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09 Feb 2011 / 1.7 / APPROVED

EXTERNAL REFERENCE

How To

Siemens S7 PLC catalogue

This document contains the list of Siemens S7 components to be used within Plant Systems for slow controls and SIL-2 and 3 purposes.

Approval Process			
	Name	*Action*	*Affiliation*
Author	**Evrard B.**	**09-Feb-2011:signed**	**IO/DG/DIP/CHD/CIT/CODAC**
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Document Security: level 1 (IO unclassified) *RO: Journeaux Jean-Yves*			
Read Access	**AD: ITER, AD: External Collaborators, AD: Section - CODAC, project administrator, RO, LG: PLC group, LG: CODAC team**		

Change Log			
Version	***Latest Status***	***Date***	***Description of Change***
v1.7	Approved	09 Feb 2011	Version updated after PCDH review.
v1.6	Signed	06 Jan 2011	New RO: B Evrard
v1.5	Signed	17 Nov 2010	Add 6ES7971-0BA00 within section 3.4.2 Add 6ES7952-1AM00-0AA0 within section 3.5.3 Add 6ES7960-1AA04-0XA0 within section 3.5.3 Add section 3.5.7 Add 6ES7922-3BD00-0AS0 within section 3.6.5 Add 6ES7922-3BD00-0AN0 within section 3.6.5
v1.4	Signed	28 Oct 2010	Replace 6ES7307-1EA00-0AA0 by 6ES7307-1EA01-0AA0 within section 3.1.2 Add reference S7 PLC ordering process (https://user.iter.org/?uid=3Q6UQ3)
v1.3	Signed	22 Oct 2010	Replace 6ES7390-1BC00-0AA0 by 6ES7390-1AJ30-0AA0 within section 3.1.1 Replace 6ES7341-1CH02 by 6ES7341-1CH02-0AE0 within section 3.1.5 Replace 6ES7193-4CC20-0AA0 by 6ES7193-4CC30-0AA0 within section 3.3.2
v1.2	Signed	31 Aug 2010	Update of documentation links, minor syntax changes, change of module references: Replace 6ES7 317-2EK13-0AB0 by 6ES7 317-2EK14-0AB0 within section 3.1.3 Replace 353-1AH01-0AE0 by 6ES7353-1AH01-0AE0 within section 3.2.6 Replace 6ES7 75710-8MA11 by 6ES5710-8MA11 within section 3.3.1 Replace 6ES7 8GL11-0AA0 by 6ES7 8LG11-0AA0 within section 3.3.3 Replace 6ES7 416-3 PN 3ER05-0AB0 by 6ES7 416-3ER05-0AB0 within section 3.4.3 Replace 6GK7 443-1EX20-0EX0 by 6GK7 443-1EX20-0XE0 within section 3.4.4 Replace 6ES7 414-FH by 6ES7414HM14-0AB0 within section 3.5.3 Replace 6ES7 960-1AA04-5BK0 by 6ES7 960-1AA04-0XA0 within section 3.5.5 Replace 6ES7153-1BK00-0AB0 by 6ES7153-1BK00-0XB0 within section 3.5.5 Replace 6ES7326-1BK01-0AB0 by 6ES7326-1BK02-0AB0 within section 3.6.4 Replace 6ES7326-2BF01-0AB0 by 6ES7326-2BF10-0AB0 within section 3.6.4 Replace 6ES7650-1KA11-7XX0 by 6ES7650-1AK11-7XX0 within section 3.6.5 Replace 6ES7 138-4CF02-0AA0 by 6ES7138-4CF03-0AB0 within section 3.7.2 Replace 6ES7 953-8GL11-0AA0 by 6ES7953-8LG11-0AA0 within section 3.7.3
v1.1	Approved	01 Feb 2010	Updated for version %5.1 of PCDH
v1.0	Signed	10 Dec 2009	

