

PROFINET PROFIdrive Interface

Manual



Documentation of the PROFIdrive Interface of the following Drives:

- C1251-MI-XC-2S
- C1250-MI-XC-xS-x00
- C1250-MI-XC-xS-xPD

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1 System overview

PROFINET is an open real-time Ethernet network. In this manual the PROFIdrive profiles of LinMot drives are described. The LinMot drive acts as a slave in this network and is implemented with the netX chip from Hilscher.

For further information on the PROFINET and PROFIdrive fieldbus protocols please visit: <u>http://www.profibus.com/</u>

1.1 References

All user manuals are distributed with the LinMot-Talk software. The newest versions can be downloaded from the LinMot homepage in the download section.

| Ref | Title | Doc Reference | Source |
|-----|--|------------------------|--|
| 1 | Safety Manual 2S Products | 0185-1174-E | shop.linmot.com |
| 2 | User Manual Motion Control SW | 0185-1093-E_6V8 | shop.linmot.com |
| 3 | LinMot Drive Configuration over Fieldbus Interfaces SG5-SG7 | 0185-1074-E_1V7 | shop.linmot.com |
| 4 | Sinamics S120 Safety Integrated Function Manual | 6SL3097-5AR00- 0BP3 | https://support.industry.sie mens.com/cs/document/109 781722 |

1.2 Port assignment



Attention: Within a PROFINET network normally the topology is defined for easy setup and replacement of devices. The real-time Ethernet RJ45 connector X17 is the P1 port and the real time RJ45 connector X18 is the P2 port in this context.







2 Process Data Object (PDO) Configuration

The cyclic process data is configured in the master and transmitted to the slave during start-up. The data object modules can be configured by drag and drop to any of the device slots from 1 to 8. The DO-SERVO can have its submodules in subslots from 1 to 12.

| BSP_10 		 Ungrouped devices 		 C1251-PDS [C1251xPDS 2S V0.1] | | | | | | | | _ # = × | Hardware catalog | • • • • |
|--|-------------|--------------------------------|------|----------|-----------|-----------|---------------------|-------------|--|---------|
| | | | a To | pology v | /iew | Networl | k view 📑 Devid | e view | Options | |
| 👍 C1251-PDS [C1251)PDS 25 V() 🖂 🖽 🖾 🖓 🗐 🕢 + | Device | oveniew | | | | | | L | | |
| | | | | | | | | | th Catalan | |
| 1 | - <u>**</u> | Module | Rack | Slot | I address | Q address | Туре | Article no. | Catalog | |
| | | C1251-PDS | 0 | 0 | | | C1251xPDS 2S V0.1 | 0150-310 | <search></search> | tin tin |
| ALRU . | | PN-IO | 0 | 0 X1 | | | C1251-PDS | | Filter Profile: <all></all> | - 📑 |
| C12 | = | DO SERVO_1 | 0 | 1 | | | DO SERVO | | - Thead module | |
| | | Module Access Point | 0 | 11 | | | Module Access Point | | C1251xPDS 2S V0.1 | |
| | | PROFisafe telegr 30 | 0 | 12 | 06 | 06 | PROFIsafe telegr 30 | | ▼ 👔 Module | |
| | | SIEMENS telegram 105, P. | . 0 | 13 | 726 | 726 | SIEMENS telegram | | DO SERVO | |
| | | | 0 | 14 | | | | | DO without PZD | |
| - 2 | | | 0 | 15 | | | | | ▼ Im Submodules | |
| | | | 0 | 16 | | | | | Actual Position | |
| | | | 0 | 17 | | | | | Actual Velocity | |
| | | | 0 | 18 | | | | | Demand Current 16b | |
| | | | 0 | 19 | | | | | Demand Current 32b | |
| | | | 0 | 1 10 | | | | | Demand Position | |
| | | | 0 | 1.11 | | | | | Demand Velocity | |
| | | | 0 | 1.12 | | | | | 📗 empty submodule | |
| | 7 | | 0 | 2 | | | | | ErrorCode | |
| | - | | 0 | 3 | | | | | Mon Channel 1 | |
| | | | 0 | 4 | | | | | Mon Channel 2 | |
| | - | | 0 | 5 | | | | | Mon Channel 3 | |
| | | | 0 | • | | | | | Mon Channel 4 | |
| | | | 0 | · | | | | | Im Par Channel 1 | |
| | | | U | 0 | | | | | Par Channel 2 | |
| | | | | | | | | | Par Channel 3 | |
| | | | | | | | | | Par Channel 4 | |
| | | | | | | | | | PROFIsafe telegr 30 | |
| | | | | | | | | | SIEMENS telegram 105, PZD-10/10 | |
| | | | | | | | | | SIEMENS telegram TDB, PZD-3/1 | |
| | | | | | | | | | 📗 Standard telegram 3, PZD-5/9 | |
| | | | | | | | | | Im Standard telegram 5, PZD-9/9 | |
| 1 | | | | | | | | | Standard telegram 516, PZD-16/13; SERVO | |
| 1 | | | | | | | | | Standard telegram 7, PZD-2/2 | |
| 1 | | | | | | | | | III Standard telegram 9, PZD-10/5; SERVO | |
| 1 | | | | | | | | | 📗 Supplementary telegram 700, PZD-0/3 | |
| 1 | | | | | | | | | Supplementary telegram 701, PZD-2/5 | |
| | | | | | | | | | 📗 Supplementary telegram 750, PZD-3/1 | |
| | ~ | | | | | | | | MarnWord | |
| | | e | | i D | | ~ . | | | | |

Overview of the supported Data Objects Modules.

2.1 Bidirectional PDO Modules

2.1.1 Standard telegram 3, PZD-5/9

The telegram content has speed-setpoint interface, 32 bit, with one sensor

| Output Data | | | | |
|-------------|----------------|----------------|-----------|--------------|
| Index | Size [Byte] | Byte Offset | Name | Data Type |
| Tlg 3 | 10 | - | Variables | RECORD |
| 1 | 2 | 0 | STW1 | Uint16 |
| 2, 3 | 4 | 2 | NSOLL_B | Int32 |
| 4 | 2 | 6 | STW2 | Uint16 |
| 5 | 2 | 8 | G1_STW | Uint16 |

Input Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|-------|----------------|----------------|-----------|--------------|
| Tlg 3 | 18 | - | Variables | RECORD |
| 1 | 2 | 0 | ZSW1 | Uint16 |
| 2, 3 | 4 | 2 | NIST_B | Int32 |
| 4 | 2 | 6 | ZSW2 | Uint16 |



| Index | Size [Byte] | Byte Offset | Name | Data Type |
|-------|----------------|----------------|-----------|--------------|
| 5 | 2 | 8 | G1_ZSW | Uint16 |
| 6, 7 | 4 | 10 | G1_XIST_1 | Int32 |
| 8, 9 | 4 | 14 | G1_XIST_2 | Int32 |

2.1.2 Standard telegram 5, PZD-9/9

The standard telegram 5 is derived from standard telegram 3 for additional use of the Dynamic Servo Control (DSC). The telegram contain speed-setpoint interface, 32 bit with one sensor, additionally position difference and position controller gain in the setpoint direction for DSC.

Output Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|-------|----------------|----------------|-----------|--------------|
| Tlg 5 | 18 | - | Variables | RECORD |
| 1 | 2 | 0 | STW1 | Uint16 |
| 2, 3 | 4 | 2 | NSOLL_B | Int32 |
| 4 | 2 | 6 | STW2 | Uint16 |
| 5 | 2 | 8 | G1_STW | Uint16 |
| 6, 7 | 4 | 10 | XERR | Int32 |
| 8, 9 | 4 | 14 | KPC | Int32 |

Input data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|-------|----------------|----------------|-----------|--------------|
| Tlg 5 | 18 | - | Variables | RECORD |
| 1 | 2 | 0 | ZSW1 | Uint16 |
| 2, 3 | 4 | 2 | NIST_B | Int32 |
| 4 | 2 | 6 | ZSW2 | Uint16 |
| 5 | 2 | 8 | G1_ZSW | Uint16 |
| 6, 7 | 4 | 10 | G1_XIST_1 | Int32 |
| 8, 9 | 4 | 14 | G1_XIST_2 | Int32 |

2.1.3 Standard telegram 7, PZD-2/2

The standard telegram 7 is defined for positioning mode. Content: Positioning interface (Program submode)

Output Data

| Size [Byte] | Byte Offset | Name | Data Type |
|----------------|-------------------------------|----------------------------|--|
| 4 | - | Variables | RECORD |
| 2 | 0 | STW1 | Uint16 |
| 2 | 2 | SATZANW | Uint16 |
| | Size [Byte] 4 2 2 | SizeByte[Byte]Offset4-2022 | Size [Byte]Byte OffsetName4-Variables20STW122SATZANW |



Input Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|-------|----------------|----------------|-----------|--------------|
| Tlg 7 | 4 | - | Variables | RECORD |
| 1 | 2 | 0 | ZSW1 | Uint16 |
| 2 | 2 | 2 | AKTSATZ | Uint16 |

2.1.4 Standard telegram 9, PZD-10/5

The standard telegram 9 is also defined for positioning mode. Content: Positioning interface (Program sub-mode plus Manual Data Input sub-mode)

