceData.stSelection.bFunctionForButton1AtButtonLevel1	BOOL	[READ_ONLY] function for button 1 at button level1
stDeviceData.stSelection.bFunctionForButton1AtButtonLevel2	BOOL	[READ_ONLY] function for button 1 at button level2
stDeviceData.stSelection.bFunctionForButton1AtButtonLevel3	BOOL	[READ_ONLY] function for button 1 at button level3
stDeviceData.stSelection.bFunctionForButton1AtButtonLevel4	BOOL	[READ_ONLY] function for button 1 at button level4
stDeviceData.stSelection.bFunctionForButton2AtButtonLevel0	BOOL	[READ_ONLY] function for button 2 at button level0
stDeviceData.stSelection.bFunctionForButton2AtButtonLevel1	BOOL	[READ_ONLY] function for button 2 at button level1
stDeviceData.stSelection.bFunctionForButton2AtButtonLevel2	BOOL	[READ_ONLY] function for button 2 at button level2
stDeviceData.stSelection.bFunctionForButton2AtButtonLevel3	BOOL	[READ_ONLY] function for button 2 at button level3
stDeviceData.stSelection.bFunctionForButton2AtButtonLevel4	BOOL	[READ_ONLY] function for button 2 at button level4
stDeviceData.stSelection.bWireFunctionLevel1	BOOL	[READ_ONLY] wire function level1
stDeviceData.stSelection.bWireFunctionLevel2	BOOL	[READ_ONLY] wire function level2
stDeviceData.stSelection.bWireFunctionLevel3	BOOL	[READ_ONLY] wire function level3
stDeviceData.stSelection.bWireFunctionLevel4	BOOL	[READ_ONLY] wire function level4

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Parameter name	Data type	Description
stDeviceData.stSelection.bWireFunctionLevel5	BOOL	[READ_ONLY] wire function level5
stDeviceData.stSelection.bWireFunctionLevel6	BOOL	[READ_ONLY] wire function level6
stDeviceData.stSelection.bWireFunctionLevel7	BOOL	[READ_ONLY] wire function level7
stDeviceData.stSelection.bWireFunctionLevel8	BOOL	[READ_ONLY] wire function level8
stDeviceData.stSelection.bWireFunctionLevel9	BOOL	[READ_ONLY] wire function level9
stDeviceData.stSelection.bWireFunctionLevel10	BOOL	[READ_ONLY] wire function level10
stDeviceData.stSelection.bWireFunctionLevel11	BOOL	[READ_ONLY] wire function level11
stDeviceData.stSelection.bWireFunctionLevel12	BOOL	[READ_ONLY] wire function level12
stDeviceData.stSelection.stTeachResult.bAll	BOOL	[READ_WRITE] all parameters of complex data type
stDeviceData.stSelection.bAnalysisDepth	BOOL	[READ_ONLY] number of scans considered for the switching output to toggle
stDeviceData.stSelection.bCounterForMarks	BOOL	[READ_WRITE] internal mark counter, can be reset to 0
stDeviceData.stSelection.bSensorVariant	BOOL	[READ_ONLY] sensor variant(desc.)
stDeviceData.stSelection.bButtonLockState	BOOL	[READ_WRITE] button lock state(desc.)
stDeviceData.stSelection.bEasytuneLockState	BOOL	[READ_WRITE] easytune lock state(desc.)
stDeviceData.stSelection.bFunctionSwitchingOutputOut2	BOOL	[READ_WRITE] function switching output OUT2(desc.)
stDeviceData.stSelection.bOutToggleWhileTeach	BOOL	[READ_WRITE] out toggle while teach(desc.)
stDeviceData.stSelection.bTeachState	BOOL	[READ_ONLY] teach state(desc.)
stDeviceData.stSelection.bProcessReliability	BOOL	[READ_ONLY] process reliability(desc.)
stDeviceData.stSelection.bChoiceOfPositionOfSwitchingPoint	BOOL	[READ_WRITE] you can chose within 7 different positions of the switching point between mark and background
stDeviceData.stData.stCommands.nCmdDeviceReset	UINT	[WRITE_ONLY] Device Reset
stDeviceData.stData.stCommands.nCmdApplicationReset	UINT	[WRITE_ONLY] Application Reset
stDeviceData.stData.stCommands.nCmdRestoreFactorySettings	UINT	[WRITE_ONLY] Restore Factory Settings
stDeviceData.stData.stCommands. nCmdClearConfigurationReservationClearDsuploadflag	UINT	[WRITE_ONLY] Clear Configuration Reservation (Clear DsUploadFlag)
stDeviceData.stData.stCommands. nCmdReserveConfigurationForDsSetDsuploadflag	UINT	[WRITE_ONLY] Reserve Configuration for DS (Set DsUploadFlag)