Document Revision History

Version	Status	Date	Changes
0.1	Draft	27/10/2009	Initial Version
0.2	Draft	04/12/09	Review to align the document with other PCDH satellites doc.
1.0	Issued	10/12/2009	Issued after internal review
1.1	Issued	01/02/2010	Updated following PCDH V5 review process
1.2	Issued	31/08/2010	Update of documentation links, minor syntax changes, change of module references: Replace 6ES7 317-2EK13-0AB0 by 6ES7 317-2EK14-0AB0 within section 3.1.3 Replace 353-1AH01-0AE0 by 6ES7353-1AH01-0AE0 within section 3.2.6 Replace 6ES7 75710-8MA11 by 6ES5710-8MA11 within section 3.3.1 Replace 6ES7 8GL11-0AA0 by 6ES7 8LG11-0AA0 within section 3.3.3 Replace 6ES7407-0-KA02 by 6ES7407-0-KA02-0AA0 within section 3.4.2 Replace 6ES7 416-3 PN 3ER05-0AB0 by 6ES7 416-3ER05-0AB0 within section 3.4.3 Replace 6GK7 443-1EX20-0EX0 by 6GK7 443-1EX20-0XE0 within section 3.4.4 Replace 6ES7 414-FH by 6ES7414HM14-0AB0 within section 3.5.3 Replace 6ES7 960-1AA04-5BK0 by 6ES7 960-1AA04-5KA0 within section 3.5.5 Replace 6ES7326-1BK01-0AB0 by 6ES7326-1BK02-0AB0 within section 3.6.4 Replace 6ES7326-2BF01-0AB0 by 6ES7326-2BF10-0AB0 within section 3.6.4 Replace 6ES7650-1KA11-7XX0 by 6ES7650-1AK11-7XX0 within section 3.6.5 Replace 6ES7 138-4CF02-0AA0 by 6ES7138-4CA50-0AB0 within section 3.7.2 Replace 6ES7 138-4CK20-0AA0 by 6ES7138-4CC30-0AA0 within section 3.7.2 Replace 6ES7 953-8GL11-0AA0 by 6ES7953-8LG11-0AA0 within section 3.7.3 Replace 6ES7138-4FA03-0AB0 by 6ES7138-4FA04-0AB0 within section 3.7.4 Replace 6ES7138-4FB02-0AB0 by 6ES7138-4FB03-0AB0 within section 3.7.4 Replace 6ES7138-4CF02-0AB0 by 6ES7138-4FR00-0AA0 within section 3.7.4 Replace 6ES7193-4CC20-0AA0 by 6ES7193-4CF50-0AA0within section 3.7.4
1.3	Issued	31/08/2010	Replace 6ES7390-1BC00-0AA0 by 6ES7390-1AJ30-0AA0 within section 3.1.1 Replace 6ES7341-1CH02 by 6ES7341-1CH02-0AE0 within section 3.1.5 Replace 6ES7193-4CC20-0AA0 by 6ES7193-4CC30-0AA0 within section 3.3.2
1.4	Issued	25/10/2010	Replace 6ES7307-1EA00-0AA0 by 6ES7307-1EA01-0AA0 within section 3.1.2 Add reference S7 PLC ordering process (https://user.iter.org/?uid=3Q6UQ3)
1.5	Issued	17/11/2010	Add 6ES7971-0BA00 within section 3.4.2 Add 6ES7952-1AM00-0AA0 within section 3.5.3 Add 6ES7960-1AA04-0XA0 within section 3.5.3 Add section 3.5.7 Add 6ES7922-3BD00-0AS0 within section 3.6.5 Add 6ES7922-3BD00-0AN0 within section 3.6.5
1.6	Issued	05/01/2010	Change of Author

References

[RD1] Plant Control Design Handbook
[RD2] Siemens S7 PLC ordering process (https://user.iter.org/?uid=3Q6UQ3)

Table of Contents

1 Introduction

1.1 Document purpose

Plant Control Design Handbook (PCDH) document defines standards for all ITER plant system instrumentation and control (I&C). These standards are essential in order to achieve an integrated, maintainable and affordable control system to operate ITER. This satellite document of PCDH, "Siemens S7 PLC I/O Catalogue" gives a list of COTS products recommended by ITER Organization. See Figure 1.

The purpose of this catalogue is to define the list of modules to be used by the different plant system suppliers across all the domestic agencies and their subcontractors participating in ITER.

This catalogue shall be used for every slow control application.

If the application requirements are not fulfilled, the deviation procedure will be triggered.

CODAC Catalogue of I&C Products for slow Controllers is a living document, which is released at regular intervals throughout the lifetime of ITER. Versions of standards and products are subject to updates and extensions as the ITER project progresses

For each type of Architecture, you will find the component part number for ordering, the documentation and the version to be used (hardware, firmware, software).

Accessories for wiring and installation will be in the appendices.

