

Agenda



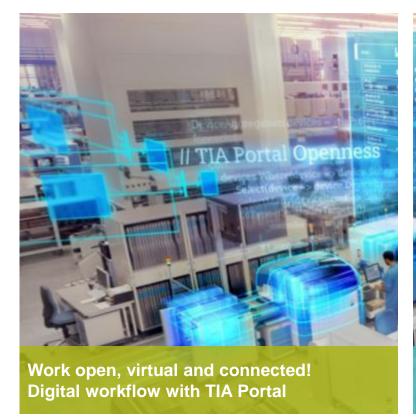


TIA Portal V15.1

TIA Portal -

More than an engineering framework









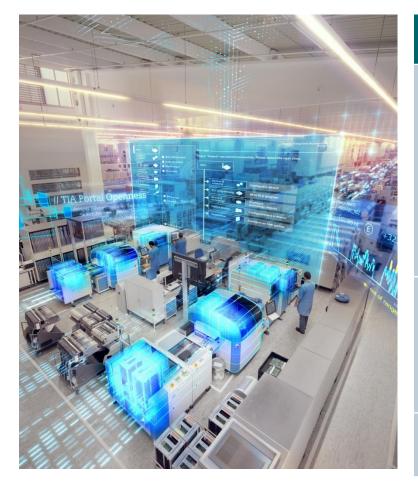
Your gateway to automation in the Digital Enterprise

TIA Portal V15.1

Your gateway to automation in the Digital Enterprise

SIEMENS Ingenuity for life

Digital Workflow with TIA Portal



Feature / Function

Virtual Commissioning with **SIMATIC Machine Simulator V1.0**

- Simulation platform based on SIMATIC S7-PLCSIM Advanced V2.0 and SIMIT V10
- Virtual validation of automation solutions, for machines in combination with NX MCD

NEW

TIA Portal Openness

- Upload F/PLC
- Parameter-specific access to ET 200SP modules
- PLC offline/offline comparison
- XML export of the snapshot of actual values



TIA Portal Teamcenter Gateway

Support of Multiuser Engineering



TIA Portal V15.1

Your gateway to automation in the Digital Enterprise

SIEMENS Ingenuity for life

Integrated Engineering with TIA Portal



Feature / Function

Support of S7-1500R/H CPUs

Redundant and high-availability applications



Support of kinematic functions with S7-1500T

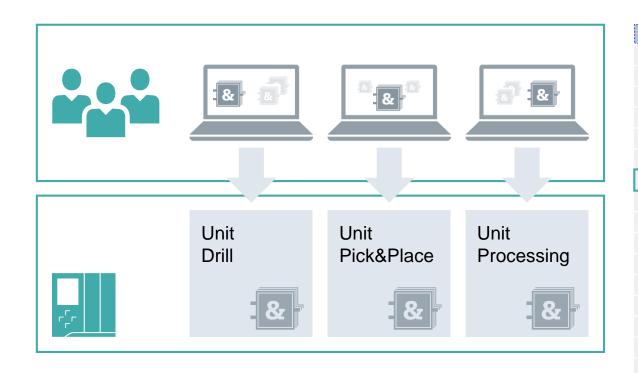
- Graphical configuration of standard kinematics
- Commissioning with kinematic control panel
- Light trace to simplify the motion recording and visualization

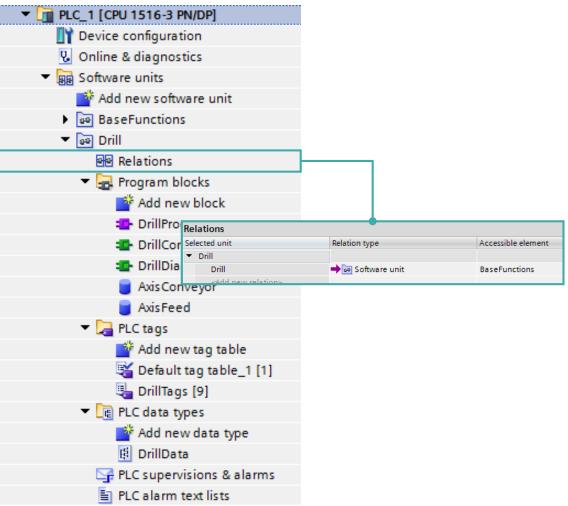
Support of multifunctional platform

Programming of CPU1518MFP

Working in a team (Multiuser) SIMATIC Units







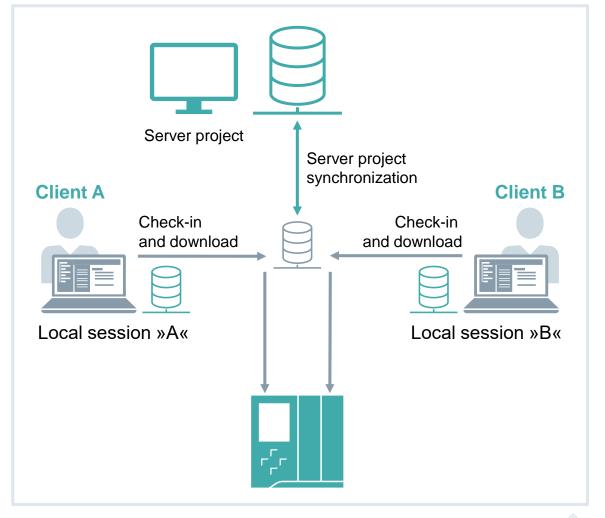


TIA Portal Multiuser – Commissioning mode

Shared commissioning in a team

In commissioning mode, the changes are automatically checked into the server project, compiled and loaded into the device when downloaded from the local session.