2.1.4.1 Output Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|-------|----------------|----------------|--------------|--------------|
| Tlg 9 | 20 | - | Variables | RECORD |
| 1 | 2 | 0 | STW1 | Uint16 |
| 2 | 4 | 2 | SATZANW | Uint16 |
| 3 | 2 | 4 | STW2 | Uint16 |
| 4, 5 | 2 | 6 | MDI_TARPOS | Int32 |
| 6, 7 | 4 | 10 | MDI_VELOCITY | Int32 |
| 8 | 2 | 14 | MDI_ACC | Uint16 |
| 9 | 2 | 16 | MDI_DEC | Uint16 |
| 10 | 2 | 18 | MDI_MOD | Uint16 |

Details Of STW1

| Bit | Name | Significance |
|-----|---|--|
| 0 | ON/OFF | Switched On (1) / Power-Down (0) |
| 1 | No STO active / STO active | No STO (1) / STO active (0) |
| 2 | No Quick Stop / Quick Stop | No Quick Stop (1) / Quick Stop (0) |
| 3 | Enable Operation / Disable Operation | Enable Operation (1) / Inhibit Operation (0) |
| 4 | Abort - forced by parameter | No Abort (1) / Abort (0) |
| 5 | Freeze - forced by parameter | No Freeze (1) / Freeze (0) |
| 6 | Go To Position | Activate traversing task or a new MDI setpoint (0 -> 1) |
| 7 | Error Acknowledge | The group signal is acknowledged with a positive edge (0 -> 1) |
| 8 | Jog Move + | Jog 1 signal source |
| 9 | Jog Move - | Jog 2 signal source |
| 10 | Control via PLC | Control by PLC (1) / No Control by PLC (0) |
| 11 | Home | Start Homing (1) / No Homing (0) |

Details of SATZANW



| Bit | Name | Significance |
|--------|---|---|
| 0 -9 | The Command Table Entry ID is entered here | The Command Table Entry ID can be from 0 to 255. This is used in Command Table Entry mode |
| 10 -14 | Reserved | |
| 15 | MDI selection | Activation of MDI submode (1) / Deactivation of MDI submode (0) |

STW2 - This is not used

MDI_TARPOS is MDI target position

MDI_VELOCITY is MDI target velocity

MDI_ACC is MDI acceleration

MDI_DEC is MDI deceleration

If $MDI_MOD = 0$, VAI Increment (Relative) Demand Position Command is used (011xh). If $MDI_MOD = 1$, VAI Go to absolute positioning mode command (010xh) is used.

Telegram 9 supports the Command Table entry when the Traversing task is activated (STW1.bit6) along with No Abort and No Freeze and when no MDI is activated (SATZANW.bit 15). In this scenario "Set Command Table Command" 200xh is selected. The Command Table Entry ID which is taken as the parameter of the Command Table Command has to be programmed in SATZANW.bit 0-9.

2.1.4.2 Input Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|-------|----------------|----------------|-----------|--------------|
| Tlg 9 | 10 | - | Variables | RECORD |
| 1 | 2 | 0 | ZSW1 | Uint16 |
| 2 | 2 | 2 | AKTSATZ | Uint16 |
| 3 | 2 | 4 | ZSW2 | Uint16 |
| 4, 5 | 4 | 6 | XIST_A | Int32 |

Details of ZSW1

| Bit | Name | Significance |
|-----|--------------------------|--|
| 0 | Ready To Switch On | Ready for switching ON (1) / Not Ready for Switch ON (0) |
| 1 | Ready To Operate | Ready to Operate (1) / Not Ready to Operate (0) |
| 2 | Operation Enabled | Operation Enabled (1) / Operation Disabled (0) |
| 3 | Fault Present | Fault Present (1) / No fault (0) |
| 4 | Coast Stop Not activated | No Abort (1) / Abort (0) |
| 5 | QuickStop Not activated | No Freeze (1) / Freeze (0) |
| 6 | Switch ON Inhibited | Switch On Inhibited (1) / Switch On Not Inhibited (0) |
| 7 | Warning Present | Warning Present (1) / No Warning Present (0) |
| 8 | Within Tolerance Range | Following Error within tolerance range (1) / Following Error out of tolerance range (0) |



| Bit | Name | Significance |
|-----|--------------------------------|--|
| 9 | Control Request | Target Position Reached (1) / Not at Target Position (0) |
| 10 | Target Reached | Control by PLC (1) / No control by PLC (0) |
| 11 | Homing Position Set | Home Position Set (1) / Home Position Not set (0) |
| 12 | Traversing Task Acknowledgment | Using positive edge 0->1 , it is acknowledged that a new traversing task or MDI set-point was accepted |
| 13 | Drive Stopped | Drive Stopped (1) / Drive Moving (0) |

Details of AKTSATZ

| Bit | Name | Significance |
|--------|--|---|
| 0 -9 | The evaluated Command Table Entry ID | This is active when telegram 9 is used for Command Table Command |
| 10 -14 | Reserved | |
| 15 | Status of sub-mode switch and currently active submode | 1 if MDI sub-mode active, The input values for the motion command will be taken from MDI_TARPOS, MDI_VELOCITY, MDI_ACC and MDI_DEC. |

XIST_A is position actual value.

2.1.5 Safety Standard telegram 30

This telegram is applicable only for the 2S drive - C1251-MI-XC-2S-XE.

Control of the Drive Safety Process inside the DO by the Safety Application Controller. The details of the safety telegram is described in Safety Manual for 2S drive.

2.1.5.1 Output Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|--------|----------------|----------------|----------------------------|--------------|
| Tlg 30 | 7 | - | Variables | RECORD |
| 1 | 2 | 0 | S_STW1 | Uint16 |
| 2 | 1 | 2 | Control Byte in safety PDU | Uint8 |
| 3 | 4 | 3 | CRC2 | Int32 |

Details of PROFIsafe Control Word - S_STW1

| Bit | Name | Significance |
|-----|--------------------|---|
| 0 | STO | No STO (1) / STO active (0) |
| 1 | SS1 | No SS1 (1) / SS1 active (0) |
| 2 | SS2 | No SS2 (1) / SS2 active (0) |
| 3 | SOS | No SOS (1) / SOS active (0) |
| 4 | SLS | No SLS (1) / SLS active (0) |
| 5 | Reserved | |
| 6 | Reserved | |
| 7 | Internal Event Ack | Safety Fault Buffer Fault Acknowledge (1>0) |
| 8 | Reserved | |



| Bit | Name | Significance |
|-------|------------------|--|
| 9 | Select SLS Bit 0 | Selection of the speed limit for SLS - selection bit 0 |
| 10 | Select SLS Bit 1 | Selection of the speed limit for SLS - selection bit 1 |
| 11-15 | Reserved | |

For more details refer to the Safety Manual 2S [1].

2.1.5.2 Input Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|--------|----------------|----------------|---------------------------|--------------|
| Tlg 30 | 7 | - | Variables | RECORD |
| 1 | 2 | 0 | S_ZSW1 | Uint16 |
| 2 | 1 | 2 | Status Byte in Safety PDU | Uint8 |
| 3 | 4 | 3 | CRC2 | Int32 |

Details of PROFIsafe Status Word - S_ZSW1

| Bit | Name | Significance |
|-------|--------------------|--|
| 0 | STO | STO active (1) / STO not active (0) |
| 1 | SS1 | SS1 active (1) / SS1 not active (0) |
| 2 | SS2 | SS2 active (1) / SS2 not active (0) |
| 3 | SOS | SOS active (1) / SOS not active (0) |
| 4 | SLS | SLS active (1) / SLS not active (0) |
| 5 | Reserved | |
| 6 | Reserved | |
| 7 | Internal Event ACK | Internal Event (1) / No Internal Event (0) |
| 8 | Reserved | |
| 9 | Select SLS Bit 0 | Selected SLS level - bit 0 |
| 10 | Select SLS Bit 1 | Selected SLS level - bit 1 |
| 11 | SOS Selected | SOS selected (1) / SOS deselected (0) |
| 12-15 | Reserved | |

For more details refer the Safety Manual 2S [1].

2.1.6 Siemens telegram 105, PZD-10/10

Siemens telegram 105 can only support IRT mode.

Output Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-----------|--------------|
| Tlg 105 | 20 | - | Variables | RECORD |
| 1 | 2 | 0 | STW1 | Uint16 |
| 2, 3 | 4 | 2 | NSOLL_B | Int32 |
| 4 | 2 | 6 | STW2 | Uint16 |



| Index | Size [Byte] | Byte Offset | Name | Data Type |
|-------|----------------|----------------|-----------|--------------|
| 5 | 2 | 8 | TORQUERED | Uint16 |
| 6 | 2 | 10 | G1_STW | Uint16 |
| 7, 8 | 4 | 12 | XERR | Int32 |
| 9, 10 | 4 | 16 | KPC | Int32 |

The telegram part TORQRED is mapped to the MC SW parameter with UPID 0x1399 "Motor relative Max Current Limit".

Input Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-----------|--------------|
| Tlg 105 | 20 | - | Variables | RECORD |
| 1 | 2 | 0 | ZSW1 | Uint16 |
| 2, 3 | 4 | 2 | NIST | Int32 |
| 4 | 2 | 6 | ZSW2 | Uint16 |
| 5 | 2 | 8 | MELDEW | Uint16 |
| 6 | 2 | 10 | G1_ZSW | Uint16 |
| 7, 8 | 4 | 12 | G1_XIST_1 | Int32 |
| 9, 10 | 4 | 16 | G1_XIST_2 | Int32 |

2.1.7 Siemens telegram TDB 200, PZD-3/1

The Siemens telegram 200 is used on Simotion PLC.