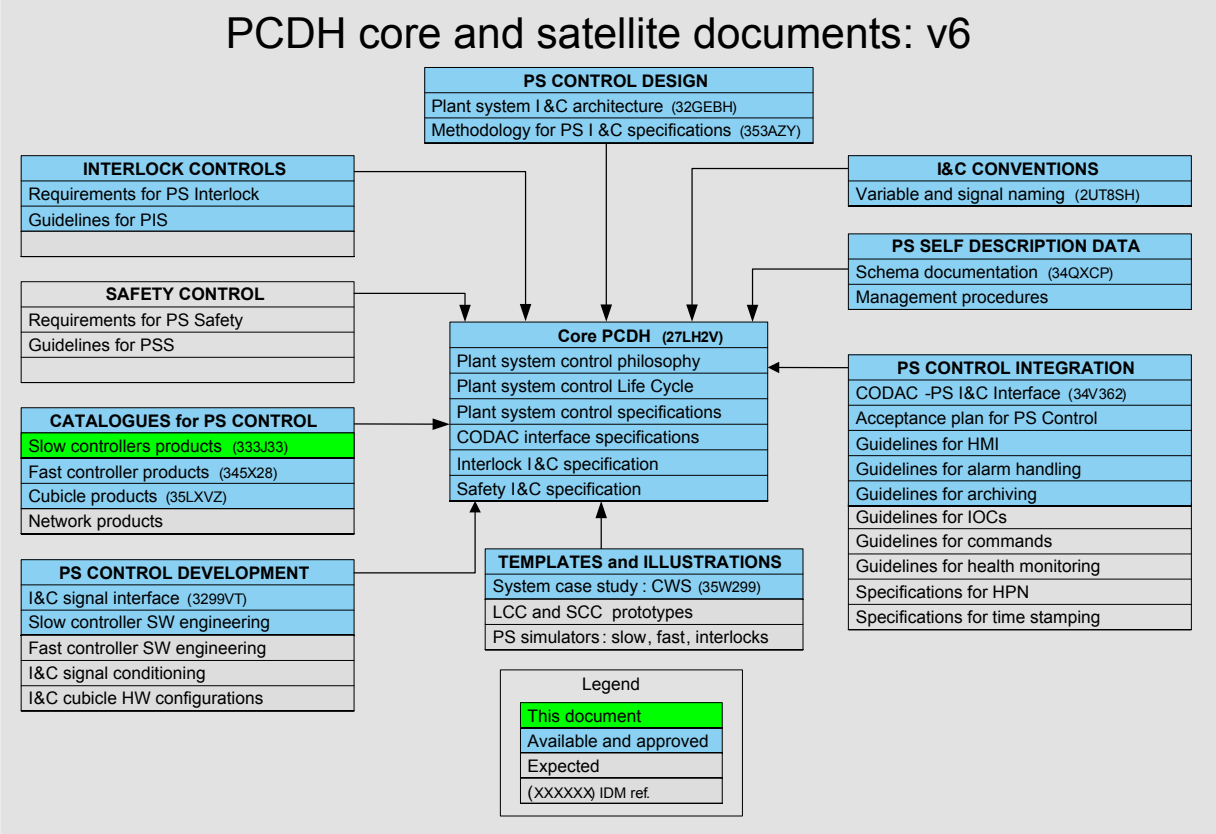


Figure 1: PCDH documents for plant system I&C design phase

1.2 Acronyms

AI	Analogue Input
AO	Analogue Output
CIN	Central Interlock Network
CIS	Central Interlock System
CODAC	COntrol Data Access and Communications
COTS	Commercial Off the Shelf
DA	Domestic Agency
DC	Direct Current
DI	Digital Input
DO	Digital Output
I&C	Instrumentation & Control
I/O	Input / Output
IO	ITER Organization
IEC	International Electrotechnical Commission
IP	Internet Protocol
LED	Light Emitting Diode
NTP	Network Time Protocol
PCDH	Plant Control Design Handbook
PLC	Programmable Logic Controller
PS	Plant System
PSH	Plant System Host
SIL	Safety Integrity Level
TBC	To Be Confirmed
TBD	To Be Defined
UPS	Uninterruptible Power Supply
1oo2	One out Of Two
2oo3	Two out Of Three

1.3 Architectures

Different architectures are possible, depending on the SIL level required, the CPU power required, the number and types of I/O and the geographical distribution of I/O.

- Industrial PLC (medium and High range)
- Industrial Remote I/O for Cabinet (ET200M)
- Industrial Remote I/O for Junction Box (ET200S)
- SIL-3 PLC
- SIL-3 remote I/O

1.4 Networks

Several networks are used:

- Ethernet for connecting the STEP 7 station to the PLC
- Ethernet 100 Mbits/s for S7 CPU to CODAC front-ends
- PROFINET V2 for process interface within the S7
- Profisafe profile over Profinet for SIL-3 purposes

1.5 Documentation

The Siemens mall for getting documentation can be accessed here:

https://eb.automation.siemens.com/goos/catalog/Pages/ProductData.aspx?catalogRegion=FR&nodeid=5000008&tree=CatalogTree&regionUrl=%2ffr&language=en&activetab=product#activetab=product&

2 Architecture

2.1 Medium range Industrial PLC

Figure 2: medium range configuration 1

Configuration1: the simplest configuration with I/O cards within the S7-300 CPU rack

The drawing below highlights architectures with remote IO rack spread over different locations.