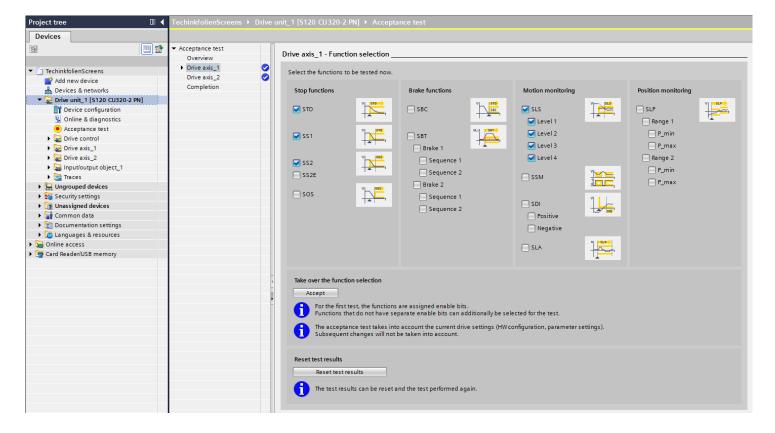


SINAMICS Startdrive V15.1 Highlights for all drives

SIEMENS Ingenuity for life

Startdrive Advanced V15.1 – Extension of Safety Acceptance Test

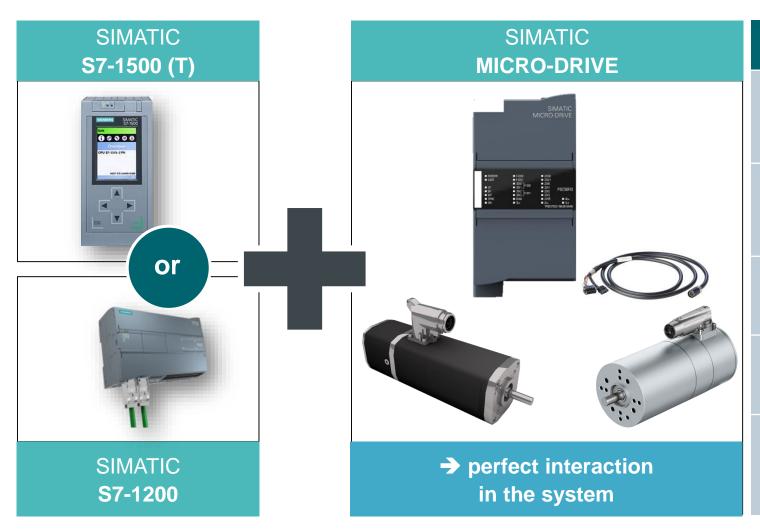
- Safety Acceptance Test for S120 and S210:
 - Guided Safety acceptance test for all drive-based Safety Integrated functionalities (Basic, Extended and Advanced Safety)
 - Generation of protocol as Excel file (xlsx format, also useable with OpenOffice)





SIMATIC MICRO-DRIVE Perfect interaction in the system





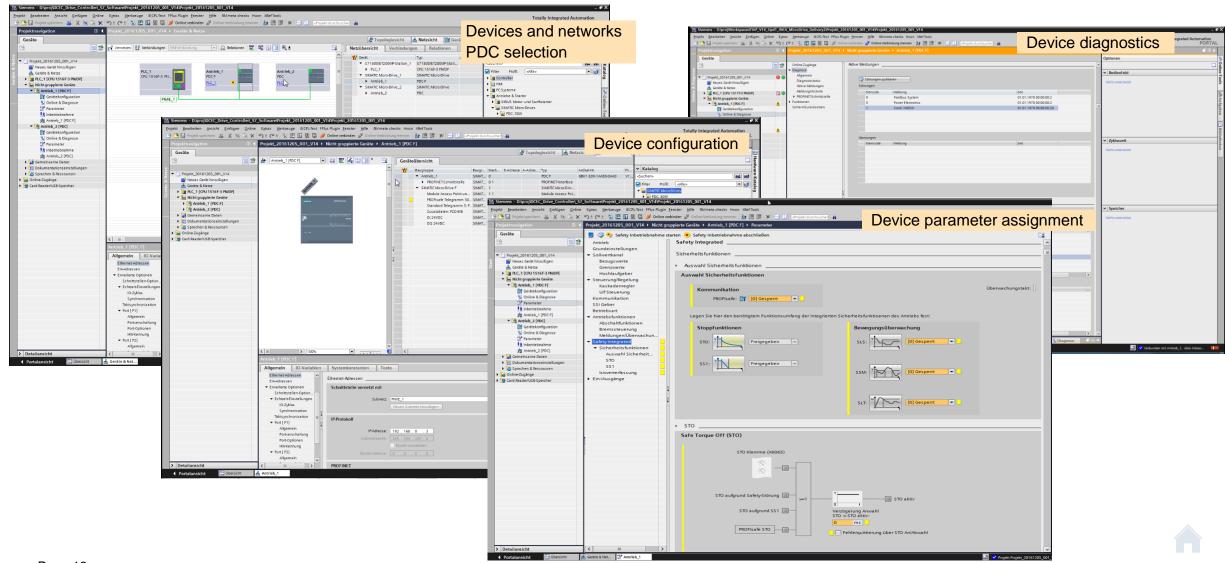
Feature / Function

- Flexibility & combinability of system components*
- PROFINET IRT (1ms)
- Safety Integrated: STO, SS1, SLT, SLS, SBC, SSM via PROFIsafe
- TIA Portal integration
- "One Button Tuning"
- One cable to motor**
- Integrated C1 EMC-Filter
- 24-48 V: 0,05-1kW
- Battery supply incl. energy recovery
- UL & Marine certification***



SIMATIC MICRO-DRIVE HSP for TIA Portal





Agenda





Nowości produktowe



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New milestones of productivity with...



... SIMATIC Notifier













Detect React Benefit

Source Devices, Communication and Target Devices

Target Devices

- Smartwatch with Android Wear 2 or higher
- Smartphone or tablet* with iOS11/Android 8 or higher

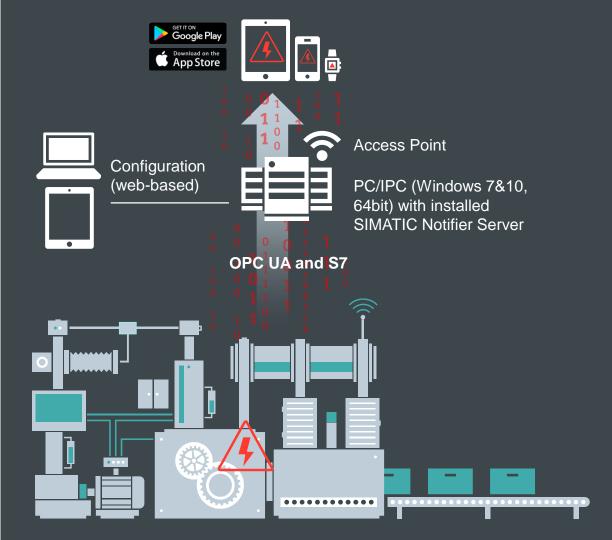
SIMATIC Notifier Server

- Configuration via webbrowser
- No connection to servers/devices outside the companys network necessary

Source Devices

- · Controllers, HMIs, SCADA systems, ...
- Linkage accomplished via OPC UA DA or S7 communication





SIMATIC Notifier *Ordering Information*





Notifier Information and Videos

Product Homepage

Contact us!