Parameter name	Data type	Description
stDeviceData.stData.stCommands. nCmdSensitivityIncreaseByOneStep	UINT	[WRITE_ONLY] Sensitivity increase by one step
stDeviceData.stData.stCommands. nCmdSensitivityDecreaseByOneStep	UINT	[WRITE_ONLY] Sensitivity decrease by one step
stDeviceData.stData.stCommands. nCmdStatic2PointTeachStartWithMark	UINT	[WRITE_ONLY] Static 2-point teach start with mark
stDeviceData.stData.stCommands. nCmdStatic2PointTeachStartWithBackground	UINT	[WRITE_ONLY] Static 2-point teach start with background
stDeviceData.stData.stCommands. nCmdDynamic2PointTeachStartWithMark	UINT	[WRITE_ONLY] Dynamic 2-point teach start with mark
stDeviceData.stData.stCommands. nCmdDynamic2PointTeachStartWithBackground	UINT	[WRITE_ONLY] Dynamic 2-point teach start with background
stDeviceData.stData.stCommands.nCmdStatic1PointTeach	UINT	[WRITE_ONLY] Static 1-point teach
stDeviceData.stData.stCommands.nCmdTeachAck	UINT	[WRITE_ONLY] Teach Ack
stDeviceData.stData.stCommands.nCmdTeachFailConfirm	UINT	[WRITE_ONLY] Teach Fail Confirm
stDeviceData.stData.stCommands.nCmdDoNothing	UINT	[WRITE_ONLY] Do nothing
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]
stDeviceData.stData.stDirectParameters1.nReserved_14	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters1.nReserved_15	UINT	[READ_ONLY]
stDeviceData.stData.stDirectParameters2. nDeviceSpecificParameter1	UINT	[READ_WRITE]

Parameter name	Data type	Description
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]
stDeviceData.stData.sProductText	STRING	[READ_ONLY]
stDeviceData.stData.sSerialNumber	STRING	[READ_ONLY]
stDeviceData.stData.sHardwareVersion	STRING	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stData.sFirmwareVersion	STRING	[READ_ONLY]
stDeviceData.stData.sApplicationSpecificTag	STRING	[READ_WRITE]
stDeviceData.stData.nDeviceStatus	UINT	[READ_ONLY]
stDeviceData.stData.nIndexOfTeachResultMemoryLocationToShow	UINT	[READ_WRITE] the teach result of the choosen memory location will be shown in the following rows
stDeviceData.stData.nIndexToRecallTeachResultFromMemoryLocation	UINT	[WRITE_ONLY] by writing the memory location n to this index the teach result from memory location n will be active from now on
stDeviceData.stData.nIndexToSaveTeachResultToMemoryLocation	UINT	[WRITE_ONLY] by writing the memory location <i> to this index the current teach result is stored in memory location <i>
stDeviceData.stData.stTeachResultMemoryNumber0.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber0.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber0.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber0.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber0.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber0.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber0.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber0.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber0.nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber1.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber1.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber1.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber1.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber1.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber1.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber1.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber1.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber1.nContrastValue	UINT	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stData.stTeachResultMemoryNumber2.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber2.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber2.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber2.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber2.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber2.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber2.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber2.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber2.nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber3.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber3.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber3.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber3.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber3.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber3.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber3.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber3.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber3.nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber4.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber4.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber4.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber4.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber4.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber4.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber4.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber4.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber4.nContrastValue	UINT	[READ_ONLY]

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Parameter name	Data type	Description
stDeviceData.stData.stTeachResultMemoryNumber5.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber5. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber5. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber5.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber5.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber5. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber5. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber5. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber5. nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber6.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber6. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber6. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber6.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber6.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber6. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber6. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber6. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber6. nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber7.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber7. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber7. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber7.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber7.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber7. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber7. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber7. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber7. nContrastValue	UINT	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stData.stTeachResultMemoryNumber8.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber8. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber8. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber8.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber8.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber8. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber8. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber8. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber8. nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber9.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber9. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber9. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber9.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber9.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber9. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber9. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber9. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber9. nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber10.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber10. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber10. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber10. nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber10.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber10. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber10. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber10. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber10. nContrastValue	UINT	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stData.stTeachResultMemoryNumber11.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber11.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber11.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber11.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber11.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber11.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber11.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber11.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber11.nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber12.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber12.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber12.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber12.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber12.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber12.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber12.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber12.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber12.nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber13.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber13.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber13.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber13.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber13.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber13.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber13.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber13.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber13.nContrastValue	UINT	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stData.stTeachResultMemoryNumber14.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber14. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber14. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber14. nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber14.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber14. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber14. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber14. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber14. nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber15.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber15. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber15. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber15. nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber15.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber15. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber15. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber15. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber15. nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber16.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber16. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber16. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber16. nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber16.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber16. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber16. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber16. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber16. nContrastValue	UINT	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stData.stTeachResultMemoryNumber17.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber17.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber17.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber17.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber17.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber17.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber17.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber17.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber17.nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber18.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber18.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber18.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber18.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber18.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber18.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber18.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber18.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber18.nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber19.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber19.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber19.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber19.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber19.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber19.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber19.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber19.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber19.nContrastValue	UINT	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stData.stTeachResultMemoryNumber20.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber20.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber20.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber20.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber20.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber20.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber20.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber20.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber20.nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber21.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber21.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber21.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber21.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber21.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber21.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber21.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber21.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber21.nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber22.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber22.nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber22.nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber22.nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber22.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber22.nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber22.nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber22.nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber22.nContrastValue	UINT	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stData.stTeachResultMemoryNumber23.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber23. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber23. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber23. nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber23.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber23. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber23. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber23. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber23. nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber24.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber24. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber24. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber24. nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber24.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber24. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber24. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber24. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber24. nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber25.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber25. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber25. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber25. nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber25.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber25. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber25. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber25. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber25. nContrastValue	UINT	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stData.stTeachResultMemoryNumber26.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber26. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber26. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber26. nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber26.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber26. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber26. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber26. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber26. nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber27.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber27. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber27. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber27. nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber27.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber27. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber27. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber27. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber27. nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber28.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber28. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber28. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber28. nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber28.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber28. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber28. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber28. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber28. nContrastValue	UINT	[READ_ONLY]