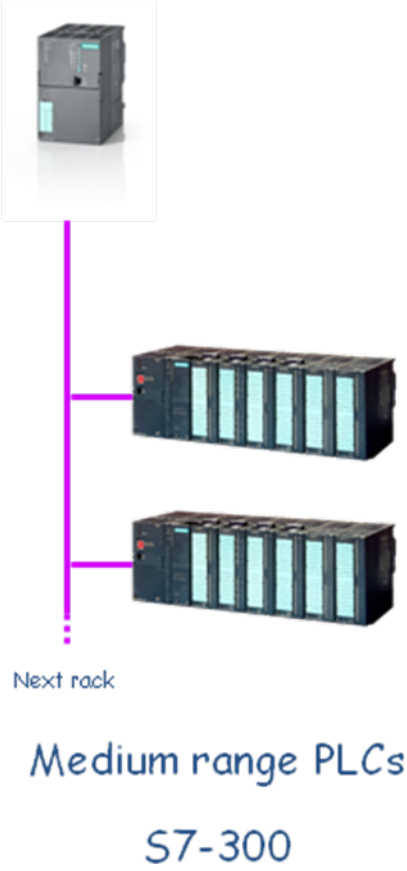
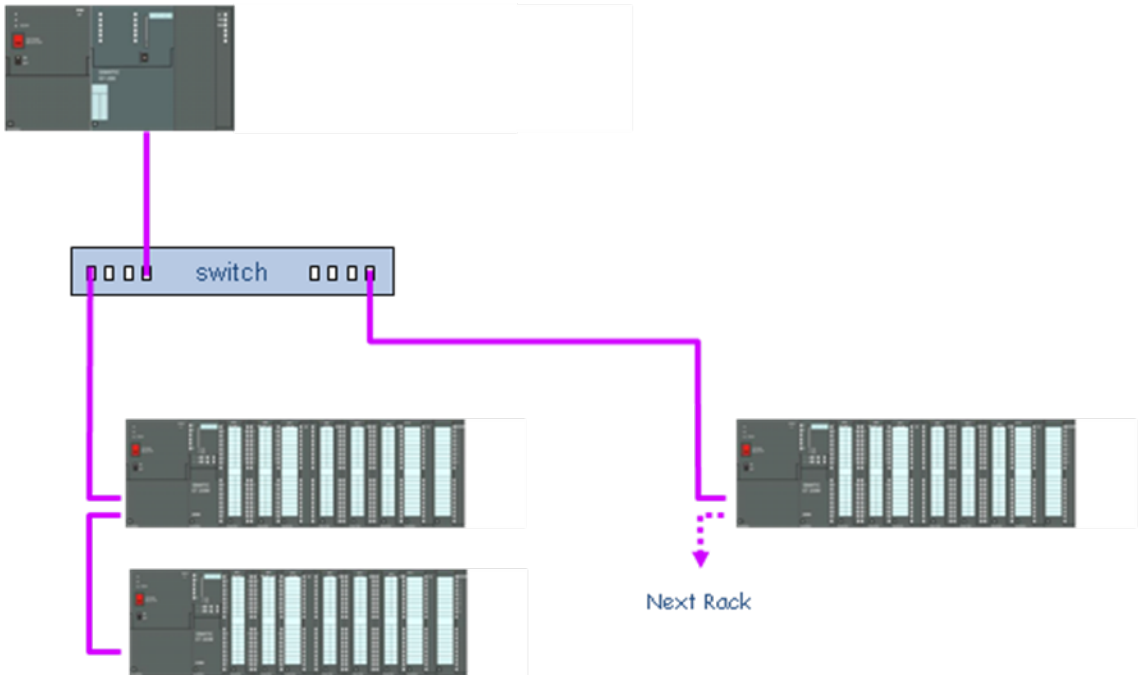


Figure 3: medium range configuration 2

Configuration2: Generic architecture with remote I/O racks connected in serial architecture.



Configuration3: a star architecture is achieved by introducing a switch network. Both serial and star configuration may be mixed.

Figure 4: medium range configuration 3

2.2 High range Industrial PLC

High range architectures are similar to the medium range. The CPU in the main rack is more powerful (S7-400 range), same remote I/O racks as for medium range controllers are used.

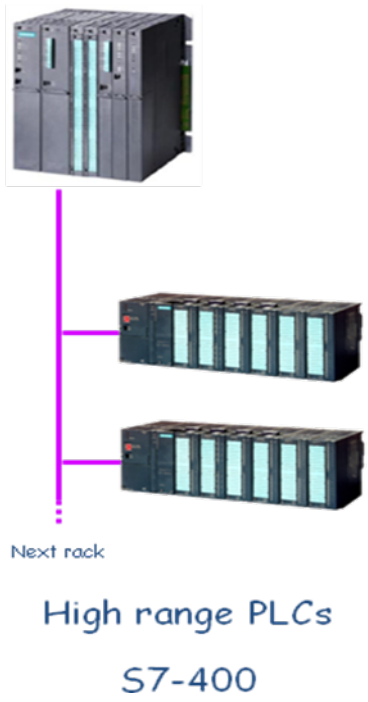


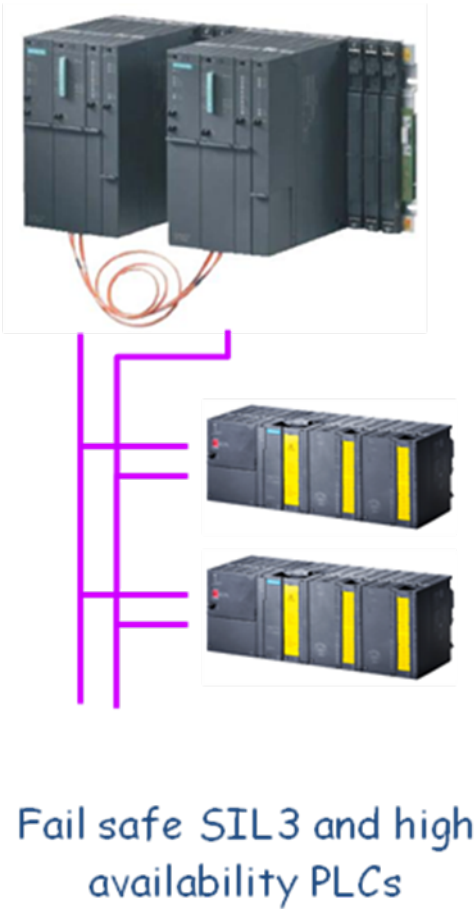
Figure 5: medium range configuration 2

2.3 Fail Safe and High availability PLC

There are numerous possible architectures. The choice will be done according to the SIL level to be reached.