Notifier Server

Mall

Notifier App



Catalogue number:

Notifier Server for Windows:

6AV2170-0AA10-0AA0

Notifier Client:

6AV2170-0AA20-0AA0

SIMATIC Notifier

Licensing

Basis (one time fee)

Notifier Server License incl. 1x Notifier Client License



300 €



Individually expendable (one time fee)

x-times Notifier Client licenses à 100 € each



2 x 100 € =



3 x 100 € =



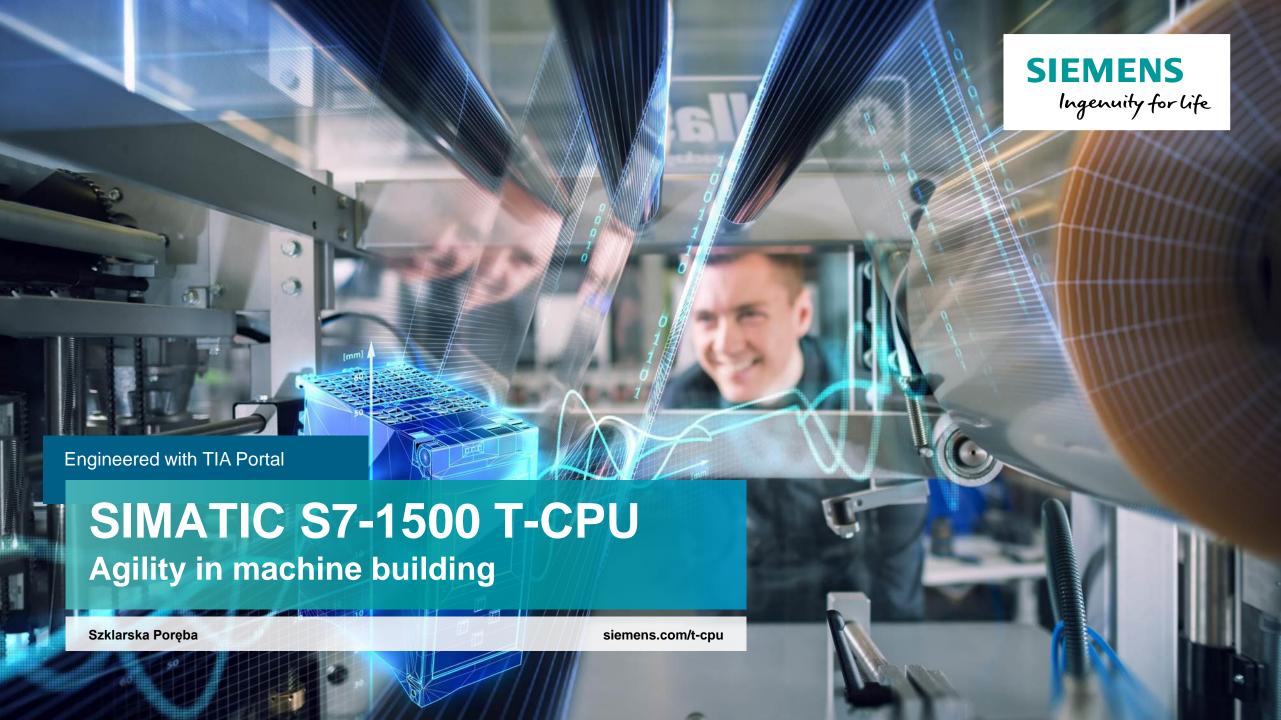
4 x 100 € =

700 €



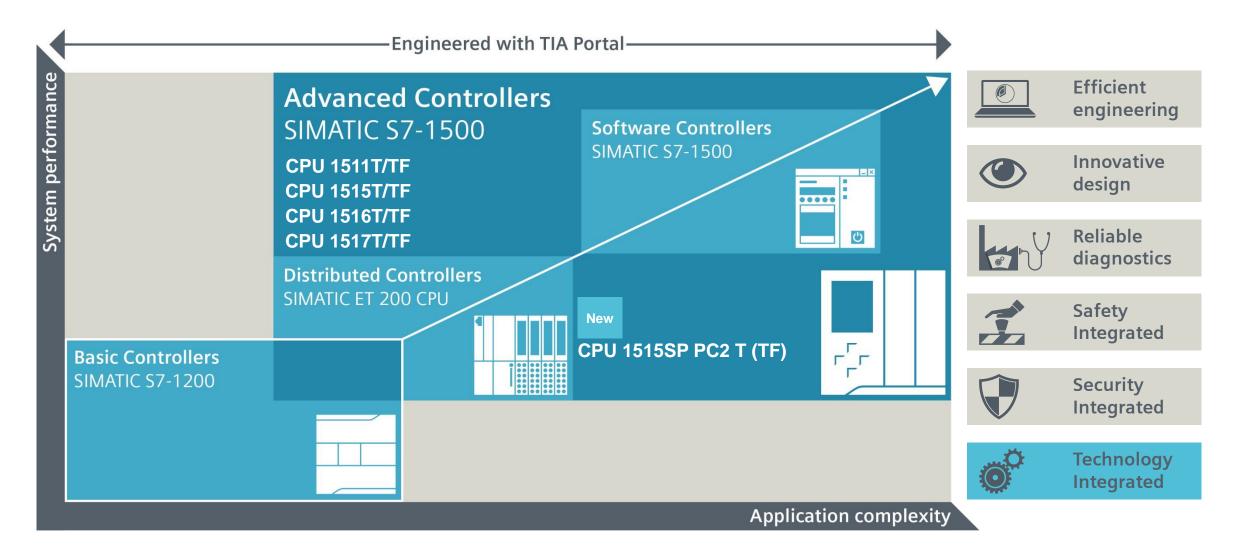
... maximum 49 x 100 € **5.200** €

1, 2, 3, 4, ... 49



The SIMATIC Controllers Portfolio Always the right controller – Plus integrated added value!





