



Factory Automation

Svibanj 2020.



Razvojni alat, softver

Totally Integrated Automation Portal (TIA Portal)

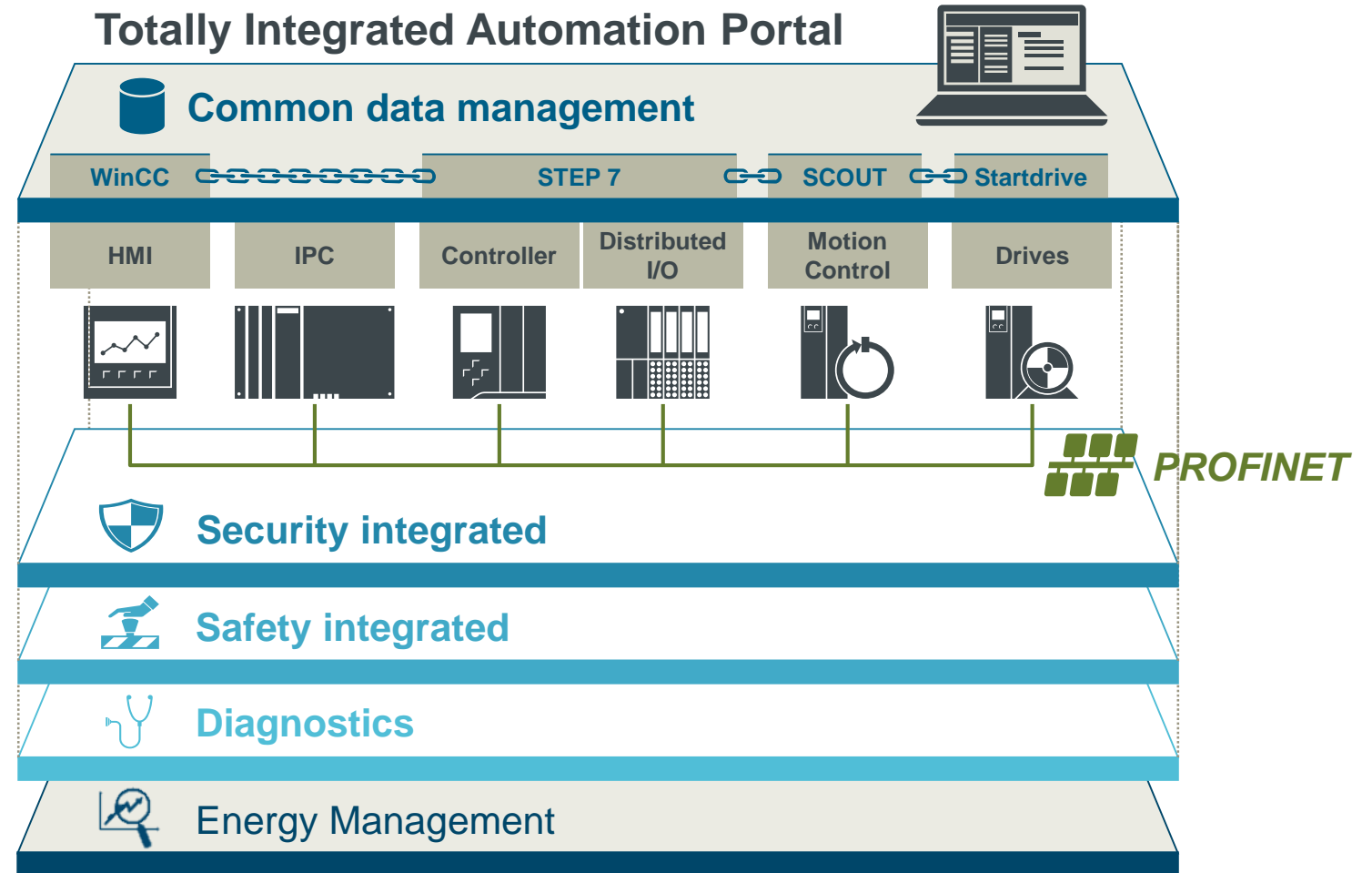
One for all...



+ One common database

+ Consistent and unified operator concept

+ Common, central services



TIA Portal V16

Your gateway to automation in the Digital Enterprise



Digital Workflow with TIA Portal



NEW

Feature / Function

TIA Portal Openness

- Support of Software Units
- PLC Online Fingerprint
- Support of SINAMICS DCC

Version Control Interface (VCI)

- Interface to external versioning systems (GIT, SVN, TFS)
- Export/import of software objects via the TIA Portal interface

TIA Portal Test Suite

- Automated creation and review of programming guidelines
- Creation and execution of application tests with S7-PLCSIM Adv

Feature / Function

TIA Add-Ins

- Extension of the TIA Portal functionality with the help of the Openness API

Project Trace

- Coordination of traces in multiple devices (multiple CPUs, different device types)
- Representation in a common diagram
- Alternative trigger sources

Support for new HW functions

- S7-1200 OPC Server
- S7-1500 - R/H, Web Server invitation, IP forwarding, Drive controller
- WinCC Unified panels

SIOS dodatne informacije: [link](#)

STEP 7 - Innovations

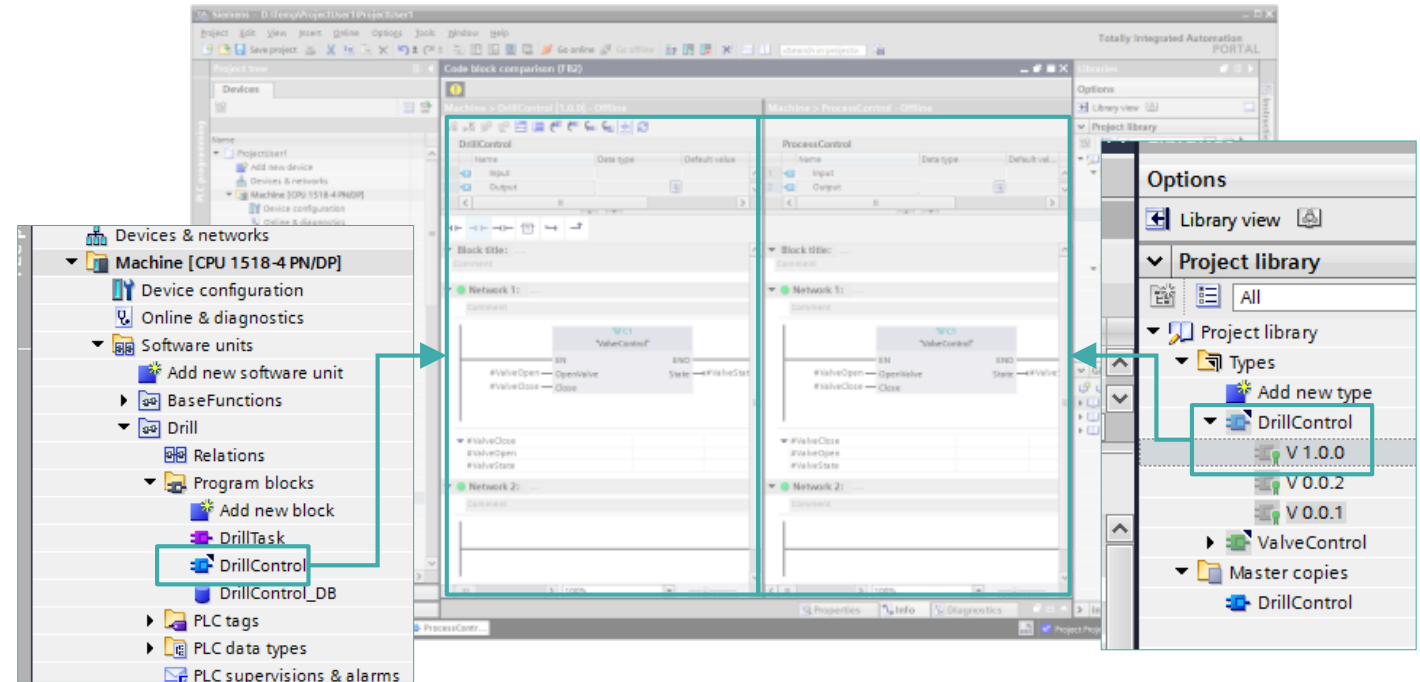
Detailed block compare for project ↔ library

Function

- Detailed block compare for blocks from a project and
 - Mastercopies (project or global library)
 - Single versions of Types (from project or global library)
 - Via Quick Compare or High-Level Compare Editor
- Detailed block compare between library blocks (e.g. V1.0 vs V2.0)

Benefit

- Easier handling of blocks in libraries
- Better usability for tracking changes between type versions



STEP 7 - Innovations

Multilingual comments in SCL programs



Function

S7-1500 ✓

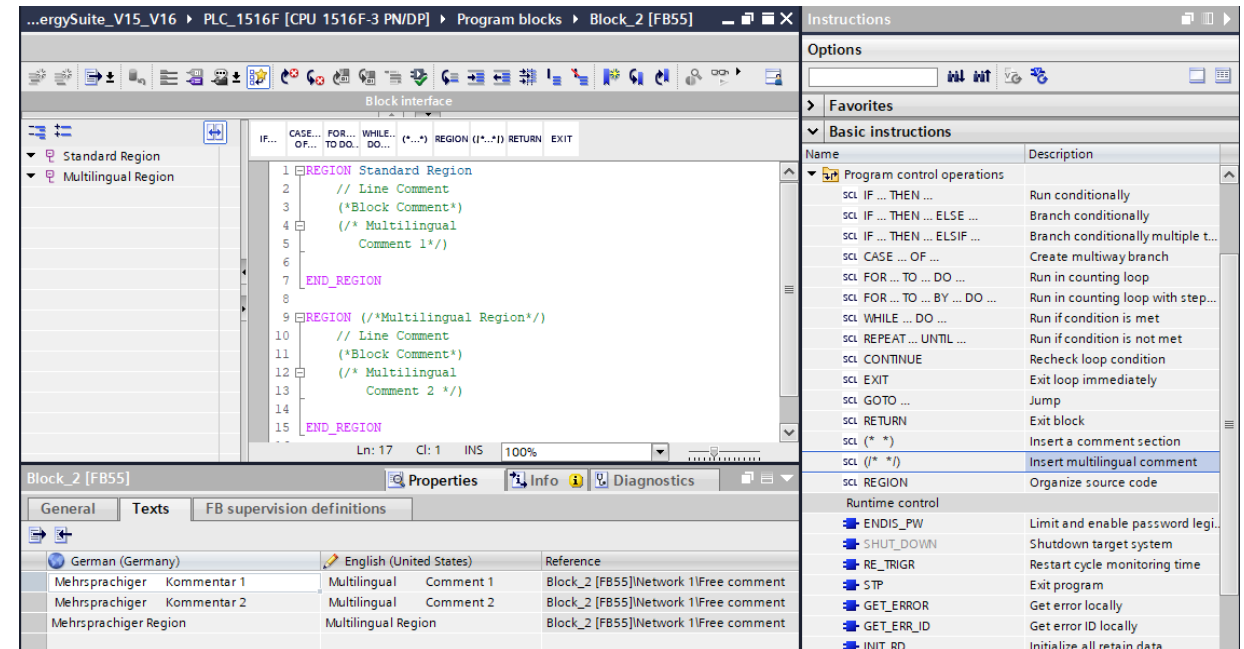
S7-1200 ✓

S7-300/400/WinAC ✓

The syntax (`/* ... */`) enables the entry of multilingual comments and regions in SCL blocks.

Advantage of the function

The code implementation can be commented in different languages. This enables the use and maintenance of complex algorithms at distributed production sites worldwide.



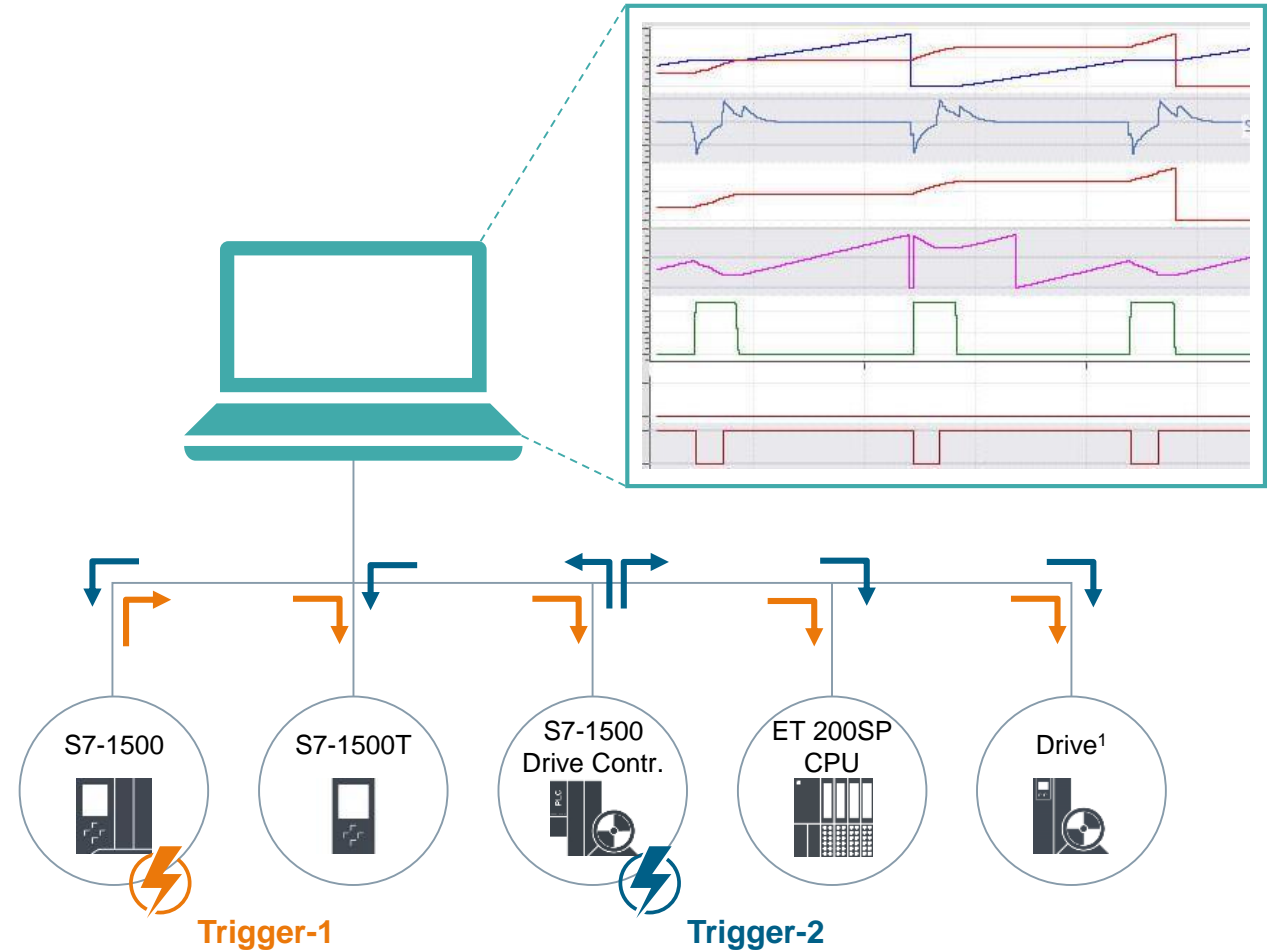
STEP 7 - Innovations Project Trace

Function

- Coordination of traces in several devices
 - Supports multiple CPUs
 - Supports a wide range of device types
- Display in a common diagram
- Alternative trigger sources possible

Benefits

- Cross-device troubleshooting
 - Extensive trigger options
 - Simple combination of related traces



System functions

TIA Portal Support Gateway

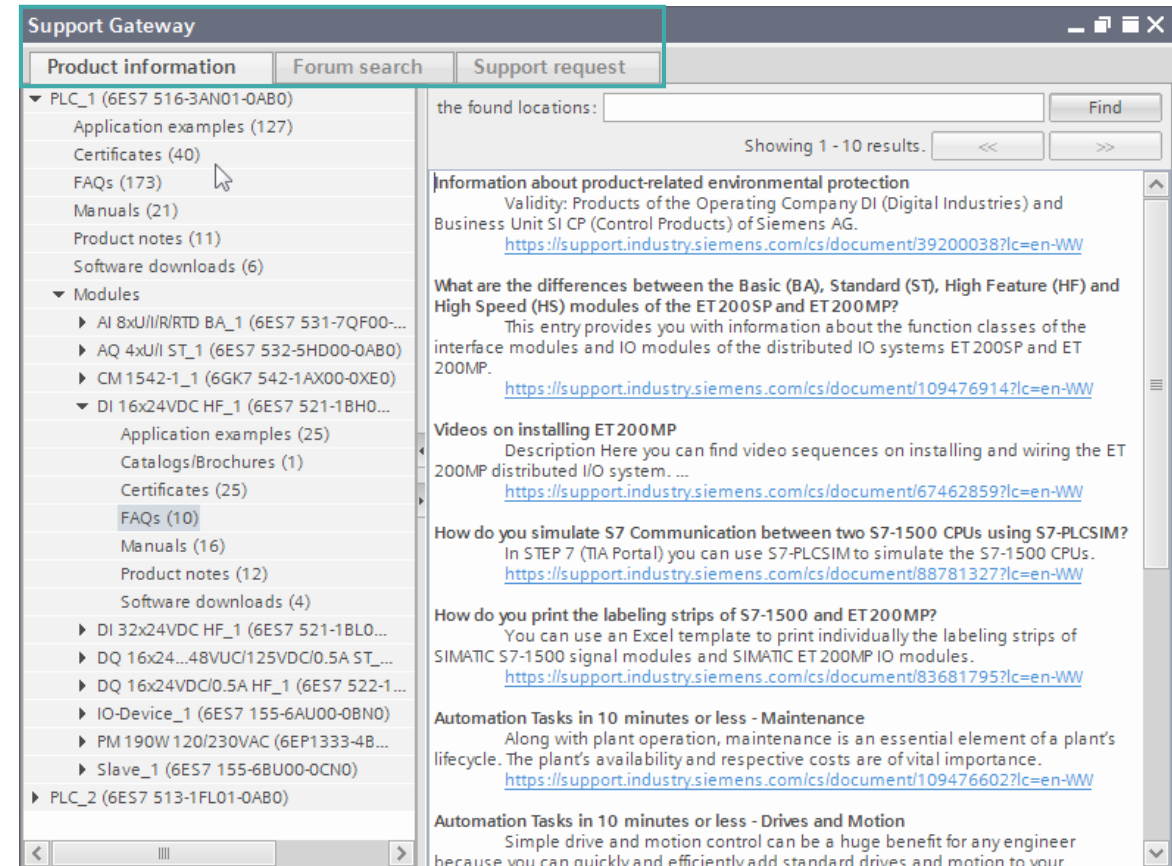


Overview

- The TIA Portal Support Gateway is the integrated connection of the Siemens Industry Online Support pages to the TIA Portal
- The Support Gateway includes the following functions:
 - Forum search
 - Product search
 - Generation of support request file