All the components chosen in the relevant section enable to build a SIL-3 architecture (with 2oo3 inputs and 1oo2 outputs).

The most demanding SIL-3 architecture will target high reliability and high availability (FH range).



Within this architecture, we use redundant S7-400 CPUs (possibly in different cubicles), redundant remote I/O racks being connected by redundant links.

Figure 6: high reliability configuration with CPU and I/O redundancy

3 Hardware components

3.1 Medium range Industrial PLC

3.1.1 Mounting rail

Manufacturer's Reference	*Description*
6ES7390-1AJ30-0AA0	Mounting rail length:830mm

3.1.2 Power supply

Manufacturer's Reference	*Description*
6ES7307-1EA01-0AA0	Power supply PS 307 AC 120/230V DC 24V, 5A

3.1.3 CPU S7-300

We select for a standard application a PLC S7-300:

Manufacturer's Reference	*Description*
6ES7317-2EK14-0AB0	CPU 317-2 PN/DP

Manufacturer's Reference	*Description*
6ES7953-8LL20-0AA0	2 MB memory card

3.1.4 S7-300 PROFINET Interface Module to ET200M

Manufacturer's Reference	*Description*
6GK7343-1EX30-0XE0	Communication processor module CP 343-1

3.1.5 Serial link interface

Whenever necessary, an additional serial link interface will be plugged in the CPU rack:

Manufacturer's Reference	*Description*
6ES7341-1CH02-0AE0	Serial link using either RS422 or 485

3.1.6 S7-300 I/O cards

It is intended to have I/O cards directly plugged in the S7-300 rack.

Same I/O cards as for remote I/O racks.

Up to 8 I/O cards may be configured in one rack.

When not sufficient or when a distributed architecture is required, use the remote I/Os in the ET200M extension.

3.1.7 Terminal strips

Not in the scope of this catalogue: terminal strips will be addressed in a specific document.

3.2 Remote I/O ET200M for Medium and High range Industrial PLC

These remote I/O are either linked to medium or high range industrial PLCs.

For a decentralized Architecture, the ET200M has to be used (or ET200S for direct connection)

The ET200M is composed of an IM153 (Interface Module) and I/O's Modules

3.2.1 Mounting rail

Manufacturer's Reference	*Description*
6ES7195-1GA00-0XA0	Mounting rail length:480mm
6ES7195-7HA00-0XA0	Bus extension for one power supply and an IM153-4

Then depending on the number and size of I/O cards:

Manufacturer's Reference	*Description*
6ES7195-7HB00-0XA0	Bus extension for two 40mm wide I/O modules (Hot swapping function)

3.2.2 Power supply

If in the same enclosure, not required. If remote, use the same PS as for S7-300

3.2.3 Interface Module

Manufacturer's Reference	*Description*
6ES7153-4AA01-0XB0	IM153-4 PN Interface module for S7-300 IO modules
6ES7953-8LF20-0AA0	Memory Card (64 KB)

3.2.4 Cables

To be chosen from a dedicated ITER catalogue.

3.2.5 Terminal strips

Not in the scope of this catalogue: terminal strips will be addressed in a specific document.

3.2.6 Input / Output module

We selected one module of each type for standard signals. Signal standards are defined in I&C signal processing, part I [RD2].

Specific needs will be dealt on a case by case basis.

Manufacturer's Reference	*Description*
6ES7321-1BL00-0AA0	Digital Input Module SM 321 isolated (500 VDC), 32 DI, DC 24V
6ES7322-1BL00-0AA0	Digital output Module 32 DO, DC 24V, 0.5A isolated
6ES7331-7KF02-0AB0	Analog Input Module 8 AI backplane isolated (500V), 14 bits+sign, configurable input range (current- voltage –thermocouple)
6ES7331-7PF01-0AB0	RTD Module Analog input 8 AI backplane isolated (500V), 15 bits+sign, PT100/200/1000,
6ES7331-7PF11-0AB0	ThermoCouple Module Analog input 8 AI, 15 bits+sign, backplane isolated (500V), thermocouple JKN
6ES7332-5HF00-0AB0	Analog Output Module 8 AO 11/12 bits, backplane and channel isolated (500V), configurable output range (current- voltage)
6ES7353-1AH01-0AE0	FM353 for counters and step motors

3.2.7 Remote I/OET200M summary

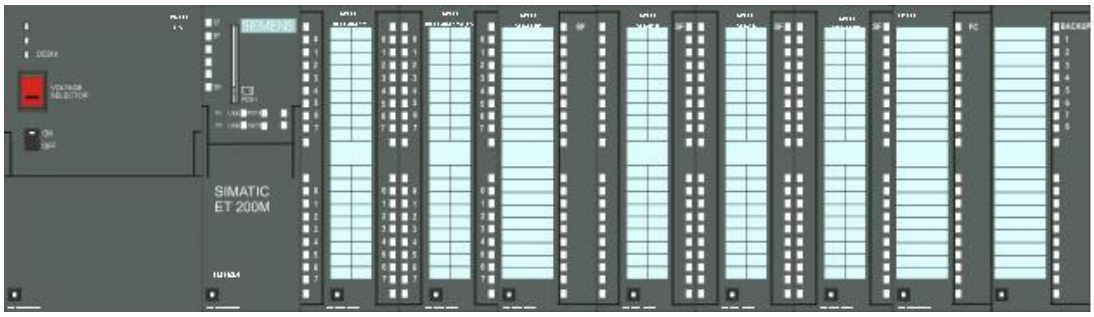


Figure 6: remote I/O ET200M rack

The figure above shows a typical remote I/O ET200M with one I/O card of each type inserted. Depending on the I/O application needs, the resulting configuration could be different.

