

# EN- ProfiSafe on Profinet IndraDrive (TIA, 15xx)

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Version:	V1.0

# AGENDA

1. ProfiSafe on Profinet
2. FAQ's ProfiSafe On Profinet. (in preperation)

General inportant hint Profinet with IndraDrive:

→ The master communication engineering IP address must be **diffrent** to the Profinet IP address (automaticly set by Siemens PLC)!

# DE-S7Profinet IndraDrive

## 1. ProfiSafe on Profinet up Firmware MPx20:

- a) GSDML file
- b) ProfiSafe address, F-Modul configuration
- c) Checksumme F\_iPar\_CRC
- d) Reinitialize, Note Doc
- e) Control Safety of S7
- f) Predefined configuration , Assignment of safety control / status word

# DE-S7Profinet IndraDrive

## 1a. ProfiSafe GSDML file

- For PROFIsafe on PROFINET, the GSDML file "GSDML-V2.1-Bosch Rexroth AG-011F-Indradrive\_02V02-20180110.xml" or more up-to-date must be used.
- Storage location in the IndraWorks installation directory:
- c:\ProgramFiles\Rexroth\IndraWorks\_xxxx\DeviceDataSheets\IndraDrive

# DE-S7Profinet IndraDrive

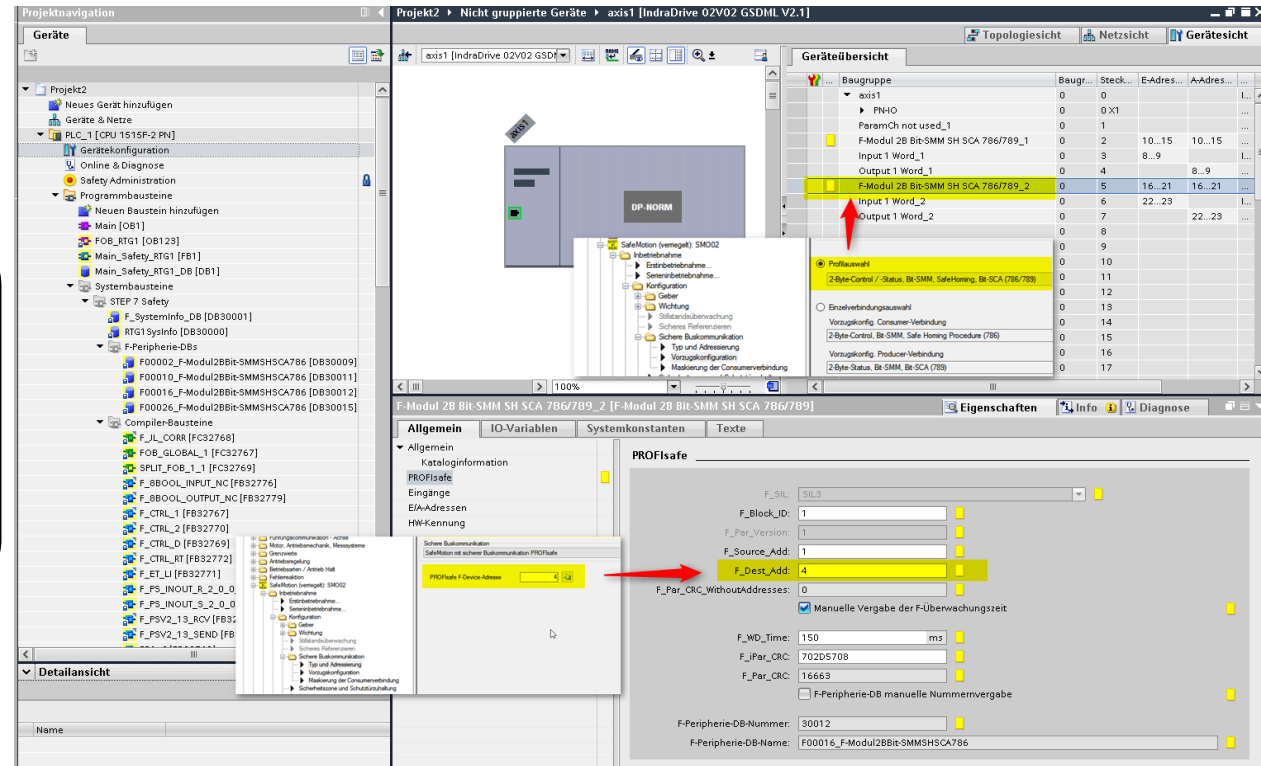
## 1b. ProfiSafe Address, F-Modul configuration

- PROFIsafe address in IndraWorks is F\_Dest\_Add in Siemens configuration
- SMO "Preferred configuration profile selection" IndraDrive must match the F-module configuration Siemens.

**Note: As soon as F-module is active in S7 configuration, Safemotion must also be commissioned in IndraDrive, SCM (configuration mode) must be completed.**

- Otherwise "F4012 wrong I / O length"!