Benefits

- Seamless integration of SIOS added value functions into the TIA Portal
- Know-how management without change of media
- Simple and fast forum search
- Pre-filtered product search based on the components contained in the TIA Portal
- Generation of a support request file with the most important computer and TIA Portal data



Hardware configuration

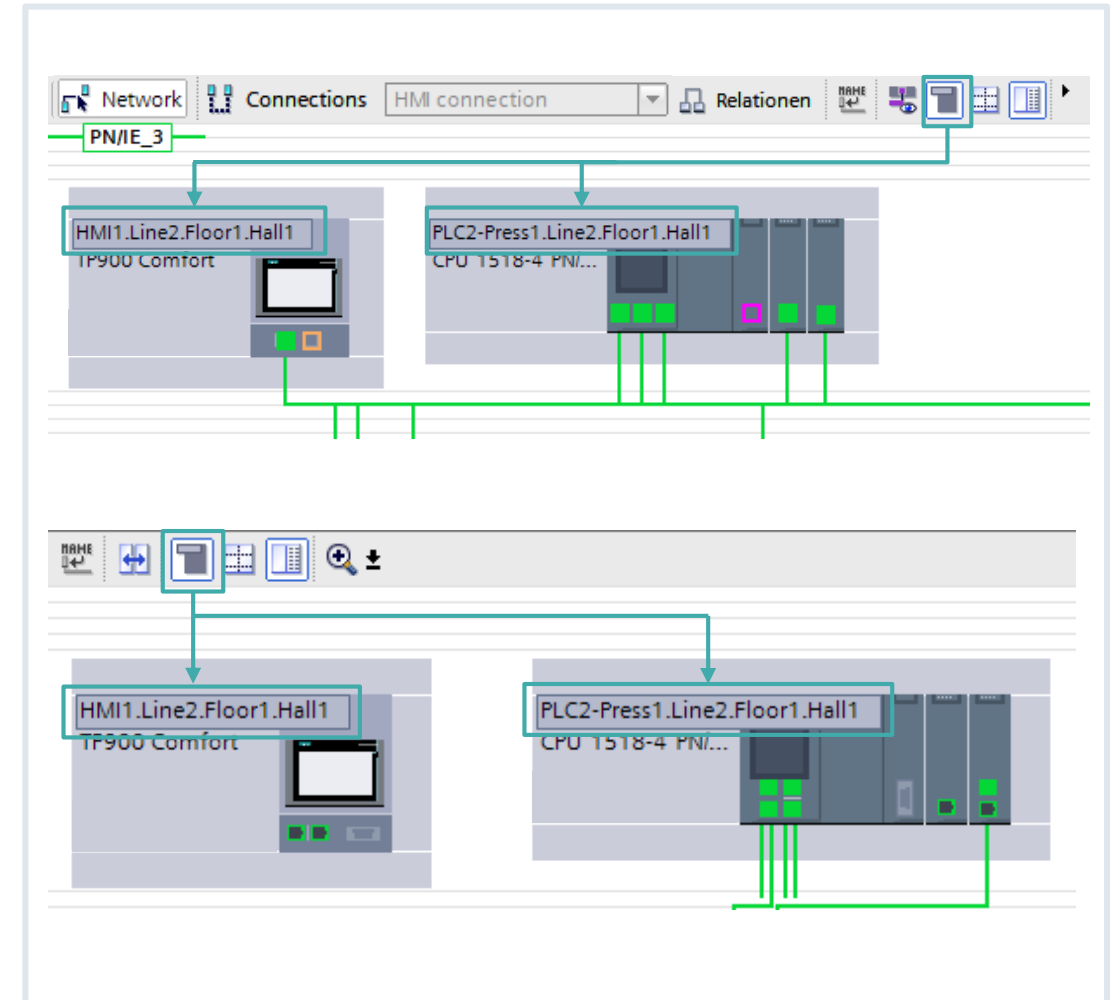
Improvement of display of the device name in network and topology view

Function

- Device name can be displayed in network view and topology view.

Advantage

- The clarity and orientation of projects with long device names is facilitated.



System functions

VCI – Interface for external version management

Functionality

Ex-/Import of program objects

- Blocks
- User data types
- Tagtables

Compare

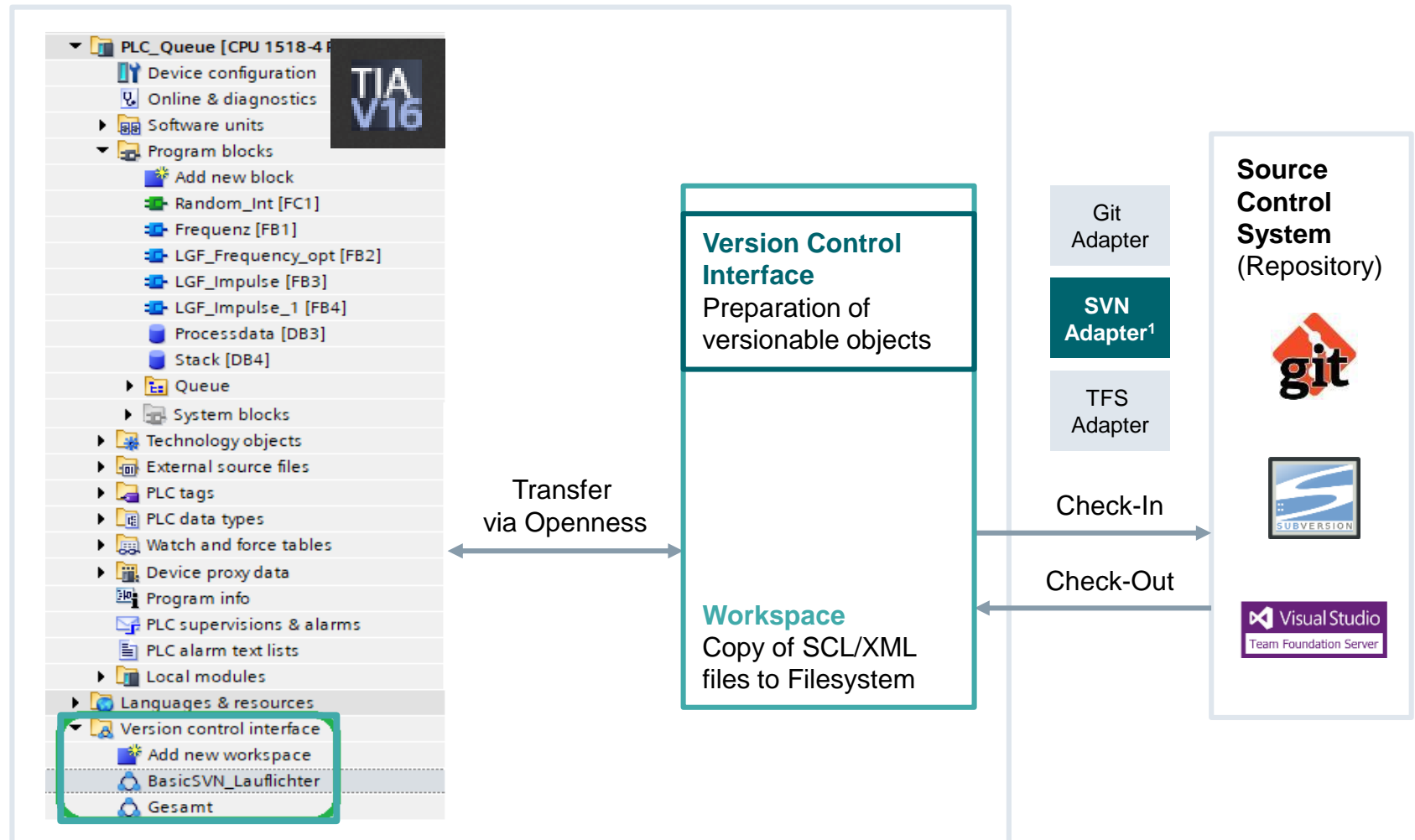
- Objectstatus (equal/unequal)
- Detailed Block compare

Interfaces for

- External compare tool
- Userscripts

Openness Interface

- API with VCI operations
- Without User-Interface



¹ Samplescripts available

System functions

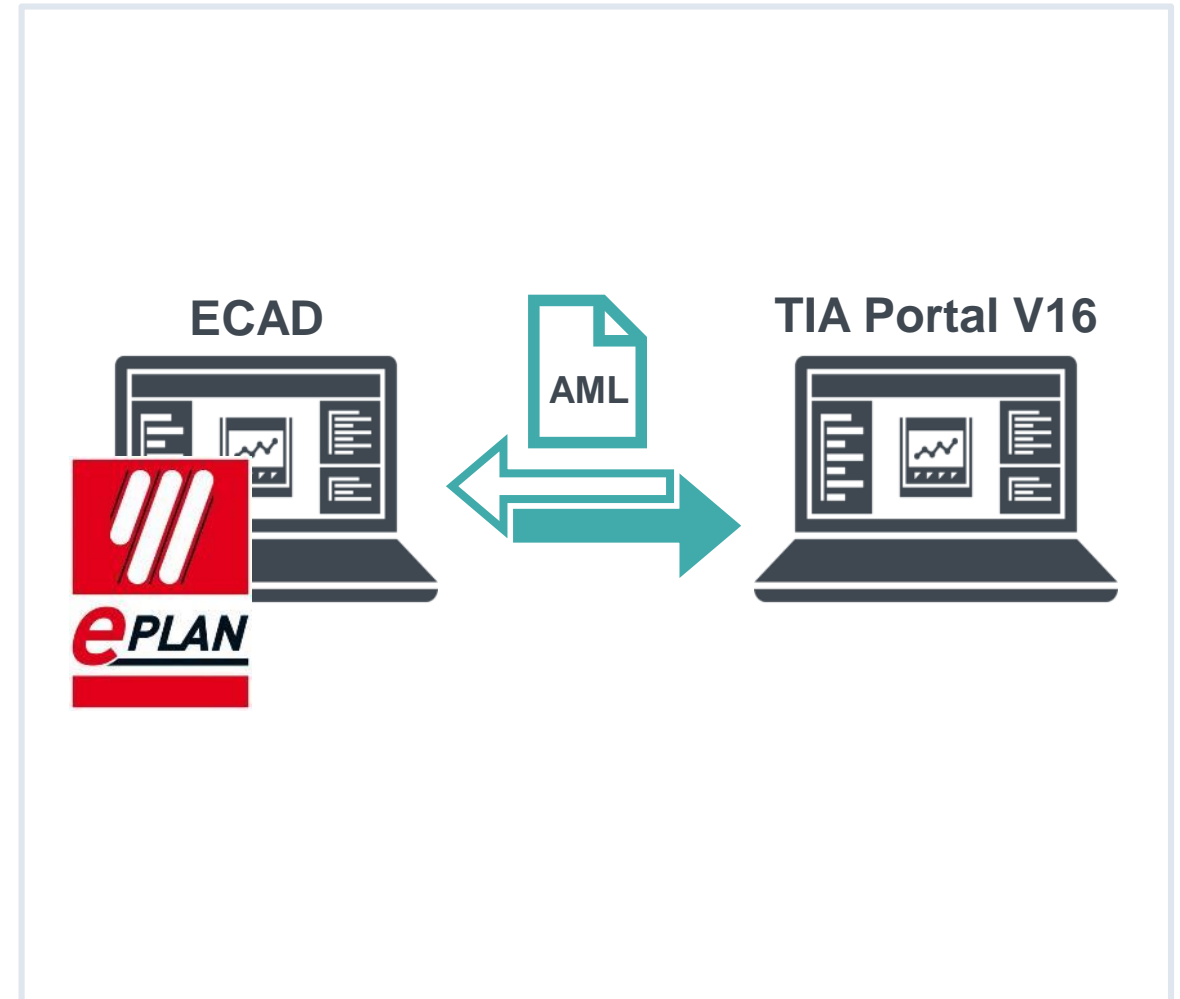
Cx export/import

Extension of the Cx export and import

- Support of the AR APC V1.1
- Use of objects from TIA Portal libraries
- Support of BaseUnits for ET200SP modules (except Safety modules)

Advantages of the function

- Due to the extension, the relevant data is retained in round-trip scenarios and saves manual post-configuration
- The use of references to library objects (master copies) enables the integration of pre-configured hardware components



Virtual commissioning of automation solutions

Using the TIA and Digital Enterprise Suite to simulate, validate, and optimize controllers and machines



Feature/ Function

Virtual Controller SIMATIC S7-PLCSIM Advanced V3.0

NEW

- extended hardware support: S7-1500 MFP incl. ODK
- PLCSIM Advanced API improvements: browse for available runtimes in the network

Simulation platform SIMIT V10.1

NEW

- Functional Mockup Unit (FMU)
- Functional Mockup Interface (FMI)

Benefit

- no changes of the STEP 7 program / HW configuration necessary to use the functionalities of the S7-1500 MFP-CPU
- Better and simpler applicability in complex scenarios
- Integration of manufacturer-independent standardized behavior models e.g. from AMESIM or Matlab in SIMIT
- Standardized interface for the data exchange of different simulation software (via FMU)

New functions in S7-PLCSIM V16

Cycle control

Function

In order to improve the applicability of PLCSIM while testing the PLC programs, the functionality has been extended to include “Cycle control”.

In the options below the operator panels the following modes can be set via the new section "Scan Control".

Pause allows the cycle to stop

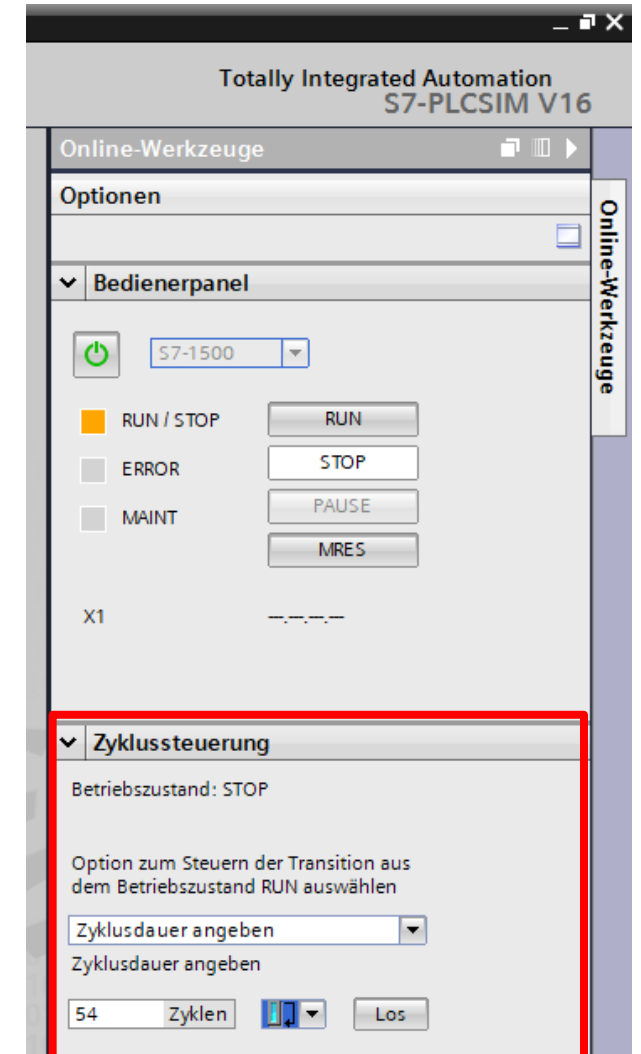
- For analyzing process values at a selectable time

Specify simulation duration (image)

- Observing the program behavior in slow motion. At least one cycle is always running through
- The following can be set: number of cycles or running time in ms./ sec./ min.

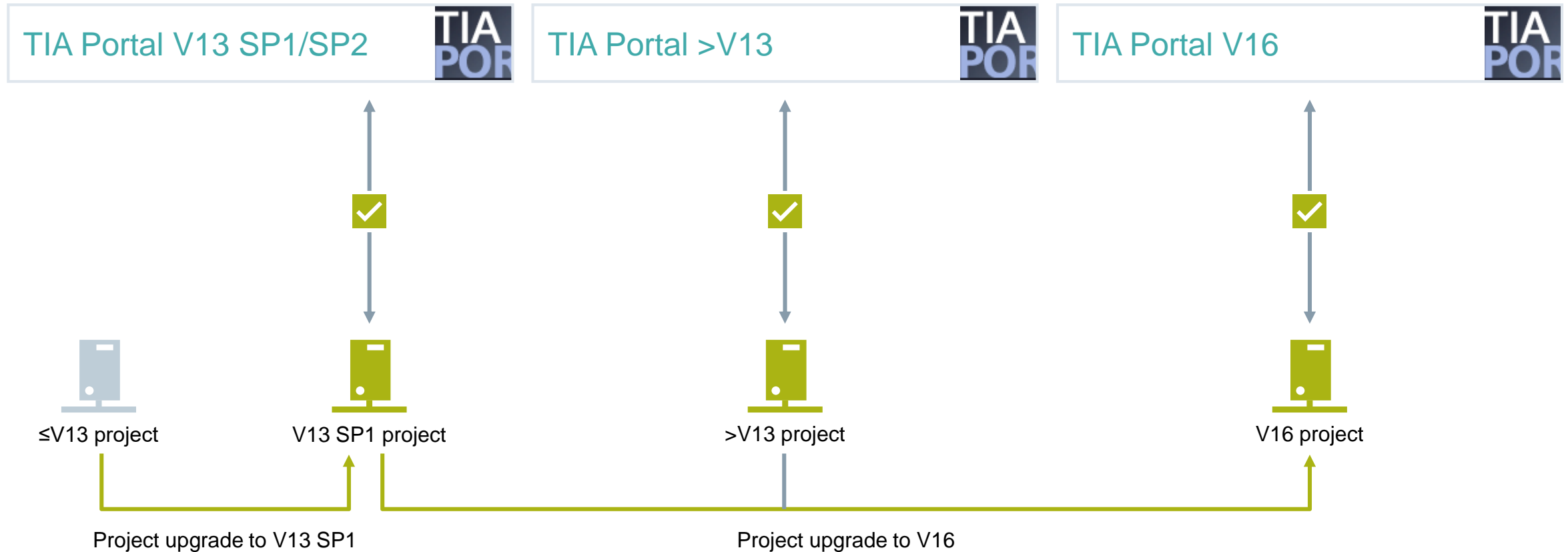
Pause after execution of the startup OB

- To analyze and verify the OB startup behavior, the program is stopped after its execution



System functions

Project upgrade



Side-by-side installation of V13 SP1/SP2 up to V16 allows access to all project versions.
The V16 license can be used for all available versions from V11.