3.3 Remote I/O ET200S

Whenever there are many inputs/outputs, ET200M is preferred. ET200S does not allow the use of a marshalling panel.

3.3.1 Mounting rail

Manufacturer's Reference	*Description*
6ES5710-8MA11	Mounting rail length:480mm

3.3.2 Power supply

Manufacturer's Reference	*Description*
6ES7138-4CA01-0AA0	Power supply AC 120/230V DC 24V / 10A
6ES7193-4CC30-0AA0	TM-P Terminal Module for Power Supply

3.3.3 Interface Module

Manufacturer's Reference	*Description*
6ES7151-3BA23-0AB0	IM151-3 PN Interface module for ET200S IO modules
6ES7953-8LG11-0AA0	Memory Card (128 KB)

3.3.4 Cables

To be chosen from a dedicated ITER catalogue.

3.3.5 Terminal strips

Not in the scope of this catalogue: terminal strips will be addressed in a specific catalogue.

3.3.6 Input / Output module

We selected one module of each type for standard signals. Signal standards are defined in I&C signal processing, part I [RD2].

Specific needs will be dealt on a case by case basis.

Manufacturer's Reference	*Description*
6ES7134-4JB51-0AB0	RTD Module, 2 AI, 500V VDC isolated
6ES7131-4BF00-0AA0	Digital Input Module, 8 DI, 24V, 500v CC isolated
6ES7132-4BF00-0AA0	Digital output Module, 8 DO, 500 V CC
6ES7134-4GB11-0AB0	Analog Input Module, 2 AI, 14 bits, 500v CC isolated.
6ES7134-4JB01-0AB0	Thermocouple Module, 2 AI, 500 V CC isolated, 16 bits
6ES7134-4GB01-0AB0	Analog Output Module, 2 AO, 13 bits, 500 v CC isolated
6ES7193-4CA50-0AA0	TM-E Terminal Module (5 pieces) for analog or digital module

3.3.7 Remote I/O ET200S summary

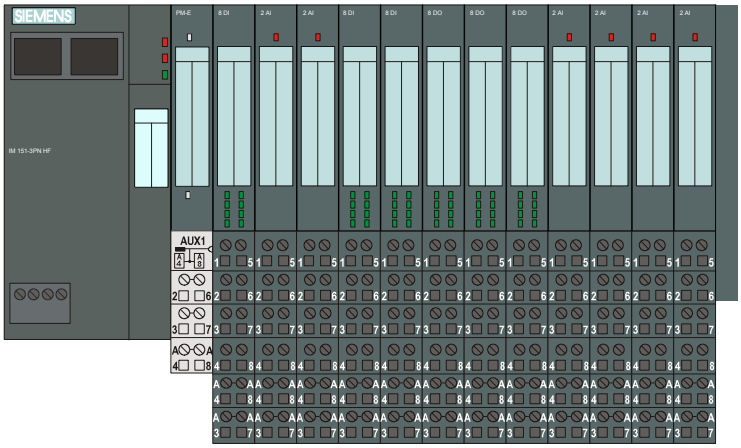


Figure 7: remote I/O ET200 S rack

The figure above shows a typical remote I/O ET200S with selected I/O cards inserted. Depending on the I/O application needs, the resulting configuration could be different.

3.4 High range Industrial PLC

3.4.1 Rack

Manufacturer's Reference	*Description*
6ES7400-1JA11-0AA0	S7-400 UR2 Rack

3.4.2 Power supply

Manufacturer's Reference	*Description*
6ES7407-0KA02-0AA0	Power Supply AC 120/230V DC 5V / 10A No redundancy, not powering the ET200

Battery Backup: If the power supply module fails, RAM and parameters will be backed up by the battery system.

Manufacturer's Reference	*Description*
6ES7971-0BA00	Lithium AA, 3.6 V/2.3 Ah

3.4.3 CPU S7-400

Manufacturer's Reference	*Description*
6ES7416-3ER05-0AB0	CPU 416-3 PN/DP
6ES7952-1AS00-0AA0	16 MB RAM

3.4.4 S7-400 PROFINET interface module to ET200M

Manufacturer's Reference	*Description*
6GK7443-1EX20-0XE0	Communication processor module CP 443-1

3.4.5 Serial link interface

Whenever necessary, an additional serial link interface will be plugged in the CPU rack:

Manufacturer's Reference	*Description*
6ES7440-1CS00-0YE0	CP440-1 PTP-Connection, 1 Channel RS422 or 485

3.4.6 S7-400 I/O cards

In the current version of the catalogue, it is not intended to have I/O cards directly plugged in the S7-400 rack (except for specific modules) as they are different from the ET200/S7-300. We will use the ET200M.