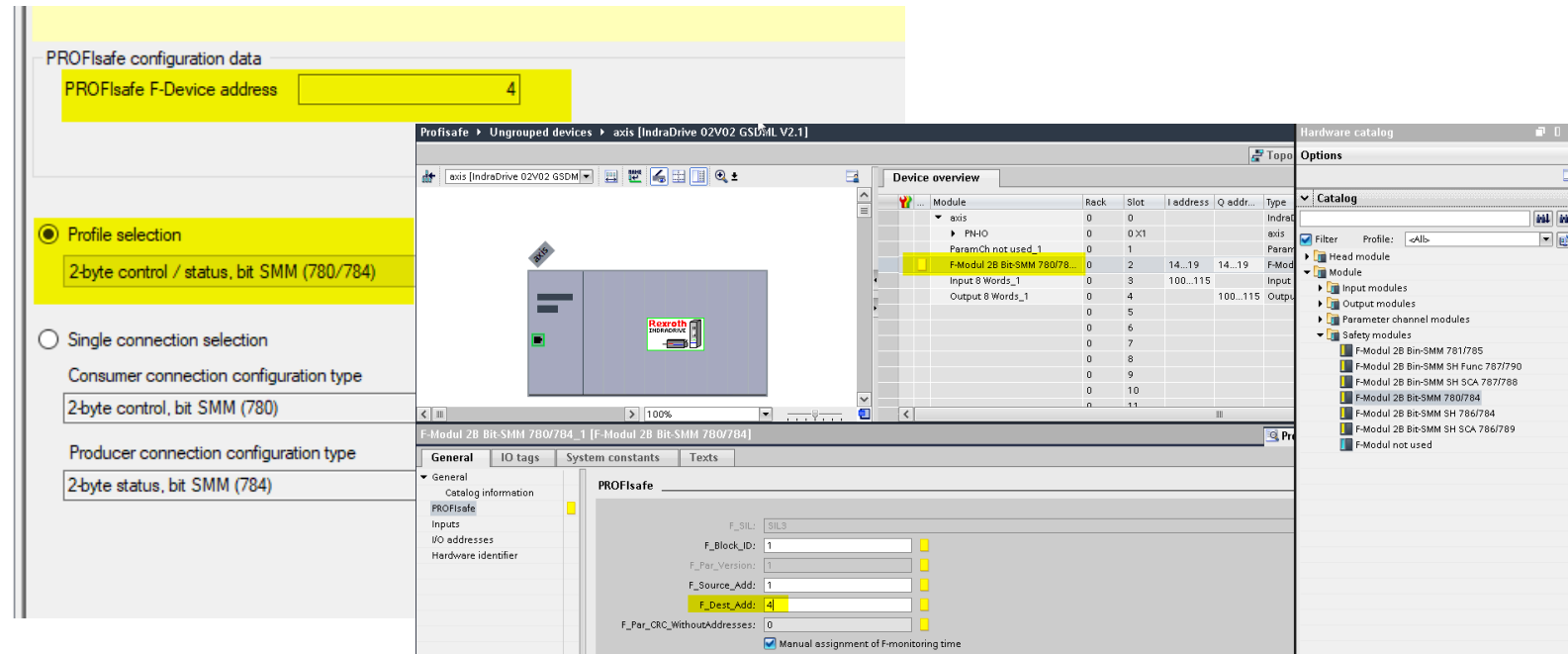
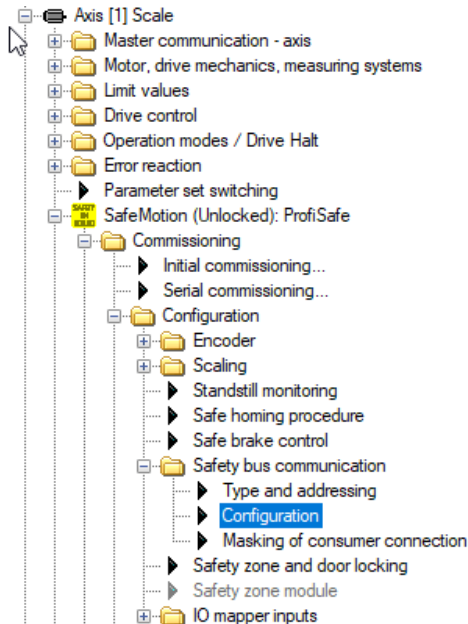
Note, screenshot double axis module IndraDrive!



# DE-S7Profinet IndraDrive

## 1b. ProfiSafe Address, F-Modul configuration

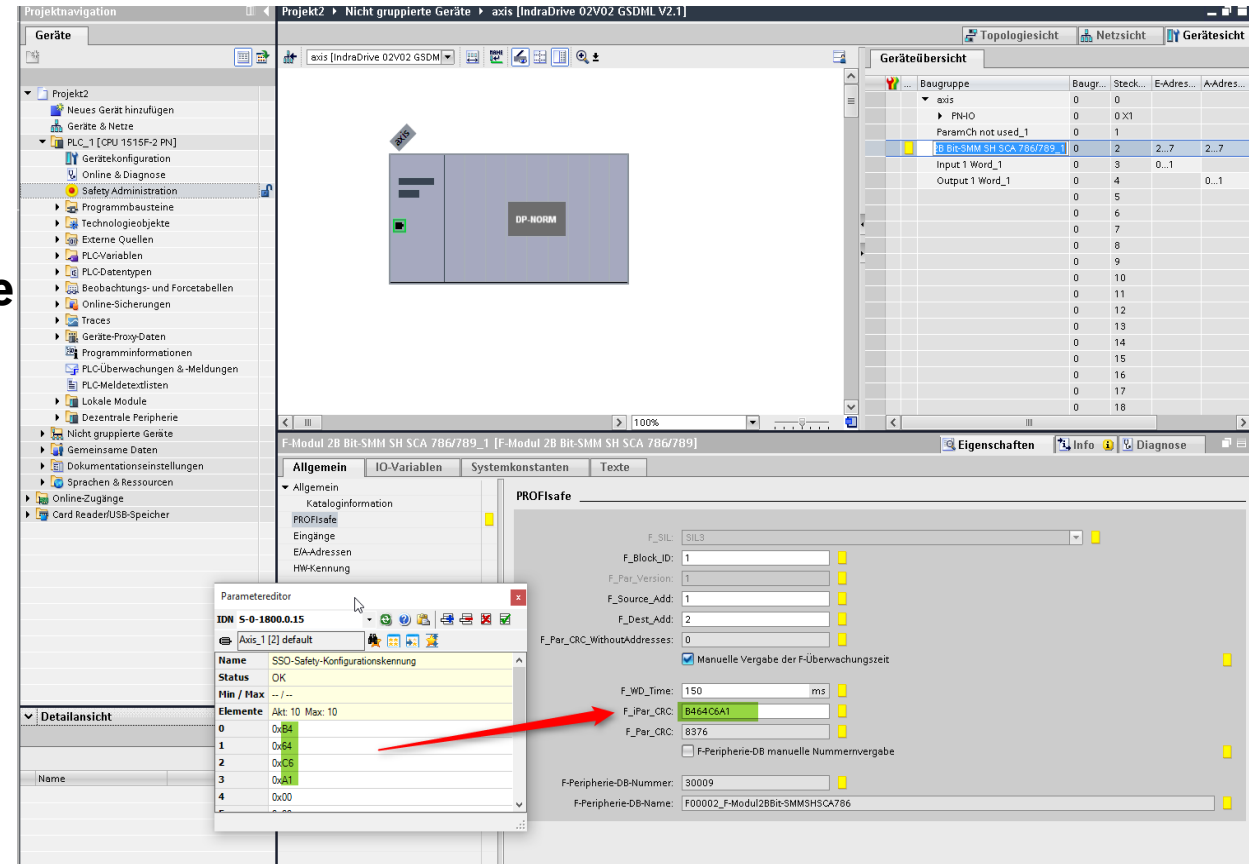
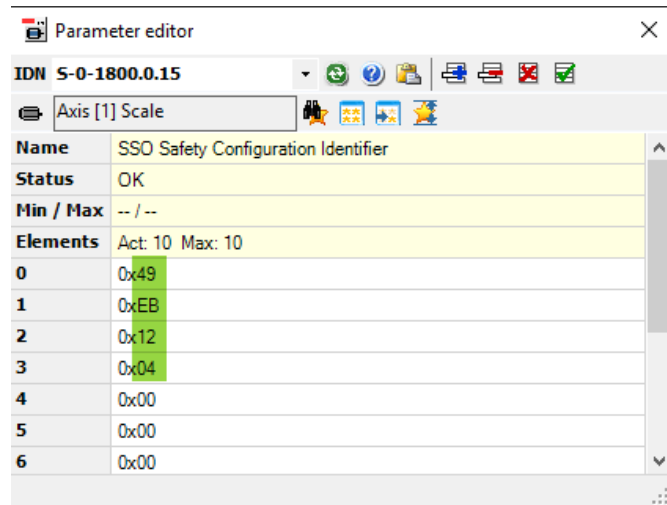
- PROFIsafe address in IndraWorks is F\_Dest\_Add in Siemens configuration
- SMO "Preferred configuration profile selection" IndraDrive must match the F-module configuration Siemens.