System functions

Spare parts compatibility S7-1500 and ET 200 CPUs – FW 2.8 with older TIA Portal versions

TIA Portal V12/V13/V14/V15/V15.1



TIA Portal V16



V12
project
with FW 1.0/1.1



Firmware V2.8

V13/V13 SP1
project with FW
1.5/1.6/1.7/1.8



Firmware V2.8

V14/V14 SP1
project with
FW 2.0/2.1



Firmware V2.8

V15/V15.1
project with
FW 2.5/FW 2.6



Firmware V2.8

V16 project
with FW 2.8



Firmware V2.8

Full spare part functionality: Online support: ID 109744163



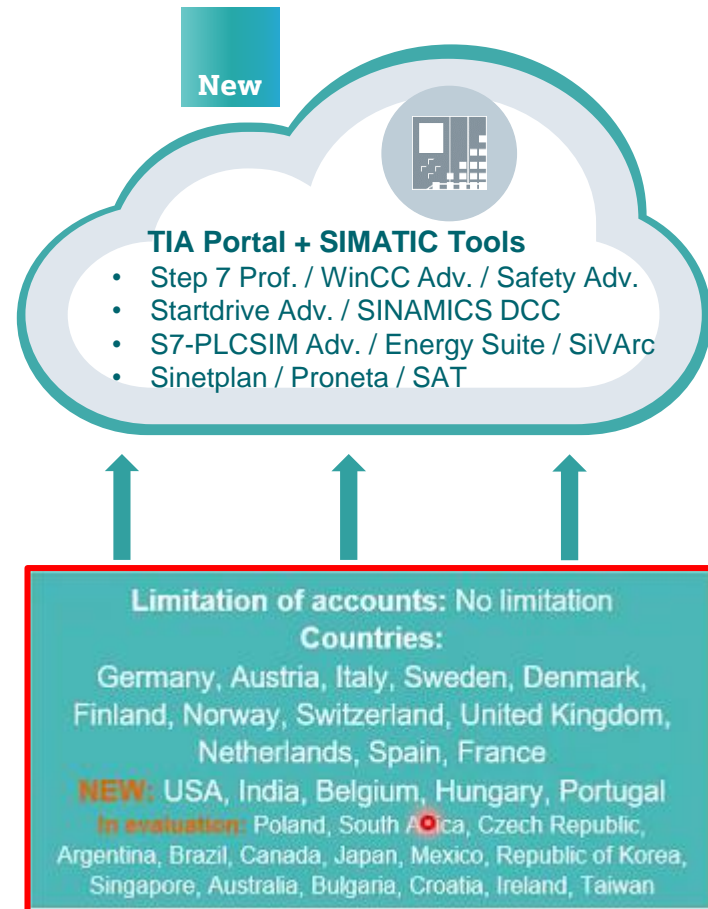
New functions can be used with TIA Portal V16 and firmware V2.8

TIA Portal V16

Your gateway to automation in the Digital Enterprise



TIA Portal Cloud as 21-day free TRIAL



Feature / Function

Simple **cloud environment** for TIA Portal Engineering

Simple **test environment** for TIA Portal usecases in the cloud

web-based access to TIA Portal engineering in the cloud

Cloud-based FileShare for TIA Portal projects

Benefit

- fast ad-hoc use of TIA Portal
- Simplified trial use of TIA Portal and TIA Portal options
- Simplified test environment with high performance
- simulation capability with S7-PLCSIM Advanced
- No installation effort at all
- Flexible application possibilities on any PC and tablet hardware
- Very low hardware requirements
- Easy management with centralized data storage of TIA Portal projects

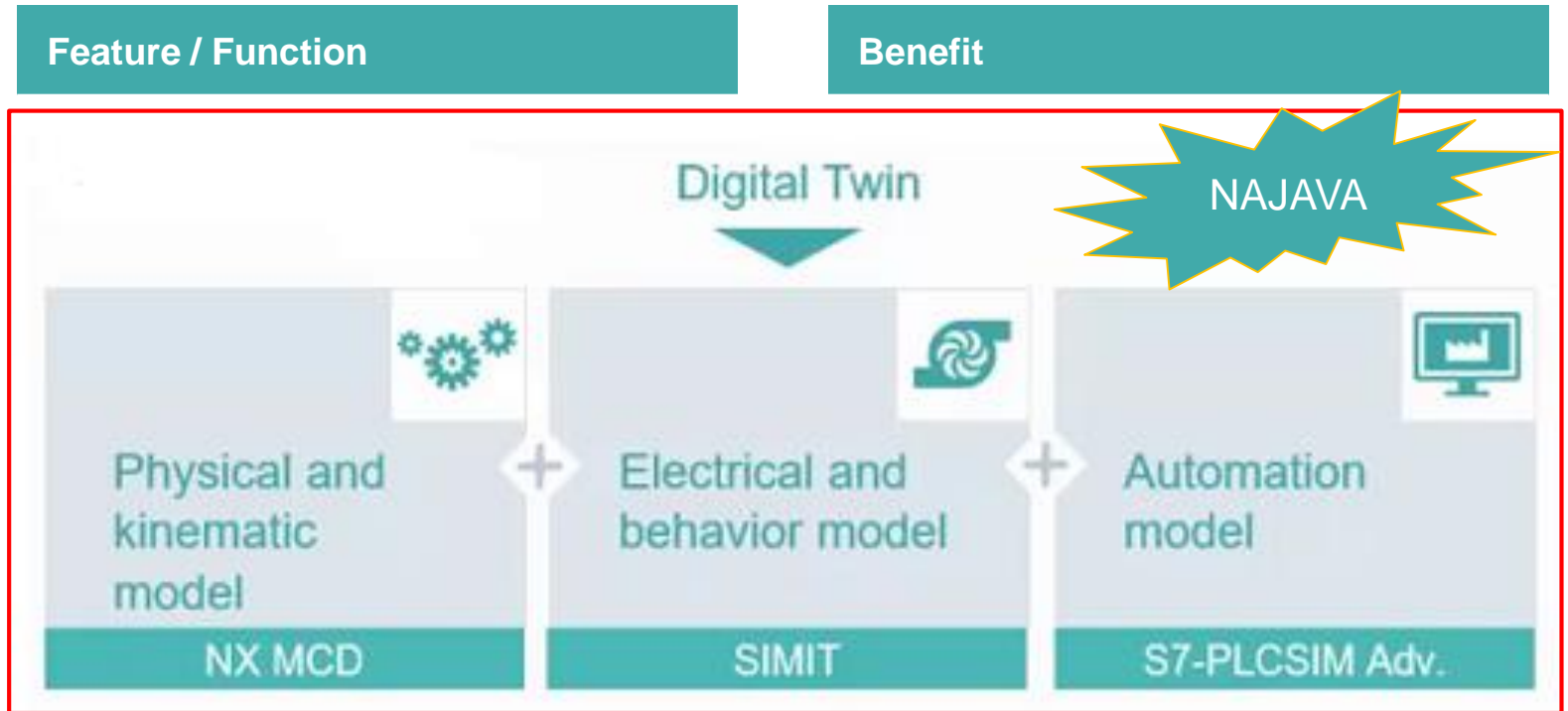
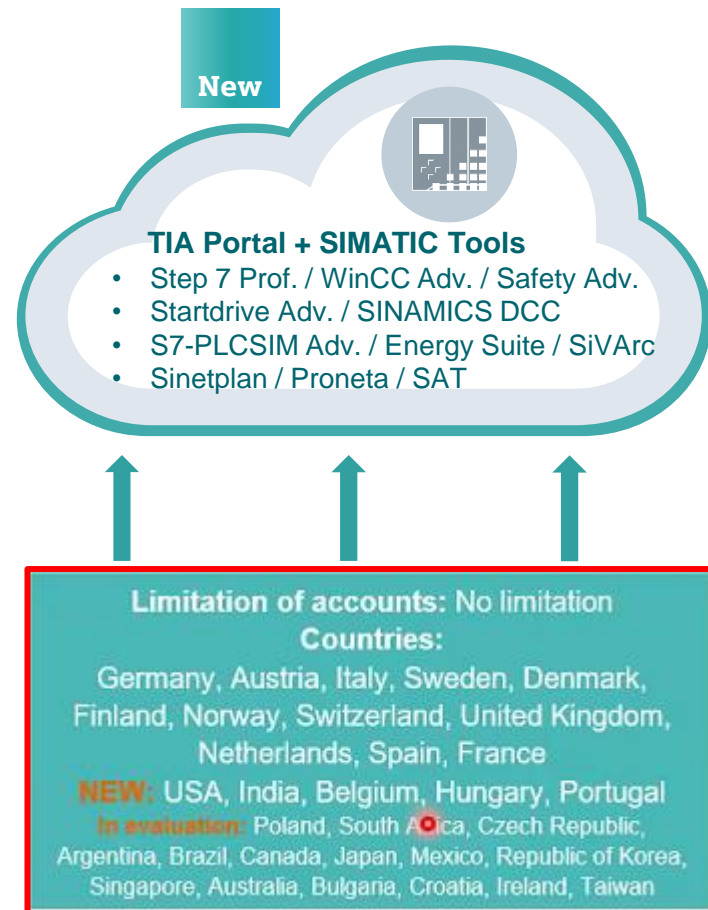
www.siemens.com/simulation-cloud

TIA Portal V16

Your gateway to automation in the Digital Enterprise



TIA Portal Cloud as 21-day free TRIAL



www.siemens.com/simulation-cloud



„Home-Office ponuda” do 31.7.2020.

Svjedoci smo da je u ovim izazovnim vremenima vrlo važna fleksibilnost i mogućnost rada neovisno o lokaciji. Kako bismo omogućili rad izvan firme, pripremili smo posebnu ponudu koja će našim korisnicima omogućiti korištenje najnovijeg TIA PORTALA V16.

Trajanje licenci vremenski je ograničeno do **31.12.2020.**

U promotivni paket uključene su TIA Portal floating licence:

- STEP 7 Professional V16
- WinCC Advanced V16 i WinCC Unified V16 (10K PT)
- STEP 7 Safety Advanced V16

Kataloški broj za naručivanje: **6ES7822-1AE06-0YS0**

>> Narudžbe su moguće do 31.7.2020.

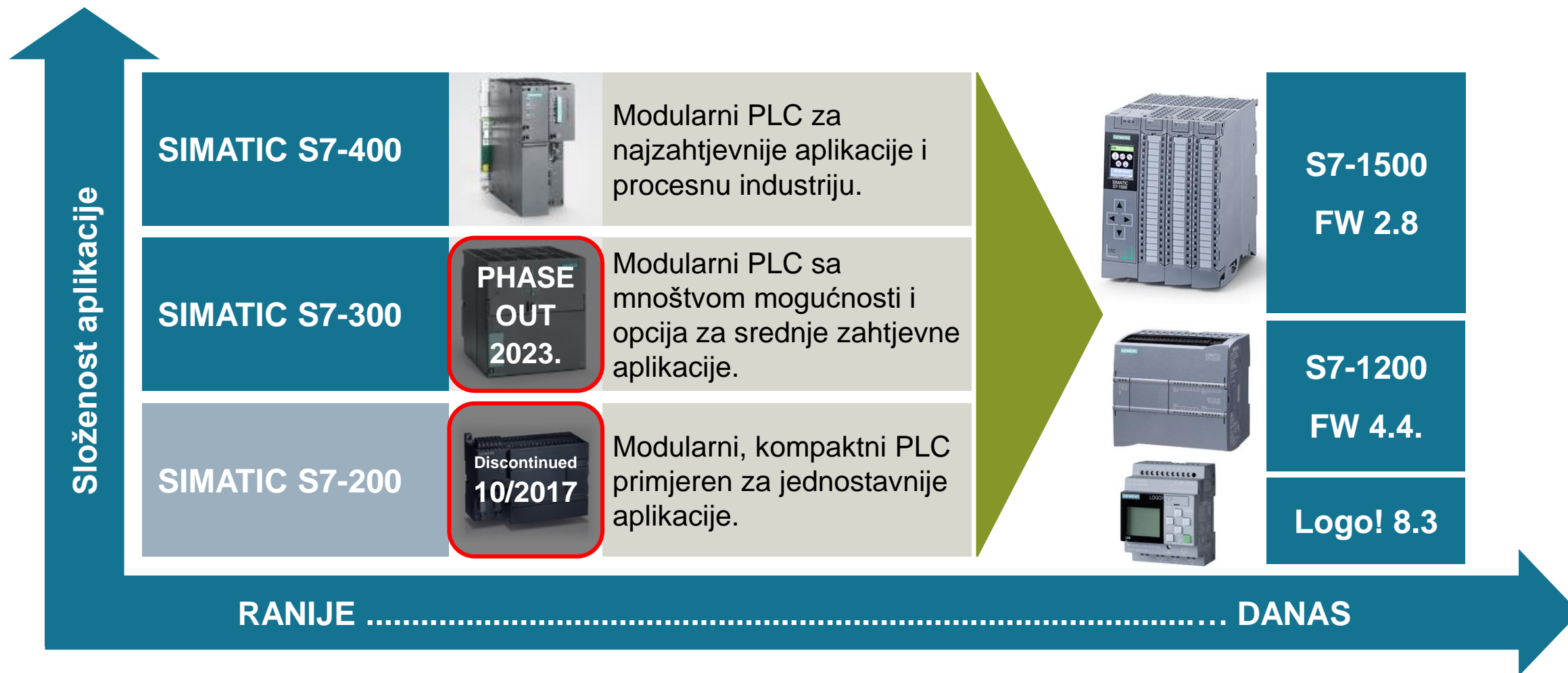
>> Kataloška cijena: 25 €

>> Isporuka isključivo putem standardnog Online Software Delivery (OSD) procesa.



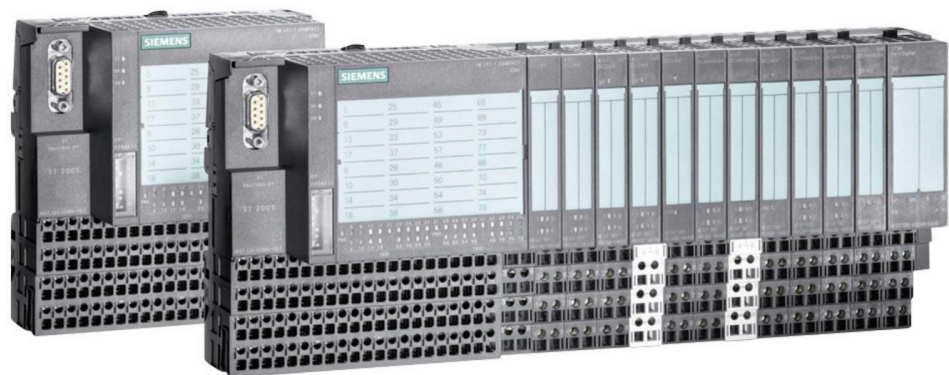
PLC oprema

SIMATIC – pregled aktualne PLC opreme



SIMATIC – pregled distribuirane periferije ET200

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PHASE OUT
ET200S
10/2020.

PHASE OUT
ET200M
2023.