Parameter name	Data type	Description
stDeviceData.stData.stTeachResultMemoryNumber29.bMarkIs	BOOL	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber29. nAmplifierValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber29. nSwitchingThreshold	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber29. nHysteresis	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber29.nNoise	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber29. nSendLedColor	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber29. nMarkExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber29. nBackgroundExposureValue	UINT	[READ_ONLY]
stDeviceData.stData.stTeachResultMemoryNumber29. nContrastValue	UINT	[READ_ONLY]
stDeviceData.stData.nTimerModuleOnOff	UINT	[READ_WRITE] timer module on / off
stDeviceData.stData.nTimeBase	UINT	[READ_WRITE] you can chose between 3 time bases (100us, 1ms, 10ms)
stDeviceData.stData.nTimeFactor	UINT	[READ_WRITE] factor and time base is the time for the timer module function
stDeviceData.stData.nTimerModuleFunction	UINT	[READ_WRITE] you can chose between serveral timer functions like pulse stretching etc.
stDeviceData.stData.nFunctionSwitchingOutput1	UINT	[READ_WRITE] with this function you can decide if mark or background has active high level
stDeviceData.stData.nTrackingFunction	UINT	[READ_WRITE] with this function you can decide if the switching level is controlled or not
stDeviceData.stData.nWireInputType	UINT	[READ_ONLY] with this function you can decide if the input has npn or pnp functionality
stDeviceData.stData.nFunctionForButton1AtButtonLevel0	UINT	[READ_ONLY] function for button 1 at button level0
stDeviceData.stData.nFunctionForButton1AtButtonLevel1	UINT	[READ_ONLY] function for button 1 at button level1
stDeviceData.stData.nFunctionForButton1AtButtonLevel2	UINT	[READ_ONLY] function for button 1 at button level2
stDeviceData.stData.nFunctionForButton1AtButtonLevel3	UINT	[READ_ONLY] function for button 1 at button level3
stDeviceData.stData.nFunctionForButton1AtButtonLevel4	UINT	[READ_ONLY] function for button 1 at button level4
stDeviceData.stData.nFunctionForButton2AtButtonLevel0	UINT	[READ_ONLY] function for button 2 at button level0
stDeviceData.stData.nFunctionForButton2AtButtonLevel1	UINT	[READ_ONLY] function for button 2 at button level1
stDeviceData.stData.nFunctionForButton2AtButtonLevel2	UINT	[READ_ONLY] function for button 2 at button level2

Parameter name	Data type	Description
stDeviceData.stData.nFunctionForButton2AtButtonLevel3	UINT	[READ_ONLY] function for button 2 at button level3
stDeviceData.stData.nFunctionForButton2AtButtonLevel4	UINT	[READ_ONLY] function for button 2 at button level4
stDeviceData.stData.nWireFunctionLevel1	UINT	[READ_ONLY] wire function level1
stDeviceData.stData.nWireFunctionLevel2	UINT	[READ_ONLY] wire function level2
stDeviceData.stData.nWireFunctionLevel3	UINT	[READ_ONLY] wire function level3
stDeviceData.stData.nWireFunctionLevel4	UINT	[READ_ONLY] wire function level4
stDeviceData.stData.nWireFunctionLevel5	UINT	[READ_ONLY] wire function level5
stDeviceData.stData.nWireFunctionLevel6	UINT	[READ_ONLY] wire function level6
stDeviceData.stData.nWireFunctionLevel7	UINT	[READ_ONLY] wire function level7
stDeviceData.stData.nWireFunctionLevel8	UINT	[READ_ONLY] wire function level8
stDeviceData.stData.nWireFunctionLevel9	UINT	[READ_ONLY] wire function level9
stDeviceData.stData.nWireFunctionLevel10	UINT	[READ_ONLY] wire function level10
stDeviceData.stData.nWireFunctionLevel11	UINT	[READ_ONLY] wire function level11
stDeviceData.stData.nWireFunctionLevel12	UINT	[READ_ONLY] wire function level12
stDeviceData.stData.stTeachResult.bMarkIs	BOOL	[READ_WRITE]
stDeviceData.stData.stTeachResult.nAmplifierValue	UINT	[READ_WRITE]
stDeviceData.stData.stTeachResult.nSwitchingThreshold	UINT	[READ_WRITE]
stDeviceData.stData.stTeachResult.nHysteresis	UINT	[READ_WRITE]
stDeviceData.stData.stTeachResult.nNoise	UINT	[READ_WRITE]
stDeviceData.stData.stTeachResult.nSendLedColor	UINT	[READ_WRITE]
stDeviceData.stData.stTeachResult.nMarkExposureValue	UINT	[READ_WRITE]
stDeviceData.stData.stTeachResult.nBackgroundExposureValue	UINT	[READ_WRITE]
stDeviceData.stData.stTeachResult.nContrastValue	UINT	[READ_WRITE]
stDeviceData.stData.nAnalysisDepth	UINT	[READ_ONLY] number of scans considered for the switching output to toggle
stDeviceData.stData.nCounterForMarks	UINT	[READ_WRITE] internal mark counter, can be reset to 0
stDeviceData.stData.nSensorVariant	UINT	[READ_ONLY] sensor variant(desc.)
stDeviceData.stData.nButtonLockState	UINT	[READ_WRITE] button lock state(desc.)