# DE-S7Profinet IndraDrive

## 1c. ProfiSafe F\_iPar\_CRC

- PROFIsafe Transfer F\_iPar\_CRC from parameter S-0-1800.0.15 is currently not displayed in the IndraWorks dialog.
- **Note: Checksum changes each time the SMO parameterization is changed**



# DE-S7Profinet IndraDrive

## 1d. ProfiSafe reinitialization

### - Note: Siemens Documentation

#### ACK\_REI

When the F-system detects a communication error or an F-I/O fault for an F-I/O, the relevant F-I/O is passivated. If channel faults are detected and channel granular passivation is configured, the relevant channels are passivated. If passivation of the entire F-I/O is configured, all channels of the relevant F-I/O are passivated.

**Reintegration** of the F-I/O/channels of the F-I/O after the fault has been eliminated requires a **user acknowledgment** with a positive edge at variable **ACK\_REI** of the F-I/O DB:

- After every communication error
- After F-I/O or channel faults only with parameter assignment "Channel failure acknowledgement = manual" or ACK\_NEC = 1

Reintegration after channel faults reintegrates all channels whose faults were eliminated.

Acknowledgment is not possible until tag ACK\_REQ = 1.

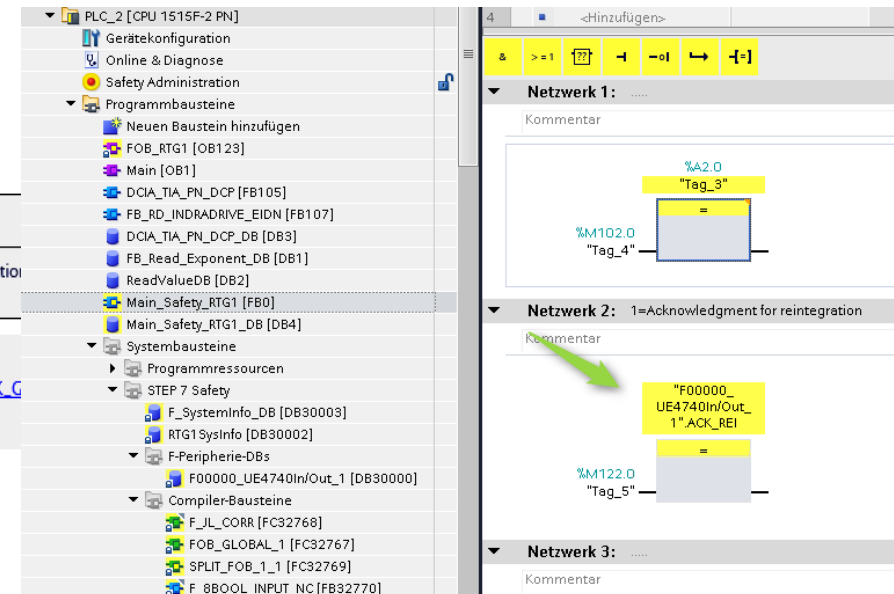
In your safety program, you must provide a user acknowledgment by means of the **ACK\_REI** tag for each F-I/O.

#### ⚠ WARNING

For the user acknowledgement, you must interconnect the **ACK\_REI** tag of the F-I/O DB with a signal generated by an operator input. An interconnection automatically generated signal is not permitted. (S011)

#### Note

Alternatively, you can use the "ACK\_GL" instruction to carry out reintegration of the F-I/O following communication errors or F-I/O/channel faults ([ACK\\_GL Global acknowledgment of all F-I/O in an F-runtime group \(STEP 7 Safety V14 SP1\)](#)).





# DE-S7Profinet IndraDrive

## 1d. ProfiSafe reinitialization

The screenshot displays the Siemens STEP 7 software interface, specifically the 'Project tree' and 'Device overview' windows, illustrating the configuration of a Rexroth IndraDrive 02V02 GSDML V2.1 for ProfiSafe reinitialization.

**Project tree (Left):** The 'System blocks' folder is expanded, showing the 'F-Module 2B Bit-SMM 780/784\_1' (ID: F00014\_F-Module2BBit-SMM780/784\_1 [0830002]) selected.

