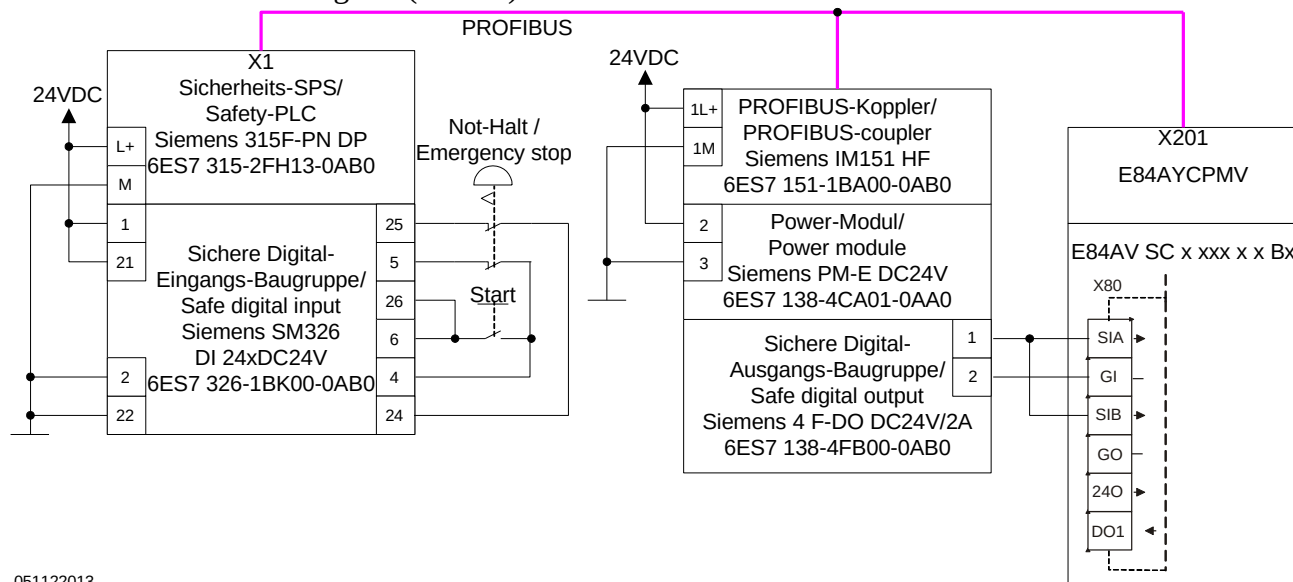


8400 with SU100 Safe stop 1 with safety PLC (PM-switching) (architecture according to PL e of EN ISO 13849-1)

8400 SLC connection diagram (section):



051122013

When the safety function is requested, the motor is stopped according to stop category 1 of EN 60204-1.

The delay time of the safety PLC must be longer than the QSP time. Consider the delay time tolerances of the safety PLC. The values to be set depend on the application.

Quick stop is activated via PROFIBUS.

The example does not describe setpoint selection by the PLC.

Faults have been excluded for protected cables (according to DIN EN ISO 13849-2:2008-09 and DIN EN 61800-5-2:2008-04). This applies to cables which are protected by a cable duct and installed inside the control cabinet.

Symbol table in the safety PLC (section):

Switch-on	A	257.0	BOOL
QSP activation	A	257.2	BOOL
Enable operation	A	257.3	BOOL
STO activation	A	0.0	BOOL
Emergency-stop button	E	8.0	BOOL
Start button	E	8.1	BOOL
Speed setpoint	AW	258	WORD

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Function block interconnection in the safety PLC (section):

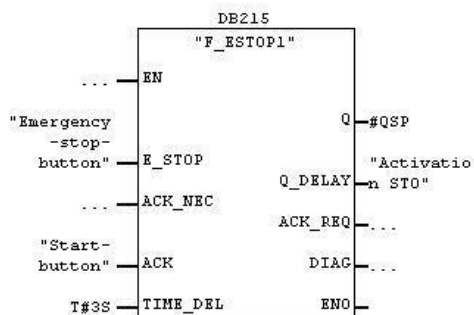
Inhalt von: 'Umgebung\Schnittstelle\TEMP'				
OUT	Name	Datentyp	Adresse	Kommentar
IN_OUT	QSP	Bool	0.0	
STAT				
TEMP				
QSP				

