



PLC Integration of GS08B_2525

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

© 2022

Leuze electronic GmbH & Co. KG

In der Braike 1

D-73277 Owen / Germany

Phone: +49 7021 573-0

Fax: +49 7021 573-199

<http://www.leuze.com>

info@leuze.com

Table of Contents

- 1 Legal information.....4**
 - 1.1 Disclaimer..... 4
- 2 About this document.....5**
 - 2.1 Purpose of use.....5
 - 2.2 Target group..... 5
- 3 General use of function block..... 6**
 - 3.1 Short description..... 6
 - 3.2 Calling and designation..... 6
 - 3.3 Configuration..... 6
 - 3.4 Method of function..... 7
 - 3.5 Behavior when error occurs.....7
- 4 Integration into the PLC project.....8**
- 5 Process data parser function..... 9**
 - 5.1 Calling and designation..... 9
 - 5.2 Configuration..... 9
- 6 Error description.....10**
- 7 Data structures..... 11**
- 8 Parameter descriptions..... 17**
- 9 Technical specifications..... 22**
 - 9.1 General data..... 22

1 Legal information

1.1 Disclaimer

With the installation, copying or other use of this software product, you agree to the following conditions of use. If you do not agree with the conditions, do not install this software product. If you received the software product by means of download, terminate the download and delete all files that have already been downloaded.

This software product is protected by European and U.S. copyright law and international treaty provisions. You are in no way authorized to rent, lease, lend or sell the software or parts thereof to third parties.

Before you link the library, please close all unnecessary programs to avoid loss of data.

We highly recommend installing the software on a computer which is not already used in the production process or is needed for storing important data. It cannot be completely excluded that existing files will be changed or overwritten. Leuze electronic GmbH & Co. KG is not liable for damages and data loss that result from this installation or the failure to observe this warning notice.

| | NOTICE |
|---|--|
|  | <p>Observe the operating instructions!</p> <ul style="list-style-type: none">👉 Observe all safety notices provided in the operating instructions for these devices. Leuze electronic GmbH & Co. KG is not liable for personal injury and property damage that result from failure to comply with these safety notices.👉 Download the operating instructions for these devices at www.leuze.com. |

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_ GS08B_2525" 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_ GS08B_2525 | Sensor data |

See structure description of ST_Leuze_IOL_ GS08B_2525 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_GS08B_2525". 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_GS08B_2525" 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_ GS08B_2525" 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_GS08B_2525` 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_GS08B_2525 | OUTPUT | ST_Leuze_PD_GS08B_2525 | Reference to the instance of the data structure ST_Leuze_PD_GS08B_2525. The structure includes the disaggregated values of the process data. |

See structure description of `ST_Leuze_PD_GS08B_2525` 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_GS08B_2525

| 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.bCmdTeachApply | BOOL | [WRITE_ONLY] Teach Apply |
| stDeviceData.stSelection.stCommands.bCmdSetpoint1SingleValueTeach | BOOL | [WRITE_ONLY] Setpoint 1 Single Value Teach |
| stDeviceData.stSelection.stCommands.bCmdSetpoint2SingleValueTeach | BOOL | [WRITE_ONLY] Setpoint 2 Single Value Teach |
| stDeviceData.stSelection.stCommands.bCmdTwoValueTeachTp1Sp1 | BOOL | [WRITE_ONLY] Two Value Teach TP1 SP1 |
| stDeviceData.stSelection.stCommands.bCmdTwoValueTeachTp2Sp1 | BOOL | [WRITE_ONLY] Two Value Teach TP2 SP1 |
| stDeviceData.stSelection.stCommands.bCmdTwoValueTeachTp1Sp2 | BOOL | [WRITE_ONLY] Two Value Teach TP1 SP2 |
| stDeviceData.stSelection.stCommands.bCmdTwoValueTeachTp2Sp2 | BOOL | [WRITE_ONLY] Two Value Teach TP2 SP2 |
| stDeviceData.stSelection.stCommands.bCmdSetpoint1DynamicTeachStart | BOOL | [WRITE_ONLY] Setpoint 1 Dynamic Teach Start |
| stDeviceData.stSelection.stCommands.bCmdSetpoint1DynamicTeachStop | BOOL | [WRITE_ONLY] Setpoint 1 Dynamic Teach Stop |
| stDeviceData.stSelection.stCommands.bCmdSetpoint2DynamicTeachStart | BOOL | [WRITE_ONLY] Setpoint 2 Dynamic Teach Start |
| stDeviceData.stSelection.stCommands.bCmdSetpoint2DynamicTeachStop | BOOL | [WRITE_ONLY] Setpoint 2 Dynamic Teach Stop |
| stDeviceData.stSelection.stCommands.bCmdTeachCancel | BOOL | [WRITE_ONLY] Teach Cancel |
| stDeviceData.stSelection.stCommands.bCmdAdoptLocalAdjustment | BOOL | [WRITE_ONLY] Adopt Local Adjustment |
| stDeviceData.stSelection.stCommands.bCmdResetDiagnosisInformation | BOOL | [WRITE_ONLY] Reset Diagnosis Information |
| 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] |