Output Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-----------------------|--------------|
| TIg TDB | 6 | - | Variables | RECORD |
| 1 | 2 | 0 | M_Add | Int16 |
| 2 | 2 | 2 | (B+) pos torque Limit | Uint16 |
| 3 | 2 | 4 | (B-) neg torque Limit | Uint16 |

The additional torque (M_Add) is calculated with UPID 0x119E (maximal Motor Current) and written to UPID 0x139C or 0x13B0 depending on which control parameter set is active. The additional torque is standardised by 4000h. The unit of M_Add is N (or Nm if rotary).

Value at UPID 0x139C/ 0x13B0 = M_Add * maximal Motor Current / 4000h

The torque limits B+ and B- are also calculated with UPID 0x119E (maximal Motor Current) and written to UPID 0x13FC/0x13FD or 0x13FE/0x13FF depending on which control parameter set is active. The unit of (B+) pos torque Limit and (B-) neg torque Limit are N (or Nm if rotary). Value at UPID 0x13FC/0x13FE = (B+) pos torque Limit * maximal Motor Current / 4000h Value at UPID 0x13FD0/x13FF = -(B-) neg torque Limit * maximal Motor Current / 4000h

Input Data



| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-----------|--------------|
| TIg TDB | 20 | - | Variables | RECORD |
| 1 | 2 | 0 | M_act | Int16 |

M_act is the standardised actual torque/ force.

For linear motor, M_act = Motor Actual Force (UPID 0x1BFF) / Motor Maximim Force (UPID 0x1BB0)* 0x4000. The unit is N.

For rotary motor, M_act = Motor Actual Torque (UPID 0x1BBF) / Motor Maximim Torque (UPID 0x1BBE) * 0x4000. The unit is Nm.

2.1.8 Real Time Config telegram 404, PZD-4/4

| Out | nut | Data |
|-----|-----|------|
| Οuι | pul | Data |

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|---------------------|--------------|
| Tlg 404 | 8 | - | Variables | RECORD |
| 1 | 2 | 0 | Config Control Word | Uint16 |
| 2 | 2 | 2 | Config Index/ | Uint16 |
| 4, 5 | 4 | 4 | Config Value | Word32 |

Input Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|--------------------|--------------|
| Tlg 404 | 8 | - | Variables | RECORD |
| 1 | 2 | 0 | Config Status Word | Uint16 |
| 2 | 2 | 2 | Config Index/ | Uint16 |
| 4, 5 | 4 | 4 | Config Value | Word32 |

Please refer to the document 0185-1074-E_1V7_MA_Drive-Configuration-Over-Fieldbus-SG5-SG7.pdf [3] from LinMot for more details.

2.1.9 LinMot telegram 516 PZD-16/13

Default-IO mapping with Config

Output Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|--------|----------------|----------------|----------------------------|--------------|
| Tlg 16 | 32 | - | Variables | RECORD |
| 1 | 2 | 0 | ControlWord | Word16 |
| 2 | 2 | 2 | Motion Command Header | Word16 |
| 3,4 | 4 | 4 | Motion Command parameter 1 | Word32 |
| 5,6 | 4 | 8 | Motion Command parameter 2 | Word32 |
| 7,8 | 4 | 12 | Motion Command parameter 3 | Word32 |
| 9,10 | 4 | 16 | Motion Command parameter 4 | Word32 |
| 11,12 | 4 | 20 | Motion Command parameter 5 | Word32 |
| 13 | 2 | 24 | Config Header | Word16 |



| Index | Size [Byte] | Byte Offset | Name | Data Type |
|-------|----------------|----------------|--------------|--------------|
| 14 | 2 | 26 | Config Index | Word16 |
| 15,16 | 4 | 28 | Config Value | Word32 |

For the meaning of the "Control Word" and the "Motion Command interface" refer to [2] , for the "Real Time Config Interface" refer to [3].

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|--------|----------------|----------------|-----------------------|--------------|
| Tlg 16 | 26 | - | Variables | RECORD |
| 1 | 2 | 0 | StateVar | Word16 |
| 2 | 2 | 2 | StatusWord | Word16 |
| 3 | 2 | 4 | WarnWord | Word16 |
| 4,5 | 4 | 6 | Demand Position | Word32 |
| 6,7 | 4 | 10 | Actual Position | Word32 |
| 8,9 | 4 | 14 | Demand Current | Word32 |
| 10 | 2 | 18 | Config Status Word | Word16 |
| 11 | 2 | 20 | Config Index Response | Word16 |
| 12,13 | 4 | 22 | Config Value Response | Word32 |

For the meaning of the variables 1-6 refer to [2], for the "Real Time Config Interface" refer to [3].

2.1.10 Supplement telegram 701, PZD-2/5

This telegram is applicable only for the 2S drive - C1251-MI-XC-2S-XE.

The predefined PROFIdrive supplementary safety telegrams 700 and 701 of Siemens are available for the transfer of the "Safety Info Channel" (SIC) and "Safety Control Channel" (SCC).

The Safety Info Channel enables Safety integrated functionality status information of the drive to be transmitted to higher level controller.

The Safety Control channel is used to sent the control information from the higher-level control to the safety functions of the drive.

(Reference to Function Manual Safety Integrated from Sinamics [4], section 5.8).

2.1.10.1 Output Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-----------|--------------|
| Tlg 701 | 4 | - | Variables | RECORD |
| 1 | 2 | 0 | S_STW1B | Uint16 |
| 2 | 2 | 2 | S_STW3B | Uint16 |

S_STW1B is not used for now.

Details of S_STW3B



| Bit | Name | Significance |
|-----|----------------------------------|---|
| 0 | Select Brake Test | Brake test selected (1) / Brake test deselected (0) |
| 1 | Start Brake Test | Start brake test requested (1) / Start Brake test not requested (0) |
| 2 | Brake Selection | Not used, default 0 |
| 3 | Select the direction of rotation | Is always 0 (Positive direction selected); The negative direction is selected in the SBT sequence |
| 4 | Select Test sequence | Not used, default 0 |
| 5 | Status of External brake | Not used, default 0 |
| 615 | Reserved | Not used, default 0 |

2.1.10.2 Input Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-------------|--------------|
| Tlg 701 | 10 | - | Variables | RECORD |
| 1 | 2 | 0 | S_ZSW1B | Uint16 |
| 2 | 2 | 2 | S_ZSW2B | Uint16 |
| 3,4 | 4 | 4 | S_V_LIMIT_B | Int32 |
| 5 | 2 | 8 | S_ZSW3B | Uint16 |

Details of S_ZSW1B

| Bit | Name | Significance |
|-------|--------------------|--|
| 0 | STO | STO active (1) / STO not active (0) |
| 1 | SS1 | SS1 active (1) / SS1 not active (0) |
| 2 | SS2 | SS2 active (1) / SS2 not active (0) |
| 3 | SOS | SOS active (1) / SOS not active (0) |
| 4 | SLS | SLS active (1) / SLS not active (0) |
| 5 | SOS selected | SOS selected (1) / SOS deselected (0) |
| 6 | SLS selected | SLS selected (1) / SLS deselected (0) |
| 7 | Internal Event ACK | Internal Event (1) / No Internal Event (0) |
| 8 | Reserved | |
| 9 | Active SLS Bit 0 | Selected SLS level - bit 0 |
| 10 | Active SLS Bit 1 | Selected SLS level - bit 1 |
| 11-15 | Reserved | |

Details of S_ZSW3B

| Bit | Name | Significance |
|-----|-------------------|---|
| 0 | Brake test | Brake test selected (1) / Brake test deselected (0) |
| 1 | Reserved | |
| 2 | Active brake | Not used, default 0 |
| 3 | Brake test active | Test active (1) / Test not active (0) |



| Bit | Name | Significance |
|-----|------------------------|---------------------------------------|
| 4 | Brake test result | Test successful (1) / Test error (0) |
| 5 | Brake test completed | Test run (1) / Test incomplete (0) |
| 6 | External brake request | Not used |
| 7 | Current load sign | Negative Sign (1) / Positive sign (0) |
| 8 | Reserved | |
| 9 | Reserved | |

S_V_LIMIT_B is the SLS speed limit with 32- bit resolution and sign bit. SLS speed limit can be obtained from UPID 1A2Ah.

The speed set point values are transmitted normalized, by setting it into in relation to the "Linear Reference Velocity" value at UPID 2061h.

S_V_LIMIT_B = UPID 1A2Ah / UPID 2061h * 0x40000000

2.1.11 Siemens telegram 750, PZD-3/1

Telegram 750 is the same as telegram 200. Telegram 750 is used with S7-1500 PLC. This telegram is used for the 2S drive - C1251-MI-XC-2S-XE.

Output Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-----------------------|--------------|
| TIg TDB | 6 | - | Variables | RECORD |
| 1 | 2 | 0 | M_Add | Int16 |
| 2 | 2 | 2 | (B+) pos torque Limit | Uint16 |
| 3 | 2 | 4 | (B-) neg torque Limit | Uint16 |

The additional torque (M_Add) is calculated with UPID 0x119E (maximal Motor Current) and written to UPID 0x139C or 0x13B0 depending on which control parameter set is active.