**Device overview (Top Right):** The 'Device overview' table lists the modules and their addresses:

Module	Rack	Slot	I address	Q address	Type
axis	0	0			IndraDrive 02...
axis	0	0	0 X1		axis
ParamCh not used_1	0	1			ParamCh not ...
F-Module 2B Bit-SMM 780/784_1	0	2	14...19	14...19	F-Module 2B Bit...
Input 8 Words_1	0	3	100...115		Input 8 Words
Output 8 Words_1	0	4		100...115	Output 8 Words

**Properties (Bottom Right):** The 'PROFIsafe' properties window is open, showing the following configuration:

- F\_SIL: SIL3
- F\_Block\_ID: 1
- F\_Par\_Version: 1
- F\_Source\_Add: 1
- F\_Dest\_Add: 4
- F\_Par\_CRC\_WithoutAddresses: 0
- ☒ Manual assignment of F-monitoring time
- F\_WD\_Time: 150 ms
- F\_iPar\_CRC: 0
- F\_Par\_CRC: S1210
- ☐ F-I/O DB manual number assignment
- F-I/O DB-number: 30002
- F-I/O DB-name: F00014\_F-Module2BBit-SMM780/784\_1

**Hardware catalog (Far Right):** The 'Catalog' window shows the 'F-Module 2B Bit-SMM 780/784' selected under the 'Safety modules' category.

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## 1d. ProfiSafe reinitialization

The screenshot displays the Siemens STEP 7 LAD editor interface. The main window shows the LAD logic for 'Main\_Safety\_RTG1'. The logic is organized into networks. Network 4 is the focus, showing a reset coil (RST) for a safety status and a set coil (S) for a safety status. The reset coil is triggered by a normally open contact labeled 'bRestartSafetyCo m' and a normally closed contact labeled 'F00014\_F-Modul28Bit-SMM780/784\_ ACK\_REI'. The set coil is triggered by a normally open contact labeled 'F00014\_F-Modul28Bit-SMM780/784\_ ACK\_REQ'. The network is titled 'Network 4: ...'.

Below the LAD editor, the 'IndraWorks Ds - SafeMotion: ProfiSafe - Safety bus communication' window is open. It shows the 'Parameterization' tab, which includes the 'Safety bus communication' section. The 'Consumer connection' is configured with a 'Configuration type' of '2-byte SMO control word, bit-coded SMM (780)' and a 'Connection status' of 'Initialized'. The 'Safety bus control word' is set to '0b0000.0000.0000.0000'.

On the right, the 'IndraWorks Ds - SafeMotion: ProfiSafe - Safety bus communication' window is open again, showing the 'Diagnostics' tab. It displays the 'Safety bus communication' section, which includes the 'Consumer connection' and 'Producer connection' details. The 'Consumer connection' is configured with a 'Configuration type' of '2-byte SMO control word, bit-coded SMM (780)' and a 'Connection status' of 'Active'. The 'Safety bus control word' is set to '0b0000.0000.0000.0000'. The 'Producer connection' is configured with a 'Configuration type' of '2-byte SMO status word, bit-coded SMM (784)' and a 'Connection status' of 'Active'. The 'Safety bus status word' is set to '0b1100.0000.0000.0001'.

# DE-S7Profinet IndraDrive

## 1d. Control Safety of S7

### Hint:

The user data of the ProfiSafe are the first 2 bytes of the process data.

The screenshot displays the Siemens STEP 7 LAD editor and the HW Config hardware configuration window. The LAD editor shows the 'Main\_Safety\_RTG1' network with the following logic:

- Network 1: A variable '%A14.0' is assigned to 'bModeSelection'.
- Network 2: A variable '%A14.1' is assigned to 'bEmergencyStop Mode'.
- Network 3: A variable '%M115.0' is assigned to 'bSMESState'.
- Network 4: A variable '%M115.1' is assigned to 'bSMSTActive'.

The HW Config window shows the 'Device overview' for the 'axis' module. A blue annotation 'Safety used 10's only the first word!' points to the 'F-Modul 2B Bit-SMM 780/78...' module. The table below shows the module's I/O addresses:

Module	Rack	Slot	I address	Q address	Type
axis	0	0 X1			IndraDrive 02V02 ...
ParamCh not used_1	0	2			ParamCh not used
F-Modul 2B Bit-SMM 780/78...	0	2	14...19	14...19	F-Modul 2B Bit-SM...
Input 8 Words_1	0	3	100...115		Input 8 Words
Output 8 Words_1	0	4		100...115	Output 8 Words

# DE-S7Profinet IndraDrive

## 1d. Control Safety of S7

The image displays three screenshots of the IndraWorks software interface, specifically the 'Main\_Safety\_RTG1' block configuration for an IndraDrive. The interface is divided into several panes:

- Left Pane:** Shows the 'Main\_Safety\_RTG1' block with a 'bEmergencyStop Mode' signal. The signal is connected to the 'bEmergencyStop Mode' input of the 'Main\_Safety\_RTG1' block.
- Middle Pane:** Shows the 'Main\_Safety\_RTG1' block with a 'bEmergencyStop Mode' signal and a 'bSMESStatus' signal. The signal is connected to the 'bEmergencyStop Mode' input of the 'Main\_Safety\_RTG1' block.
- Right Pane:** Shows the 'Main\_Safety\_RTG1' block with a 'bEmergencyStop Mode' signal and a 'bSMESStatus' signal, and a 'bSMSTActive' signal. The signal is connected to the 'bEmergencyStop Mode' input of the 'Main\_Safety\_RTG1' block.

The right pane also shows the 'Safety bus communication' configuration for the IndraDrive, including the 'Consumer connection' and 'Producer connection' settings. The 'Consumer connection' is configured for 'SafeMotion with P' and the 'Producer connection' is configured for 'SafeMotion with Profisafe safety bus communication'.

# DE-S7Profinet IndraDrive

## 2d. Control Safety of S7

- The first 2 bits are the same in all preference configurations.
- SMES and SMST are zero active bits. ("Wire unbreakable").

Hint:  
Byteorder Safety matches, no high / low byte necessary!