| Parameter name | Data type | Description |
|---|-----------|--|
| 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] |
| 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.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] |
| stDeviceData.stSelection.bProductName | BOOL | [READ_ONLY] |
| stDeviceData.stSelection.bProductId | BOOL | [READ_ONLY] |
| stDeviceData.stSelection.bProductText | BOOL | [READ_ONLY] |
| stDeviceData.stSelection.bFirmwareVersion | BOOL | [READ_ONLY] |
| stDeviceData.stSelection.bApplicationSpecificTag | BOOL | [READ_WRITE] |
| stDeviceData.stSelection.bErrorCount | BOOL | [READ_ONLY] |
| stDeviceData.stSelection.bDeviceStatus | BOOL | [READ_ONLY] |
| stDeviceData.stSelection.stTeachState.bAll | BOOL | [READ_ONLY] all parameters of complex data type |
| stDeviceData.stSelection.stSetpoint_60.bAll | BOOL | [READ_WRITE] all parameters of complex data type |
| stDeviceData.stSelection.stSetpoint_60.bBdc1q11 | BOOL | [READ_WRITE] threshold measurement value |
| stDeviceData.stSelection.stSetpoint_60.bBdc1q12 | BOOL | [READ_WRITE] threshold measurement value |
| stDeviceData.stSelection.stSwitchpoint_61.bAll | BOOL | [READ_WRITE] all parameters of complex data type |

| Parameter name | Data type | Description |
|---|-----------|--|
| stDeviceData.stSelection.stSwitchpoint_61.bLogic | BOOL | [READ_WRITE] switching information is transmitted in inverted or not inverted manner |
| stDeviceData.stSelection.stSwitchpoint_61.bMode | BOOL | [READ_WRITE] operation mode for binary signal |
| stDeviceData.stSelection.stSwitchpoint_61.bHysteresis | BOOL | [READ_WRITE] |
| stDeviceData.stSelection.bLot | BOOL | [READ_ONLY] production lot |
| stDeviceData.stSelection.bDeviceAdjustment | BOOL | [READ_WRITE] Selection of local / remote adjustment |
| stDeviceData.stSelection.bOnDelaySwitchingOutput | BOOL | [READ_WRITE] on delay for the binary data channel |
| stDeviceData.stSelection.bOffDelaySwitchingOutput | BOOL | [READ_WRITE] off delay for the binary data channel |
| stDeviceData.stSelection.bSwitchingOutput | BOOL | [READ_WRITE] polarity of the switching output |
| stDeviceData.stSelection.bSensorMode | BOOL | [READ_WRITE] sensor tuning |
| stDeviceData.stSelection.stTeachpoint.bAll | BOOL | [READ_ONLY] all parameters of complex data type |
| stDeviceData.stSelection.stTeachpoint.bTp1 | BOOL | [READ_ONLY] detected lower limit during teach-in procedure |
| stDeviceData.stSelection.stTeachpoint.bTp2 | BOOL | [READ_ONLY] detected upper limit during teach-in procedure |
| stDeviceData.stSelection.stProcessDataLimits.bAll | BOOL | [READ_ONLY] all parameters of complex data type |
| stDeviceData.stSelection.stProcessDataLimits.bLower | BOOL | [READ_ONLY] lower limit after power-up or reset |
| stDeviceData.stSelection.stProcessDataLimits.bUpper | BOOL | [READ_ONLY] upper limit after power-up or reset |
| stDeviceData.stSelection.bSwitchCounter | BOOL | [READ_ONLY] number of switching after power-up or reset |
| stDeviceData.stSelection.bTemperature | BOOL | [READ_ONLY] Sensor temperature |
| stDeviceData.stSelection.bTeachInQuality | BOOL | [READ_ONLY] Last teach in Quality |
| stDeviceData.stSelection.bSwitchpointPotentiometer | BOOL | [READ_ONLY] position of the local sensibility switch |
| stDeviceData.stSelection.bSwitchingOutputLogic | BOOL | [READ_ONLY] local switching output logic |
| 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.nCmdTeachApply | UINT | [WRITE_ONLY] Teach Apply |