The additional torque is standardised by 4000h. The unit of M_Add is N (or Nm if rotary).

Value at UPID 0x139C/ 0x13B0 = M_Add * maximal Motor Current / 4000h

The torque limits B+ and B- are also calculated with UPID 0x119E (maximal Motor Current) and written to UPID 0x13FC/0x13FD or 0x13FE/0x13FF depending on which control parameter set is active. The unit of (B+) pos torque Limit and (B-) neg torque Limit are N (or Nm if rotary).

Value at UPID 0x13FC/0x13FE = (B+) pos torque Limit * maximal Motor Current / 4000h

Value at UPID 0x13FD0/x13FF = -(B-) neg torque Limit * maximal Motor Current / 4000h

Input Data

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-----------|--------------|
| TIg TDB | 20 | - | Variables | RECORD |
| 1 | 2 | 0 | M_act | Int16 |

M_act is the standardised actual torque/ force.

For linear motor, M_act = Motor Actual Force (UPID 0x1BFF) / Motor Maximim Force (UPID 0x1BB0)* 0x4000. The unit is N.

For rotary motor, M_act = Motor Actual Torque (UPID 0x1BBF) / Motor Maximim Torque (UPID 0x1BBE) * 0x4000. The unit is Nm.



2.2 Output PDO Modules

2.2.1 Par Channel 1 telegram 417, PZD 2/0

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|---------------------|--------------|
| Tlg 417 | 4 | - | Variables | RECORD |
| 1, 2 | 4 | 0 | Parameter Channel 1 | Word32 |

2.2.2 Par Channel 2 telegram 418, PZD 2/0

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|---------------------|--------------|
| Tlg 418 | 4 | - | Variables | RECORD |
| 1, 2 | 4 | 0 | Parameter Channel 2 | Word32 |

2.2.3 Par Channel 3 telegram 419, PZD 2/0

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|---------------------|--------------|
| Tlg 419 | 4 | - | Variables | RECORD |
| 1, 2 | 4 | 0 | Parameter Channel 3 | Word32 |

2.2.4 Par Channel 4 telegram 420, PZD 2/0

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|---------------------|--------------|
| Tlg 420 | 4 | - | Variables | RECORD |
| 1, 2 | 4 | 0 | Parameter Channel 4 | Word32 |

2.3 Input PDO Modules

2.3.1 Actual Position telegram 405, PZD 0/2

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-----------------|--------------|
| Tlg 405 | 4 | - | Variables | RECORD |
| 1, 2 | 4 | 0 | Actual Position | Int32 |

2.3.2 Demand Position telegram 406, PZD 0/2

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-----------------|--------------|
| Tlg 406 | 4 | - | Variables | RECORD |
| 1, 2 | 4 | 0 | Demand Position | Int32 |



2.3.3 WarnWord telegram 407, PZD 0/1

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-----------|--------------|
| Tlg 407 | 2 | - | Variables | RECORD |
| 1 | 2 | 0 | WarnWord | Uint16 |

2.3.4 ErrorCode telegram 408, PZD 0/1

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-----------|--------------|
| Tlg 408 | 2 | - | Variables | RECORD |
| 1 | 2 | 0 | ErrorCode | Uint16 |

2.3.5 Demand Current 32b telegram 409, PZD 0/2

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|--------------------|--------------|
| Tlg 409 | 4 | - | Variables | RECORD |
| 1, 2 | 4 | 0 | Demand Current 32b | Int32 |

2.3.6 Mon Channel 1 telegram 410, PZD 0/2

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|---------------|--------------|
| Tlg 410 | 4 | - | Variables | RECORD |
| 1, 2 | 4 | 0 | Mon Channel 1 | Word32 |

2.3.7 Mon Channel 2 telegram 411, PZD 0/2

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|---------------|--------------|
| Tlg 411 | 4 | - | Variables | RECORD |
| 1, 2 | 4 | 0 | Mon Channel 2 | Word32 |

2.3.8 Mon Channel 3 telegram 412, PZD 0/2

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|---------------|--------------|
| Tlg 412 | 4 | - | Variables | RECORD |
| 1, 2 | 4 | 0 | Mon Channel 3 | Word32 |



2.3.9 Mon Channel 4 telegram 413, PZD 0/2

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|---------------|--------------|
| Tlg 413 | 4 | - | Variables | RECORD |
| 1, 2 | 4 | 0 | Mon Channel 4 | Word32 |

2.3.10 Demand Current 16b telegram 414, PZD 0/1

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|--------------------|--------------|
| Tlg 414 | 2 | - | Variables | RECORD |
| 1 | 2 | 0 | Demand Current 16b | Int16 |

2.3.11 Actual Velocity telegram 415, PZD 0/2

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-----------------|--------------|
| Tlg 415 | 4 | - | Variables | RECORD |
| 1, 2 | 4 | 0 | Actual Velocity | Int32 |

2.3.12 Demand Velocity telegram 416, PZD 0/2

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-----------------|--------------|
| Tlg 416 | 4 | - | Variables | RECORD |
| 1, 2 | 4 | 0 | Actual Velocity | Int32 |

2.3.13 Supplement telegram 700, PZD-0/3

| Index | Size [Byte] | Byte Offset | Name | Data Type |
|---------|----------------|----------------|-------------|--------------|
| Tlg 700 | 6 | - | Variables | RECORD |
| 1 | 2 | 0 | S_ZSW1B | Uint16 |
| 2,3 | 4 | 3 | S_V_LIMIT_B | Int32 |

Please refer to telegram 701 for the details.



3 Asynchronous Configuration Protocol

For configuration purposes (Parameter Handling) the standard PROFINET Protocol is used.

3.1 PROFIdrive Profile Area

| PNU | Name | Access |
|-------|---|--------|
| 922 | Telegram selection | r |
| 924 | Status word bit Pulses Enabled | r |
| 925 | Number of Controller Sign-Of-Life failures which may be tolerated | r |
| 928 | Control priority DO IO Data | r |
| 930 | Operating mode | r |
| 944 | Fault message counter | r |
| 947 | Fault number | r |
| 950 | Scaling of the fault buffer | r |
| 951 | Fault number list with text | r |
| 952 | Fault situation counter | r |
| 953 | Warning parameters | r |
| 964 | Drive Unit identification | r |
| 965 | Profile identification number | r |
| 974 | Base Mode Parameter Access service identification | r |
| 975 | DO identification | r |
| 980 | Number list of defined parameter | r |
| | | |
| 60000 | Velocity reference value(not yet implemented) | r |

LinMot PROFIdrive Object Dictionary.

3.2 Manufacturer specific Profile Area

The RAM and ROM values of the drive parameters can be accessed by their parameter number (UPID) added with an offset of 0x2000 (UPID+0x2000).

3.3 Supported Services

The table below shows the services (request IDs) which are supported for parameter acces.

| Request ID | Description |
|------------|--|
| 0x01 | Request Parameter, reads the RAM value of the parameter |
| 0x02 | Change parameter, changes the RAM value of the parameter |
| 0x41 | Read ROM value of parameter, only valid with value attribute |



Request IDDescription0x42Write ROM value of parameter, only valid with the value attribute



4 PROFIdrive Parameters

4.1 Parameters



Attention: The PROFIdrive Interface has an additional parameter tree branch (Parameters \rightarrow Profinet), which can be configured with the distributed LinMot-Talk software.

With these parameters, the PROFIdrive interface can be enabled or disabled. The LinMot-Talk software can be downloaded from <u>http://www.linmot.com</u> under the section download, software & manuals.

4.1.1 PROFdrive/Dis-/Enable

With the Dis-/Enable parameter the LinMot Servo Drive can be run without the Ethernet PROFIdrive Interface going online. So in a first step the system can be configured and run without any bus connection.

| PROFIdrive/Dis-/ | Enable |
|------------------|--|
| Disable | Servo Drive runs without PROFINET. |
| Enable | Servo Drive runs with PROFINET connection. |

IMPORTANT: If the PROFIdrive Interface is disabled, the integrated Netx-ASIC rests in reset state! No messages will be sent to other devices connected to the PROFINET-Network via the servo drive.

4.1.2 PROFdrive/Byte Order

With the Byte Order parameter the used Byte order of the transmitted data can be defined.

| PROFIdrive/Byte | Order |
|-----------------|---|
| reversed | Byte order is reversed. For S7 PLC_s select reversed. |
| not reversed | Byte order is not reversed. |

4.1.3 PROFdrive/Word Order

With the Word Order parameter the used Word order of the transmitted data can be defined.

| PROFIdrive/Wor | ROFIdrive/Word Order | | |
|----------------|-----------------------------|--|--|
| Reversed | Word order is reversed. | | |
| not reversed | Word order is not reversed. | | |

4.1.4 PROFdrive/Monitoring Channels

With these parameters the parameters are defined which are copied to the corresponding monitoring channel.

PROFIdrive/Monitoring Channels

| Channel 1 UPID | Source UPID for monitoring channel 1 |
|----------------|--------------------------------------|
| Channel 2 UPID | Source UPID for monitoring channel 2 |
| Channel 3 UPID | Source UPID for monitoring channel 3 |



PROFIdrive/Monitoring Channels

Channel 4 UPID Source UPID for monitoring channel 4

4.1.5 PROFIdrive/Parameter Channels

With these parameters the parameters are defined which are copied to the corresponding parameter channel.