Page 20 SIMATIC S7-1500 T-CPU

Advanced Controller – SIMATIC S7-1500 T-CPU Scalable motion control in the Advanced Controller portfolio



SIMATIC ET200SP Open Controller CPU 1515SP PC2 T/TF





Complete Windows operating system on board

Kinematics with up to 4 interpolating axes (TO Kinematics)

Portfolio complition with Open Controller CPU 1515SP PC2 T CPU 1515SP PC2 TF

SIMATIC ODK 1500S (ODK - Open Development Kit)

Fail-safe CPU with extended Motion Control functions

Page 21 SIMATIC S7-1500 T-CPU

Overview

Motion control functions and typical applications



Cartesian gantries **Kinematics functions** Roll pickers with conveyor tracking Articulated arm Delta pickers **Kinematics functions** SCARA robots, ... Synchronized axes Cross cutters **Coordination (synchronous** Flying shears, ... operation, cams) Palletizers, ... Hoisting + vertical conveyors **Positioning** Feeder + door control systems S7-1500 T-CPU SIMOTION Pumps, fans, mixers **S7-1500 S7-1200** Conveyor belts **Speed setpoint** Auxiliary drives, ...

Advanced Controller – SIMATIC S7-1500 Overview motion control functionalities (extract)



Kinematics functions Camming **Gearing (absolute) Gearing (relative) Positioning** T-CPU **Speed setpoint** 500 **S7-1500 Output cams Measuring input**

Kinematics with up to 4 interpolating axes (T-CPU only) Offset of the leading value at the following axis (T-CPU only) (T-CPU only) Camming (T-CPU only) Absolute gearing Coupling onto actual values (T-CPU only) Relative gearing Encoder switch over to 2nd – 4th encoder (T-CPU only) Specification of motion vector from application (T-CPU only) Superimposed positioning during active motion Move axis to relative/absolute position Cyclic interface for torque data Moving an axis with torque limiting Setting a position Homing absolute and on the fly · Traversing an axis with speed setpoint Enabling/disabling an axis

Activating output cams and cam tracks and measuring inputs

- Maste - Slave - Cam Execute MasterOffset SlaveOffset MasterScaling - SlaveScaline MasterStartDist - Velocity Acceleration - Deceleration - Execute Acceleration

Artificial Intelligence in SIMATIC S7-1500/ET 200MP ET 200MP TM NPU for AI

(Neural Processing Unit for Artifical Intelligence)





Feature / Function

Artificial Intelligence module for S7-1500 and ET 200MP (ET 200MP TM NPU for AI)

- Processing of input data (camera, sound, CPU) via trained neural networks
- Connection of sensors via USB and Ethernet interface
- Engineering and handling via TIA
 Portal and Al Toolkit

Additional Information:

The module can be acquired after getting in contact with the Edge & Al Deployment Team *, for discussion and evaluation of the use cases

Benefit

- Optimization of manufacturing processes
- Saving of additional components (e.g. IPC)
- Saving of engineering effort through direct communication with the CPU

Use Cases

- Robotics
- (Visual) Quality control
- Detection of process anomalies
- Condition monitoring (e.g. sound profiles)

*Contact: SimaticEdgeAl.industry@siemens.com

Innovation SIMATIC Field PG M6 -

future proof, lots of connections, more system performance



SIMATIC Field PG M6, comfort and advanced



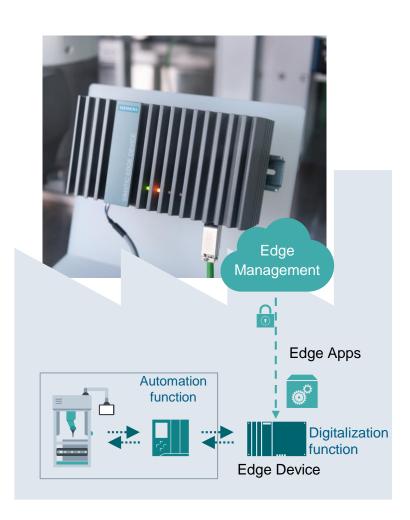
Feature / Function

- 8th generation of Intel Core i5/i7 type H processors with UHD graphic 630
- Performant memory technology: DDR4-RAM, 8 to 32 GB, 2666 MHz,up to 2 TB SSD

Siemens Industrial Edge

Enabling digitalization in automation





Feature / Function

Edge system consisting out of

- Edge Management
- Edge Apps
- Edge Devices
- Cloud based management system to manage Edge devices and deploy Apps on devices worldwide
- Possibility to develop own Apps based on edge platform as well as integrating Siemens Apps

Edge integration into automation portfolio based on

- Dedicated Edge devices: IPC
- Edge enabled automation devices

Benefit

- Implement digitalization requirements in automation today & tomorrow
- Monitor status and health of worldwide distributed edge devices efficiently
- Deploy apps easily to distributed devices enabling new use cases

Enabling various automation tasks on app basis e.g.

- Real time data analytics with AI
- Data processing
- Data visualization
- Handle analytical as well as communication tasks

Innovation SIMATIC Multifunctional Platform

Flexible high level language integration into the S7-1500 PLC



SIMATIC CPU 1518(F)-4 PN/DP MFP



Feature / Function

- Integration of high level language application and PLC program into one hardware
- PLC integrated functions and PLC independent applications in C/C++ for any application (e.g. protocol converter, database, ...)
- Code generation with model based development tool, e.g. Matlab Simulink
- Regular firmware updates stand for highest security standards
- Closed embedded operating systems

Agenda





SIMATIC S7-1500R/H

SIMATIC S7-1500

Higher availability by new S7-1500R and S7-1500H

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S7-1500R: CPU 1513R/1515R



S7-1500H: CPU 1517H



Feature / Function

Redundant PLCs

- Switchover time 200 500ms
- Support of up to 50 devices in PROFINET-Ring
- System IP Address
- Configuration in TIA-Portal like Standard CPU

High-Availability PLC

- Same features as Redundant PLC
- Dedicated High Performance synchronization modules
- Distance between CPUs up to 10 km
- Switchover time < 100ms

Focus applications (1. delivery step)