Parameter name	Data type	Description
stDeviceData.stData.nEasytuneLockState	UINT	[READ_WRITE] easytune lock state(desc.)
stDeviceData.stData.nFunctionSwitchingOutputOut2	UINT	[READ_WRITE] function switching output OUT2(desc.)
stDeviceData.stData.nOutToggleWhileTeach	UINT	[READ_WRITE] out toggle while teach(desc.)
stDeviceData.stData.nTeachState	UINT	[READ_ONLY] teach state(desc.)
stDeviceData.stData.nProcessReliability	UINT	[READ_ONLY] process reliability(desc.)
stDeviceData.stData.nChoiceOfPositionOfSwitchingPoint	UINT	[READ_WRITE] you can chose within 7 different positions of the switching point between mark and background

Tab. 7.2: ST_Leuze_PD_ KRT18_2129

Parameter name	Data type	Description
ST_Leuze_PD_KRT18_2129.nReceivedSignalLevel	UINT	
ST_Leuze_PD_KRT18_2129.nTransmitterColor	UINT	
ST_Leuze_PD_KRT18_2129.nSwitchingThreshold	UINT	
ST_Leuze_PD_KRT18_2129.bSensorInOperation	BOOL	
ST_Leuze_PD_KRT18_2129.bWarnSignal	BOOL	
ST_Leuze_PD_KRT18_2129.bSensorSignal	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
Clear Configuration Reservation (Clear DsUploadFlag)			UIntegerT	160	W	Clear Configuration Reservation (Clear DsUploadFlag)
Reserve Configuration for DS (Set DsUploadFlag)			UIntegerT	161	W	Reserve Configuration for DS (Set DsUploadFlag)
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 mark			UIntegerT	194	W	Static 2-point teach start with mark
Static 2-point teach start with background			UIntegerT	195	W	Static 2-point teach start with background
Dynamic 2-point teach start with mark			UIntegerT	196	W	Dynamic 2-point teach start with mark
Dynamic 2-point teach start with background			UIntegerT	197	W	Dynamic 2-point teach start with background
Static 1-point teach			UIntegerT	198	W	Static 1-point teach
Teach Ack			UIntegerT	207	W	Teach Ack
Teach Fail Confirm			UIntegerT	208	W	Teach Fail Confirm
Do nothing			UIntegerT	255	W	Do nothing
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	

Parameter	Index	Subindex	Data type	Default	AR	Description
Vendor ID 1	0	8	UIntegerT		R	
Vendor ID 2	0	9	UIntegerT		R	
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	

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Parameter	Index	Subindex	Data type	Default	AR	Description
Standard Command	2	0	UIntegerT	255	W	(0 ... 63): Reserved 128: Device Reset 129: Application Reset 130: Restore Factory Settings (131 ... 159): Reserved 160: Clear Configuration Reservation (Clear DsUploadFlag) 161: Reserve Configuration for DS (Set DsUploadFlag) 192: Sensitivity increase by one step 193: Sensitivity decrease by one step 194: Static 2-point teach start with mark 195: Static 2-point teach start with background 196: Dynamic 2-point teach start with mark 197: Dynamic 2-point teach start with background 198: Static 1-point teach 207: Teach Ack 208: Teach Fail Confirm 255: Do nothing
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	
Device Status	36	0	UIntegerT		R	0: Device is OK 1: Maintenance required 2: Out of specification 3: Functional check 4: Failure (5 ... 255): Reserved

Parameter	Index	Subindex	Data type	Default	AR	Description
index of teach result memory location to show	100	0	UIntegerT	0	RW	the teach result of the choosen memory location will be shown in the following rows 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29
index to recall teach result from memory location	101	0	UIntegerT	0	W	by writing the memory location n to this index the teach result from memory location n will be active from now on 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29
index to save teach result to memory location	102	0	UIntegerT	0	W	by writing the memory location \<i\> to this index the current teach result is stored in memory location \<i\> 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29
teach result memory number 0	103	0	RecordT		R	teach result from memory location number 0
mark is	103	1	BooleanT		R	False: brighter True: darker
amplifier value	103	2	UIntegerT		R	
switching threshold	103	3	UIntegerT		R	
hysteresis	103	4	UIntegerT		R	
noise	103	5	UIntegerT		R	
send LED color	103	6	UIntegerT		R	1: white
mark exposure value	103	7	UIntegerT		R	
background exposure value	103	8	UIntegerT		R	
contrast value	103	9	UIntegerT		R	
teach result memory number 1	104	0	RecordT		R	teach result from memory location number 1
mark is	104	1	BooleanT		R	False: brighter True: darker
amplifier value	104	2	UIntegerT		R	
switching threshold	104	3	UIntegerT		R	
hysteresis	104	4	UIntegerT		R	
noise	104	5	UIntegerT		R	
send LED color	104	6	UIntegerT		R	1: white
mark exposure value	104	7	UIntegerT		R	