| Parameter name | Data type | Description |
|--|-----------|---|
| stDeviceData.stData.stCommands.nCmdSetpoint1SingleValueTeach | UINT | [WRITE_ONLY] Setpoint 1 Single Value Teach |
| stDeviceData.stData.stCommands.nCmdSetpoint2SingleValueTeach | UINT | [WRITE_ONLY] Setpoint 2 Single Value Teach |
| stDeviceData.stData.stCommands.nCmdTwoValueTeachTp1Sp1 | UINT | [WRITE_ONLY] Two Value Teach TP1 SP1 |
| stDeviceData.stData.stCommands.nCmdTwoValueTeachTp2Sp1 | UINT | [WRITE_ONLY] Two Value Teach TP2 SP1 |
| stDeviceData.stData.stCommands.nCmdTwoValueTeachTp1Sp2 | UINT | [WRITE_ONLY] Two Value Teach TP1 SP2 |
| stDeviceData.stData.stCommands.nCmdTwoValueTeachTp2Sp2 | UINT | [WRITE_ONLY] Two Value Teach TP2 SP2 |
| stDeviceData.stData.stCommands.nCmdSetpoint1DynamicTeachStart | UINT | [WRITE_ONLY] Setpoint 1 Dynamic Teach Start |
| stDeviceData.stData.stCommands.nCmdSetpoint1DynamicTeachStop | UINT | [WRITE_ONLY] Setpoint 1 Dynamic Teach Stop |
| stDeviceData.stData.stCommands.nCmdSetpoint2DynamicTeachStart | UINT | [WRITE_ONLY] Setpoint 2 Dynamic Teach Start |
| stDeviceData.stData.stCommands.nCmdSetpoint2DynamicTeachStop | UINT | [WRITE_ONLY] Setpoint 2 Dynamic Teach Stop |
| stDeviceData.stData.stCommands.nCmdTeachCancel | UINT | [WRITE_ONLY] Teach Cancel |
| stDeviceData.stData.stCommands.nCmdAdoptLocalAdjustment | UINT | [WRITE_ONLY] Adopt Local Adjustment |
| stDeviceData.stData.stCommands.nCmdResetDiagnosisInformation | UINT | [WRITE_ONLY] Reset Diagnosis Information |
| 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] |