SIMATIC S7-1500R/H PLC Hardware in 1st Release step



	S7-1513R-1PN 6ES7513-1RL00-0AB0	S7-1515R-2PN 6ES7515-2RM00-0AB0	S7-1517H-3PN 6ES7517-3HP00-0AB0
Program / memory	350 kB code 1,5 MB data	500 kB code 3 MB data	2 MB code 8 MB data
Interfaces	X1	X2 X1	X2 X1 X3 X4
Firmware	V2.6	V2.6	V2.6

Short Distance	Long Distance
<= 10m	<= 10km

Fiber Optic Cable					
Plastic	Glass fiber				
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

SIMATIC S7-1500R/H Periphery in 1st Release step



	IM 155-6PN HF ET 200SP	IM 155-5PN HF ET 200MP	PN/PN coupler	SINAMICS S120
	6ES7-155-6AU00-0CN0	6ES7-155-5AA00-0AC0	6ES7-158-3AD10-0XA0	
Firmware	>=V4.2	>=V4.2	>=V4.2	>=V5.1





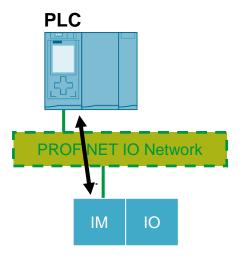




PNO PROFINET System redundancy



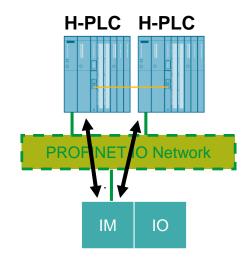
S1 Mode



S1 Device

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

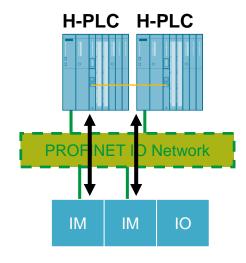
S2 Mode



S2 Device

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

R1 Mode



R1 Device

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

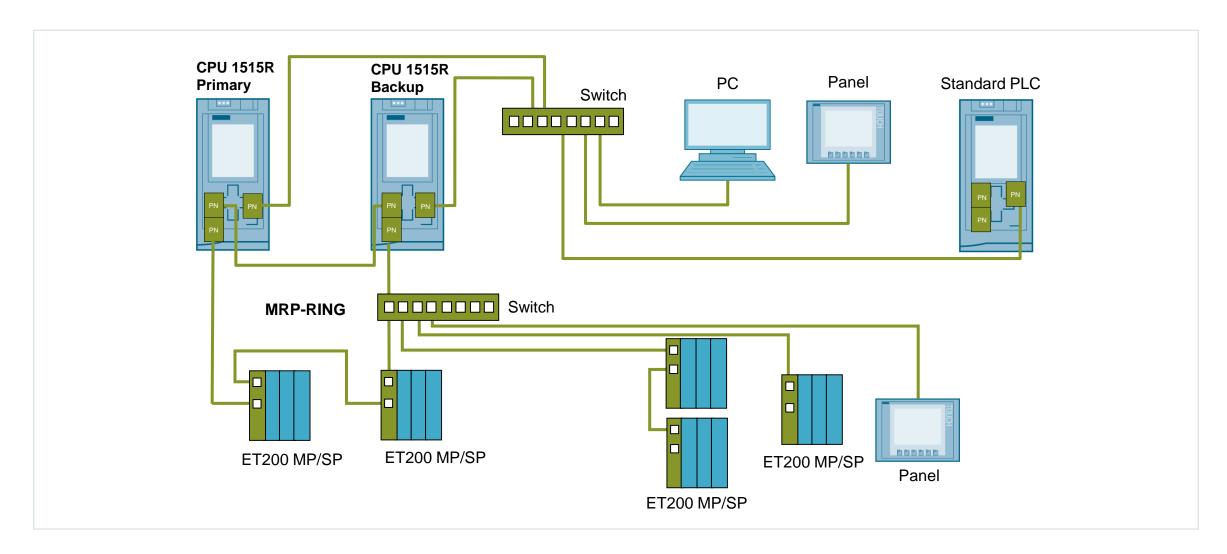
For R/H Release 1

Future 1500H release

Standard PLC

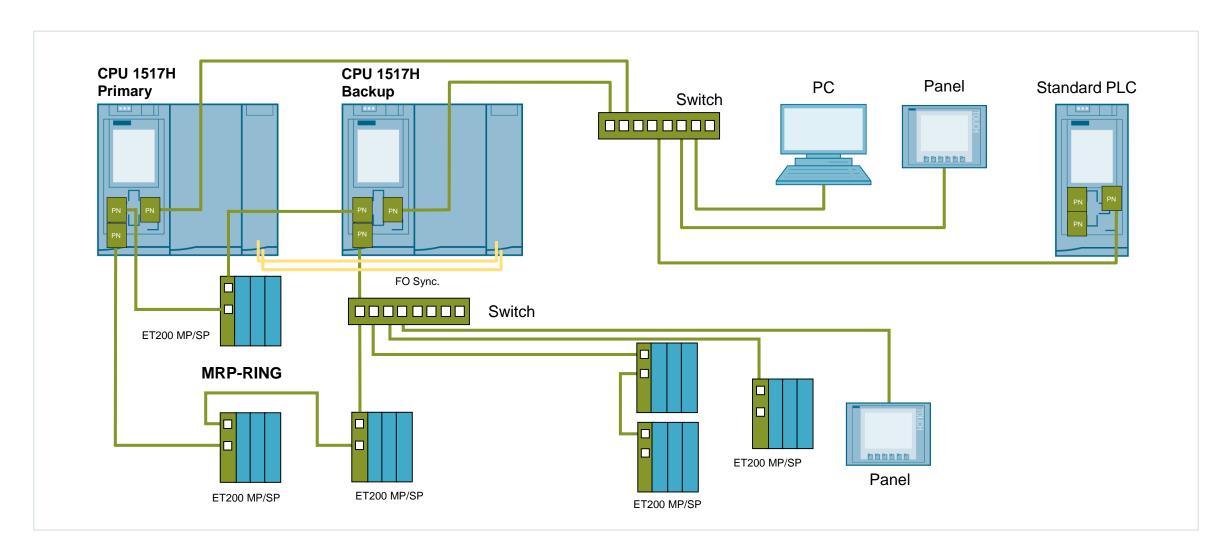
Configuration example (1st Release step) CPU1515R