PROFIdrive/Monitoring Channels

| Channel 1 UPID | Destination UPID for parameter channel 1 |
|----------------|--|
| Channel 2 UPID | Destination UPID for parameter channel 2 |
| Channel 3 UPID | Destination UPID for parameter channel 3 |
| Channel 4 UPID | Destination UPID for parameter channel 4 |

4.1.6 PROFdrive/Axis Configuration/ Axis Type

With this parameter the Axis type is defined.



Attention: It has to be the same as configured on the master side!

| PROFIdrive/Byte | e Order |
|-----------------|-----------------------|
| Linear | The axis is linear. |
| Rotative | The axis is rotative. |

4.1.7 PROFdrive/Axis Configuration/ Linear/Rotative Reference Velocity

With PROFIdrive telegrams the set-point values are transmitted normalized. For this reason they have to be set into relation to a reference value. The Parameter "Linear Reference Velocity" is the reference value for the NSOLL_B and NIST_B values used in telegrams 3, 5 and 105 if the axis is of type linear. If the axis is of type rotative the reference value is defined with the parameter "Rotative Reference Velocity".

4.1.8 PROFdrive/Axis Configuration/ MDI Configuration

With PROFIdrive telegrams the set-point values are transmitted normalized. In the MDI mode the position and velocity is mapped directly without the use of a reference value for scaling.

The transmitted position has a resolution of [0.1um]. The transmitted velocity has a resolution of [1um/s].

Only for the acceleration and deceleration the reference parameter "MDI Acceleration Scale" is used for scaling the acceleration and deceleration of the MC-SW motion command. With the default value of 1'000 the transmitted acceleration values have a resolution of [0.01m/s^3]. With a value of 100'000 they will have a resolution of [1m/s^3].



4.1.9 PROFIdrive/Axis Configuration/G1 Configuration

This gives the possibility to set the reference mark to get the position feedback information taken from the sensors.

| Reference Mark1 Source | | | | |
|------------------------|--|--|--|--|
| Home Switch | Reference Mark 1 trigger Source is the configured home switch signal | | | |
| Z on X13 | Reference Mark 1 trigger Source is Z signal on X13 | | | |
| Range Indicator 1 | Reference Mark 1 trigger Source is on status word bit Range Indicator 1 | | | |
| NOT Range Indicator 1 | Reference Mark 1 trigger Source is on NOT of status word bit Range Indicator 1 | | | |

4.1.10 PROFIdrive/Axis Configuration/Std Tlg 5/105 Anti Windup

Std telegram 5 /105 anti windup gain, higher values reduce the position error in the drive with blocked slider. This parameter has only an influence if KPC is zero. The PosDiff=(StreamedVel*StreamingPeriod*fa)/AntiWindupGain).

4.1.11 PROFIdrive/Axis Configuration/Monitoring

Life Sign Tolerance parameter of Axis.

5 Connecting to the **PROFINET** Network

5.1 Pin Assignment of the Connectors X17-X18

The PROFINET connector is a standard RJ-45 female connector with a pin assignment as defined by EIA/TIA T568B:

| X17 - X18 | RealTime Ethernet Connector | | | | | |
|-----------|---|---|---|--|--|--|
| | Pin | Wire color code | Assignment 100 BASE-TX | | | |
| | 1 2 3 4 5 6 7 8 case | WHT/ORG ORG WHT/GRN BLU WHT/BLU GRN WHT/BRN BRN - | Rx+ Rx- Tx+ - Tx- - - | | | |
| RJ-45 | Use standard patch cables cable is usually referred to | s (twisted pair, S/UTP, AWC as a "Cat5e-Cable". | 626) for wiring. This type of | | | |



6 Example Setup

This is an example of configuring the project with TIA for S7-1500 and C1251 drive.

6.1 Setup in S7-1500 System

In the following steps the integration of the *LinMot Safety PROFIdrive* with the LinMot linear motor into the S7-1500 is described. In this example, the PLC used is Siemens S7-1500 with CPU 1517F-3 PN/DP. The TIA portal V16.0 software with Step 7 safety is used for the development. The lower version of the software (for eg. TIA Portal 15.0 and TIA Portal 15.1) can also be used.

All the programs and the safety function block used in association with C1251-2S are also compatible with Siemens S120 safety drive.

| Component | Quantity | Article Number | Note |
|-----------------------|----------|---------------------|---------------|
| CPU 1517F-3 PN/DP | 1 | 6ES7 517-3FP00-0AB0 | Firmware V2.8 |
| C1251-MI-XC-2S-0E-C00 | 1 | 0150-4185 | Firmware V0.1 |
| PS01-37x120F-HP-C-2S | 1 | 0150-21251 | |

6.1.1 Assumed preconditions

The S7-1500 is in factory reset condition. The programming PC is connected over P1. The LinMot drive is completely wired. The PROFINET is wired from the S7-1500 PN/IE to the LinMot X17 RT ETH.

It is supposed, that the motor and the drive have PnP functionality, means the motor is basically setup automatically. Otherwise the motor has to be setup manually with the Motor-Wizard of LinMot-Talk.



Attention: To achieve a good response of the master set-point, it is important to well tune the position controller in the LinMot drive!

6.1.2 Adding Safety Drive to System

Please refer to the example setup at the end for more details about

- 1) How to configure a new TIA project
- 2) Details of adding a LinMot PROFIdrive drive as TO to the system
- 3) Details of configuring the safety telegram
- For the details about the safety word and the meaning of the safety status please refer the Safety Manual for LinMot 2S products.
- Please note that the vendor ID "CD" in hex is appended with the safety address programmed with S11 and S12 switch (in hex), while configuring the safety address in TIA portal. Please check the section "Configure communication module to the LinMot PROFIdrive drive" for details.
- In this manual for PROFIdrive 2S, the telegram 30 for safety and telegram 700/701 for the brake test are introduced.

6.2 Configure the Project- TIA Configuration

6.2.1 Create a new project

Start the TIA Portal and create a new project BSP_10.





Create new project

6.2.2 Configure a Device



Configure the device

6.2.3 Add new Device



Select the PLC device



6.2.4 Select PLC Controller



Select the PLC device article number

6.2.5 Configure PROFINET

Add the PROFINET network PN/IE_1 here and choose the IP-address and subnet netmask.



Configure the Profinet, set the PLC network address

Define the S7-1500 as Sync master in the real time settings.

| Devices | 100_10 F FRC_1 (000 1517F-3 PADP) | | | | | | | Contraction of the second s |
|---|--|---|--------|------|-------------------|---------------------|---|--|
| Devices | | | | | X | 1 | Dig i i | 0.0 |
| | | | | - C | Topology view | A restricts wew | 01 nance new | options |
| 2 2 | # PLC_1 (0PU 1517P-3 PN/0P) = 🖬 * 🗄 | Device overview | | | | | | - |
| | | A Module | Reck | Slet | I address Q addre | no Type | Article no. | ✓ Catalog |
| 0 855_10 | and a second | - | 0 | 100 | | | • | dearcho H4 H |
| Add new device | | | 0 | 0 | | | | Riter Lolls |
| Devices & networks | | * RC1 | 0 | 1 | | CPU 15177-3 PNOP | 6857 517-3PP00-0 | A Date of the local date of th |
| · MC TOUISINGME | 1 2 3 | PROFINET interface_1 | 0 | 1.01 | | PROFINICT interface | | - Carne |
| B Calles & discussion | Contract of Contra | PROFINETINGER_2 | 0 | 132 | | PROFINET interface | | Lines. |
| Contra a degrecitors | | D^e interface_1 | 0 | 133 | | OP interface | | 1 Martin |
| - Cabasa units | | | 0 | 2 | | | | + Can |
| have been blacks | | 1 | 0 | 3 | | | | + (ann |
| Trabashara a biotes | | | 0 | 4 | | | | |
| Internet age of the | | | 0 | 5 | | | | 1 100 |
| h Chan | | | 0 | 6 | | | | 1 10 |
| Part and a second | | | 0 | 7 | | | | • [• wind |
| The set of | | | 0 | 0 | | | | I Communications m |
| Online backups | | | 0 | 9 | | | | • Technology modules |
| The second second | 7 m | | 0 | 10 | | | | I SIMUTE Drive Controlle |
| A DRC IIA communication | | | | | | | | • Interface modules |
| Desire considera | PLC_1 [CPU 1517F-3 PN/09] | | | _ | 3 Properties | Sinto 🔒 Sibiag | nostics | - |
| 29 Program into | General 10 tags System constant | ts Texts | | | | | | |
| N A rupepition & alar | Gazani | | | | | | | 1 |
| D R Calarm text lint: | feaning | Synchronization | | | | | | |
| I contractular | Othernet addresses | | | | | | | |
| | Transiday successivation | Constanting Constant | male I | | | 100 | | |
| | Constant parties | systematic system | | | | | or an | |
| Details view | * Advantation | Synchronization role: Synchro | LCTR7 | | | | | |
| Module | interdere extérner | RT class: RURT | | | | | | |
| | Media redundancy | | | | | | | |
| | Real time settings | | | | | | | |
| Norne | 10 communication | | | | | | | |
| Device configuration | Sunchronization | | | | | | | |
| Online & diagnostics | Real time options | | | | | | | |
| Safety Administration | Part Dol P1 81 | | | | | | | |
| Setwere units | Part Doi P2 81 | | | | | | | |
| mogram ceocks | Web server access | | | | | | | |
| reconology sejects | PROFINET interface [K2] | | | | | | | |
| External source nies | DP interface (x3) | | | | | | | |
| err redi | Sterlag | | | | | | | |
| FLC Data type: | Side | | | | | | | |
| reach and force socies | Communication load | | | | | | | |
| Unline backups | System and clock memory | | | | | | | |
| INCOS | SMRTIC Memory Card | | | | | | | |
| OPC UA communication | Sofren discession | | | | | | | |
| | | | | | | | | |
| Device proxydata | General | | | | | | | |
| Device proxydata Program info | General PI Calaraya | | | | | | | |