ET200SP

ET200MP





HW inovacije

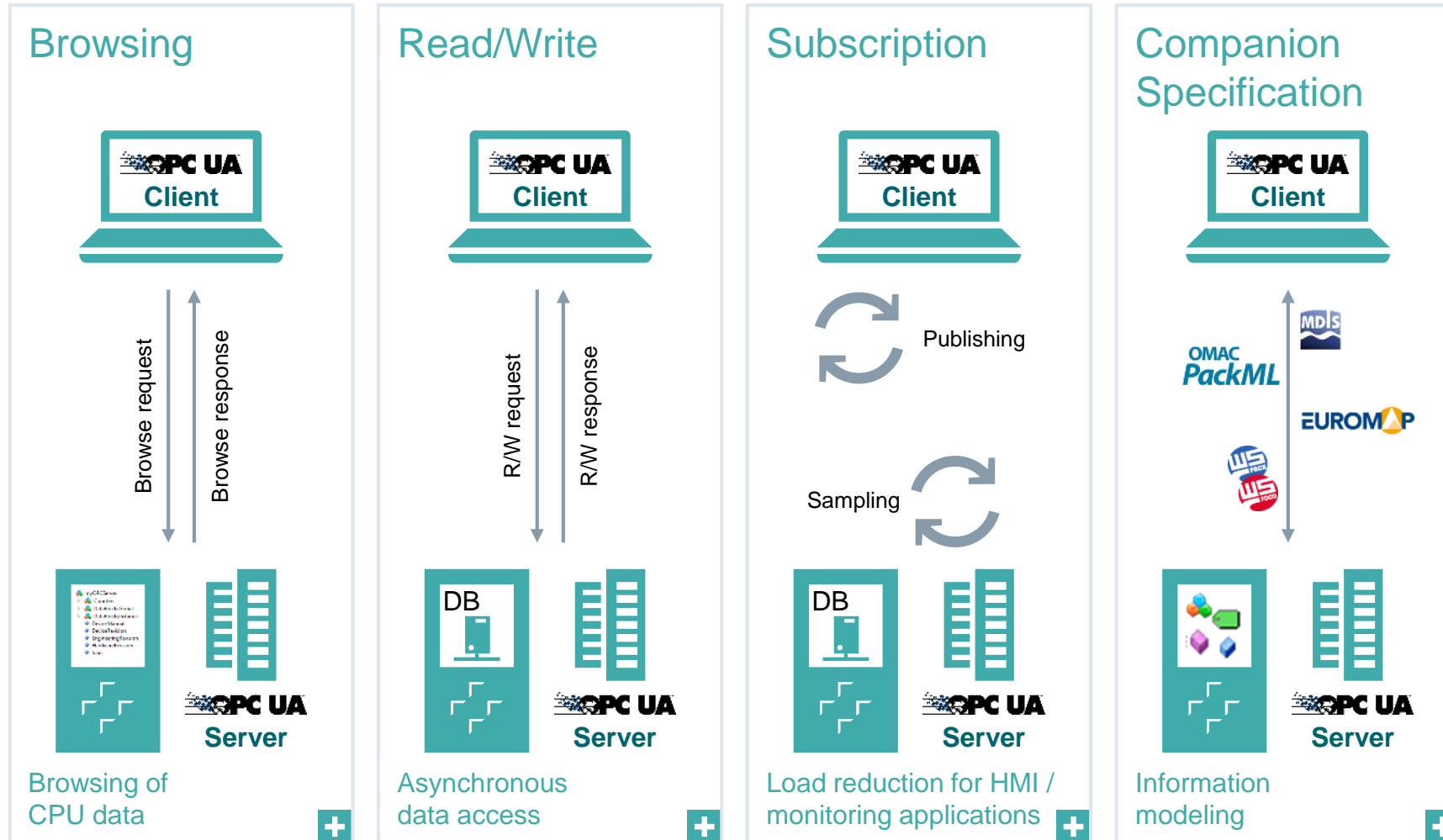
Innovation Basic Controller SIMATIC S7-1200

New Firmware 4.4 – enhanced connectivity

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OPC UA S7-1200 V4.4 - Functional scope



S7-1200 exceptions in the 1st version

- No registered read/write
- No structured data types and arrays
- No methods
- No alarms and conditions

Hardware configuration

S7-1200 V4.4 – E-mail encryption with TMAIL_C – optionally with attachment

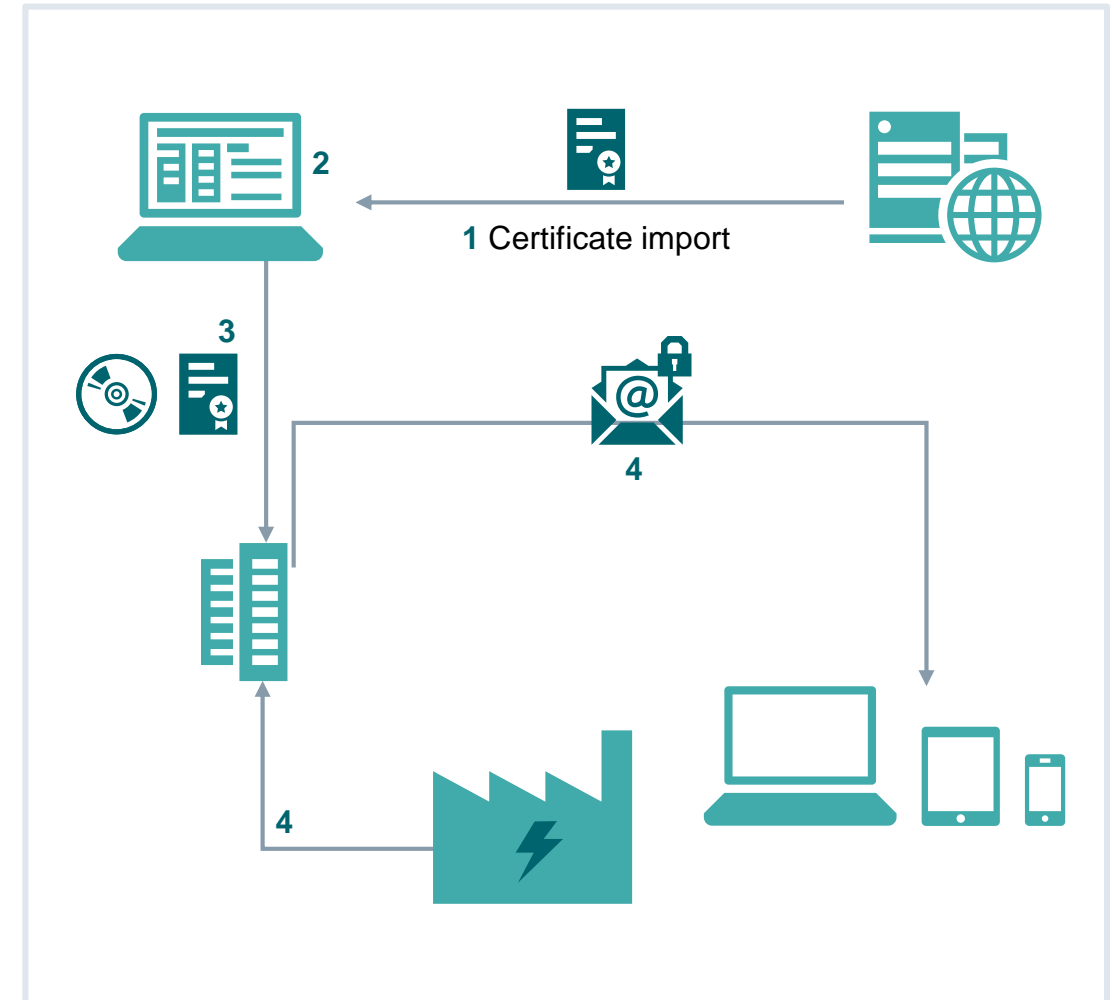
Encrypted e-mail communication with TMAIL_C
via internal CPU interfaces

Requirements

- TIA Portal V16, CPU FW V4.4 and TMAIL_C block version **V6.0**

Procedure

1. Import of certificate from the e-mail provider to the TIA Portal
2. Programming with TMAIL_C and reference to imported certificate (assignment of certificate to the CPU)
3. Program download with TMAIL_C and referenced certificate for encrypted communication
4. Sending of an encrypted e-mail with fault/diagnostics information to service staff/center; display on PC, tablet or smart watch
5. Optional: Sending of data log, recipes or user files



Hardware configuration

S7-1200 V4.4 – DNS name resolution for OUC

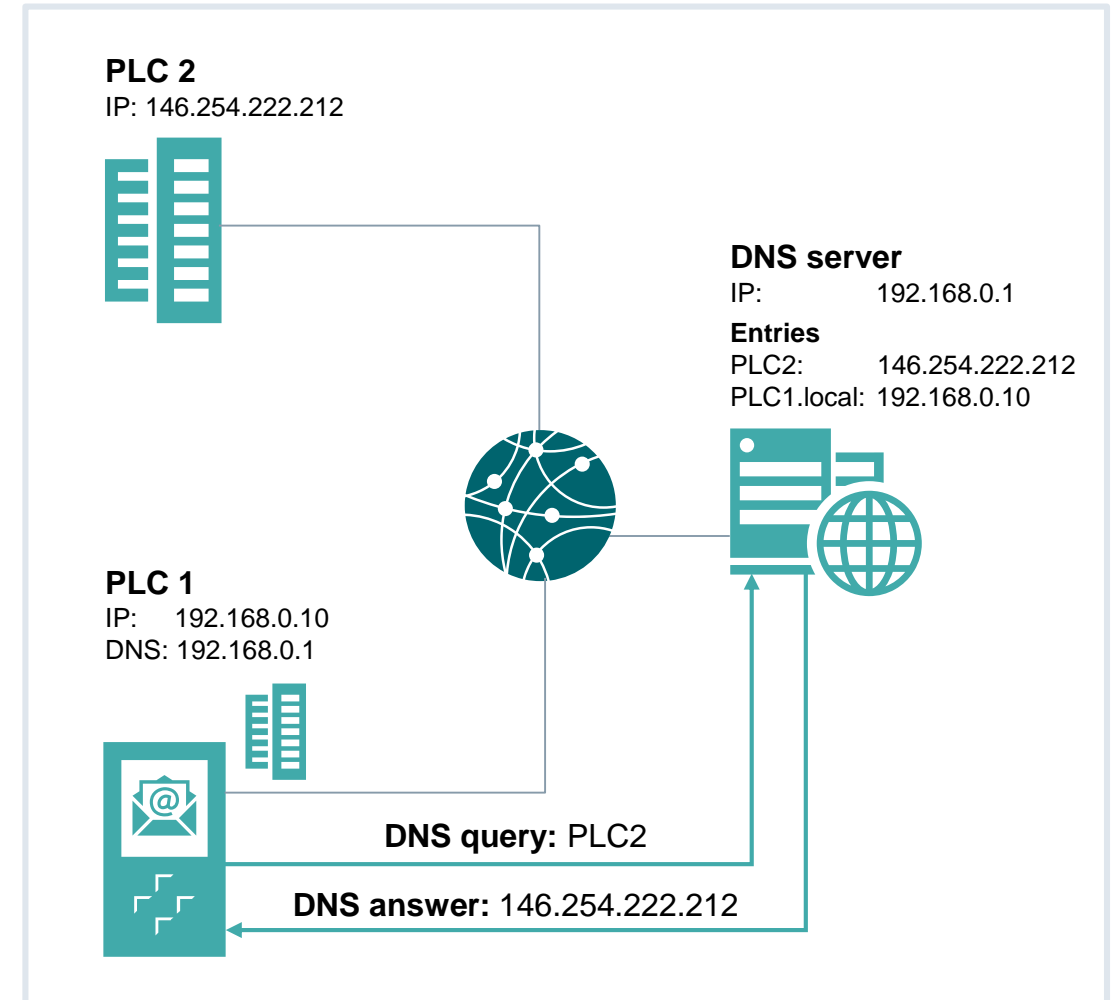
Open user communication with DNS name resolution

- CPUs query IP addresses from one another on the DNS server
- DNS server configuration in the CPU properties

Benefits

- Clear configuration thanks to name-based addressing
- No IP addresses needed for configuration of Open User Communication

OUC independent of IP address



Hardware configuration

S7-1200 – DC signal modules with 16 digital outputs sinking

Sourcing/PNP

SM 1222 DC DQ16xDC
6ES7222-1BH32-0XB0

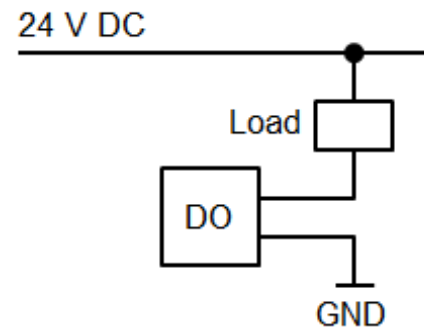
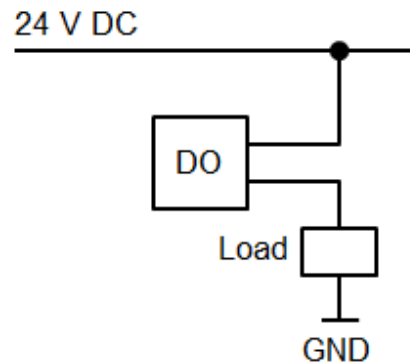
**SM 1223 DC/DC DI 16xDC/
DQ 16xDC**
6ES7223-1BL32-0XB0

Sinking/NPN

SM 1222 DC DQ16xDC SINK
6ES7222-1BH32-1XB0

**SM 1223 DC/DC DI 16xDC/
DQ 16xDC SINK**
6ES7223-1BL32-1XB0

New



2 additional 16-channel DC output modules
sinking



SIMATIC S7-1500

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System functions

New product features for SIMATIC S7-1500 and ET 200 CPUs – Enhanced environmental conditions

Examples of possible applications

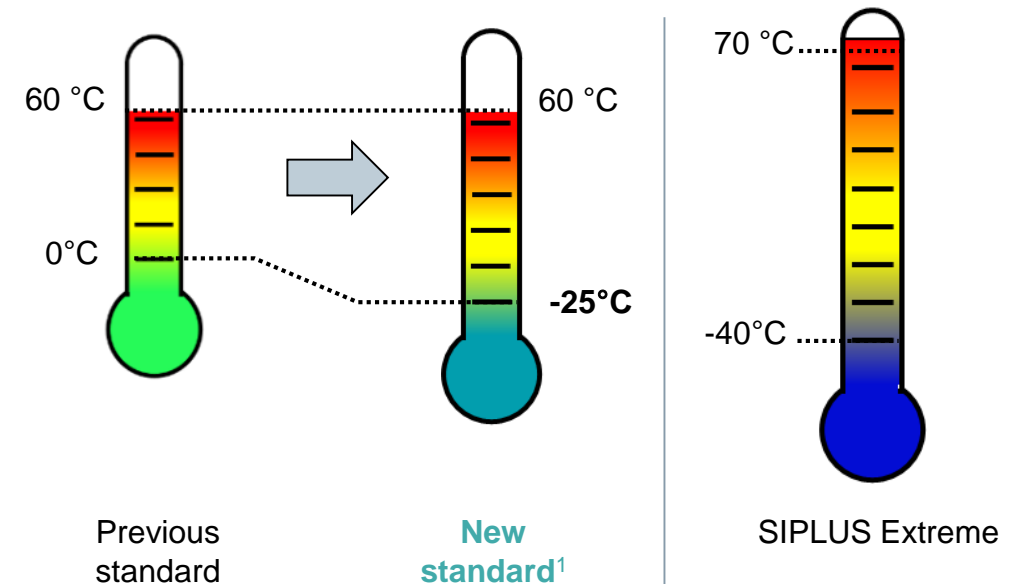
- Outdoor plants
- AGV (deep-freeze) cold storage facilities
- Tunnel construction
- Cranes
- Shipbuilding
- ...

Additional benefits of SIPLUS versions

- -40° C to +70° C
- Condensation, 100% rel. humidity and icing allowed
- Higher resistance to harmful gases and salt mist
- Railway standards

Planning

- Adjustment in stages
- -25°C for CPUs
- I/O modules down to -30°C in some cases



1) Please observe the information in the manual with regard to condensation

System functions

New features for the SIMATIC S7-1500 system and ET 200SP CPUs – Enhanced environmental conditions

Possible applications

- Cable railways
- Wind farms
- Automobile (e.g. Mexico)
- Surface mining (e.g. South America)

Benefits

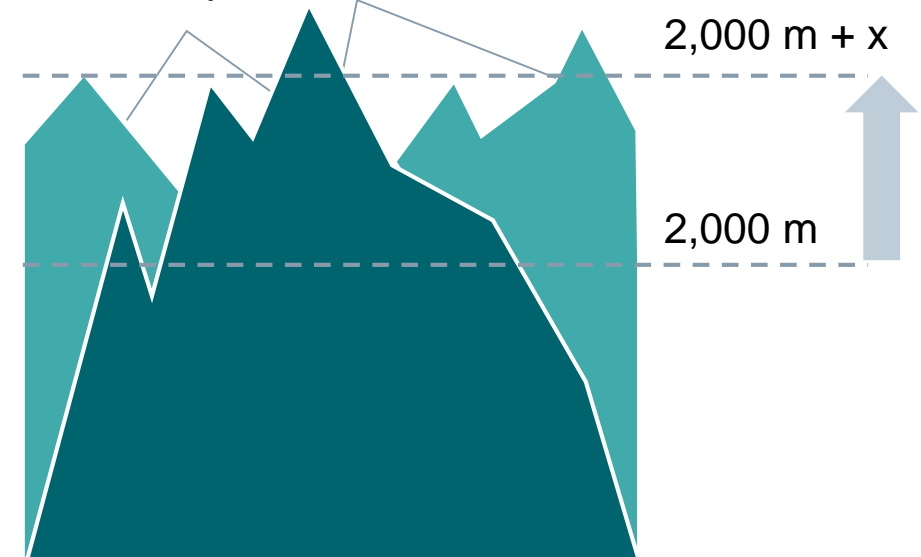
Extended range of applications

Additional benefits of SIPLUS versions

- Portfolio largely released for 5,000 m
- Higher operational temperature at higher altitudes

Extended installation altitude

- Adjustment in stages
- Permissible installation altitude depends on the module
- Information about the possible installation altitude can be found in the technical specifications or in the system manual



Hardware configuration

Improvement of the mechanical ruggedness

S7-1500 CPUs with new mechanical design

- The integration of the display into the CPU results in a new mechanical design
 - Installation dimensions remain identical
 - Slight variation regarding connection placement of the connectors
(PN connector 90° rotated, DP connector)
- RUN/STOP switch is replaced with RUN/STOP buttons
 - No more "cancelling" of the RUN/STOP switch
 - "STOP ACTIVE" indicates that the CPU was switched to STOP via the STOP button
 - Memory reset/Reset operation: Same as before
- Display can now be read – even when the cover is open
- Mechanical manipulation protection is retained