Configuration example SIMATIC S7-1500H (1st Release step) CPU1517H

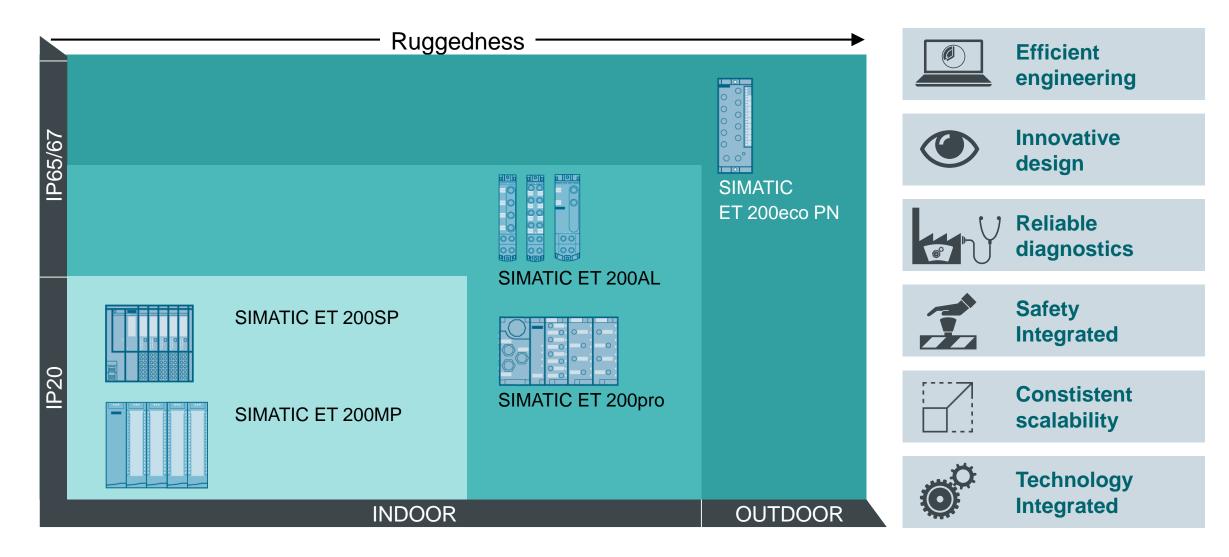






SIMATIC ET 200 Portfolio Overview





IO systems in IP65/67 for outside the control cabinet Perfect adjustment to individual applications

SIEMENS Ingenuity for life

The use of IP65/ 67 components represents:

- Saving space without cabinet
- Mounting directly on the machine
- Flexible mounting options
- Powerful and compact block peripheriy
- Robust construction
- Use under tough conditions
- High vibration resistance
- Different communication possibilities

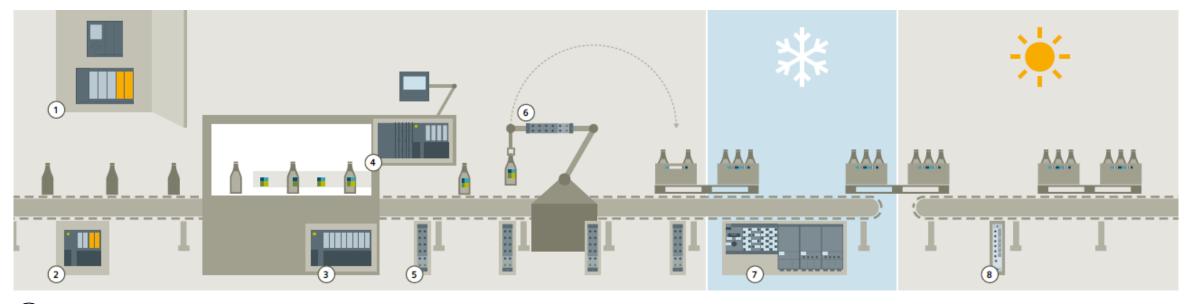






SIMATIC ET 200 The fitting solution for every requirement





- 1 S7-1500 I/O und ET 200MP: Directly connectable to S7-1500
- 2 3 ET 200SP: Compact I/O system for IP20
- Distributed Controller: distributed intelligence

ET 200AL: The compact block IO system for IP65/67 ...

- (5) ...directly connected to the ET 200SP
- (6) ...connected via Profinet / Profibus interface
- (7) **ET 200pro**: The modular I/O system for IP65/67
- (8) **ET 200eco PN:** Block I/O for IP65/67 for outdoor requirements



Positioning and preferred areas of application



	Exemplary areas of application	System features	Unique selling points
ET 200AL	 Handling / Assembly Special machine building 	Light and flexible applicable system, even on difficult-to-reach plant components	Counter, IO modules can be connected directly to ET 200SP system, IO-Link master
ET 200pro	Automobile industryConveyor technology/ LogisticsMachine tools	Modular and multifunctional system with a large module portfolio	CPU S7-1500, IO-Link master, motor starter, frequency inverter, RFID, fail-safe modules, valve terminal modules
ET 200eco PN	 Automobile industry Packing machines Machine tools Food & Beverage (cooling systems) General plant construction 	Robust system thanks to metal housing, can also be reliably used outdoors and in potentially explosive atmospheres	Fail-safe mixing module F-DI/F-DQ, IO-Link Master, approved for ATEX2 (gas) / 22 (dust), fail-safe module, operation from -40° C

SIMATIC ET 200SP

The right connection for every performance requirement







Basic

Up to 12 modules

- Basic functions (all modules except Safety can be used)
- Operation with gaps
- 2 x Ethernet ports



Standard

up to 32 modules

- + Safety Integrated modules
- + Expansion in IP 67 (ET 200AL connection)
- + Single hot swapping



High Feature up to 64 modules

- + Flexible connection via copper or fiber optic BusAdapter + Isochronous mode: 250 µs
- + Multi hot swapping