IndraWorks Ds - SafeMotion: ProfiSafe - Safety bus communication

Parameterization Commissioning Diagnostics Service Tools Help

IndraDrive [1] Scale

- Overview
- Master communication
- Power supply
- Axes [1] Scale
  - Master communication - axis
  - Motor, drive mechanics, measuring systems
  - Limit values
  - Drive control
  - Operation modes / Drive Halt
  - Error reaction
  - Parameter set switching
  - SafeMotion (Locked): ProfiSafe
    - Commissioning
    - Diagnostics
      - SafeMotion
      - Encoder
      - Safe brake control
      - Safety bus communication
      - Inputs and outputs
      - IO mapper inputs
      - Safety zone
      - Safe CAM
    - Service
    - Probe
  - Optimization / commissioning
- Measuring encoder
  - Position switch
- Local I/Os
- Remote I/O

Normal Operation mode active

Safety bus communication SafeMotion with PROFIsafe safety bus communication

Consumer connection Producer connection

Configuration type

2-byte SMO control word, bit-coded SMM (780) 2-byte SMO status word, bit-coded SMM (784)

Connection status

Active Active

Safety bus control word

0b0000.0000.0000.0011

Safety bus status word

0b0100.0000.0000.0000

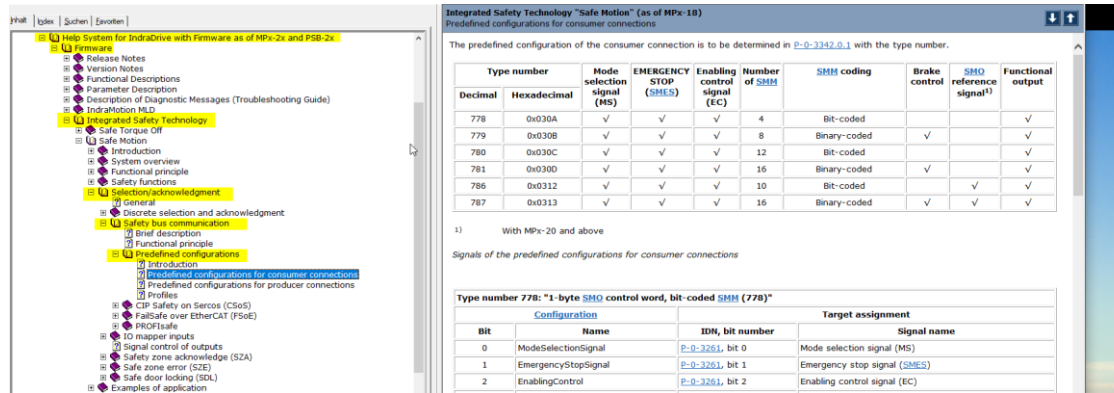
Specific PROFIsafe diagnostics

IndraDrive (192.168.0.101, S/IP)

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## 1e. ProfiSafe preferred configuration

### - Note on IndraWorks help



The screenshot shows the IndraWorks help system interface. The left sidebar contains a tree view with the following items: Help System for IndraDrive with Firmware as of MPx.2x and PSB.2x, Firmware, Release Notes, Version Notes, Functional Descriptions, Parameter Description, Description of Diagnostic Messages (Troubleshooting Guide), IndraMotion MLD, Integrated Safety Technology, Safe Torque Off, Safe Motion, Introduction, System overview, Functional principle, Safety functions, Selection/acknowledgment, General, Discrete selection and acknowledgment, Safety bus communication, Brief description, Functional principle, Predefined configurations, Introduction, Predefined configurations for consumer connections, Profiles, CIP Safety on Siercos (CSoS), FailSafe over EtherCAT (FSaE), PROFIsafe, IO mapper inputs, Signal control of outputs, Safety zone acknowledgment (SZA), Safe zone error (SZE), Safe door locking (SDL), and Examples of application.

The main content area displays the 'Integrated Safety Technology "Safe Motion" (as of MPx-1B)' section. It includes a table of predefined configurations for consumer connections. The table has columns for Type number, Decimal, Hexadecimal, Mode selection signal (MS), EMERGENCY STOP (SHE.S), Enabling control signal (EC), Number of SMM, SMM coding, Brake control, SMO reference signal<sup>1)</sup>, and Functional output.

Type number	Decimal	Hexadecimal	Mode selection signal (MS)	EMERGENCY STOP (SHE.S)	Enabling control signal (EC)	Number of SMM	SMM coding	Brake control	SMO reference signal <sup>1)</sup>	Functional output
778	0x030A	✓	✓	✓	✓	4	Bit-coded			✓
779	0x030B	✓	✓	✓	✓	8	Binary-coded	✓		✓
780	0x030C	✓	✓	✓	✓	12	Bit-coded			✓
781	0x030D	✓	✓	✓	✓	16	Binary-coded	✓		✓
786	0x0312	✓	✓	✓	✓	10	Bit-coded		✓	✓
787	0x0313	✓	✓	✓	✓	16	Binary-coded	✓	✓	✓

1) With MPx-20 and above

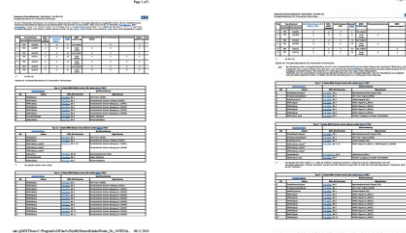
Signals of the predefined configurations for consumer connections

Type number 778: "1-byte SMO control word, bit-coded SMM (778)"

Bit	Configuration	Name	IDN, bit number	Target assignment	Signal name
0	ModeSelectionSignal	P-0-3261, bit 0	Mode selection signal (MS)		
1	EmergencyStopSignal	P-0-3261, bit 1	Emergency stop signal (SHE.S)		
2	EnablingControl	P-0-3261, bit 2	Enabling control signal (EC)		

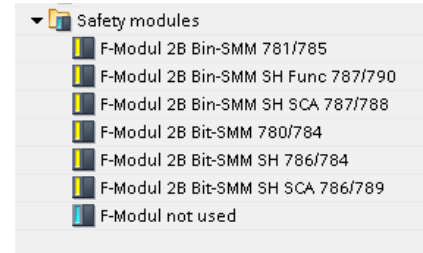
Note:  
Byteorder Safety  
matches, no high /  
low byte necessary!

### - Docu preferred configuration Status word Control word



The screenshot shows two tables side-by-side. The left table is titled 'Status word' and the right table is titled 'Control word'. Both tables have columns for Bit, Configuration, Name, IDN, bit number, and Target assignment. The Status word table has 16 bits, and the Control word table has 16 bits.