Parameter	Index	Subindex	Data type	Default	AR	Description
background exposure value	104	8	UIntegerT		R	
contrast value	104	9	UIntegerT		R	
teach result memory number 2	105	0	RecordT		R	teach result from memory location number 2
mark is	105	1	BooleanT		R	False: brighter True: darker
amplifier value	105	2	UIntegerT		R	
switching threshold	105	3	UIntegerT		R	
hysteresis	105	4	UIntegerT		R	
noise	105	5	UIntegerT		R	
send LED color	105	6	UIntegerT		R	1: white
mark exposure value	105	7	UIntegerT		R	
background exposure value	105	8	UIntegerT		R	
contrast value	105	9	UIntegerT		R	
teach result memory number 3	106	0	RecordT		R	teach result from memory location number 3
mark is	106	1	BooleanT		R	False: brighter True: darker
amplifier value	106	2	UIntegerT		R	
switching threshold	106	3	UIntegerT		R	
hysteresis	106	4	UIntegerT		R	
noise	106	5	UIntegerT		R	
send LED color	106	6	UIntegerT		R	1: white
mark exposure value	106	7	UIntegerT		R	
background exposure value	106	8	UIntegerT		R	
contrast value	106	9	UIntegerT		R	
teach result memory number 4	107	0	RecordT		R	teach result from memory location number 4
mark is	107	1	BooleanT		R	False: brighter True: darker
amplifier value	107	2	UIntegerT		R	
switching threshold	107	3	UIntegerT		R	
hysteresis	107	4	UIntegerT		R	

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Parameter	Index	Subindex	Data type	Default	AR	Description
noise	107	5	UIntegerT		R	
send LED color	107	6	UIntegerT		R	1: white
mark exposure value	107	7	UIntegerT		R	
background exposure value	107	8	UIntegerT		R	
contrast value	107	9	UIntegerT		R	
teach result memory number 5	108	0	RecordT		R	teach result from memory location number 5
mark is	108	1	BooleanT		R	False: brighter True: darker
amplifier value	108	2	UIntegerT		R	
switching threshold	108	3	UIntegerT		R	
hysteresis	108	4	UIntegerT		R	
noise	108	5	UIntegerT		R	
send LED color	108	6	UIntegerT		R	1: white
mark exposure value	108	7	UIntegerT		R	
background exposure value	108	8	UIntegerT		R	
contrast value	108	9	UIntegerT		R	
teach result memory number 6	109	0	RecordT		R	teach result from memory location number 6
mark is	109	1	BooleanT		R	False: brighter True: darker
amplifier value	109	2	UIntegerT		R	
switching threshold	109	3	UIntegerT		R	
hysteresis	109	4	UIntegerT		R	
noise	109	5	UIntegerT		R	
send LED color	109	6	UIntegerT		R	1: white
mark exposure value	109	7	UIntegerT		R	
background exposure value	109	8	UIntegerT		R	
contrast value	109	9	UIntegerT		R	
teach result memory number 7	110	0	RecordT		R	teach result from memory location number 7
mark is	110	1	BooleanT		R	False: brighter True: darker

Parameter	Index	Subindex	Data type	Default	AR	Description
amplifier value	110	2	UIntegerT		R	
switching threshold	110	3	UIntegerT		R	
hysteresis	110	4	UIntegerT		R	
noise	110	5	UIntegerT		R	
send LED color	110	6	UIntegerT		R	1: white
mark exposure value	110	7	UIntegerT		R	
background exposure value	110	8	UIntegerT		R	
contrast value	110	9	UIntegerT		R	
teach result memory number 8	111	0	RecordT		R	teach result from memory location number 8
mark is	111	1	BooleanT		R	False: brighter True: darker
amplifier value	111	2	UIntegerT		R	
switching threshold	111	3	UIntegerT		R	
hysteresis	111	4	UIntegerT		R	
noise	111	5	UIntegerT		R	
send LED color	111	6	UIntegerT		R	1: white
mark exposure value	111	7	UIntegerT		R	
background exposure value	111	8	UIntegerT		R	
contrast value	111	9	UIntegerT		R	
teach result memory number 9	112	0	RecordT		R	teach result from memory location number 9
mark is	112	1	BooleanT		R	False: brighter True: darker
amplifier value	112	2	UIntegerT		R	
switching threshold	112	3	UIntegerT		R	
hysteresis	112	4	UIntegerT		R	
noise	112	5	UIntegerT		R	
send LED color	112	6	UIntegerT		R	1: white
mark exposure value	112	7	UIntegerT		R	
background exposure value	112	8	UIntegerT		R	

Parameter	Index	Subindex	Data type	Default	AR	Description
contrast value	112	9	UIntegerT		R	
teach result memory number 10	113	0	RecordT		R	teach result from memory location number 10
mark is	113	1	BooleanT		R	False: brighter True: darker
amplifier value	113	2	UIntegerT		R	
switching threshold	113	3	UIntegerT		R	
hysteresis	113	4	UIntegerT		R	
noise	113	5	UIntegerT		R	
send LED color	113	6	UIntegerT		R	1: white
mark exposure value	113	7	UIntegerT		R	
background exposure value	113	8	UIntegerT		R	
contrast value	113	9	UIntegerT		R	
teach result memory number 11	114	0	RecordT		R	teach result from memory location number 11
mark is	114	1	BooleanT		R	False: brighter True: darker
amplifier value	114	2	UIntegerT		R	
switching threshold	114	3	UIntegerT		R	
hysteresis	114	4	UIntegerT		R	
noise	114	5	UIntegerT		R	
send LED color	114	6	UIntegerT		R	1: white
mark exposure value	114	7	UIntegerT		R	
background exposure value	114	8	UIntegerT		R	
contrast value	114	9	UIntegerT		R	
teach result memory number 12	115	0	RecordT		R	teach result from memory location number 12
mark is	115	1	BooleanT		R	False: brighter True: darker
amplifier value	115	2	UIntegerT		R	
switching threshold	115	3	UIntegerT		R	
hysteresis	115	4	UIntegerT		R	
noise	115	5	UIntegerT		R	