Spare part functionality

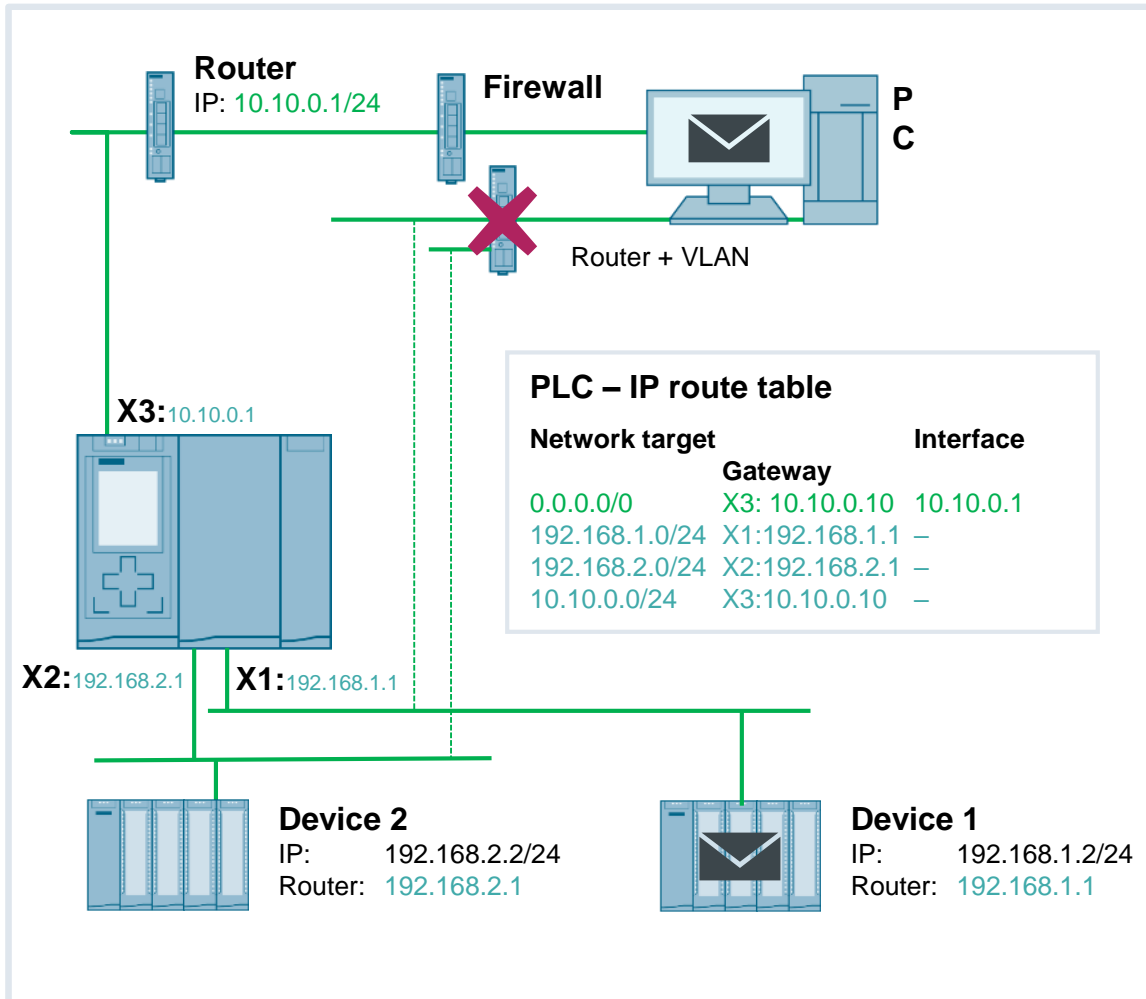
The CPUs are fully "spare part compatible" with previous versions

CPU 1515(F) and CPU 1516(F)



Hardware configuration

S7-1500 based CPUs - IP-Forwarding



IP forwarding in PLC

- New** PLC can forward received IP frames to directly reachable IP subnets. IP route table is automatically generated by the IP configuration of the PLC interfaces
- Optional default IP route if external IP routers are used
- New** Additional external router is not needed X

Area of application

- Simplified integration of devices for remote access, e.g. for diagnostics for remote maintenance or firmware update
- Simple access from control to field level for configuration and parameter assignment of devices, e.g. via PDM or Web browser ...

Restriction

Additional IP routes cannot be entered in the route table of the PLC

SIMATIC S7-1500 based CPUs – Web server innovations

New JSON API



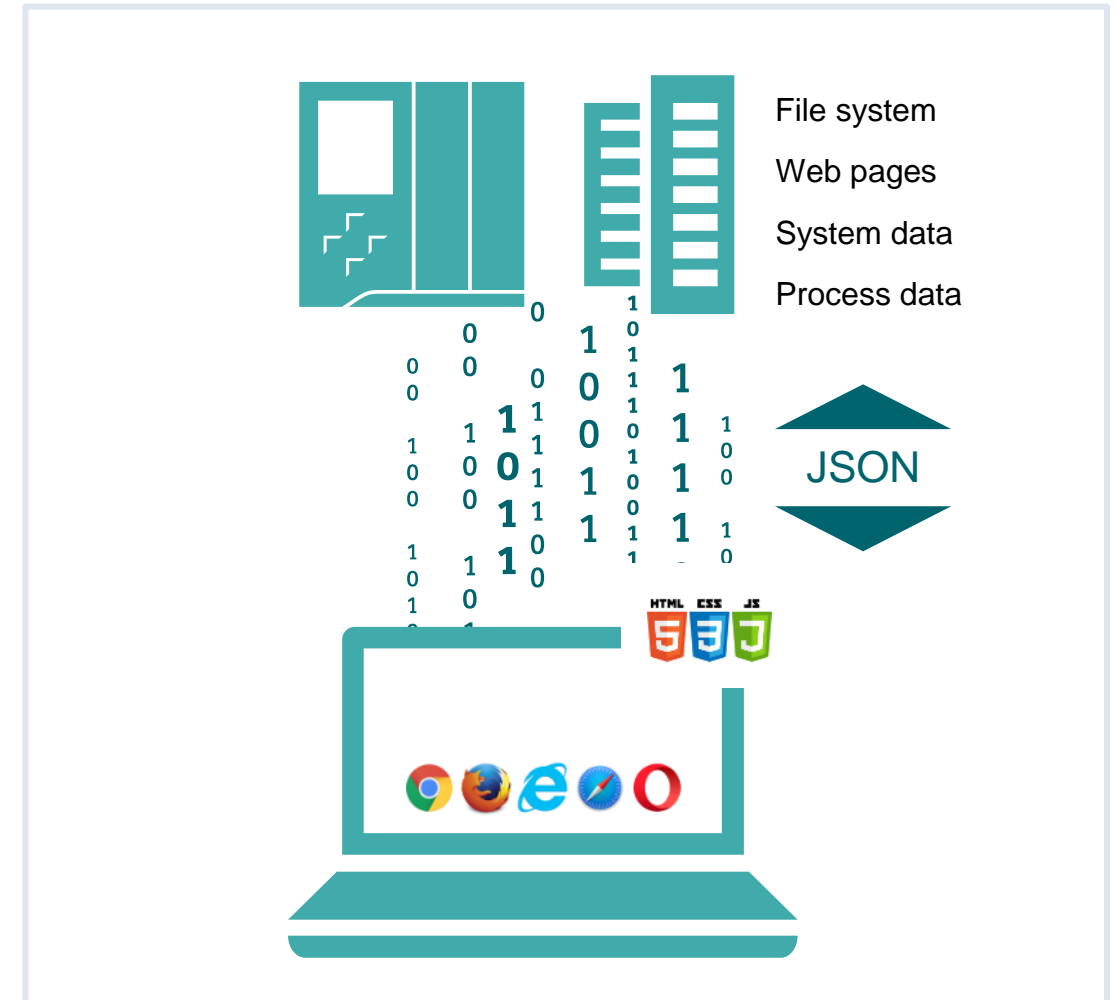
Function

- Web server with JSON RPC2.0 as new "Web data interface" for access to web server data such as
 - Process values (tag values)
 - Status and CPU diagnostics data (partly)
- CPU Web server response in JSON format



Advantages of the function

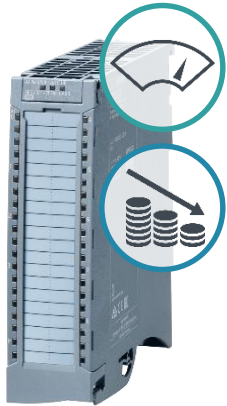
- Future basis for "state of the art" creation of user-defined web pages
- JSON as web-capable data format for simple linking to web data consumers, e.g. MES systems, SCADA systems
- JSON as a stable data format for accessing web server data, i.e. no adjustment of web client code (e.g. JavaScript code) needed after firmware update
- Spare part compatibility as the new web data interface can be used in addition to the current options



SIMATIC ET 200MP – New Products

New products for more flexibility and better scalability

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AI 8xU/I/R/RTD BA

Feature / Function

AI 8xU/I/R/RTD BA

Cost-effective 8-channel analog input module for measuring current, voltage, resistance and temperature (25% less than for ST version)

- Connection of resistance thermometers via 3-wire connection
- Toolless mounting of the shielding

Benefit

- **Optimized price-performance solution** for price-sensitive measurement applications
- **Continuous scalability** of the ET 200MP in terms of cost, functionality and performance
- **Time saving** for mounting



CM 8xIO-LINK

CM 8xIO-LINK

8 Port IO-Link Master (V1.1)

- Up to 32 Byte In-/Output data per port
- Engineering with the S7-Port Configuration Tool or directly in the TIA Portal („Autostart-function“)
- Master-Backup via TIA Portal function block

- **Space saving in the control cabinet** due to the possibility to connect IO-Link devices directly and centrally to the S7-1500
- **Reduction** of engineering and wiring effort

SIMATIC S7-1500 / ET 200MP – New products

New products & features for better availability and minimum footprint



High channel modules

NEW



Feature / Function

New modules with high channel density

64-channel digital modules:

- DI 64x24VDC BA (p-/m-reading)
- DQ 64x24VDC/0.3A BA
- DQ 64x24VDC/0.3A SNK BA (m-switching)
- DI 32x24VDC/DQ 32x24VDC/0.3A SNK BA

16-channel analog modules:

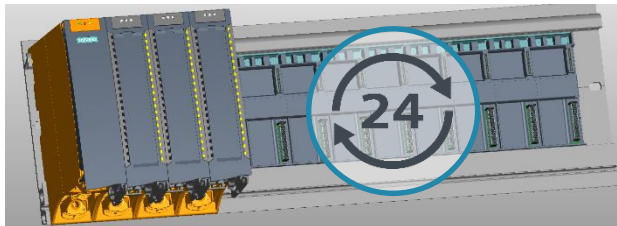
- AI 16xU BA
- AI 16xI BA

Benefit

- **Optimized price-performance solution** for price-sensitive applications
- **Minimum footprint** due to highest possible channel density
- **Time saving** for mounting through the tool-free assembly of shielding and use of TOP Connect

Active backplane bus

NEW



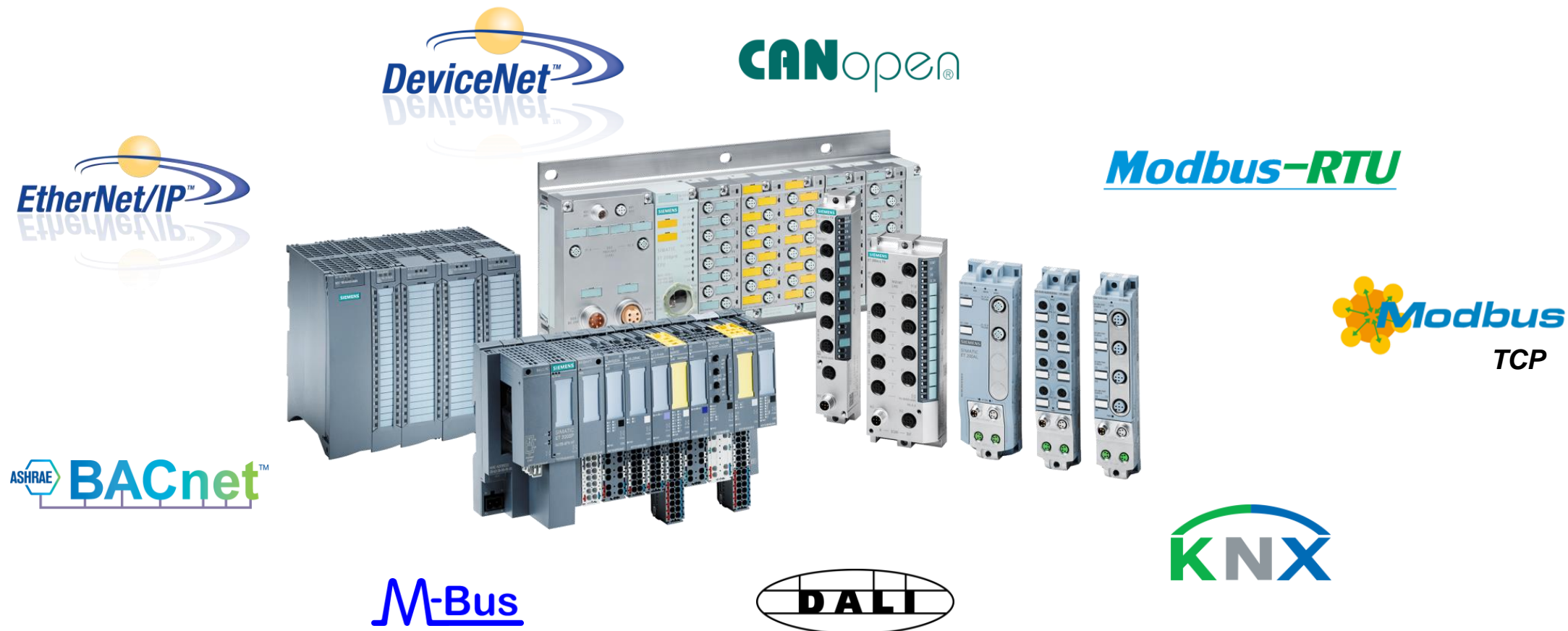
Active backplane bus / Hot Swapping

By using the active backplane bus for the ET 200MP, hot swapping (module exchange at RUN of the PLC) is possible even with multiple modules. Up to **12** S7-1500 / ET 200MP modules can be plugged in per station.

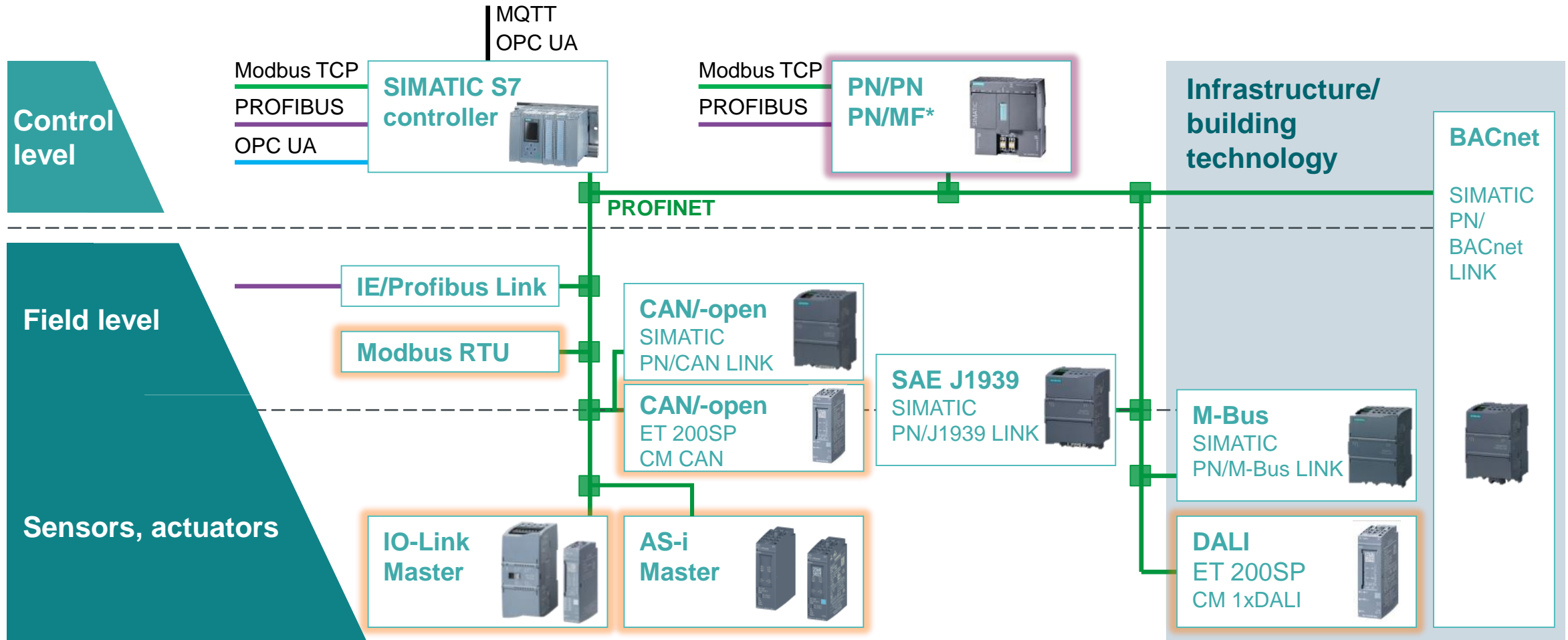
Highest machine / system availability, since in the event of failure and replacement of one or more modules, the PLC and unaffected modules remain in operation.

SIMATIC Connectivity

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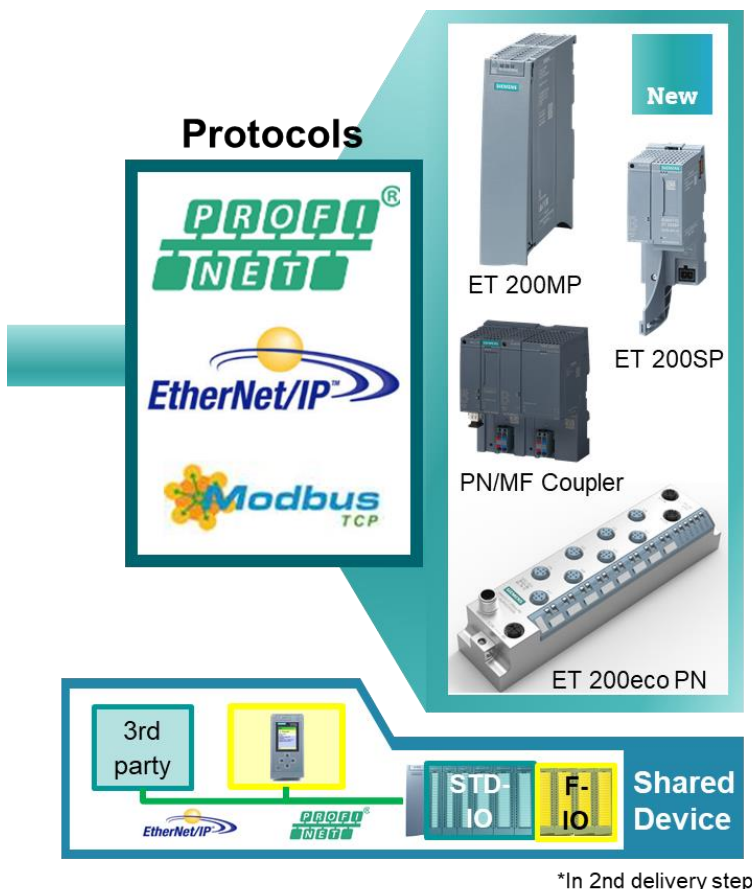
Which networks can SIMATIC S7 communicate with?