3.4.7 High Range PLC Summary

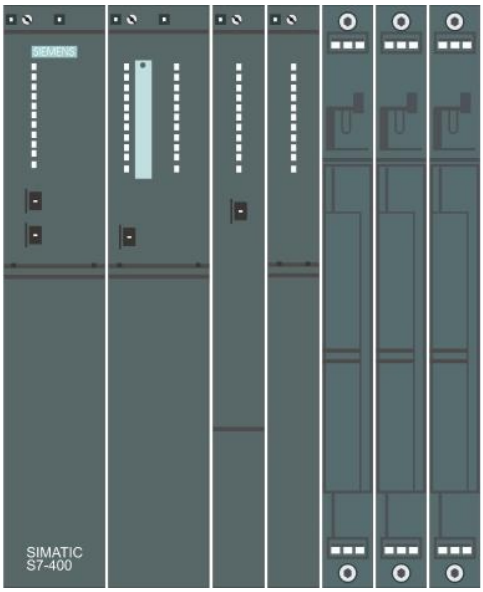


Figure 8: High range PLC configuration (CPU rack only)

3.5 Fail Safe and High availability PLC

3.5.1 Rack

Manufacturer's Reference	*Description*
6ES7400-1JA01-0AA0	S7-400 UR2 Rack

3.5.2 Power supply

Manufacturer's Reference	*Description*
6ES7407-0KR02-0AA0	Power Supply AC 120/230V DC 5V / 10A For Redundant use
6ES7971-0BA00	Lithium AA, 3.6 V/2.3 Ah

3.5.3 CPU S7-400

Manufacturer's Reference	*Description*
6ES7414-4HM14-0AB0	CPU 414-FH
6ES7952-1AM00-0AA0	SIMATIC S7, Memory Card RAM 4 MO
6ES7960-1AA04-0XA0	Synchronous cartridge for sync cable, up to 10 m
6ES7833-1CC00-6YX0	RT S7 F system license

3.5.4 Ethernet Module

Manufacturer's Reference	*Description*
6GK7443-1GX20-0XE0	CP443-1 Advanced module for Ethernet communication

3.5.5 Cables between redundant CPUs

Manufacturer's Reference	*Description*
6ES7960-1AA04-5AA0	Sync cable 1m
6ES7960-1AA04-5BA0	Sync cable 2m
6ES7960-1AA04-5KA0	Sync cable 10m

3.5.6 Safety direct I/O

Not possible. See ET200M.

3.5.7 Failsafe and High availability PLC Summary

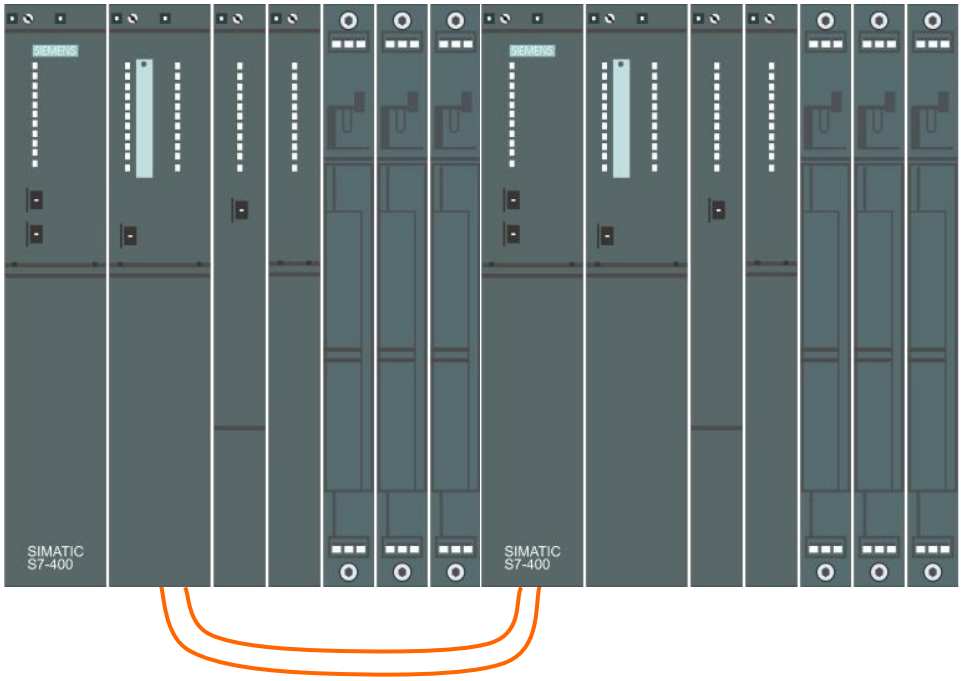


Figure 9: Failsafe and High availability PLC configuration (CPU rack only)

3.6 Remote I/O for both failsafe and failsafe High availability range SIL-3 PLC

These remote I/O are either linked to failsafe range or failsafe and high availability range SIL-3 PLCs.