Parameter	Index	Subindex	Data type	Default	AR	Description
send LED color	115	6	UIntegerT		R	1: white
mark exposure value	115	7	UIntegerT		R	
background exposure value	115	8	UIntegerT		R	
contrast value	115	9	UIntegerT		R	
teach result memory number 13	116	0	RecordT		R	teach result from memory location number 13
mark is	116	1	BooleanT		R	False: brighter True: darker
amplifier value	116	2	UIntegerT		R	
switching threshold	116	3	UIntegerT		R	
hysteresis	116	4	UIntegerT		R	
noise	116	5	UIntegerT		R	
send LED color	116	6	UIntegerT		R	1: white
mark exposure value	116	7	UIntegerT		R	
background exposure value	116	8	UIntegerT		R	
contrast value	116	9	UIntegerT		R	
teach result memory number 14	117	0	RecordT		R	teach result from memory location number 14
mark is	117	1	BooleanT		R	False: brighter True: darker
amplifier value	117	2	UIntegerT		R	
switching threshold	117	3	UIntegerT		R	
hysteresis	117	4	UIntegerT		R	
noise	117	5	UIntegerT		R	
send LED color	117	6	UIntegerT		R	1: white
mark exposure value	117	7	UIntegerT		R	
background exposure value	117	8	UIntegerT		R	
contrast value	117	9	UIntegerT		R	
teach result memory number 15	118	0	RecordT		R	teach result from memory location number 15
mark is	118	1	BooleanT		R	False: brighter True: darker
amplifier value	118	2	UIntegerT		R	

Parameter	Index	Subindex	Data type	Default	AR	Description
switching threshold	118	3	UIntegerT		R	
hysteresis	118	4	UIntegerT		R	
noise	118	5	UIntegerT		R	
send LED color	118	6	UIntegerT		R	1: white
mark exposure value	118	7	UIntegerT		R	
background exposure value	118	8	UIntegerT		R	
contrast value	118	9	UIntegerT		R	
teach result memory number 16	119	0	RecordT		R	teach result from memory location number 16
mark is	119	1	BooleanT		R	False: brighter True: darker
amplifier value	119	2	UIntegerT		R	
switching threshold	119	3	UIntegerT		R	
hysteresis	119	4	UIntegerT		R	
noise	119	5	UIntegerT		R	
send LED color	119	6	UIntegerT		R	1: white
mark exposure value	119	7	UIntegerT		R	
background exposure value	119	8	UIntegerT		R	
contrast value	119	9	UIntegerT		R	
teach result memory number 17	120	0	RecordT		R	teach result from memory location number 17
mark is	120	1	BooleanT		R	False: brighter True: darker
amplifier value	120	2	UIntegerT		R	
switching threshold	120	3	UIntegerT		R	
hysteresis	120	4	UIntegerT		R	
noise	120	5	UIntegerT		R	
send LED color	120	6	UIntegerT		R	1: white
mark exposure value	120	7	UIntegerT		R	
background exposure value	120	8	UIntegerT		R	
contrast value	120	9	UIntegerT		R	

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Parameter	Index	Subindex	Data type	Default	AR	Description
teach result memory number 18	121	0	RecordT		R	teach result from memory location number 18
mark is	121	1	BooleanT		R	False: brighter True: darker
amplifier value	121	2	UIntegerT		R	
switching threshold	121	3	UIntegerT		R	
hysteresis	121	4	UIntegerT		R	
noise	121	5	UIntegerT		R	
send LED color	121	6	UIntegerT		R	1: white
mark exposure value	121	7	UIntegerT		R	
background exposure value	121	8	UIntegerT		R	
contrast value	121	9	UIntegerT		R	
teach result memory number 19	122	0	RecordT		R	teach result from memory location number 19
mark is	122	1	BooleanT		R	False: brighter True: darker
amplifier value	122	2	UIntegerT		R	
switching threshold	122	3	UIntegerT		R	
hysteresis	122	4	UIntegerT		R	
noise	122	5	UIntegerT		R	
send LED color	122	6	UIntegerT		R	1: white
mark exposure value	122	7	UIntegerT		R	
background exposure value	122	8	UIntegerT		R	
contrast value	122	9	UIntegerT		R	
teach result memory number 20	123	0	RecordT		R	teach result from memory location number 20
mark is	123	1	BooleanT		R	False: brighter True: darker
amplifier value	123	2	UIntegerT		R	
switching threshold	123	3	UIntegerT		R	
hysteresis	123	4	UIntegerT		R	
noise	123	5	UIntegerT		R	
send LED color	123	6	UIntegerT		R	1: white