Configuring the PLC as Sync-master



6.2.6 Install LinMot GSDML device description file

If not already installed, install the newest device description file of the device you want to use. The device description files are distributed together with the firmware under path:

LinMot\LinMot-Talk 6.10 - Build 2021xxxx\Firmware\Interfaces\ProfiNet\GSDML_PD

| 8 | roject Edit View Incert Online | Options Tools Window Help | Totally | Integrated Automation |
|---|---|---|---|---|
| | 💁 🎦 🔜 Save project 🛛 📓 🐰 🦄 | Y Setting: | ee 🖉 Goothine 🌆 🖪 🐨 🛪 🖃 🛄 (Search in projects) 🙀 | PORTAL |
| | | Support packages | _##X | Hardware cata 🖉 🛙 🕨 |
| | Devices | Manage general station description files (CSD) Start Automation License Manager Show reference tast | Constant and the second s | Options E |
| | B2F_10 B2F_10 | C) data lawes | | Careful and an |
| | OPC UA communication | PLC_1 [CPU 15177-3 PN/DP] | Reperties Valiation Diagnostics | |
| | Program info | General ID tags System const | tants Texts | 0120 |

If not installed altready, install the LinMot GSDML file

Choose the source path and select the GSDML file. Please note that the article number of the drive "31005" is in the xml file name. Click on Install.

| Manage general station description files | | | × |
|---|------------------|----------------|-----------------|
| Installed GSDs GSDs in the project | | | |
| Source path: C:\LinMot_PD_2S\0187-0001_SW_6V10_Li | nMot-Talk_6.10_E | Build_20210521 | Firmware I |
| Content of imported path | | | |
| File | Version | Language | Status |
| GSDML-V2.33-NTI-2664-PN_PD-V1.0-20181127.xml | V2.33 | English | Not yet insta 🔺 |
| GSDML-V2.33-NTI-2812-PN_PD-V1.0-20181204.xml | V2.33 | English | Not yet insta |
| GSDML-V2.33-NTI-2854-PN_PD-V1.0-20181127.xml | V2.33 | English | Not yet insta |
| GSDML-V2.33-NTI-31005-PN_PD-V1.0-20201202.xml | V2.33 | English | Already insta |
| GSDML-V2.33-NTI-3795-PN_PD-V1.0-20190527.xml | V2.33 | English | Already insta |
| GSDML-V2.33-NTI-3795-PN_PD-V1.0-20190603.xml | V2.33 | English | Already insta 🗮 |
| | | | |
| | | | |
| | | | |
| | | | ~ |
| | | | > |
| | | | |
| | De | lete Inst | all Cancel |

After installation there will be a notification. Click on "Close". The hardware catalog will be updated

| Manage general station description files | × |
|--|-------------|
| | |
| Installation result | |
| ! Message | |
| Installation was completed successfully. | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| Save log Install additional | files Close |

GSDML file installation completed



6.2.7 Configure LinMot PROFIdrive to PROFINET network

Now change to the network view and add the desired LinMot PROFIdrive device from the hardware catalogue.



Select the LinMot drive and drag and drop it to the PN/IE1 network.

| BSP_10 → Devices & networks | | | | | | | - | ∎ ∎ × |
|-----------------------------|------------|---------|------|-------|------------------------------------|------------|-------------------|--------|
| | | | | 🚽 Top | ology view 🔥 | Network v | iew 📑 Device | view |
| Network | on 💌 🖾 📲 🖥 | 1 🔢 Q ± | | Ne | twork overview | Connec | tions | < > |
| | | | ^ | | Device | | Туре | A |
| | | | - | | \$71500/ET200M | Pstation_1 | \$71500/ET200MP s | tation |
| DLC 1 | | | | | PLC_1 | | CPU 1517F-3 PN/DP | |
| CPU 1517F-3 PN | | | - 11 | | GSD device_1 | | GSD device | |
| | | | | | C1251-PDS | | C1251xPDS 2S V0.1 | |
| | | | | | | | | |
| | | | | | | | | |
| PN/IE_1 | | | | | | | | |
| | | | _ | - | | | | |
| | | | | • | | | | |
| | | | | | | | | |
| | | | _ | | | | | |
| C1251-PD5 | | | - 11 | | | | | |
| C1251xPDS 25 | | | | | | | | |
| PLC_1 | | | - 11 | | | | | |
| | | | - 11 | | | | | |
| | | | | | | | | |
| | (a) (| - | ~ | | | | | |
| (K) II | > 100% | - | . 🙂 | < | | | | > |

Connect to the PN/IE network

6.2.7.1 Assign LinMot drive to the PLC

Assign the LinMot drive to the PLC master- PLC_1.



| SP_10 → Devices & ne | tworks | |
|----------------------------------|---|--|
| Network | ns [HM connection 🔽 🗮 🐮 🗐 🔛 🛄 🍳 ± | |
| PLC_1 СРU 1517F-3 PN | | |
| C1251-PI C1251xP Not assig | DS 25 [1251-FD 25 25 PLC_1.PROFINET interface_1 | |
| | PLC_1.PROFINET interface_2 | |

Assign the drive to PLC_1

Select PLC_1 as IO Controller to the drive.

| BSP_10 → Devices & networks | |
|------------------------------------|---|
| | |
| Network Connections HMI conn | nection 💌 🗮 🖫 🔛 🛄 🔍 ± 🔤 |
| | 4 IO system: PLC_1.PROFINET IO-System (100) |
| PLC_1 CPU 1517F-3 PN | PLC_1.PROFINET IO-Syste |
| | |
| C1251-PDS C1251xPDS 25 PLC_1 | 25 25 |
| | ~ |
| < 111 | > 100% 💌 🕂 |

Assign PLC as IO controler to drive

Double click on the drive and go to the "Device view". Assign the name to the drive if required by clicking on the existing name and editing it.

Edit the IP address by choosing " Properties > Profinet interface [X1] > Ethernet addresses" under IP protocol enter the required IP address and choose the Subnet mask.

| < | | > 100% |
|---|--|--------|
| C1251-PDS [C1251xPDS 2 | 25 V0.1] | |
| General IO tags | System constants Texts | |
| • General | DROEINET Interface [V1] | |
| Catalog information | | |
| PROFINET interface [X1] | General | |
| General | | |
| Ethernet addresses | | |
| Advanced options | Name: MHO | |
| Identification & Maintenance | Comment: | |
| Hardware interrupts | | |
| | | |
| | | |
| | | |
| | Ethernet addresses | |
| | Interface networked with | |
| | | |
| | Subnet: PNIE_1 | |
| | Add new subnet | |
| | | |
| | IP protocol | |
| | | |
| | IP address: 10 . 3 . 7 . 2 | |
| | Subnet mask: 255 . 255 . 0 | |
| | Synchronize router settings with IO controller | |
| | Use router | |
| | | |
| | | |
| | PROFINET | |
| | | |
| | Generate PROFINET device name automatically | |
| | | |
| | Assian the IP address | |
| | Assign the IF dutiess | |



6.2.7.1.1 Define the PROFINET Topology

Change to Topology view, and wire the PROFINET connection from PLC- X1 P1 port to the C1251 port.

| Project tree II | ■ BSP_10 	 Devices & networks | | | | | |
|---------------------------|---|-------------------------|---|----------|-----------------|---------------|
| Devices | | | Topology view | Networl | k view 🛛 🚺 D | evice view |
| 34 | ™ ⊞ ≡ ∷ Q ± | 4 | Topology overview Topolog | y compar | ison | |
| • [] 85P_10 | ^ | | W Device / part | Slot | Fartner station | Partner devic |
| - ADD THEN DEVICE | PLC 1 | | \$71500/ET200MP station 1 | | | |
| Devices & Retworks | CPU 1517F-3 PN | | • PLC 1 | 1 | | |
| PLC_TOOTST/PSHC | | | PROFINET interface 1 | 1.81 | | |
| U Color & discontin | | | Port_1 | 1 81 21 | | |
| Contra a disglostics | = | | Port_2 | 1 X1 P2 | GSD device_1 | C1251-PD5 |
| b follower units | | 1 | PROFINET interface_2 | 1 X2 | | |
| Drogram blockr | | 2 | Port_1 | 1 X2 P1 | | |
| a Tarboology objects | | • | GSD device_1 | | | |
| Set External source files | | | C1251-FDS | 0 | | |
| PLC mas | | | PN40 | 0 X1 | | |
| PLC data types | C1251-PD5 | | Port 1 - Ri45 | 0 X1 P1 | \$71500/ET200 | PLC_1 |
| Watch and force tables | C1251xF05 25 | | Port 2 - RH45 | 0 X1 P2 | | |
| Coline beckups | PLC_1 | | | | | |
| • Traces | | | | | | |
| OPC UA communication | | | | | | |
| Device providate | and and the second s | × 1 | | | | |
| | C II 2 100% | · · · · · · · · · · · · | < | | | |

Assign the drive to PLC in topology view

6.2.8 Configure communication module to the LinMot PROFIdrive

Double click in the Topology view the LinMot drive, then automatically the device view of the LinMot drive opens. In the section Module, select DO SERVO. Double click on the item.