High Speed up to 30 modules

+ Isochronous mode: 125µs



CPU

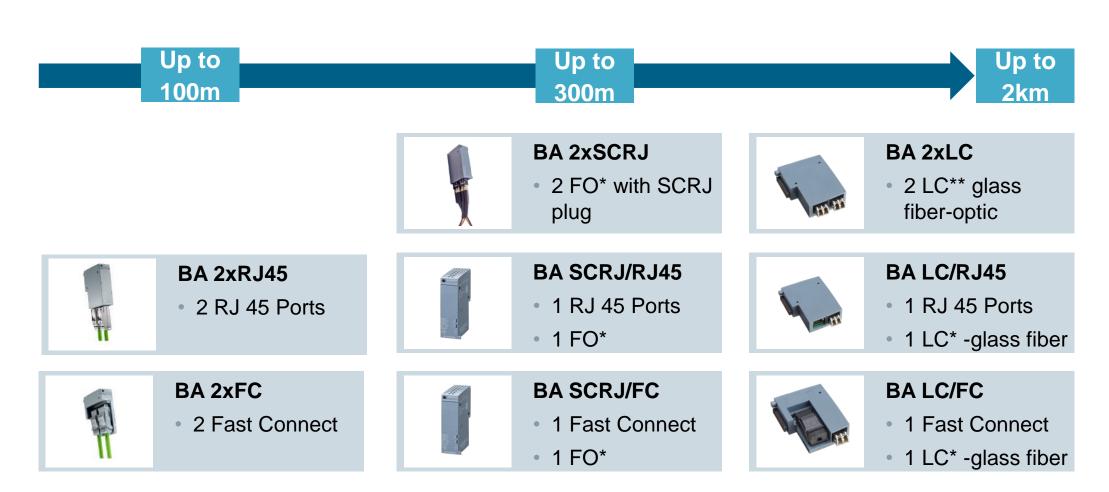
up to 64 modules

- + S7-1500 CPU integrated
- + Web server onboard
- + Local data backup using memory card

SIMATIC ET 200SP

the flexible connection with the Busadapter (BA)





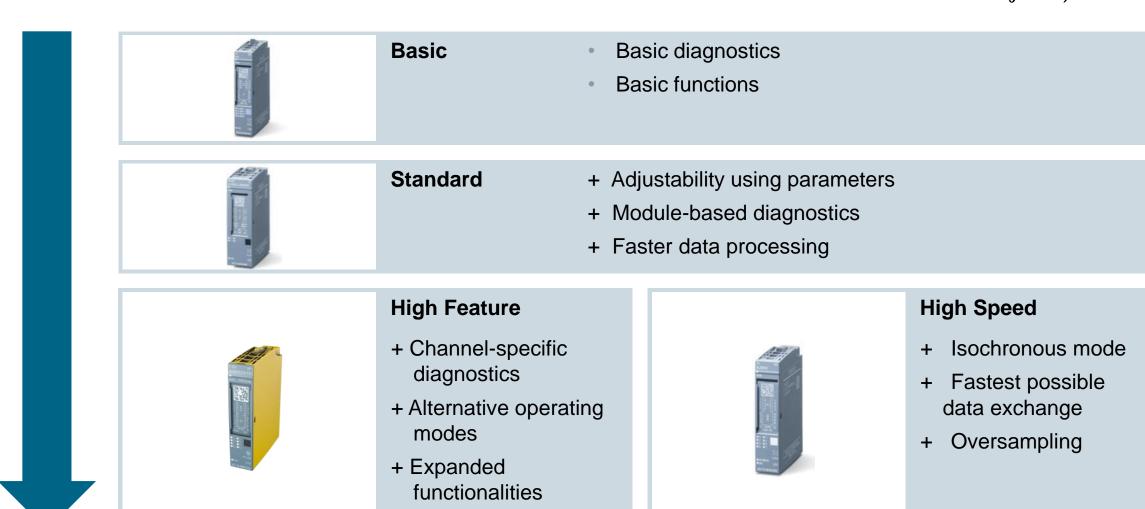
^{*} Fibre optic POF, PCF, PCF-GI

^{**} Lucent Connector

SIMATIC ET 200SP

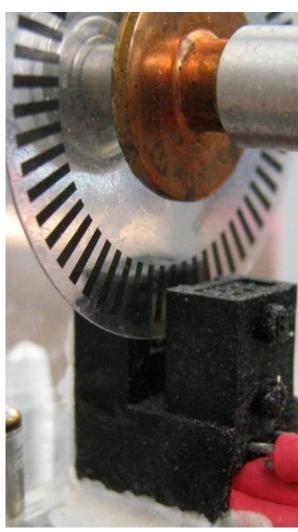
The I/O system with all the options





SIMATIC ET 200SP – Technological functions ET 200SP - 6ES7 131-6BF00-0DA0. 6ES7 132-6BD20-0DA0





Feature/function

DI 8x24VDC High Speed

- DI
- Counting (4-channel)

DQ 4x24VDC/2A High Speed

- DQ (energy-saving mode)
- PWM

Alle High Speed Module (digital/ analog)

Oversampling

Benefits

Counting

- Four 32-bit pulse counter inputs
- One gate or direction input per channel
- Max. counting frequency approx. 10 kHz

Pulse Width Modulation

- Four PWM outputs
- Activation via pulse/pause ratio 0.0% to 100.0%
- Period duration configurable from 0.2ms to 59.73ms

Oversampling

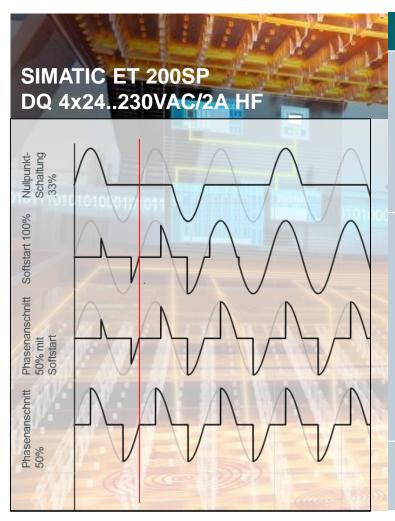
- Output of analog values with maximum resolution of 31.25µs
- Acquire analog values with maximum resolution 50µs

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SIMATIC ET 200SP – dimmer module - 6ES7132-6FD00-0CU0

Fast & fine grained power control for the factory automation





Feature

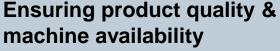
4 control modes (parameterizable by channel)

- Half-wave control
- Full-wave control
- Phase angle control
- Parameterizable start-up delay of the output power during module / CPU start-up
- Parameterizable output filter for softstarts & -stops

Channel-wise parameterizable diagnostics

Benefit

 Space-saving solution for simple heating and drying processes (e.g. for the power control of IR-lamps)