Parameter	Index	Subindex	Data type	Default	AR	Description
mark exposure value	123	7	UIntegerT		R	
background exposure value	123	8	UIntegerT		R	
contrast value	123	9	UIntegerT		R	
teach result memory number 21	124	0	RecordT		R	teach result from memory location number 21
mark is	124	1	BooleanT		R	False: brighter True: darker
amplifier value	124	2	UIntegerT		R	
switching threshold	124	3	UIntegerT		R	
hysteresis	124	4	UIntegerT		R	
noise	124	5	UIntegerT		R	
send LED color	124	6	UIntegerT		R	1: white
mark exposure value	124	7	UIntegerT		R	
background exposure value	124	8	UIntegerT		R	
contrast value	124	9	UIntegerT		R	
teach result memory number 22	125	0	RecordT		R	teach result from memory location number 22
mark is	125	1	BooleanT		R	False: brighter True: darker
amplifier value	125	2	UIntegerT		R	
switching threshold	125	3	UIntegerT		R	
hysteresis	125	4	UIntegerT		R	
noise	125	5	UIntegerT		R	
send LED color	125	6	UIntegerT		R	1: white
mark exposure value	125	7	UIntegerT		R	
background exposure value	125	8	UIntegerT		R	
contrast value	125	9	UIntegerT		R	
teach result memory number 23	126	0	RecordT		R	teach result from memory location number 23
mark is	126	1	BooleanT		R	False: brighter True: darker
amplifier value	126	2	UIntegerT		R	
switching threshold	126	3	UIntegerT		R	

Parameter	Index	Subindex	Data type	Default	AR	Description
hysteresis	126	4	UIntegerT		R	
noise	126	5	UIntegerT		R	
send LED color	126	6	UIntegerT		R	1: white
mark exposure value	126	7	UIntegerT		R	
background exposure value	126	8	UIntegerT		R	
contrast value	126	9	UIntegerT		R	
teach result memory number 24	127	0	RecordT		R	teach result from memory location number 24
mark is	127	1	BooleanT		R	False: brighter True: darker
amplifier value	127	2	UIntegerT		R	
switching threshold	127	3	UIntegerT		R	
hysteresis	127	4	UIntegerT		R	
noise	127	5	UIntegerT		R	
send LED color	127	6	UIntegerT		R	1: white
mark exposure value	127	7	UIntegerT		R	
background exposure value	127	8	UIntegerT		R	
contrast value	127	9	UIntegerT		R	
teach result memory number 25	128	0	RecordT		R	teach result from memory location number 25
mark is	128	1	BooleanT		R	False: brighter True: darker
amplifier value	128	2	UIntegerT		R	
switching threshold	128	3	UIntegerT		R	
hysteresis	128	4	UIntegerT		R	
noise	128	5	UIntegerT		R	
send LED color	128	6	UIntegerT		R	1: white
mark exposure value	128	7	UIntegerT		R	
background exposure value	128	8	UIntegerT		R	
contrast value	128	9	UIntegerT		R	
teach result memory number 26	129	0	RecordT		R	teach result from memory location number 26

Parameter	Index	Subindex	Data type	Default	AR	Description
mark is	129	1	BooleanT		R	False: brighter True: darker
amplifier value	129	2	UIntegerT		R	
switching threshold	129	3	UIntegerT		R	
hysteresis	129	4	UIntegerT		R	
noise	129	5	UIntegerT		R	
send LED color	129	6	UIntegerT		R	1: white
mark exposure value	129	7	UIntegerT		R	
background exposure value	129	8	UIntegerT		R	
contrast value	129	9	UIntegerT		R	
teach result memory number 27	130	0	RecordT		R	teach result from memory location number 27
mark is	130	1	BooleanT		R	False: brighter True: darker
amplifier value	130	2	UIntegerT		R	
switching threshold	130	3	UIntegerT		R	
hysteresis	130	4	UIntegerT		R	
noise	130	5	UIntegerT		R	
send LED color	130	6	UIntegerT		R	1: white
mark exposure value	130	7	UIntegerT		R	
background exposure value	130	8	UIntegerT		R	
contrast value	130	9	UIntegerT		R	
teach result memory number 28	131	0	RecordT		R	teach result from memory location number 28
mark is	131	1	BooleanT		R	False: brighter True: darker
amplifier value	131	2	UIntegerT		R	
switching threshold	131	3	UIntegerT		R	
hysteresis	131	4	UIntegerT		R	
noise	131	5	UIntegerT		R	
send LED color	131	6	UIntegerT		R	1: white
mark exposure value	131	7	UIntegerT		R	

Parameter	Index	Subindex	Data type	Default	AR	Description
background exposure value	131	8	UIntegerT		R	
contrast value	131	9	UIntegerT		R	
teach result memory number 29	132	0	RecordT		R	teach result from memory location number 29
mark is	132	1	BooleanT		R	False: brighter True: darker
amplifier value	132	2	UIntegerT		R	
switching threshold	132	3	UIntegerT		R	
hysteresis	132	4	UIntegerT		R	
noise	132	5	UIntegerT		R	
send LED color	132	6	UIntegerT		R	1: white
mark exposure value	132	7	UIntegerT		R	
background exposure value	132	8	UIntegerT		R	
contrast value	132	9	UIntegerT		R	
timer module on / off	141	0	UIntegerT		RW	timer module on / off 1: on 0: off
time base	142	0	UIntegerT	2	RW	you can chose between 3 time bases (100us, 1ms, 10ms) 0: 100µs 1: 1ms 2: 10ms
time factor	143	0	UIntegerT	2	RW	factor and time base is the time for the timer module function (1 ... 1000)
timer module function	144	0	UIntegerT	3	RW	you can chose between serveral timer functions like pulse stretching etc. 1: ON delay 2: OFF delay 3: pulse stretching 4: pulse suppression
function switching output1	145	0	UIntegerT		RW	with this function you can decide if mark or background has active high level 0: high signal on mark 1: low signal on mark
tracking-function	146	0	UIntegerT		RW	with this function you can decide if the switching level is controlled or not 1: on 0: off
wire input type	147	0	UIntegerT		R	with this function you can decide if the input has npn or pnp functionality 1: NPN-logic 0: PNP-logic