FBI : Titel:

Kommentar:

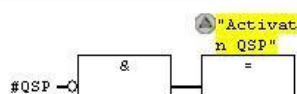
Netzwerk 1: Emergency-stop

Kommentar:



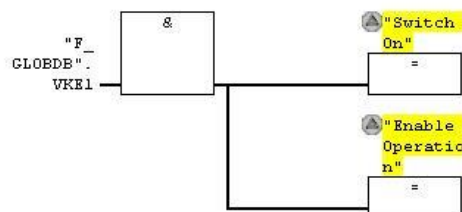
Netzwerk 2: Inversion QSP

Kommentar:



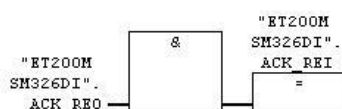
Netzwerk 3: Switch On and Enable Operation

Kommentar:



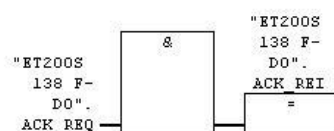
Netzwerk 4: 1=ACKNOWLEDGEMENT FOR REINTEGRATION

Kommentar:



Netzwerk 5: 1=ACKNOWLEDGEMENT FOR REINTEGRATION

Kommentar:



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Required controller parameter settings based on the "Actuator-speed" application (C00005 = 1000):

Code	Value to be set	Comment
C00007	40: MCI	In the preconfiguration, the quick stop function is linked to the MCI interface.
C00105	Depends on the application, adjust value to safety relay	QSP time

If a different application is used (C00005 $\neq$ 1000), the QSP must be adapted.

Safety-related parameters:



The calculations shown serve as an example of a possible determination of safety-related characteristic values.

The current suitability status and the characteristic values of the listed components must be checked by obtaining current manufacturer data on the components actually used prior to project planning.

Evaluation of the safety characteristics:

Emergency-stop button: B10_d-value of emergency-stop button according to table C.1 of EN ISO 13849-1: 100000

It was assumed that the system is used:

250 days / year, 16 hours / day, 2 emergency-stop button operations / day

→ resultant MTTF_d-value: 3000 years (limited to 2500 years)

→ resultant PFH_d-value of a category 4-structure according to table K.1 (extended) of EN ISO 13849-1: 9.06×10^{-10} 1 / hour

Safe input module: PFH_d-value: 1.00×10^{-9} 1 / hour

Safety PLC: Siemens 315F-DP: PFH_d-value: 1.54×10^{-9} 1 / hour

PROFIsafe: PFH_d-value: 1.00×10^{-9} 1 / hour

Safe output module: PFH_d-value: 1.00×10^{-10} 1 / hour

SU100 from hardware version 2A (with separate nameplate): PFH_d-value: 7.79×10^{-10} 1 / hour

Result: The PFH_d-value of the entire safety circuit is 5.32×10^{-9} 1 / hour.

SU100 up to hardware version 1B (without separate nameplate): PFH_d-value: The SU100 does not contribute to the probability of failure on demand. Therefore, it need not be considered for the calculation.

The application example is valid for:

Product series	Type designation	From hardware version	From software version
Inverter Drives 8400	E84AV SC x xxx x x Bx	VA	03.00
Inverter Drives 8400	E84AV HC x xxx x x Bx	VA	02.00
Inverter Drives 8400	E84AV TC x xxx x x Bx	VB	01.10

The documentation A5E00048969-10 01/2010 for the safe input and output modules has been used.

The user must ensure that the latest application example version is used. The current application example version can be downloaded from the Application Knowledge Base.

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Safety information / disclaimer



The safety application and parameterisation notes are examples of possible subfunctions in machines.

The T10_D value according to DIN EN ISO 13849-1, Annex C.4.2 is only indicated if a B10_D value is available and the operating time is less than 20 years.

Commissioning is prohibited until the machine has been checked in accordance with the regulations set out in the relevant EU directives / national laws.

The safety instructions contained in the technical documentation must be observed.

Using the examples does not exempt the user from careful project planning. For possible damages and consequential damages Lenze assumes no liability to the extent permitted by law.

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