Bit	Configuration	Name	IDN, bit number	Target assignment	Signal name
0	ModeSelectionSignal	P-0-3261, bit 0	Mode selection signal (MS)		
1	EmergencyStopSignal	P-0-3261, bit 1	Emergency stop signal (SHE.S)		
2	EnablingControl	P-0-3261, bit 2	Enabling control signal (EC)		



The screenshot shows a list of safety modules under the heading 'Safety modules'. The list includes:

- F-Modul 2B Bin-SMM 781/785
- F-Modul 2B Bin-SMM SH Func 787/790
- F-Modul 2B Bin-SMM SH SCA 787/788
- F-Modul 2B Bit-SMM 780/784
- F-Modul 2B Bit-SMM SH 786/784
- F-Modul 2B Bit-SMM SH SCA 786/789
- F-Modul not used

### - The preferred configuration determines the assignment of the safety control or status word.

# DE-S7Profinet IndraDrive

## 1e. ProfiSafe preferred configuration

### - Docu preferred configuration control word 780

Type number 780: "2-byte SMO control word, bit-coded SMM (780)"				
Configuration		Target assignment		
Byte	Bit	Name	IDN, bit number	Signal name
0	0	ModeSelectionSignal	P-0-3261, bit 0	Mode selection signal (MS)
	1	EmergencyStopSignal	P-0-3261, bit 1	Emergency stop signal (SMES)
	2	EnablingControl	P-0-3261, bit 2	Enabling control signal (EC)
	3	SMM1Signal	P-0-3261, bit 3	SMM1 signal (A_SMM1)
	4	SMM2Signal	P-0-3261, bit 4	SMM2 signal (A_SMM2)
	5	SMM3Signal	P-0-3261, bit 5	SMM3 signal (A_SMM3)
	6	SMM4Signal	P-0-3261, bit 6	SMM4 signal (A_SMM4)
1	7	SMM5Signal	P-0-3261, bit 7	SMM5 signal (A_SMM5)
	0	SMM6Signal	P-0-3261, bit 8	SMM6 signal (A_SMM6)
	1	SMM7Signal	P-0-3261, bit 9	SMM7 signal (A_SMM7)
	2	SMM8Signal	P-0-3261, bit 10	SMM8 signal (A_SMM8)
	3	SMM9Signal	P-0-3261, bit 11	SMM9 signal (A_SMM9)
	4	SMM10Signal	P-0-3261, bit 12	SMM10 signal (A_SMM10)
	5	SMM11Signal	P-0-3261, bit 13	SMM11 signal (A_SMM11)
7	6	SMM12Signal	P-0-3261, bit 14	SMM12 signal (A_SMM12)
	7	SafeOutput_Local	P-0-3223, bit 0	Safe output at local interface

### Status word 784

Type number 784: "2-byte SMO status word, bit-coded SMM (784)"				
Configuration		Source assignment		
Byte	Bit	Name	IDN, bit number	Signal name
0	0	SMESStatus	P-0-3231, bit 1	EMERGENCY STOP (SMES)
	1	SMSTStatus	P-0-3231, bit 2	Special mode Safe standstill (SMST)
	2	SMM1Status	P-0-3231, bit 3	Special mode Safe motion 1 (SMM1)
	3	SMM2Status	P-0-3231, bit 4	Special mode Safe motion 2 (SMM2)
	4	SMM3Status	P-0-3231, bit 5	Special mode Safe motion 3 (SMM3)
	5	SMM4Status	P-0-3231, bit 6	Special mode Safe motion 4 (SMM4)
	6	SMM5Status	P-0-3231, bit 7	Special mode Safe motion 5 (SMM5)
1	7	SMM6Status	P-0-3231, bit 8	Special mode Safe motion 6 (SMM6)
	0	SMM7Status	P-0-3231, bit 9	Special mode Safe motion 7 (SMM7)
	1	SMM8Status	P-0-3231, bit 10	Special mode Safe motion 8 (SMM8)
	2	SMM9Status	P-0-3231, bit 11	Special mode Safe motion 9 (SMM9)
	3	SMM10Status	P-0-3231, bit 12	Special mode Safe motion 10 (SMM10)
	4	SMM11Status	P-0-3231, bit 13	Special mode Safe motion 11 (SMM11)
	5	SMM12Status	P-0-3231, bit 14	Special mode Safe motion 12 (SMM12)
7	6	EncoderStandstill	P-0-3256, bit 6	Encoder standstill
	7	SafetyStatus	P-0-3237, bit 0	Safety status

### - Docu preferred configuration control word 786

Type number 786: "2-byte SMO control word, bit-coded SMM (786)"				
Configuration		Target assignment		
Byte	Bit	Name	IDN, bit number	Signal name
0	0	ModeSelectionSignal	P-0-3261, bit 0	Mode selection signal (MS)
	1	EmergencyStopSignal	P-0-3261, bit 1	Emergency stop signal (SMES)
	2	EnablingControl	P-0-3261, bit 2	Enabling control signal (EC)
	3	SMM1Signal	P-0-3261, bit 3	SMM1 signal (A_SMM1)
	4	SMM2Signal	P-0-3261, bit 4	SMM2 signal (A_SMM2)
	5	SMM3Signal	P-0-3261, bit 5	SMM3 signal (A_SMM3)
	6	SMM4Signal	P-0-3261, bit 6	SMM4 signal (A_SMM4)
1	7	SMM5Signal	P-0-3261, bit 7	SMM5 signal (A_SMM5)
	0	SMM6Signal	P-0-3261, bit 8	SMM6 signal (A_SMM6)
	1	SMM7Signal	P-0-3261, bit 9	SMM7 signal (A_SMM7)
	2	SMM8Signal	P-0-3261, bit 10	SMM8 signal (A_SMM8)
	3	SMM9Signal	P-0-3261, bit 11	SMM9 signal (A_SMM9)
	4	SMM10Signal	P-0-3261, bit 12	SMM10 signal (A_SMM10)
	5 <sup>1)</sup>	SafeHomingProcedure	P-0-3253, bit 0	SMO reference signal
7	6	Reserved	-	-
	7	SafeOutput_Local	P-0-3223, bit 0	Safe output at local interface