Under the section Submodules, double click on PROFIsafe telegram 30. Safety telegram 30 will be added to subslot 2. The input and the output addresses are automatically assigned.

| | | | | | | | | | _ # # × | Hardware catalog |
|-------------------------------|------|------|----------|-----------|---------------------|-------------|--------------|--------------|-------------|--------------------------------------|
| | | | | | | 2 T | opology view | Network view | Device view | Options |
| Sevice overview | | | | | | | | | | in Carlos |
| Y _ Module | Rock | Slot | Taddress | Q address | Dibe | Article no. | Firmmore | Comment | | • catalog |
| C1251-PD5 | 0 | 0 | | | C1251#0525V0.1 | 0150-31005 | V0.1 | | | Searcho |
| MHD | 0 | 0 X1 | | | C1251405 | | | | | Viter Profile: oillo |
| DO SERVO_1 | 0 | 1 | | | DO SERVO | | | | | Dill Head module |
| Module Access Point | 0 | 11 | | | Module Access Point | | | | | C1251x20525V01 |
| PROPIsale telegr 30 | 0 | 12 | 0_6 | 06 | PROFIsate telegr 30 | | | | | - Module |
| | 0 | 13 | | | | | | | | DO SERVO |
| | 0 | 14 | | | | | | | | DO without PZD |
| | 0 | 15 | | | | | | | | Submodules |
| | 0 | 16 | | | | | | | | Actual Position |
| | 0 | 17 | | | | | | | | Actual Velocity |
| | 0 | 18 | | | | | | | | Demand Current 16h |
| | 0 | 19 | | | | | | | | Demand Current 32b |
| | 0 | 110 | | | | | | | | Demend Position |
| | 0 | 1 11 | | | | | | | | Demand Velocity |
| | 0 | 1.12 | | | | | | | | ensty submodule |
| | 0 | 2 | | | | | | | | ErrorCode |
| | 0 | 3 | | | | | | | | Man Channel 1 |
| | ٥ | 4 | | | | | | | | Mon Channel 2 |
| | 0 | 5 | | | | | | | | Mon Channel 3 |
| | 0 | 6 | | | | | | | | Man Chargel 4 |
| | 0 | 7 | | | | | | | | Par Charmel 1 |
| | 0 | 8 | | | | | | | | Par Charpel 7 |
| | | | | | | | | | | Par Charnel 3 |
| | | | | | | | | | | Par Channel 4 |
| | | | | | | | | | | PETER a fer te lever 10 |
| | | | | | | | | | | CIENCING INVIDUATION 1/16 (27)-10/10 |

Double click the PROFIsafe telegram and open the *PROFIsafe* tab under *General*. Choose the correct address under F_Dest_Add. To know the right address check the C1251 device drive safe address S12 and S11. The address in S12 and S11 are in hex format. This will come as the lower byte. The higher byte is the vendor id which is *CD* in hex.

Example: If S11 = 2, S12 = 0, the F_Dest_Addr should be 52512 in decimal (CD20h)

| S11 / S12 | Safe Address | |
|-------------------------------|--------------|-----------------------------|
| 2 ³⁴⁵ ⊕ 3008 | S11 | High nibble of safe address |
| 0,345 e ⊕ 0,00 € | S12 | Low nibble of safe address |



| PROFiliate | |
|----------------------------|-------------------------------------|
| | |
| f_50; | [542 P |
| F_CRC_Length: | 46m 00. 1 |
| P_Per_Venior: | |
| P_Source_AM | |
| F_DHIT_ADE: | 180 |
| F_Fer_CRC_NthoutAddresses: | 11437 |
| C.Passivation: | PriceWedule - |
| | |
| | Hanval assignment of Frankoing time |
| F_VD_Sine: | 150 m . |
| f_ht_OC | 4061 |
| | PID DE manual number accignment |
| Fill OBmumber: | 3003 |
| | Comment and the local |

Select the standard telegram 105 under the section Submodules in the Catalog. Double click on Siemens telegram 105. This standard telegram will be added to subslot 3



Go to the tab Properties > PROFINET Interface [X1] > Advanced options > Isochronous mode. Select the "Isochronous mode" check box.

6.2.8.1 Add Safety Telegram 30

The LinMot drive C1251 supports the following safety functions - STO, SOS, SS1, SS2, SLS0, SLS1, SLS2, SLS3. For details of the functionality, refer to the User Safety Manual.

The functional block for safety functions are added to PLC_1. This block is compatible (or reusable) with the functional block used for Siemens safety drive S120.

Double click on "PLC_1 > Program blocks > Main_Safety_RTG1". Add each functional blocks as required.

| ISP_ | _10 ▶ | PLC_1 | CPL | J 151 | 7F-3 F | N/DP] | Prog | jram b | locks | ▶ Mai | n_Safe | ty_RT(| G1 (FB | 1] | | | | | | | |
|------|-------|------------------------|--------------|-------|----------------------|---------------|--------------------------|--------|-------|-------|--------|--------|--------|----------|-------|----------------|---|---|--|--|------|
| 8 | KĂ ≶ | 6 | L. | = 🗖 | = (| 9 18 ± | .@± | 8 ± [| = 😥 | ¢° 6 | o d≊ € | • • | ⊊ I | 1 | હા તા | e ⁿ | * | 9 | | | 8 lo |
| 8 | >=1 | 1 | - | -01 | ч . | [-] | | | | | | | | | | | | | | | |
| | *51 | SM1 LT_Swit | 9.0 ch" — | "SQ_ | 4Q0.5 STW1_S | LT" | | | | | | | | | | | | | | | |
| | Netwo | ork 6: | SOS | | | | | | | | | | | | | | | | | | |
| | Comme | ent | | | | | | | | | | | | | | | | | | | |
| | *so | %M1 DS_Swit | 9.5 ch" — | - | - | - | | | | | | | | | | | | | | | |
| | Netwo | ork 7: | \$\$1 | | | | | | | | | | | | | | | | | | |
| | Commi | ent | | | | | | | | | | | | | | | | | | | |
| 0 | *\$\$ | %M1 i1_Swit | 9.3 ch] | "SQ_S | 4Q0.1 TW1_S: | .1" | | | | | | | | | | | | | | | |
| | Netw | ork 8: | \$\$2 | | | | | | | | | | | | | | | | | | |
| | Comme | ent | 2.02 | | | | | | | | | | | | | | | | | | |
| | *55 | %M1 \$2_Swit | 9.4 ch" — | sq_s | 100.2 TW1_S: = | 52* | | | | | | | | | | | | | | | |

Assign safety function in function block for safety

Add the required tags in PLC tags by clicking on "PLC_1 > PLC tags"



As the CPU is F-CPU (safety mode activated), there will be Safety Administration tab under the PLC_1. Double click on "Safety Administration". Choose the "Main_Safety_RTG1" under "Main safety block".



Safety Administartion configuration

6.2.8.2 Safety Parameters in LinMot Talk

The safety parameters are programmed in the LinMot talk. They are given in yellow color under Parameters.



For the proper operation of the safe bus it is required to assign the parameter "Safety > General Settings > Safe Fieldbus Activation" to PROFIsafe.

Please check the Safety Manual for the program and validation steps of the safety parameters.

6.3 Creating Technology Objects

To configure the Positioning axis, go to PLC_1 > "Technology objects" folder in the project tree. Double click on "Add new object".





Open new technology object

When the dialogue box opens, select the "TO_PositioningAxis". Also give the name of the technology object. Click on OK.



6.3.1 Configure axis

Open the "Configuration" window. Choose axis type as linear if linear motor is used. The basic parameters could be left as suggested.





Basic parameter in TO



Open "Hardware interface > Drive". In the drive list select the drive C1251-PDS under Profinet IO-System and select the entry DO SERVO_1 and click on the tick mark.



Drive configuration in TO

After assigning the process image of the drive, all the below fields will be automatically filled.



Drive configuration in TO

In the *Data exchange with drive* session, choose the reference speed as 12000.0 1/min and maximum speed as 24000.0 1/min.



Data exchange with the drive configuration



In the Data exchange with encoder session, choose the measuring system as linear.

The resolution should be 100nm under "Distance between increments" because the LinMot drive works with a fix resolution of 100nm.

Set the "Bits in Gx_XIST1" in fine resolution to 0.



6.4 Compile and Download PLC_1 configuration

Compilation of the project is done by clicking the $\begin{tabular}{ll} \hline \hline \hline \hline \hline \end{bmatrix}$ Toolbox button.

For downloading the project first connect to the target system, by clicking the button III.



After searching the target device using "Start search", select the target system, then click Load

If there is an existing program running, you might have to stop the modules by selecting "stop all" in the "Load preview". After then click on "Load".

Finally click on Finish in the load results.