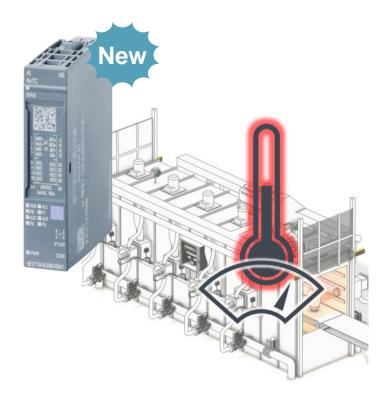
- Relieving the power supply network by avoiding peak currents
- on startup
 - when switching the outputs
 - Protection of heating objects by reducing thermal stress during heating and cooling
 - Minimal downtimes due to detailed diagnostics in clear text

Al 4xTC HighSpeed (6ES7 134-6JD00-0DA1) High measuring accuracy and precision in temperature measurements









Feature / Function

Declared Conformity* acc. to

- AMS2750E

 (Aerospace Material
 Specification)
- CQI-9 (Chartered Quality Institute)

New parameter: outliers cleanupSuppression of interference pulses, e. g. through switching operations in the system

Increase of the Common Mode
Voltage* from 10V to 60V
*(Max. potential difference between the inputs)

Benefit

Handling Security for furnace manufacturers in the industries

- Aerospace (AMS)
- Automotive (CQI-9)

through the certified measuring accuracy and performance when measuring temperature values for heat treatment of metals

Increasing the availability and robustness of temperature measurements in harsher environmental conditions

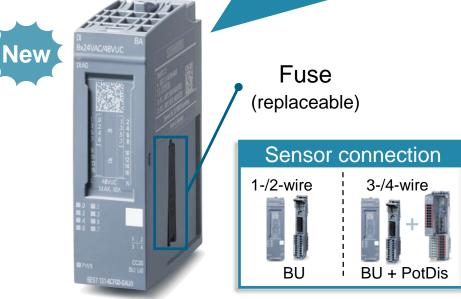
^{*} Declaration of Conformity in SIOS: Link

New module DI 8x24VAC/48VUC BA (6ES7131-6CF00-0AU0) Digital input module for variable input voltages



Characteristics	DI 8x24AC/48VUC BA	
Number of channels	8	
Channels isolated	NO	
BaseUnit Type	U0	
Supply voltage / Input-voltages (DI)	AC: 24 - 48V (50 / 60Hz) DC: 48V (40,8 – 57,3V)	
encoder supplyAmountShort Circuitprotection	8 Yes; per module, (Fuse replaceable)	
Diagnostics	Monitoring of the supply voltage Monitoring of the encoder supply	





Charging with ET 200SP Technology modules New DC Charging Modul: SIMATIC ET 200SP TM ECC PL ST



TM ECC 2xPWM (AC-Charging)



TM ECC PL ST (DC-Charging)



Feature / Function

- Communication controller for conductive charging of eCars in accordance of IEC 61851 & IEC 15118
- Modular design in System of ET 200SP
- Integrated Powerline Communication in accordance GreenPhy
- Parameterizable contact for contactor
- Integrated DQ for safe shutdown of charging voltage

Benefit

- Realization of norm conformal
 DC charging solutions with intelligent data communication
- Individual extension options for cooling the cable and status LEDs
- Secure data exchange between charging infrastructure and vehicle
- Safe evaluation of charging conditions
- Time sensitive safe shutdown

Functional Safety with ET 200

New Possibilities by new fail-safe I/O modules





ET 200eco PN 4 F-DI/3F-DQ 6ES7146-6FF00-0AB0



ET 200SP F-AI (0)4..20 mA 6ES7136-6AA00-0CA1

Feature / Function

ET 200ecoPN 4 F-DI/3F-DQ

- Mix-IO module with fail-safe In- and Outputs (2A) (up to PI e/SIL 3)
- 1002-evaluation onboard
- Channel granular diagnostics
- Retentive PROFIsafe address via Coding-Element (no DIP Switches)
- Standardized Y-connector

ET 200SP F-AI (0)4..20 mA

- 4 analog inputs for 0(4)..20 mA
- 2 or 4 sensors (2xSIL3, 4xSIL2)
- Resolution 15bit + VZ
- Channel granular diagnostics
- 1002-evaluation onboard incl. hysteresis
- Retentive PROFIsafe address via Coding-Element (no DIP Switches)

SIMATIC IPC127E

Ultra compact industrial PC as high performance gateway



SIMATIC IPC127E



Feature / Function

- Ultra compact housing (0,3l) with diverse mounting options (DIN Rail, wall, book mounting)
- Optimized performance-volume ratio: 4 Core Atom-processor, 4 GB RAM, 128 GB SSD)
- Up to 3 LAN- and 4 USB interfaces
- Preconfigured variants available from stock.

Benefit

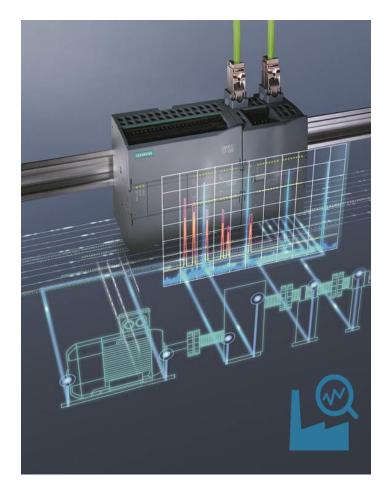
- Minimized footprint in cabinet or directly at the machine
- Easy integration in new and existing systems
- Performant data collection und preprocessing
- Visualization with WinCC RT Advanced
- Maximum connectivity for control level, field level and service
- The right product in a short time available

Condition Monitoring Systems

Mechanical condition data become digital added value



SIPLUS CMS1200 with SM1281



Feature / Function

- Condition monitoring of mechanical components simply integrated in SIMATIC S7-1200 in a speed range of 3 to 16.000 rpm
- Direct data transfer to MindSpere via integrated MindConnect Lib: FW update
- Speed calculation from vibration data via PLL algorithm
- CMS1200 data integrated in MindConnect Edge Analytics, a new MindApp for condition monitoring



NEW

NEW

NEW

Benefit

- Early detection of mechanical damage
- Scheduled maintenance instead of spontaneous repair
- Analysis software on board
- Datatransfer without additional hardware
- Speed determination without additional hardware
- SM1281 parametrization, visualization of vibration data in MindSphere
- Detailied analysis through additional characteristic values

Thank you for your attention!





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