| Parameter name | Data type | Description |
|--|-----------|--|
| stDeviceData.stData.stDirectParameters1.nReserved_15 | UINT | [READ_ONLY] |
| 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.sFirmwareVersion | STRING | [READ_ONLY] |
| stDeviceData.stData.sApplicationSpecificTag | STRING | [READ_WRITE] |
| stDeviceData.stData.nErrorCount | UINT | [READ_ONLY] |
| stDeviceData.stData.nDeviceStatus | UINT | [READ_ONLY] |
| stDeviceData.stData.stTeachState.nSp2TeachPointStatus | UINT | [READ_ONLY] indication for the success of a teach point setting |
| stDeviceData.stData.stTeachState.nSp1TeachPointStatus_2 | UINT | [READ_ONLY] indication for the success of a teach point setting |
| stDeviceData.stData.stTeachState.nTeachState_3 | UINT | [READ_ONLY] indication of the current state of the teach-in procedure |
| stDeviceData.stData.stSetpoint_60.nBdc1q11 | UINT | [READ_WRITE] threshold measurement value |
| stDeviceData.stData.stSetpoint_60.nBdc1q12 | UINT | [READ_WRITE] threshold measurement value |
| stDeviceData.stData.stSwitchpoint_61.nLogic | UINT | [READ_WRITE] switching information is transmitted in inverted or not inverted manner |
| stDeviceData.stData.stSwitchpoint_61.nMode | UINT | [READ_WRITE] operation mode for binary signal |
| stDeviceData.stData.stSwitchpoint_61.nHysteresis | UINT | [READ_WRITE] |
| stDeviceData.stData.sLot | STRING | [READ_ONLY] production lot |
| stDeviceData.stData.nDeviceAdjustment | UINT | [READ_WRITE] Selection of local / remote adjustment |

| Parameter name | Data type | Description |
|--|-----------|--|
| stDeviceData.stData.nOnDelaySwitchingOutput | UINT | [READ_WRITE] on delay for the binary data channel |
| stDeviceData.stData.nOffDelaySwitchingOutput | UINT | [READ_WRITE] off delay for the binary data channel |
| stDeviceData.stData.nSwitchingOutput | UINT | [READ_WRITE] polarity of the switching output |
| stDeviceData.stData.nSensorMode | UINT | [READ_WRITE] sensor tuning |
| stDeviceData.stData.stTeachpoint.nTp1 | UINT | [READ_ONLY] detected lower limit during teach-in procedure |
| stDeviceData.stData.stTeachpoint.nTp2 | UINT | [READ_ONLY] detected upper limit during teach-in procedure |
| stDeviceData.stData.stProcessDataLimits.nLower | UINT | [READ_ONLY] lower limit after power-up or reset |
| stDeviceData.stData.stProcessDataLimits.nUpper | UINT | [READ_ONLY] upper limit after power-up or reset |
| stDeviceData.stData.nSwitchCounter | UINT | [READ_ONLY] number of switching after power-up or reset |
| stDeviceData.stData.nTemperature | INT | [READ_ONLY] Sensor temperature |
| stDeviceData.stData.nTeachInQuality | INT | [READ_ONLY] Last teach in Quality |
| stDeviceData.stData.nSwitchpointPotentiometer | UINT | [READ_ONLY] position of the local sensibility switch |
| stDeviceData.stData.nSwitchingOutputLogic | UINT | [READ_ONLY] local switching output logic |