Parameter	Index	Subindex	Data type	Default	AR	Description
function for button 1 at button level0	150	0	UIntegerT		R	function for button 1 at button level0 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
function for button 1 at button level1	151	0	UIntegerT		R	function for button 1 at button level1 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
function for button 1 at button level2	152	0	UIntegerT		R	function for button 1 at button level2 0: No function 4: Static 2 point teach 5: Dynamic 2 point teach 15: Static 1 point teach
function for button 1 at button level3	153	0	UIntegerT		R	function for button 1 at button level3 0: No function 4: Static 2 point teach 5: Dynamic 2 point teach 15: Static 1 point teach
function for button 1 at button level4	154	0	UIntegerT		R	function for button 1 at button level4 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
function for button 2 at button level0	155	0	UIntegerT		R	function for button 2 at button level0 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach

Parameter	Index	Subindex	Data type	Default	AR	Description
function for button 2 at button level1	156	0	UIntegerT		R	function for button 2 at button level1 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
function for button 2 at button level2	157	0	UIntegerT		R	function for button 2 at button level2 0: No function 4: Static 2 point teach 5: Dynamic 2 point teach 15: Static 1 point teach
function for button 2 at button level3	158	0	UIntegerT		R	function for button 2 at button level3 0: No function 4: Static 2 point teach 5: Dynamic 2 point teach 15: Static 1 point teach
function for button 2 at button level4	159	0	UIntegerT		R	function for button 2 at button level4 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
wire function level1	160	0	UIntegerT		R	wire function level1 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
wire function level2	161	0	UIntegerT		R	wire function level2 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach

Parameter	Index	Subindex	Data type	Default	AR	Description
wire function level3	162	0	UIntegerT		R	wire function level3 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
wire function level4	163	0	UIntegerT		R	wire function level4 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
wire function level5	164	0	UIntegerT		R	wire function level5 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
wire function level6	165	0	UIntegerT		R	wire function level6 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach

Parameter	Index	Subindex	Data type	Default	AR	Description
wire function level7	166	0	UIntegerT		R	wire function level7 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
wire function level8	167	0	UIntegerT		R	wire function level8 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
wire function level9	168	0	UIntegerT		R	wire function level9 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
wire function level10	169	0	UIntegerT		R	wire function level10 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach

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Parameter	Index	Subindex	Data type	Default	AR	Description
wire function level11	170	0	UIntegerT		R	wire function level11 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
wire function level12	171	0	UIntegerT		R	wire function level12 0: No function 1: Reserve function1 2: Sensivity + 3: Sensivity - 4: Static 2 point teach 5: Dynamic 2 point teach 6: Special function near mark 7: Special function activ on background 8: tracking enable 9: No function with error 15: Static 1 point teach
teach result	180	0	RecordT		RW	teach result description
mark is	180	1	BooleanT		RW	False: brighter True: darker
amplifier value	180	2	UIntegerT		RW	
switching threshold	180	3	UIntegerT		RW	
hysteresis	180	4	UIntegerT		RW	
noise	180	5	UIntegerT		RW	
send LED color	180	6	UIntegerT		RW	1: white
mark exposure value	180	7	UIntegerT		RW	
background exposure value	180	8	UIntegerT		RW	
contrast value	180	9	UIntegerT		RW	
analysis depth	181	0	UIntegerT		R	number of scans considered for the switching output to toggle (2 ... 1000)
counter for marks	182	0	UIntegerT		RW	internal mark counter, can be reset to 0
sensor variant	183	0	UIntegerT	0	R	sensor variant(desc.)
button lock state	184	0	UIntegerT	0	RW	button lock state(desc.) 1: on 0: off

Parameter	Index	Subindex	Data type	Default	AR	Description
easytune lock state	185	0	UIntegerT	0	RW	easytune lock state(desc.) 1: on 0: off
function switching output OUT2	186	0	UIntegerT	0	RW	function switching output OUT2(desc.) 0: inverted OUT1 1: equal OUT1 2: warning output
out toggle while teach	187	0	UIntegerT	1	RW	out toggle while teach(desc.) 1: on 0: off
teach state	188	0	UIntegerT	0	R	teach state(desc.) 0: no teach occured 1: busy 2: last teach successful 3: last teach failed 4: last valid is used
process reliability	189	0	UIntegerT	0	R	process reliability(desc.)
choice of position of switching point	190	0	UIntegerT		RW	you can chose within 7 different positions of the switching point between mark and background 0: very close to the mark = 6% / 1PT: very high sensitivity 1: close to the mark = 12% / 1PT: high sensitivity 2: toward mark = 25% / 1PT: increased sensitivity 3: in the middle between the mark and background = 50% / 1PT: standard sensitivity 4: in direction of the background = 70% / 1PT: reduced sensitivity 5: close to the background = 82% / 1PT: low sensitivity 6: very close to the background = 90% / 1PT: very low sensitivity

9 Technical specifications

9.1 General data

Tab. 9.1: Sensor and IODD version

IODD version	V2.0
IODD release date	2022-2-22
Device family	Contrast Scanner
Device ID	2129
Device name	KRT18BW
Device variants	KRT18BW.V5/L6T-M12 (50147600), KRT18BW.VT5/L6T-M12 (50147602), KRT18BW.VS5/L6T-M12 (50147604), KRT18BW.H5/L6T-M12 (50147607), KRT18BW.HT5/L6T-M12 (50147609)