*) MF: Multifunctionbus

Legend: Link Modules Coupler

SIMATIC ET 200 MultiFieldbus Interfaces for ET 200MP, ET 200SP, ET 200eco PN, Coupler



Feature / Function



Products

- ET 200MP IM: IM155-5MF ST
- ET 200SP IM: IM156-6MF HF
- ET 200eco PN "Next generation"*
- **PN/MF Coupler**

Functions

- Support for PROFINET, EtherNET/IP and Modbus TCP
- Simultaneous communication with all protocols to modules of a station via the same cable (e.g. Standard I/O via EIP, F-I/O via PROFIsafe, Energy Metering via MTCP)
- Engineering via MFCT Tool
- Support of **Shared Device in MultiFieldbus configurations**
(Allocation of a station to several controllers)

Benefit



- **Savings in costs and planning effort when designing machines/plants**, since the same IO configuration can be used independently of the overarching controller
- **High flexibility** due to the possibility of access to the ET 200 station / modules from several controllers via shared device

PN/MF Coupler:

- Easy to configure deterministic data exchange, even across network boundaries, between SIMATIC and 3rd party controllers
- Simple integration of SIMATIC controls into existing machines / plants

SIMATIC ET 200SP innovations

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CM 1 x CAN

NEW

CANopen

Feature / Function

CM 1 x CAN

ET 200SP module for integrating CAN/CANopen* nodes into the automation solution in confined spaces (e.g. for AGV-systems, eCar charging stations, ...)

*Implementation acc. to specification "CiA 301"

Benefit

- **Compact and cost-effective solution** for the connection of CAN / CANopen devices
- **Time savings in engineering** thanks to simple parameterization possibility in the TIA Portal
- **Saves space in the control cabinet** thanks to the small footprint of the ET 200SP



SIWAREX TM WP351

NEW

Feature / Function

SIWAREX TM WP351

New ET 200SP module for fast, precise weighing processes in confined spaces

(e.g. rotary fillers)

- Legal for trade according OIML R51, R61, R76 & R107
- Easy commissioning and service via Webserver-Interface
- Cycle times < 1ms

Benefit

Simple and cost-effective solution for automated and calibrated weighing applications:

- **Saves time during commissioning** due to the simple user interface of the web server interface
- **Saves space in the control cabinet** thanks to the small footprint of the ET 200SP

SIMATIC ET 200SP for lighting control

Simple integration of lighting controls into the automation system



Feature / Function

Upgrade CM PtP for DMX 512

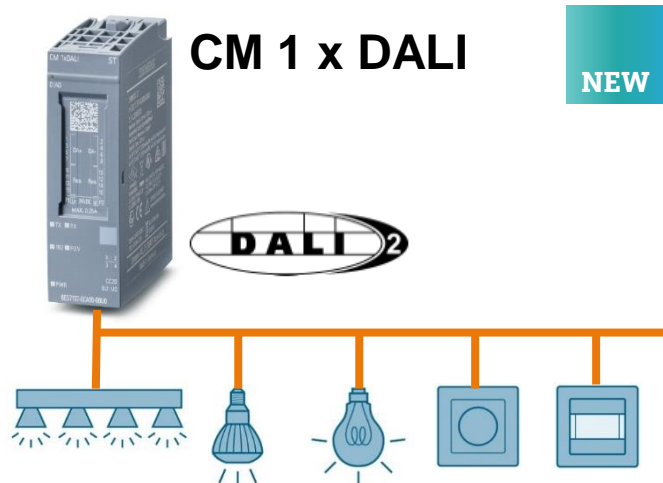
Use of the ET 200SP CM PtP as master module for lighting control with DMX 512 (Digital MultipleX 512)

- Typical applications: Stage and show lighting, large light shows, ...

Benefit

Simple and cost-effective integration of lighting controls into automation:

- **Saves space in the control cabinet** thanks to the small footprint of the ET 200SP
- **Time savings in engineering** due to simple parameterization and programming in the TIA Portal
- **Saves space and costs** for additional control units
- **Scalability of the quantity structure** due to the possibility of inserting several modules per station



NEW

CM 1 x DALI (Digital Addressable Lighting Interface)

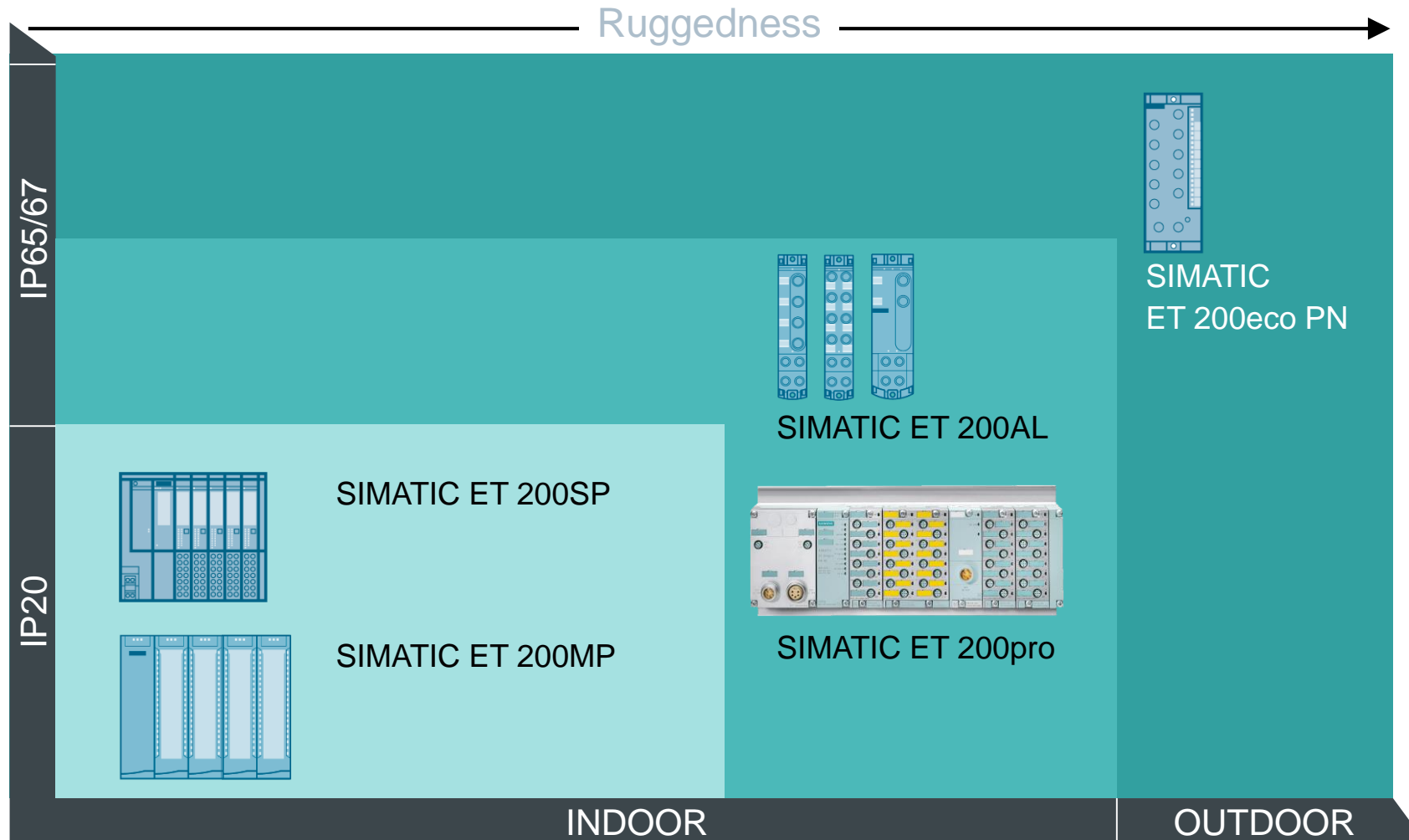
ET 200SP DALI Multi-Master module for connecting one DALI bus (per module) with up to 64 luminaires and 63 sensors

- Control of the connected devices via function blocks
- Integrated power supply up to 160 mA
- Typical applications: tunnels, hall lighting, shipbuilding, etc.

SIMATIC ET 200

Portfolio Overview

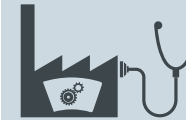
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**Efficient
engineering**



**Innovative
design**



**Reliable
diagnostics**



**Safety
Integrated**



**Consistent
scalability**



**Technology
Integrated**

SIMATIC ET 200pro

Scalable control solutions directly at the machine

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SIMATIC CPU 1513pro (F)

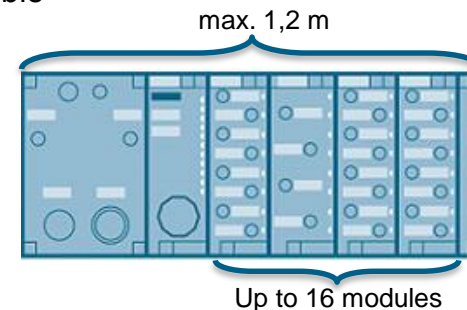


Feature / Function

- Two new SIMATIC CPU 1513pro controllers in IP65/67 for mounting outside the control cabinet
- Two (!) independent PROFINET interfaces with 4 ports
- Programming interface RJ45
- Safety Integrated
- Integrated OPC UA Server/Client
- Integrated Webserver
- Station width up to 1,2m possible

Benefit

- **The performance and functionality of the S7-1500** for mounting directly on the machine
- **Good price-performance solution** for small to medium-sized applications
- **Easy commissioning and high transparency** due to the possibility of direct connection of a PG and the diagnostic option of the web server
- **Easy solution for safety requirements up to SIL3 / PL e** via centrally pluggable fail-safe I/Os & motor starters

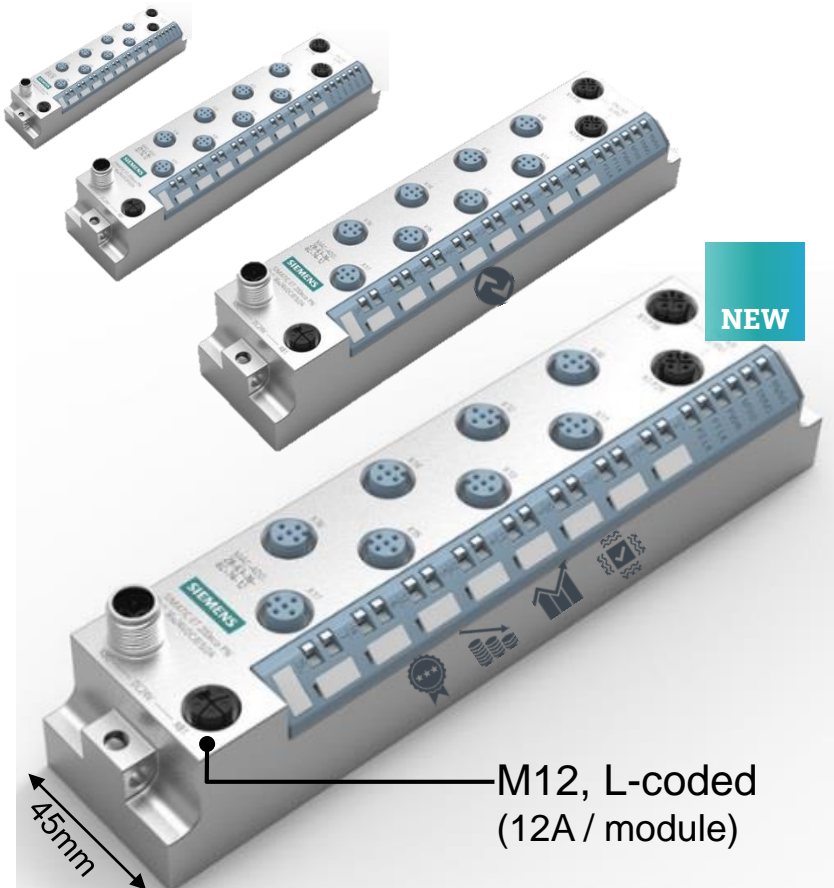


SIMATIC ET 200eco PN

The next generation of rugged I/O in IP65/67



ET 200eco PN „Next Generation“



Feature / Function

6 new ET 200eco PN modules:

- DI 8X24VDC
- DI 16X24VDC
- DQ 8X24VDC/0,5A
- DQ 8X24VDC/2A
- DIQ 16X24VDC/0,5A/2A
- CM 8x IO-Link + DI 4x24VDC

New features:

- S2-Redundancy
- Shared Device
(Distribution of the outputs of a module to several controllers)
- MSI / MSO
(Read access to inputs/outputs from up to 4 controllers)
- Clock sync. up to the channel
- High supply current up to 12A
- Single / Double assignment of channels via parameterization

Benefit

- **Easier mounting & handling** due to the possibility of mounting the modules directly on the machine outside the control cabinet
- **Less planning effort** due to standardization of the module width
- **Cost savings in warehousing** by combining the module portfolio
- **Greater machine/plant transparency** through MSI/MSO and detailed diagnostics
- **More flexibility** through the parameterizable channel assignment of the ports
- **Higher machine availability** due to the possibility to operate the modules also in ring structures

TIA Portal
V16

SIMATIC S7-1500 R/H



SIMATIC S7-1500 Redundant Systems

System overview



Consistent concept –
Identical synchronization
process

Scaling of the switching
performance over the **available
bandwidth** of the
sync connection

CPU type

Synchronization

Hot Standby

I/O systems

Type of connection

Redundant – S7-1500R



CPU 1513R / CPU 1515R

via **PROFINET Ring (MRP)**

Yes, ~300 ms switchover time

High available – S7-1500H



CPU 1517H

via **Sync-Module**

Yes, ~50 ms switchover time


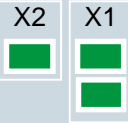

ET 200SP and ET 200MP

Single connection (PN redundancy S2) and switched S1 ¹⁾

SIMATIC S7-1500 Redundant Systems

PLC Hardware



	CPU 1513R-1 PN 6ES7513-1RL00-0AB0	CPU 1515R-2 PN 6ES7515-2RM00-0AB0	CPU 1517H-3 PN 6ES7517-3HP00-0AB0	Short Distance <= 10m	Long Distance <= 10km
Program / memory	350 kB code 1,5 MB data	500 kB code 3 MB data	2 MB code 8 MB data	Fiber Optic Cable	
Interfaces	X1 	X2 X1 	X2 X1 X3 X4 	Plastic	Glass fiber
Firmware	V2.8	V2.8	V2.8	Sync module SFP	
				6ES7960-1CB00-0AA5	6ES7960-1FB00-0AA5

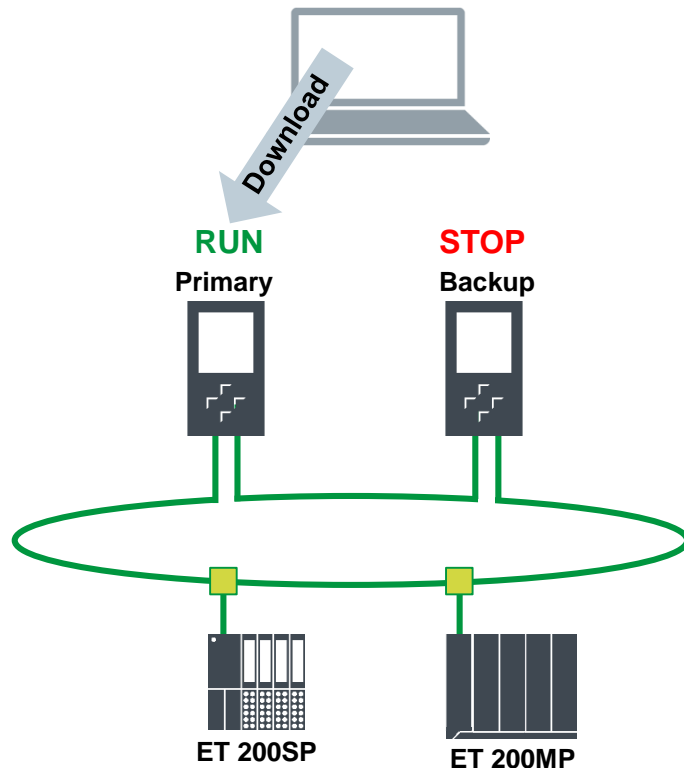


X1: PROFINET IO Controller, Supports RT, MRP, Transport Protocol TCP/IP, Open User Communication
X2: PROFINET Basic Services, Transport Protocol TCP/IP, Open User Communication