The ET200M is composed of an IM153 (Interface Module) and I/O's Modules

3.6.1 Mounting rail

Manufacturer's Reference	*Description*
6ES7195-1GA00-0XA0	Mounting rail length:480mm
6ES7195-7HA00-0XA0	Bus extension for one power supply and an IM153-4

Then depending on the number and size of I/O cards:

Manufacturer's Reference	*Description*
6ES7195-7HB00-0XA0	Bus extension for two 40mm wide I/O modules (Hot swapping function)
6ES7195-7HC00-0XA0	Bus extension for one 80mm wide I/O module (Hot swapping function)

3.6.2 Power supply

If in the same enclosure, this is not required.

If remote, use the same PS as for S7-300

3.6.3 Interface Module

Note that we intend to use Profinet interface between CPUs and remote I/O chassis. The profinet protocol with redundant ET200M rack is not yet available and references will be updated once known.

Manufacturer's Reference	*Description*
6ES7153-4AA01-0XB0	IM153-4 PN Interface module for S7-300 IO modules *Redundant Profinet attachement not yet supported*

3.6.4 Input / Output module

We selected one module of each type for standard signals. Signal standards are defined in I&C signal processing, part I [RD2].

Specific needs will be dealt on a case by case basis.

The following modules are currently available in 80mm width and soon in 40mm. This catalogue will be updated once the reference will be known.

Manufacturer's Reference	*Description*
6ES7326-1BK02-0AB0	Digital input module, 24 DI, DC 24V Failsafe 80 mm wide
6ES7326-1RF00-0AB0	Namur Digital input module 8 DI, DC 24V Failsafe, 80 mm wide
6ES7326-2BF10-0AB0	Digital output Module, 10 DO, 24V DC, 2A Failsafe, 40 mm wide
6ES7336-4GE00-0AB0	Analog Input Module, 6 AI, 15 bits, 0/4 - 20 mA Failsafe, 40 mm wide

3.6.5 Terminal strips

Manufacturer's Reference	*Description*
6ES7650-1AK11-7XX0	MTA Marshalling Termination Assembly for digital input modules (12/24 channels)
6ES7650-1AL11-6XX0	MTA Marshalling Termination Assembly for digital output modules (10 channels 24v-DC output range)
6ES7650-1AM31-6XX0	MTA Marshalling Termination Assembly for digital output modules (10 channels / relays Output 120-220VAC/24-150VDC Max 5A)
6ES7650-1AH61-5XX0	MTA Marshalling Termination Assembly for analog input modules (6 channels / 0/4-20 mA)
6ES7922-3BD00-0AS0	Connecting cable with 40-pole front connector for ET 200M and 50-pole Sub-D female connector for MTA; Length 3 m
6ES7922-3BD00-0AN0	Connecting cable with 40-pole front connector for ET 200M and 25pole Sub-D female connector for MTA; Length 3 m

3.7 Failsafe ET200S module

3.7.1 Mounting rail

Manufacturer's Reference	*Description*
6ES7195-1GA00-0XA0	Mounting rail length:480mm

3.7.2 Power supply

Manufacturer's Reference	*Description*
6ES7138-4CA50-0AB0	Power supply PM-E DC 24V / 10A
6ES7193-4CC30-0AA0	TM-P Terminal Module for Power Supply

3.7.3 Interface Module

Note that we intend to use Profinet interface between CPUs and remote I/O chassis. The attachment of redundant ET200S rack is not yet available and references will be updated once known.

Manufacturer's Reference	*Description*
6ES7151-3BA23-0AB0	IM151-3 PN Interface module for ET200S IO modules *Redundant attachement not yet supported*
6ES7953-8LG11-0AA0	Memory card (128 KB)

3.7.4 Input / Output module

We selected one module of each type for standard signals. Signal standards are defined in I&C signal processing, part I [RD2].

Specific needs will be dealt on a case by case basis.

Manufacturer's Reference	*Description*
6ES7138-4FA04-0AB0	Digital input module (4/8F-DI DC 24V)
6ES7138-4FB03-0AB0	Digital output module (4F-DO DC 24V / 2A)
6ES7138-4FR00-0AA0	Relay output Module (1F-RO DC 24V/ 5 A)
6ES7193-4CF50-0AA0	TM-E Terminal Module for analog or digital module

3.7.5 Failsafe ET200S summary

Figure 9: Failsafe ET200 S rack

The figure above shows a typical failsafe remote I/O ET200S with selected I/O cards inserted. Depending on the I/O application needs, the resulting configuration could be different.

4 Software licences

4.1 STEP 7 for industrial PLC

Manufacturer's Reference	*Description*
6ES7810-5CC11-0YA5	STEP 7 Professional 2010
6ES7803-0CC03-0YA5	DOCPRO V5.4
6ES7841-0CC05-0YA5	PLCSIM V5.4
6ES7658-1FX07-2YA5	Simatic Version Trail V7.0
6ES7658-1CX07-2YA5	Simatic Cross Manager V7.0
6ES7830-2AA22-0YX0	Standard PID Control 5.2
9AE4110-1AA20	FB for IEC 61850 compliance

4.2 STEP 7 for SIL-3 PLC

Manufacturer's Reference	*Description*
6ES7833-1CC02-0YA5	F system UG 1 license
6ES7833-1SM02-0YA5	Simatic Safety Matrix V6.2
6ES7658-1EX07-2YA5	Continuous Function Chart for S7-400