### Status word 789

Type number 789: "2-byte SMO status word, bit-coded SMM (789)"				
Configuration		Source assignment		
Byte	Bit	Name	IDN, bit number	Signal name
0	0	SMESStatus	P-0-3231, bit 1	EMERGENCY STOP (SMES)
	1	SMSTStatus	P-0-3231, bit 2	Special mode Safe standstill (SMST)
	2	SMM1Status	P-0-3231, bit 3	Special mode Safe motion 1 (SMM1)
	3	SMM2Status	P-0-3231, bit 4	Special mode Safe motion 2 (SMM2)
	4	SMM3Status	P-0-3231, bit 5	Special mode Safe motion 3 (SMM3)
	5 <sup>1)</sup>	HomingStatus	P-0-3256, bit 5	Status of Safe reference
	6 <sup>1)</sup>	SCA1Status	P-0-3273.0.1, bit 0	Cam 1 status
1	7 <sup>1)</sup>	SCA2Status	P-0-3273.0.1, bit 1	Cam 2 status
	0 <sup>1)</sup>	SCA3Status	P-0-3273.0.1, bit 2	Cam 3 status
	1 <sup>1)</sup>	SCA4Status	P-0-3273.0.1, bit 3	Cam 4 status
	2 <sup>1)</sup>	SCA5Status	P-0-3273.0.1, bit 4	Cam 5 status
	3 <sup>1)</sup>	SCA6Status	P-0-3273.0.1, bit 5	Cam 6 status
	4	BrakeStatus	P-0-3265, bit 0	Acknowledgment of holding brake control
	5	SafetyError	P-0-3231, bit 25	Safety technology error
7	6	EncoderStandstill	P-0-3256, bit 6	Encoder standstill
	7	SafetyStatus	P-0-3237, bit 0	Safety status

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## 1e. ProfiSafe preferred configuration

### - Docu preferred configuration control word 781

Typ-Nummer 781: "2-byte SMO control word, binary-coded SMM (781)"

Configuration			Target assignment	
Byte	Bit	Name	IDN, bit number	Signal name
0	0	ModeSelectionSignal	P-0-3261, bit 0	Mode selection signal (MS)
	1	EmergencyStopSignal	P-0-3261, bit 1	Emergency stop signal (SMES)
	2	EnablingControl	P-0-3261, bit 2	Enabling control signal (EC)
	3	SMM1Signal_coded <sup>1)</sup>	P-0-3261, bit 3..18	SMM1 signal (A_SMM1)
	4	SMM2Signal_coded <sup>1)</sup>		...
	5	SMM3Signal_coded <sup>1)</sup>		SMM16 signal (A_SMM16)
	6	SMM4Signal_coded <sup>1)</sup>		
	7	Reserved	-	-
1	0..5	Reserved	-	-
	6	ReleaseBrake	P-0-3265.0.2, bit 0	Release holding brake
	7	SafeOutput_local	P-0-3323, bit 0	Safe output at local interface

### Status word 785

Type number 785: "2-byte SMO status word, binary-coded SMM (785)"

Configuration			Source assignment	
Byte	Bit	Name	IDN, bit number	Signal name
0	0	SMESStatus	P-0-3231, bit 1	EMERGENCY STOP (SMES)
	1	SMSTStatus	P-0-3231, bit 2	Special mode Safe standstill (SMST)
	2	SMM1Status_coded <sup>1)</sup>	P-0-3231, bit 3..18	Special mode Safe motion 1 (SMM1)
	3	SMM2Status_coded <sup>1)</sup>		...
	4	SMM3Status_coded <sup>1)</sup>		Special mode Safe motion 16 (SMM16)
	5	SMM4Status_coded <sup>1)</sup>		
	6..7	Reserved	-	-
1	0..5	Reserved	-	-
	4	BrakeStatus	P-0-3265, bit 0	Acknowledgment of holding brake control
	5	SafetyError	P-0-3231, bit 25	Safety technology error
	6	EncoderStandstill	P-0-3256, bit 6	Encoder standstill
	7	SafetyStatus	P-0-3237, bit 0	Safety status

### - Docu preferred configuration control word 787

Typ-Nummer 787: "2-byte SMO control word, binary-coded SMM (787)"

Configuration			Target assignment	
Byte	Bit	Name	IDN, bit number	Signal name
0	0	ModeSelectionSignal	P-0-3261, bit 0	Mode selection signal (MS)
	1	EmergencyStopSignal	P-0-3261, bit 1	Emergency stop signal (SMES)
	2	EnablingControl	P-0-3261, bit 2	Enabling control signal (EC)
	3	SMM1Signal_coded <sup>1)</sup>	P-0-3261, bit 3..18	SMM1 signal (A_SMM1)
	4	SMM2Signal_coded <sup>1)</sup>		...
	5	SMM3Signal_coded <sup>1)</sup>		SMM16 signal (A_SMM16)
	6	SMM4Signal_coded <sup>1)</sup>		
	7 <sup>2)</sup>	SafeHomingProcedure	P-0-3253, bit 0	SMO reference signal
1	0..5	Reserved	-	-
	6	ReleaseBrake	P-0-3265.0.2, bit 0	Release holding brake
	7	SafeOutput_local	P-0-3323, bit 0	Safe output at local interface

### Status word 790

Type number 790: "2-byte SMO status word, binary-coded SMM (790)"

Configuration			Source assignment	
Byte	Bit	Name (SDDML)	IDN, bit number	Signal name
0	0	SMESStatus	P-0-3231, bit 1	EMERGENCY STOP (SMES)
	1	SMSTStatus	P-0-3231, bit 2	Special mode Safe standstill (SMST)
	2	SMM1Signal_coded <sup>1)</sup>	P-0-3231, bit 3..10	Special mode Safe motion 1 (SMM1)
	3	SMM2Signal_coded <sup>1)</sup>		...
	4	SMM3Signal_coded <sup>1)</sup>		Special mode Safe motion 8 (SMM8)
	5 <sup>2)</sup>	HomingStatus	P-0-3256, bit 5	Status of Safe reference
1	6	FunctionalInput1	P-0-3329, bit 0	Functional input signals 1 drive
	7	FunctionalInput2	P-0-3329, bit 1	Functional input signals 2 drive
	0	FunctionalInput3	P-0-3329, bit 2	Functional input signals 3 drive
	1	FunctionalInput4	P-0-3329, bit 3	Functional input signals 4 drive
	2 <sup>2)</sup>	ParkingAxis	P-0-3231, bit 27	Parking axis
	3	Reserved	-	-
	4	BrakeStatus	P-0-3265, bit 0	Acknowledgment of holding brake control
	5	SafetyError	P-0-3231, bit 25	Safety technology error
	6	EncoderStandstill	P-0-3256, bit 6	Encoder standstill
	7	SafetyStatus	P-0-3237, bit 0	Safety status



# DE-S7Profinet IndraDrive

## 1e. ProfiSafe preferred configuration

### - Docu preferred configuration control word 787

Type number 787: "2-byte SMO control word, binary-coded SMM (787)"