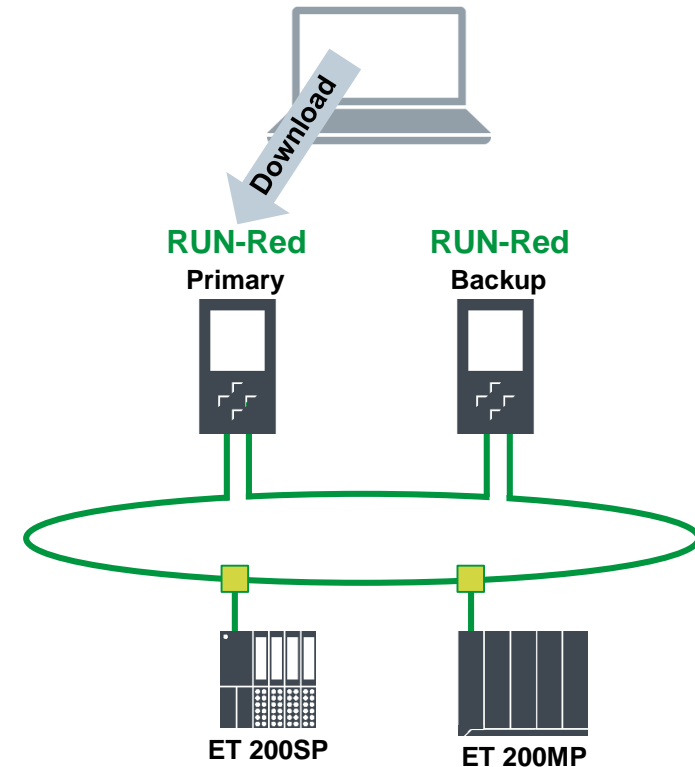
New in V16: Program Download in RUN-Redundant Mode

The Backup-PLC can remain in RUN redundant during download

V15.1



V16

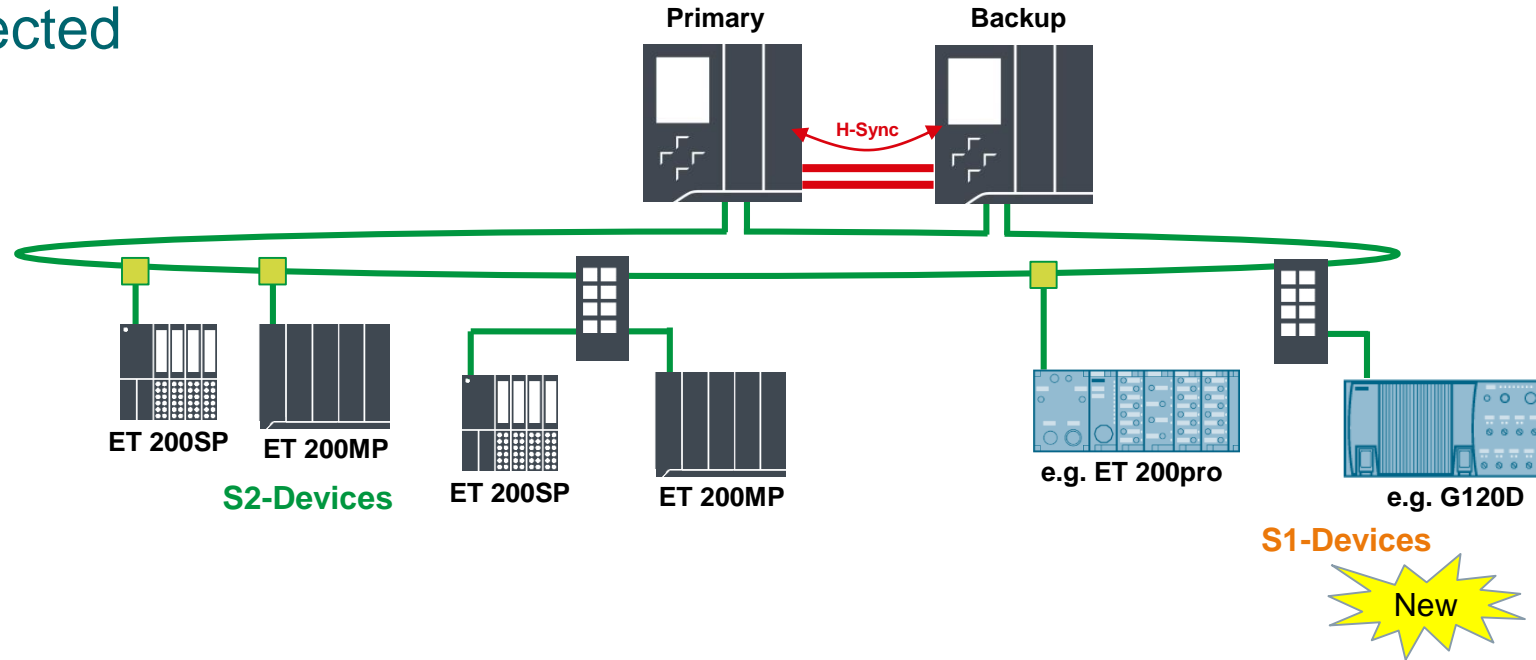


Benefits:

- No RUN/STOP handling of Backup PLC required
- No SyncUp Phase (with temporary loss of communication)
- User Program is synchronized automatically

New in V16: Mode „Switched S1 Device“

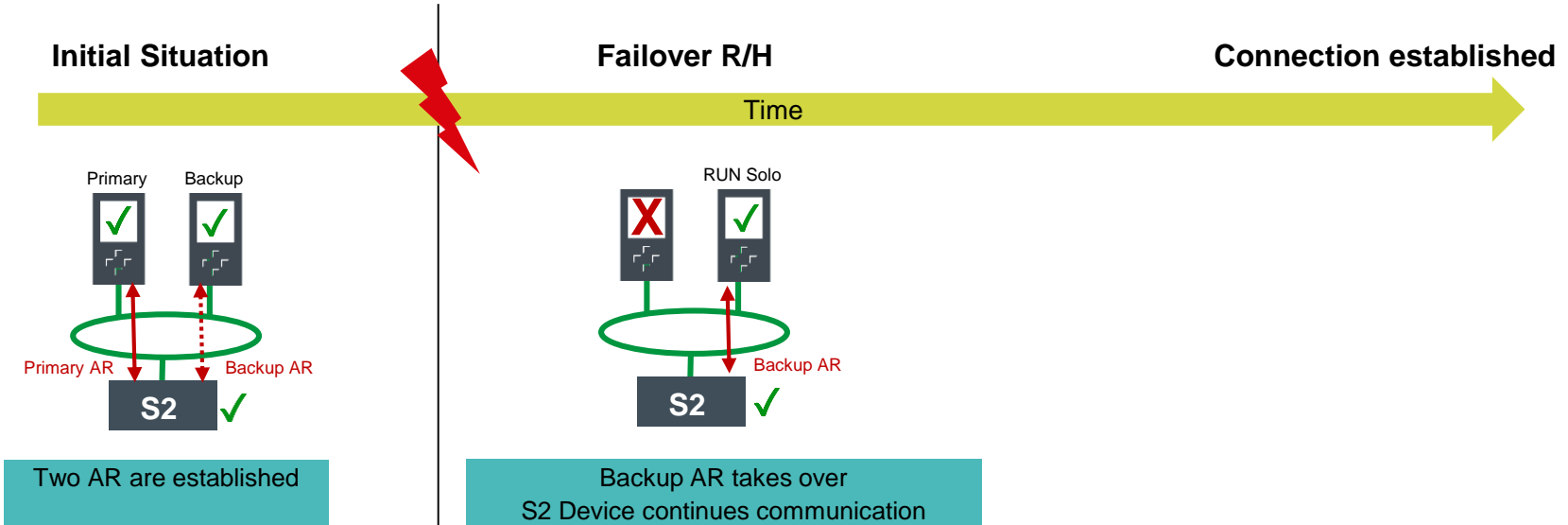
Also devices without System Redundancy Feature (S1) can be connected



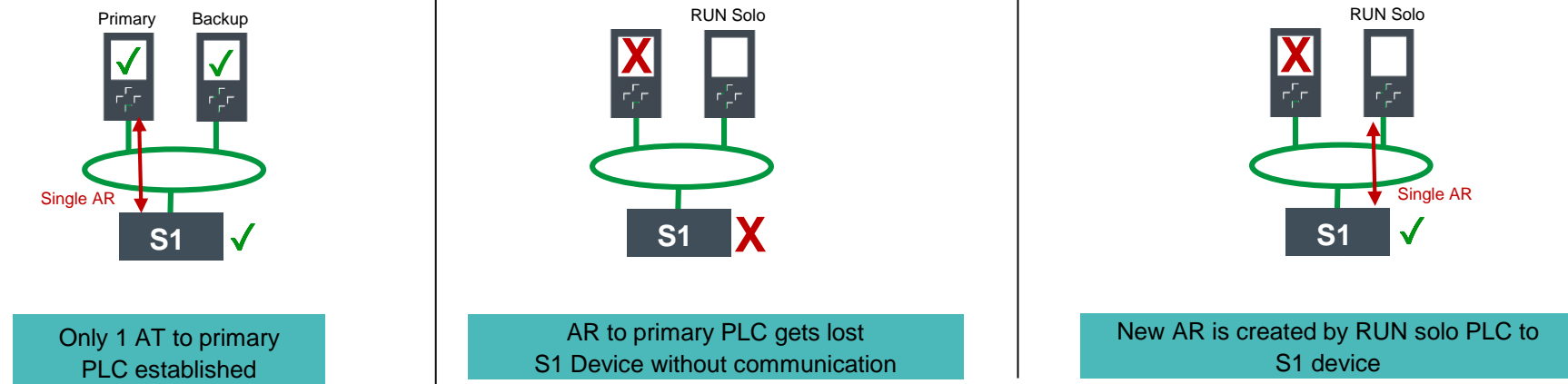
System Behavior when Primary-Backup switch occurs	S2-Devices (with System Redundancy)	S1-Devices (without System Redundancy)
Activation time of device	Very short (50ms +) because backup communication relation is already established	Some seconds (depended on the device itself) since device is restarted
Behavior of Outputs	Keeps last valid value during failover	If the device supports the function “Hold last value” → no difference to S2 Otherwise: Outputs switches to “0” during activation time.

New in V16: Mode „Switched S1 Device“ Comparison with System Redundancy S2

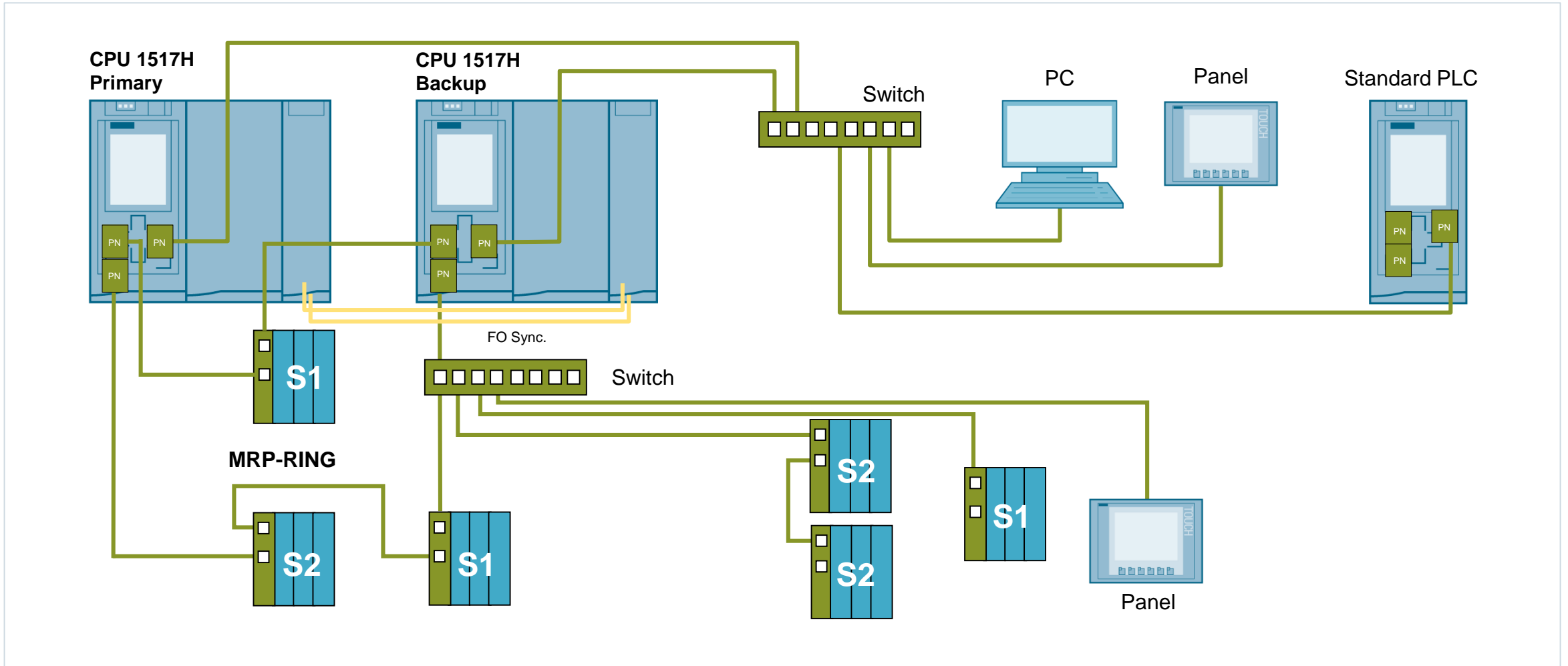
Behavior with
System Redundancy S2



Behavior with
„Switched S1“

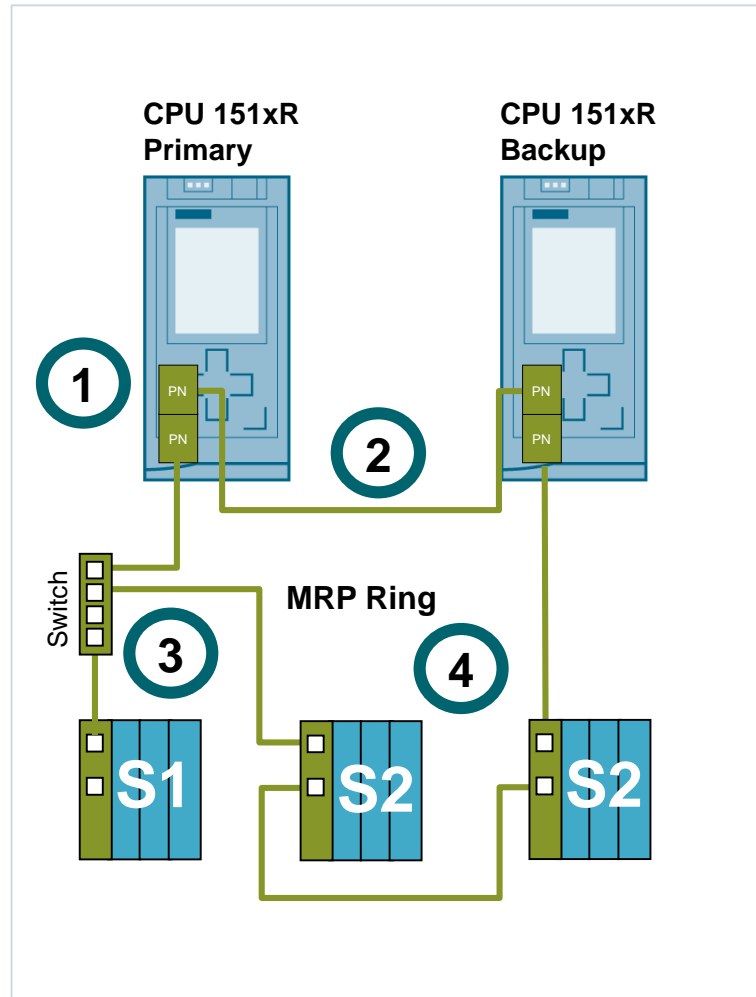


Configuration example SIMATIC S7-1500H CPU1517H



Network Configuration with S7-1500 R/H

Basic System Configuration



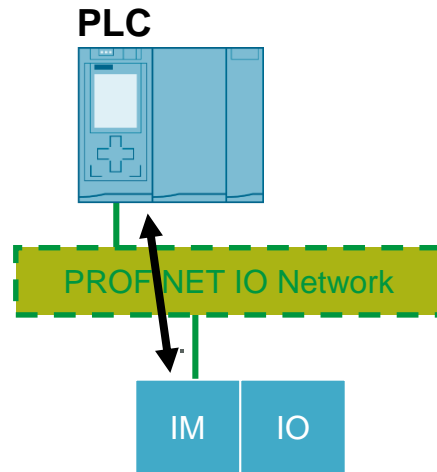
Structure

- 1 MRP-Ring must be connected to the X1 - Port
- 2 Synchronization over PN-Ring – no device in this segment
- 3 S1 Devices should be connected via a switch to the ring¹⁾
- 4 S2 Devices can be integrated into the ring or also separated with a switch

1) Reason: S1 devices do not forward H-sync telegrams during a MRP reconfiguration phase. This would lead to a high PLC cycle time in the case that segment 2 is interrupted.
See chapter „H-Sync Forwarding“ in the system manual of S7-1500 R/H for details.