6.5 Move the Axis with the Commissioning panel

The safety mode activation can be confirmed from the "Safety Administration" window.

| General | | General | | | | | |
|----------------------------|---|-----------------------------|---------|-----------|----------------------|----------------------|---------------------|
| F-runtime group | | | | | | | |
| F-runtime group 1 [RTG1 | 1 | Safety mode status | | | | | |
| F-blocks | | | | | | Disa | ble safety mode |
| F-compliant PLC data types | | | | | 2 A A | | |
| Access protection | 0 | Current mode: | Safety | mode is | activated. | | |
| Web server F-admins | | | | | | | |
| Settings | | Safety program status | | | | | |
| Flexible F-Link | | Sarety program status | | | | | |
| | | Offline program: | The off | line safe | ty program is consis | tent, but no passwoi | rd has been assigne |
| | | Online program: | The on | line safe | ty program is consis | tent, but no passwo | rd has been assigne |
| | | F-signatures | | | | | |
| | | Description | | Status | Offline signature | Online signature | Version comparisor |
| | | Collective F-signature | | | A960C08C | A960C08C | • |
| | | Software F-signature | | | F5D6F956 | | |
| | | Hardware F-signature | | | B389C736 | | |
| | H | E-communication address sig | natura | | 0000 | | |

Safety administaration window

After the program is loaded the drive is in "Switch On Disabled" state. Safety panel has "Safety Fn State STO" and "Safety Fn State Int Event" active.

| Status | | | Mo | nitoring | | | |
|---|--|---|--|--|--------------------------------------|---|-----------------------------------|
| 0. Denotion Encloided 0. Denotion Encloided 0. Denotion Denotion 0. Denotion Denotion | Motor Hol Sensor 0 Motor Start Important, 0 0 Motor Supply Voltage Law, 0 0 Motor Supply Voltage Law, 0 0 Motor Supply Voltage Law, 0 0 Data Start, 0 0 Data Start, 0 0 Plane Hol, 0 0 0 | Connection State Firmware Statu Motor Status: Op. State: Status Connection Connection Demand Position Demand Position Demand Positis Force Factor: Motor Current: Logic Supply W Motor Supply W | witch C sty Wa olt: 2 olt: 2 olt: 6 | nine awritched Off In Disabled minig 00 mm 00 00 m 00 00 % 00 A 22 A V 23 A V 25 A V | Name | DelVoishe | v |
| | | | | | Additione | Der Fondere | |
| Safety System State: Doparion Safety Eins Safet: UP Falze Safety Eins Cole: UP Falze Safety Diato Safet: Safety Diato Safet Safety Function State: | | Enable Manual Command Count Nib Name Header | Overric Catego Type: ble (Toj Offs. 0 | ke10 mm ny: No Operation (000uh) ggle Bite): Oh [Description 000uh: No Operation | Auto Increment Co Scaled Value 0 | t mm +10 mm ky Used unt Nibble Int. Volue (Dec) 0 | v (7) In: Value (Hes) 0000h |
| Sidely Fin State SS2 Solely Fin State SL3 0 Solely Fin State SL3 1 Solely Fin State SL3 2 Solely Fin State SL3 2 Solely Fin State SL3 2 Solely Fin State Alcot trang down Solely Fin State Alcot trang down Solely Fin State Fin Varing Solely Fin State Off Int State Solely Fin State Off Int State | down required I required | | | | Read | Command | Send Command |

LinMot talk status

In the next step you have to acknowledge the safety internal event before enabling the drive. In this example the signal "Safety_Error_Ack" is assigned to the safety control word 0 bit 7.



| • | Network 12: Sa | fety Error Ack | |
|---|--------------------------|-------------------------|---|
| | Comment | | |
| | | %Q0.7 | |
| | | "SQ_STW1_ IntEvtAck" | |
| | | = | |
| | %M19.7 | | |
| | "Safety_Error_ Ack" — | | _ |

Safety internal event in the functioanl block

Acknowledge the event by assigning the falling edge to the signal. From the watch window, right click on the signal and change from TRUE to FALSE.

| <u>÷</u> | iž 📝 lo 🐔 16 🌮 🖞 | aon ▶ 1 | | | | |
|----------|--------------------|--------------------|----------------|---------------------------|--------------|--|
| i | Name | Address | Display format | Monitor value | Modify value | 9 |
| | "STO_Switch" | %M19.2 | Bool | TRUE | TRUE | Image: A state of the state |
| 2 | "SS1_Switch" | %M19.3 | Bool | TRUE | TRUE | Image: A state of the state |
| 3 | "SS2_Switch" | %M19.4 | Bool | TRUE | TRUE | Image: A state of the state |
| 4 | "SOS_Switch" | %M19.5 | Bool | TRUE | TRUE | Image: A state of the state |
| 5 | "SLSO_Switch" | %M30.0 | Bool | FALSE | | |
| 5 | "SLS1_Switch" | %M30.1 | Bool | FALSE | | |
| 7 | "SLS_Switch" | %M19.6 | Bool | TRUE | TRUE | Image: A state of the state |
| 3 | "Ack_Error" | %M20.0 | Bool | FALSE | | |
| 9 | "Safety_Error_Ack" | %M19.7 | Bool | FALSE | | |
| 10 | | <add new=""></add> | | | | |

Watch table for assigning the signal

Now the system is ready for motion commands over the control panel, to do this click on the "Technology objects".

Choose "Commissioning" under the positioning axes name. Double click on "Commissioning". The axis control panel is shown as below.

| 9 | Axis control panel | | | |
|---|--------------------|----------------------|-------------------|--|
| | Master control: | Axis: | Operating mode: | |
| | Notivate Deactivat | e 🖉 Enable 🐼 Disable | | |
| | Control | | | |
| | Velocity setpoint: | | Backward Prorward | |
| | | | Stop | |
| | | Jerk: | | |
| | Axis status | | Current values | |
| | Drive ready | Enabled | | |
| | Error | Homed More | | |
| | | | Velocity: | |
| | | | | |
| | 300 | nfrm | | |
| | Alarm display 🎽 | | | |

Axis control panel for commissioning

We have to get the master control by clicking on activate.

After clicking the system will go online automatically. Click on "yes" and accept the activation.



| Activation (| 1502:000042) | X |
|--------------|---|---|
| 4 | Use of the master control can be dangerous for persons and machines. Do you want to use the master control to control the axis PositioningAxis_1? | |
| | This function is only suitable for commissioning, diagnostics and test purposes. The function may only be used by authorized personnel. | |
| | You can control the axis with the control panel as long as the control panel has master control. Changing at another location (e.g. in the user program) has no effect while the control panel is operating. | |
| | As soon as master control is once again passed to the user program, the values of the control panel and the tuning are discarded. The original values (e.g. from the user program) become active again. | |
| | If this axis is used as the leading axis, moving it can move the following axes along with it. | |
| | You can only control the axis manually if there is a direct connection from your TIA Portal to the controller. This direct connection is monitored cyclically. If sign of life is not received from the programming device/PC within the monitoring time, master control is relinquished for security reasons. Other connections (e.g. virtual machines, remote connections) are not monitored. | |
| | | |
| | | |
| | Monitoring time: 2000 ms | |
| | Yes No | |

Axis control panel for commissioning

In the next step you have to set the enables, click the "Enable" button.



Axis control panel for commissioning

The LinMot talk shows the "Operation Enabled" state in the monitoring panel.

Set the home position by choosing the "Set home position" command from the drop down list under "Operating mode". Then click on Start.





Axis control panel for commissioning

Now the homing is done and the "Homed" in the axis status should be green. The axis is ready for absolute position moves.

Go to operation mode and choose "Positioning absolute" from the drop down menu.

Select the absolute motion. The position can be left at 100mm if your motor has enough position range. Otherwise reduce this value.

Then click Start.

| ning | Axis cont | trol panel | | | | | | | | |
|------|-----------------|-------------------------------------|------------|---|------------------------------|-------------------------|---|------|------------|--|
| | Master Stati | control: wate 🛛 🍢 Deactivat | | Axis: | Disable | \rangle | Operating mode: Positioning absolute | | • | |
| | Control | Position: [100.0 Velocity: 100.0 | mm mmls | Acceleration: Deceleration: Jerk: | 1000.0 1000.0 200000.0 | mm/s= mm/s= mm/s= | Start | Stop | | |
| | Axis stat | tus Drive ready | | Enabled | | | Current values | | | |
| | . E | Active errors: | | Homed | More | | Position: Velocity: | 0.0 | mm mm/s | |
| | | Alarm display 🎽 | im | - | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Axis control panel for commissioning

Check the position in the current value of position in the axis control panel.



Axis control panel for commissioning



To start the relative motion, choose "Positioning relative" from the Axis control panel > Operating mode. Set the relative distance as 20.0mm and move backward or forward as required.

| Matter complex Acc: Operating mode: Summer: Summer: Summer: Summer: Control Summer: Summer: Summer: Distance: ::00 mm Acceleration: Summer: Vectory: 100 mm Acceleration: Summer: Vectory: 100 mm Deceleration: Summer: Joint Deceleration: Summer: Summer: Summer: Acti: status Current values Summer: Summer: |
|--|
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| Enri Binken andy Enri Binken Akee Active error: Confirm Antimetry P |

Axis control panel for commissioning

In this example the axis is moved backward and reached the position 80.0 mm.



Axis control panel for commissioning

Before leaving the control panel click the "Axis > Disable button". Then click on "Master control > Deactivate". Now the LinMot-Talk is in "Ready to Switch On" state.



LinMot talk status after deactivation



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