Configuration			Target assignment	
Byte	Bit	Name	IDN, bit number	Signal name
0	0	ModeSelectionSignal	P-0-3261, bit 0	Mode selection signal (MS)
	1	EmergencyStopSignal	P-0-3261, bit 1	Emergency stop signal (SMES)
	2	EnablingControl	P-0-3261, bit 2	Enabling control signal (EC)
	3	SMM1Signal_coded <sup>1)</sup>	P-0-3261, bit 3..18	SMM1 signal (A_SMM1)
	4	SMM2Signal_coded <sup>1)</sup>		...
	5	SMM3Signal_coded <sup>1)</sup>		SMM16 signal (A_SMM16)
	6	SMM4Signal_coded <sup>1)</sup>		
	7 <sup>2)</sup>	SafeHomingProcedure	P-0-3253, bit 0	SMO reference signal
1	0..5	Reserved	-	-
	6	ReleaseBrake	P-0-3265.0.2, bit 0	Release holding brake
	7	SafeOutput_local	P-0-3323, bit 0	Safe output at local interface

### Status word 788

Type number 788: "2-byte SMO status word, binary-coded SMM (788)"

Configuration			Source assignment	
Byte	Bit	Name	IDN, bit number	Signal name
0	0	SMESStatus	P-0-3231, bit 1	EMERGENCY STOP (SMES)
	1	SMSTStatus	P-0-3231, bit 2	Special mode Safe standstill (SMST)
	2	SMM1Status_coded <sup>1)</sup>	P-0-3231, bit 3..18	Special mode Safe motion 1 (SMM1)
	3	SMM2Status_coded <sup>1)</sup>		...
	4	SMM3Status_coded <sup>1)</sup>		Special mode Safe motion 16 (SMM16)
	5	SMM4Status_coded <sup>1)</sup>		
	6 <sup>2)</sup>	HomingStatus	P-0-3256, bit 0	Status of Safe reference
1	7 <sup>2)</sup>	SCA1Status_coded	P-0-3273, bit 0..4	Cam 1 status
	0 <sup>2)</sup>	SCA2Status_coded		...
	1 <sup>2)</sup>	SCA3Status_coded		Cam 32 status
	2 <sup>2)</sup>	SCA4Status_coded		
	3 <sup>2)</sup>	SCA5Status_coded		
	4	BrakeStatus	P-0-3266, bit 0	Acknowledgment of holding brake control
	5	SafetyError	P-0-3231, bit 25	Safety technology error
	6	EncoderStandstill	P-0-3256, bit 6	Encoder standstill
	7	SafetyStatus	P-0-3237, bit 0	Safety status

### - Docu preferred configuration control word 786

Type number 786: "2-byte SMO control word, bit-coded SMM (786)"

Configuration			Target assignment	
Byte	Bit	Name	IDN, bit number	Signal name
0	0	ModeSelectionSignal	P-0-3261, bit 0	Mode selection signal (MS)
	1	EmergencyStopSignal	P-0-3261, bit 1	Emergency stop signal (SMES)
	2	EnablingControl	P-0-3261, bit 2	Enabling control signal (EC)
	3	SMM1Signal	P-0-3261, bit 3	SMM1 signal (A_SMM1)
	4	SMM2Signal	P-0-3261, bit 4	SMM2 signal (A_SMM2)
	5	SMM3Signal	P-0-3261, bit 5	SMM3 signal (A_SMM3)
	6	SMM4Signal	P-0-3261, bit 6	SMM4 signal (A_SMM4)
1	7	SMM5Signal	P-0-3261, bit 7	SMM5 signal (A_SMM5)
	0	SMM6Signal	P-0-3261, bit 8	SMM6 signal (A_SMM6)
	1	SMM7Signal	P-0-3261, bit 9	SMM7 signal (A_SMM7)
	2	SMM8Signal	P-0-3261, bit 10	SMM8 signal (A_SMM8)
	3	SMM9Signal	P-0-3261, bit 11	SMM9 signal (A_SMM9)
	4	SMM10Signal	P-0-3261, bit 12	SMM10 signal (A_SMM10)
	5 <sup>1)</sup>	SafeHomingProcedure	P-0-3253, bit 0	SMO reference signal
	6	Reserved	-	-
	7	SafeOutput_local	P-0-3323, bit 0	Safe output at local interface

### Status word 784

Type number 784: "2-byte SMO status word, bit-coded SMM (784)"

Configuration			Source assignment	
Byte	Bit	Name	IDN, bit number	Signal name
0	0	SMESStatus	P-0-3231, bit 1	EMERGENCY STOP (SMES)
	1	SMSTStatus	P-0-3231, bit 2	Special mode Safe standstill (SMST)
	2	SMM1Status	P-0-3231, bit 3	Special mode Safe motion 1 (SMM1)
	3	SMM2Status	P-0-3231, bit 4	Special mode Safe motion 2 (SMM2)
	4	SMM3Status	P-0-3231, bit 5	Special mode Safe motion 3 (SMM3)
	5	SMM4Status	P-0-3231, bit 6	Special mode Safe motion 4 (SMM4)
	6	SMM5Status	P-0-3231, bit 7	Special mode Safe motion 5 (SMM5)
1	7	SMM6Status	P-0-3231, bit 8	Special mode Safe motion 6 (SMM6)
	0	SMM7Status	P-0-3231, bit 9	Special mode Safe motion 7 (SMM7)
	1	SMM8Status	P-0-3231, bit 10	Special mode Safe motion 8 (SMM8)
	2	SMM9Status	P-0-3231, bit 11	Special mode Safe motion 9 (SMM9)
	3	SMM10Status	P-0-3231, bit 12	Special mode Safe motion 10 (SMM10)
	4	SMM11Status	P-0-3231, bit 13	Special mode Safe motion 11 (SMM11)
	5	SMM12Status	P-0-3231, bit 14	Special mode Safe motion 12 (SMM12)
	6	EncoderStandstill	P-0-3256, bit 6	Encoder standstill
	7	SafetyStatus	P-0-3237, bit 0	Safety status

# DE-S7Profinet IndraDrive

## 1g. Hint Dual drive controller with Profinet

- PROFI-safe on PROFINET as of MPM20VRS
- Master-side configuration:
  - Each axis has an F-, input- and output-module.
  - Thus each axis has its own address range.