PROFINET System Redundancy

S1 Mode

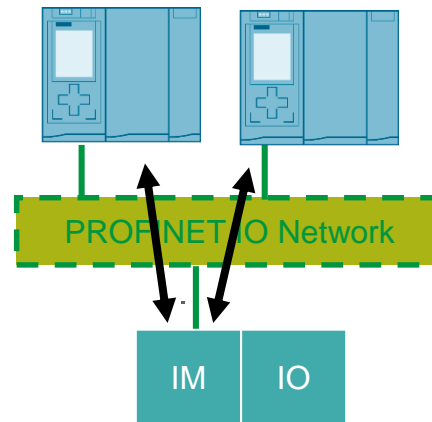


S1 Device

- S → Single interface
- 1 → one connection to one PLC

Standard PLC + R/H

S2 Mode

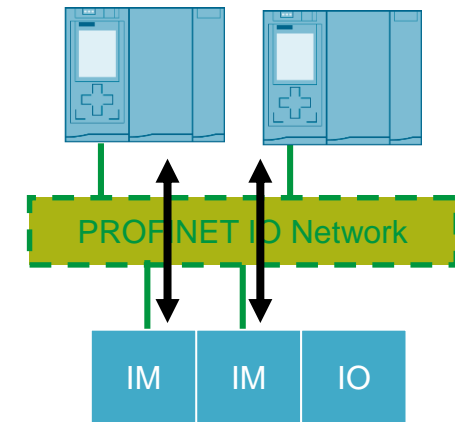


S2 Device

- S → Single interface
- 2 → can switch between two connections

For R/H PLC

R1 Mode



R1 Device

- R → Redundant interface
- 1 → each interface has one connection to one PLC

Future 1500H release



Engineered with TIA Portal

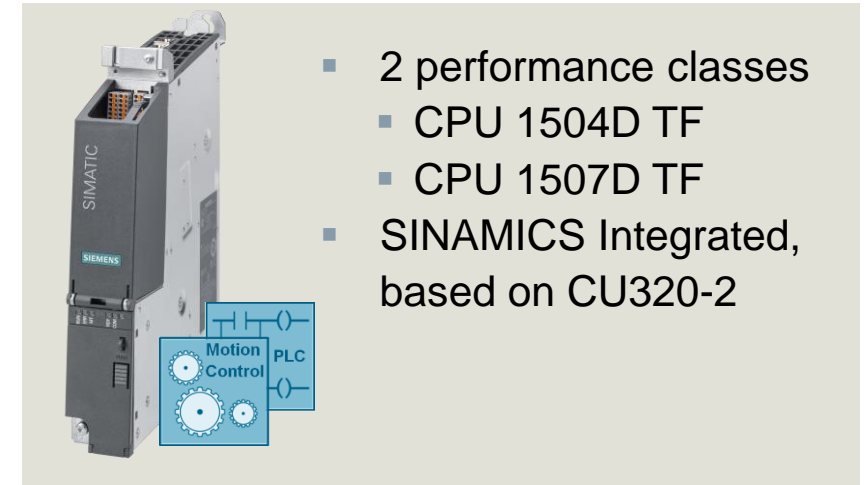
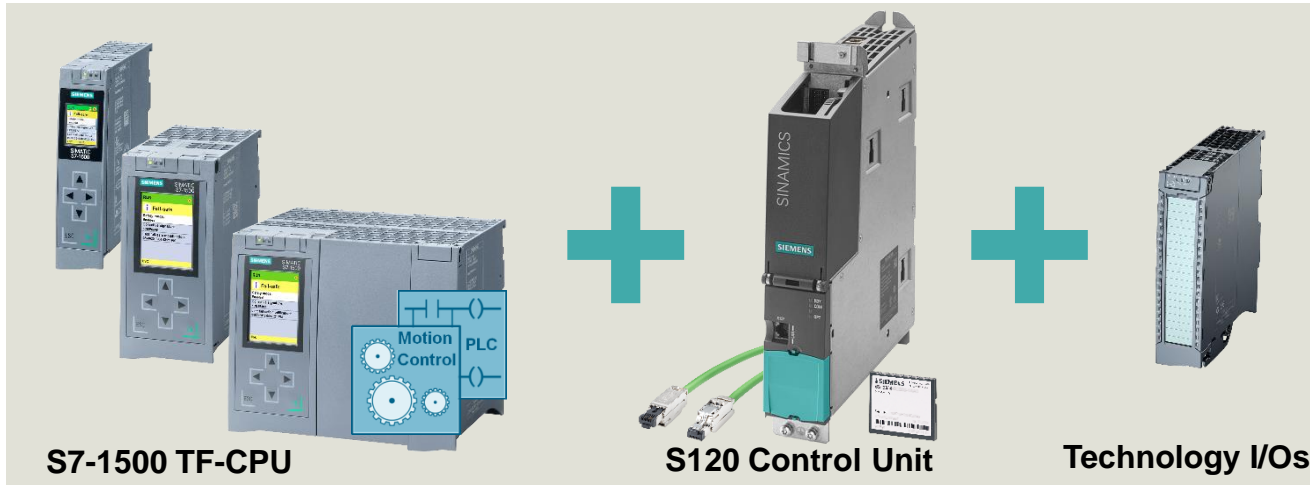
SIMATIC Drive Controller

Motion control, technology and
SIMATIC S7-1500 PLC in the drive

SIMATIC Drive Controller

The attractive solution, optimized for production machines

SIEMENS
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Ultra-Compact – Ideal for mechanical engineering

- SIMATIC S7-1500 controller, SINAMICS S120 Control Unit and technology I/Os in one space-saving device
- Small compact design

Easy handling

- Easy scalability: powerful interfaces, uniform across all performance classes
- Central data storage (one SIMATIC Memory Card) for controller and drive
- Less wiring and installation costs
- Efficient engineering in the TIA portal with SIMATIC STEP 7 and SINAMICS Startdrive

Optimized for production machines

- Powerful for demanding applications
- Well equipped with interfaces, technology I/Os and memory
- Fail-safe CPU and drive-integrated safety functions for personal and machine safety
- High-speed outputs for ultra-short output delay times and highest switching accuracy, e.g. for output cams

SIMATIC Drive Controller

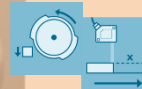
HW setup

4 x DRIVE-CLiQ

12 DI, 8 DI/DQ (**DRIVE I/Os**, usable by PLC)
→ DI, DQ, up to 8 measuring inputs



8 DI/DQ (**PLC I/Os**)
→ DI, DQ, Timer DI, Timer DQ, ...
(High-Speed outputs)



24 V supply

PN1: PROFINET IO IRT (3 ports / MRPD)

PROFIBUS (Master)

PN2: PROFINET IO RT

PN3: PROFINET (1 Gbit)

2 x 3 LEDs (3 x PLC / 3 x Drive)

7 segment display (diagnostics)

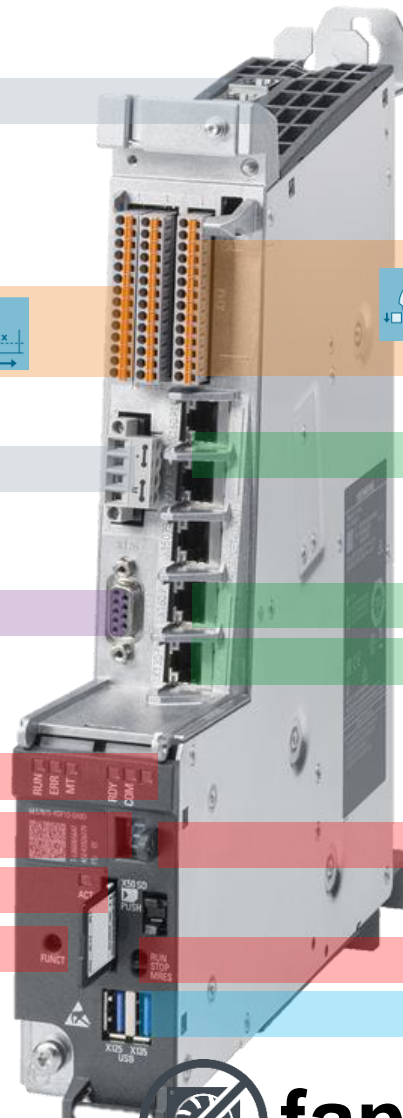
Slot for SIMATIC Memory Card

Function key (diagnostics, ...)

Eyelet for access protection

PLC switch (RUN / STOP / MRES)

2 x USB 3.0 (currently without function)



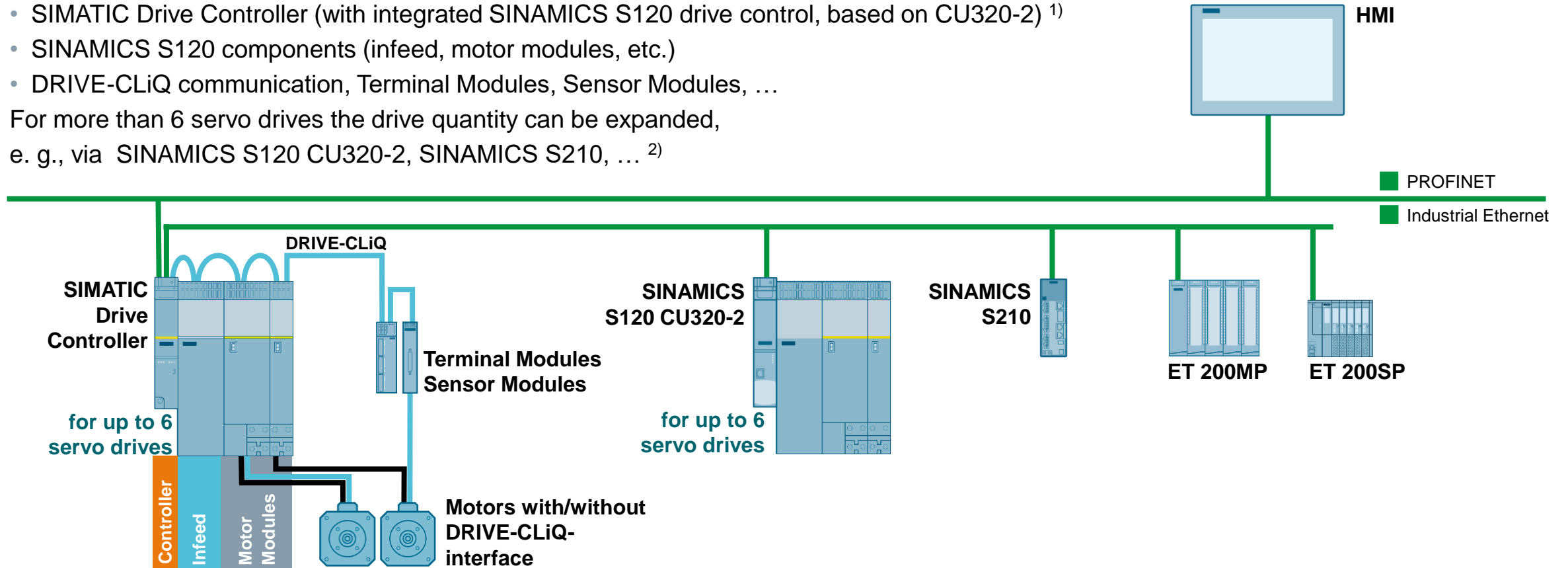
 **fanless**

SIMATIC Drive Controller Topology

A drive-based SIMATIC solution comprises the following components:

- SIMATIC Drive Controller (with integrated SINAMICS S120 drive control, based on CU320-2) ¹⁾
- SINAMICS S120 components (infeed, motor modules, etc.)
- DRIVE-CLiQ communication, Terminal Modules, Sensor Modules, ...

For more than 6 servo drives the drive quantity can be expanded,
e. g., via SINAMICS S120 CU320-2, SINAMICS S210, ... ²⁾



¹⁾ Functional subset (no EPOS/DCC/...)

²⁾ No CX32-2 like SIMOTION D4x5-2

SIMATIC Drive Controller

CPU Portfolio will be enlarged by the SIMATIC Drive Controller



Technology CPU					Standard CPU	Open Controller	Drive Controller CPU	
CPU types	1511TF-1 PN	1515TF-2 PN	1516TF-3 PN/DP	1517TF-3 PN/DP	1518F-4 PN/DP (MFP) ¹	1515SP PC2 TF PN	1504D TF	1507D TF
Interfaces								
Program memory	225/225 KB	750/750 KB	1,5/1,5 MB	3/3 MB	4/6 MB	1/1,5 MB	2 MB	6 MB
Data memory	1 MB	3 MB	5 MB	8 MB	20 MB ¹	5 MB	4 MB	20 MB
Bit performance	60 ns	30 ns	10 ns	2 ns	1 ns	10 ns	Scale with motion control performance	
Functions	Display, S7-1500 backplane bus						SINAMICS S120 Integrated (incl. 12 DI, 8 DI/DQ) additional PLC technology I/Os (8 DI/DQ)	
Positioning axes								
▪ Typical ²	5	7	55	70	128	30	10	55
▪ Maximum ³	10	30	80	128	128	30	30	160
Motion Control Resources ⁴	800	2.400	6.400	10.240	10.240	2.400	2.400	12.800
Extended Motion Control Resources ⁵	40	120	192	256	–	120	120	420
							NEW	

¹ 50 MB add. for C/C++ (PLC-RT)+500 MB for C/C++ appl. (RT/appl.)

⁴ Resources for Motion Control technology objects:

⁵ Resources for Extended Motion Control technology objects:

² At 4 ms Servo/IPO cycle time and 35 % CPU load due to Motion Control

Speed axis = 40 | Positioning axis = 80 | Synchr. Axis = 160 | Output cam= 20 | Output cam track= 160 | Measuring input= 40

Cams = 2 | Kinematic objects= 30 | Leading axis proxy = 3

³ No further TO's applicable

PROFINET IO with IRT PROFINET IO with RT PROFINET basic communication (1 Gbit)

PROFIBUS

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Logo!8

LOGO!8

„Malen, ali moćan”

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LOGO!8.0

- Brži procesor, udvostručenje broja programskih blokova
- Umrežavanje s drugom SIMATIC opremom
- Novi displej sa 6 redaka po 16 znakova i 3-bojnim pozadinskim osvjetljenjem
- GSM komunikacijski modul

V8.1 & V8.2

- KNX modul za automatizaciju u zgradarstvu
- Podrška za Modbus TCP
- Custom web stranica na integriranom serveru
- LOGO! Web Editor za izradu web stranica.
- Logo Access program za prebacivanje podataka iz LOGO! Modula u MS office aplikacije.



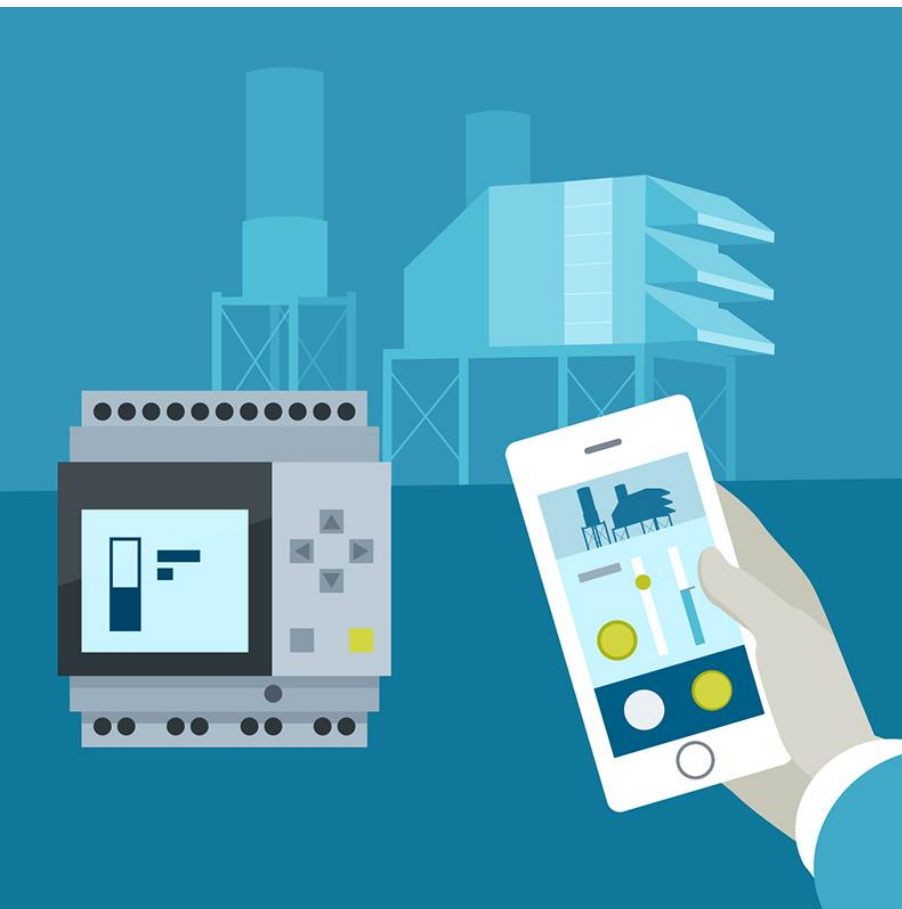
Innovation LOGO!8.3

IoT and cloud connectivity for everyone

NEW

07/2020

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Ingenuity for life



Feature / Function

Cloud

- Use of LOGO! WebEditor V2.0 project for cloud data visualization
- Upload LOGO! WebEditor V2.0 into cloud
- Adding additional cloud services (e.g. alarming)

Usability

- Easy configuration in LOGO! SoftComfort V8.3
- Security integrated
- LOGO! Web Editor well known by users

Hardware

- Cloud communication and configuration part of LOGO! Soft Comfort V8.3 integrated in any LOGO! 8.3 base module

Benefit

- Create/modify visualization every where and any time
- Flexible user management in the cloud
- Added values and new business models through additional cloud services
- Secure communication
- Visualization by using the existing LOGO! WebEditor knowledge
- LOGO! goes IoT with familiar usability



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SIMATIC Controller

Get more Information...



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Newsletter

Always up-to-date!

- interesting news from and about AS, such as product innovations, success news, best practice information

<https://sie.ag/2WMmRCj>



Internet

Detailed product information and related subjects!

- Product Websites
- Twitter, Youtube..

<http://www.siemens.com/S7-1200>



Getting Started

Easy Introduction to the new SIMATIC controller generation!

- Learn about the new possibilities and get to know the new Hardware even better

www.siemens.com/automation-tasks



References Center

From customer to customer!

- Customers gives account to there experiences using our Products for their applications

<https://webservices.siemens.com/referenzen/#language=en>



TIA Portal V16

Zanimljivi linkovi



- Digital Training with Highlights of TIA Portal V16
<https://support.industry.siemens.com/cs/document/109772991/sitrain%3A-digital-training-with-highlights-of-tia-portal-v16?dti=0&lc=en-WW>
- TIA Portal Tutorial Centar
https://cache.industry.siemens.com/dl/dl-media/707/106656707/att_961750/v9/106656707_TIA_Portal_-_Tutorial_Center_web/start.htm#!/en
- Automation Tasks in 10 minutes
https://cache.industry.siemens.com/dl/dl-media/570/109767570/att_986452/v1/109476605_Automation_Tasks_web/start.htm#!/de
- Basic Process Library
<https://support.industry.siemens.com/cs/ww/de/view/109749508>