Tab. 7.2: ST_Leuze_PD_GS08B_2525

| Parameter name | Data type | Description |
|---|-----------|-------------|
| ST_Leuze_PD_GS08B_2525.nMeasurementValue | UINT | |
| ST_Leuze_PD_GS08B_2525.bStability | BOOL | |
| ST_Leuze_PD_GS08B_2525.bSwitchStateBdc1Q1 | 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 |
| Teach Apply | | | UIntegerT | 64 | W | Teach Apply |
| Setpoint 1 Single Value Teach | | | UIntegerT | 65 | W | Setpoint 1 Single Value Teach |
| Setpoint 2 Single Value Teach | | | UIntegerT | 66 | W | Setpoint 2 Single Value Teach |
| Two Value Teach TP1 SP1 | | | UIntegerT | 67 | W | Two Value Teach TP1 SP1 |
| Two Value Teach TP2 SP1 | | | UIntegerT | 68 | W | Two Value Teach TP2 SP1 |
| Two Value Teach TP1 SP2 | | | UIntegerT | 69 | W | Two Value Teach TP1 SP2 |
| Two Value Teach TP2 SP2 | | | UIntegerT | 70 | W | Two Value Teach TP2 SP2 |
| Setpoint 1 Dynamic Teach Start | | | UIntegerT | 71 | W | Setpoint 1 Dynamic Teach Start |
| Setpoint 1 Dynamic Teach Stop | | | UIntegerT | 72 | W | Setpoint 1 Dynamic Teach Stop |
| Setpoint 2 Dynamic Teach Start | | | UIntegerT | 73 | W | Setpoint 2 Dynamic Teach Start |
| Setpoint 2 Dynamic Teach Stop | | | UIntegerT | 74 | W | Setpoint 2 Dynamic Teach Stop |
| Teach Cancel | | | UIntegerT | 79 | W | Teach Cancel |
| Adopt Local Adjustment | | | UIntegerT | 160 | W | Adopt Local Adjustment |
| Reset Diagnosis Information | | | UIntegerT | 163 | W | Reset Diagnosis Information |
| IO-Link 1.1 system test command 240, Event 8DFE appears | | | UIntegerT | 240 | W | IO-Link 1.1 system test command 240, Event 8DFE appears |
| IO-Link 1.1 system test command 241, Event 8DFE disappears | | | UIntegerT | 241 | W | IO-Link 1.1 system test command 241, Event 8DFE disappears |
| IO-Link 1.1 system test command 242, Event 8DFF appears | | | UIntegerT | 242 | W | IO-Link 1.1 system test command 242, Event 8DFF appears |
| IO-Link 1.1 system test command 243, Event 8DFF disappears | | | UIntegerT | 243 | W | IO-Link 1.1 system test command 243, Event 8DFF disappears |
| Direct Parameters 1 | 0 | 0 | RecordT | | RW | |

| Parameter | Index | Subindex | Data type | Default | AR | Description |
|----------------------------|-------|----------|-----------|---------|----|---|
| 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 | |
| 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 |

| 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 64: Teach Apply 65: Setpoint 1 Single Value Teach 66: Setpoint 2 Single Value Teach 67: Two Value Teach TP1 SP1 68: Two Value Teach TP2 SP1 69: Two Value Teach TP1 SP2 70: Two Value Teach TP2 SP2 71: Setpoint 1 Dynamic Teach Start 72: Setpoint 1 Dynamic Teach Stop 73: Setpoint 2 Dynamic Teach Start 74: Setpoint 2 Dynamic Teach Stop 79: Teach Cancel 160: Adopt Local Adjustment 163: Reset Diagnosis Information 240: IO-Link 1.1 system test command 240, Event 8DFE appears 241: IO-Link 1.1 system test command 241, Event 8DFE disappears 242: IO-Link 1.1 system test command 242, Event 8DFF appears 243: IO-Link 1.1 system test command 243, Event 8DFF disappears |
| Device Access Locks | 12 | 0 | RecordT | | RW | |
| Parameter (write) Access Lock | 12 | 1 | BooleanT | 0 | RW | |
| Data Storage Lock | 12 | 2 | BooleanT | | RW | |
| Local Parameterization Lock | 12 | 3 | BooleanT | 0 | RW | |
| Local User Interface Lock | 12 | 4 | BooleanT | | RW | |
| Vendor Name | 16 | 0 | StringT | Leuze electronic GmbH + Co. KG | R | |
| Vendor Text | 17 | 0 | StringT | The Sensor People | R | |
| Product Name | 18 | 0 | StringT | | R | |
| Product ID | 19 | 0 | StringT | | R | |
| Product Text | 20 | 0 | StringT | | R | |
| Firmware Version | 23 | 0 | StringT | | R | |
| Application Specific Tag | 24 | 0 | StringT | | RW | |
| Error Count | 32 | 0 | UIntegerT | | R | |

| Parameter | Index | Subindex | Data type | Default | AR | Description |
|------------------------|-------|----------|-----------|---------|----|--|
| 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 |
| Teach State | 59 | 0 | RecordT | | R | indication of the current state of the teach-in procedure and teach point setting |
| SP2 teach point Status | 59 | 1 | UIntegerT | 0 | R | indication for the success of a teach point setting 0: Teachpoint 1 and 2 not taught or not successful 1: Teachpoint 1 successfully taught 2: Teachpoint 2 successfully taught 3: Teachpoint 1 and 2 successfully taught |
| SP1 teach point Status | 59 | 2 | UIntegerT | 0 | R | indication for the success of a teach point setting 0: Teachpoint 1 and 2 not taught or not successful 1: Teachpoint 1 successfully taught 2: Teachpoint 2 successfully taught 3: Teachpoint 1 and 2 successfully taught |
| Teach State | 59 | 3 | UIntegerT | | R | indication of the current state of the teach-in procedure 0: Idle 1: Switchpoint Set 2: Switchpoint 2 Set 3: Switchpoint 1+2 Set 4: Wait for Command 5: Busy 6: Reserved 7: Error |
| Setpoint | 60 | 0 | RecordT | | RW | threshold measurement value of a sensor for the edge of a binary output signal |
| BDC1Q1 1 | 60 | 1 | UIntegerT | 50 | RW | threshold measurement value (4 ... 75) |
| BDC1Q1 2 | 60 | 2 | UIntegerT | 50 | RW | threshold measurement value (4 ... 75) |
| Switchpoint | 61 | 0 | RecordT | | RW | mode, logic and hysteresis for binary data channel 1 |
| Logic | 61 | 1 | UIntegerT | 0 | RW | switching information is transmitted in inverted or not inverted manner 0: low active 1: high active |
| Mode | 61 | 2 | UIntegerT | 1 | RW | operation mode for binary signal 0: Deactivated 1: Single point mode 2: Window mode 3: Two point mode |
| Hysteresis | 61 | 3 | UIntegerT | 0 | RW | (0 ... 20) |

| Parameter | Index | Subindex | Data type | Default | AR | Description |
|----------------------------|-------|----------|-----------|---------|----|--|
| Lot | 64 | 0 | StringT | | R | production lot |
| Device Adjustment | 65 | 0 | UIntegerT | 1 | RW | Selection of local / remote adjustment 0: Remote 1: Local |
| On delay switching output | 66 | 0 | UIntegerT | 0 | RW | on delay for the binary data channel (0 ... 10000) |
| Off delay switching output | 67 | 0 | UIntegerT | 0 | RW | off delay for the binary data channel (0 ... 10000) |
| Switching Output | 70 | 0 | UIntegerT | 0 | RW | polarity of the switching output 0: PP 1: NPN 2: PNP |
| Sensor Mode | 73 | 0 | UIntegerT | 0 | RW | sensor tuning 0: Standard 1: Precision 2: Power 3: Speed |
| Teachpoint | 80 | 0 | RecordT | | R | Values detected during teach |
| TP1 | 80 | 1 | UIntegerT | | R | detected lower limit during teach-in procedure |
| TP2 | 80 | 2 | UIntegerT | | R | detected upper limit during teach-in procedure |
| Process data limits | 84 | 0 | RecordT | | R | Process data limit values |
| lower | 84 | 1 | UIntegerT | | R | lower limit after power-up or reset |
| upper | 84 | 2 | UIntegerT | | R | upper limit after power-up or reset |
| Switch counter | 85 | 0 | UIntegerT | | R | number of switching after power-up or reset |
| Temperature | 86 | 0 | IntegerT | | R | Sensor temperature |
| Teach-In Quality | 87 | 0 | IntegerT | 0 | R | Last teach in Quality 0: OK 1: OK 2: Not OK 3: Not OK |
| Switchpoint Potentiometer | 90 | 0 | UIntegerT | | R | position of the local sensibility switch |
| switching output logic | 91 | 0 | UIntegerT | | R | local switching output logic 0: low active 1: high active |

9 Technical specifications

9.1 General data

Tab. 9.1: Sensor and IODD version

| | |
|-------------------|----------------------------------|
| IODD version | V1.0 |
| IODD release date | 2021-11-18 |
| Device family | Fork sensor for object detection |
| Device ID | 2525 |
| Device name | GS08B/1-120 |
| Device variants | GS08B/1.1-120-M8.3 (50146194) |