SIMATIC

S7-1200 G2

Smart choice for basic automation

http://www.siemens.com/s7-1200g2

SIEMENS

Challenge

Increasing demand for smart automation solutions

The advancement of technology is placing greater pressure on industry and machine building. It is not only high-end applications that are impacted, but there is also a growing demand for cutting-edge technology to enhance productivity in simpler automation solutions. This requires a well-coordinated automation system that minimizes complexity and is optimized for cost efficiency over the entire life cycle.

Challenges and opportunities

Technological advancements require constant improvements and state-of-the-art technology, leading to the need for increased **productivity**.

Versatile customer requirements demand scalable and tailored automation solutions with maximum **flexibility**.

Legal regulations (such as machine safety) must be met without compromising productivity, even under high **cost pressure**.

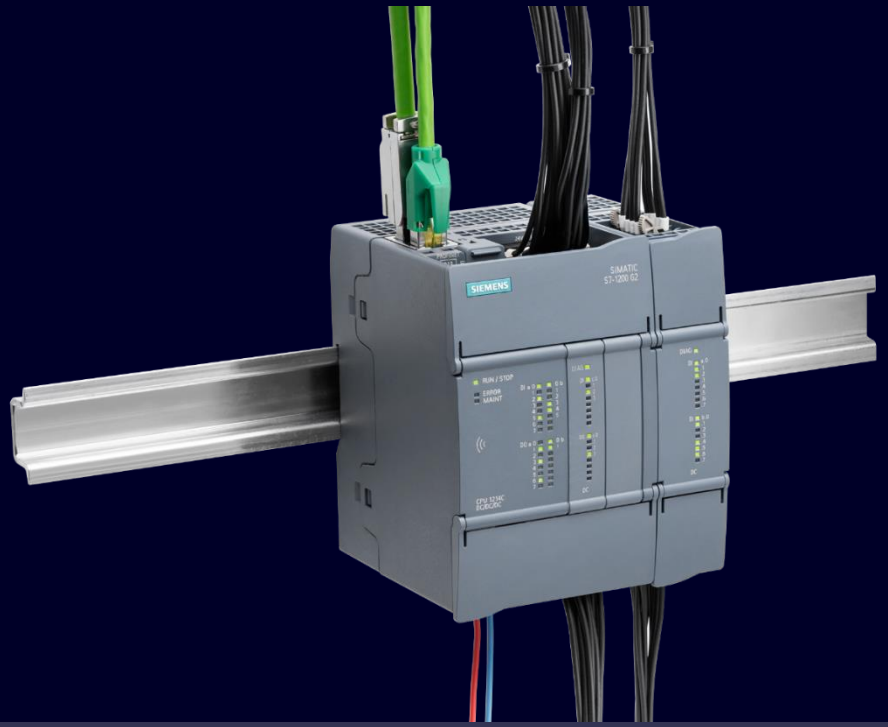
SIEMENS

Solution

New standards in the field of basic automation controllers

SIMATIC S7-1200 G2 sets new standards for simple but high-precision automation controllers. The new controller family now offers efficient motion control for complex motion requirements with enhanced performance and scalability within the SIMATIC controller portfolio.

It allows for more flexible machine safety solutions and increased data transparency, making it the smart choice for all basic automation solutions.



Added value

Enhanced performance & scalability

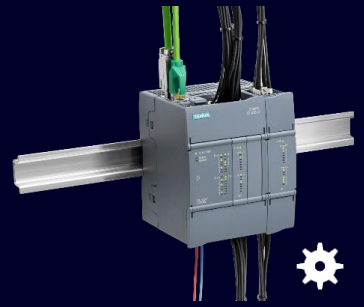
Efficient motion control

Flexible machine safety

Increased data transparency

SIEMENS

Overview
Highlights of SIMATIC S7-1200 G2



Enhanced performance & scalability

- Enhanced processing power, dedicated communication performance and more memory
- Up to 31 PROFINET devices and synchronized program execution with PROFINET IRT
- Optimized scalable hardware portfolio and seamless scalability across all SIMATIC controllers
- Analysis and optimization of PLC runtime with SIMATIC Profiling

Flexible machine safety

- Fail-safe integrated in the complete range (PROFIsafe communication, I/Os)
- Improved F-IO Portfolio with F-SBs and mixed I/O modules
- Fail-safe engineering integrated in STEP 7 Basic

Efficient motion control

- Control of single axes, coordinated axes and simple kinematics
- Integrated motion control technology objects simplifying configuration

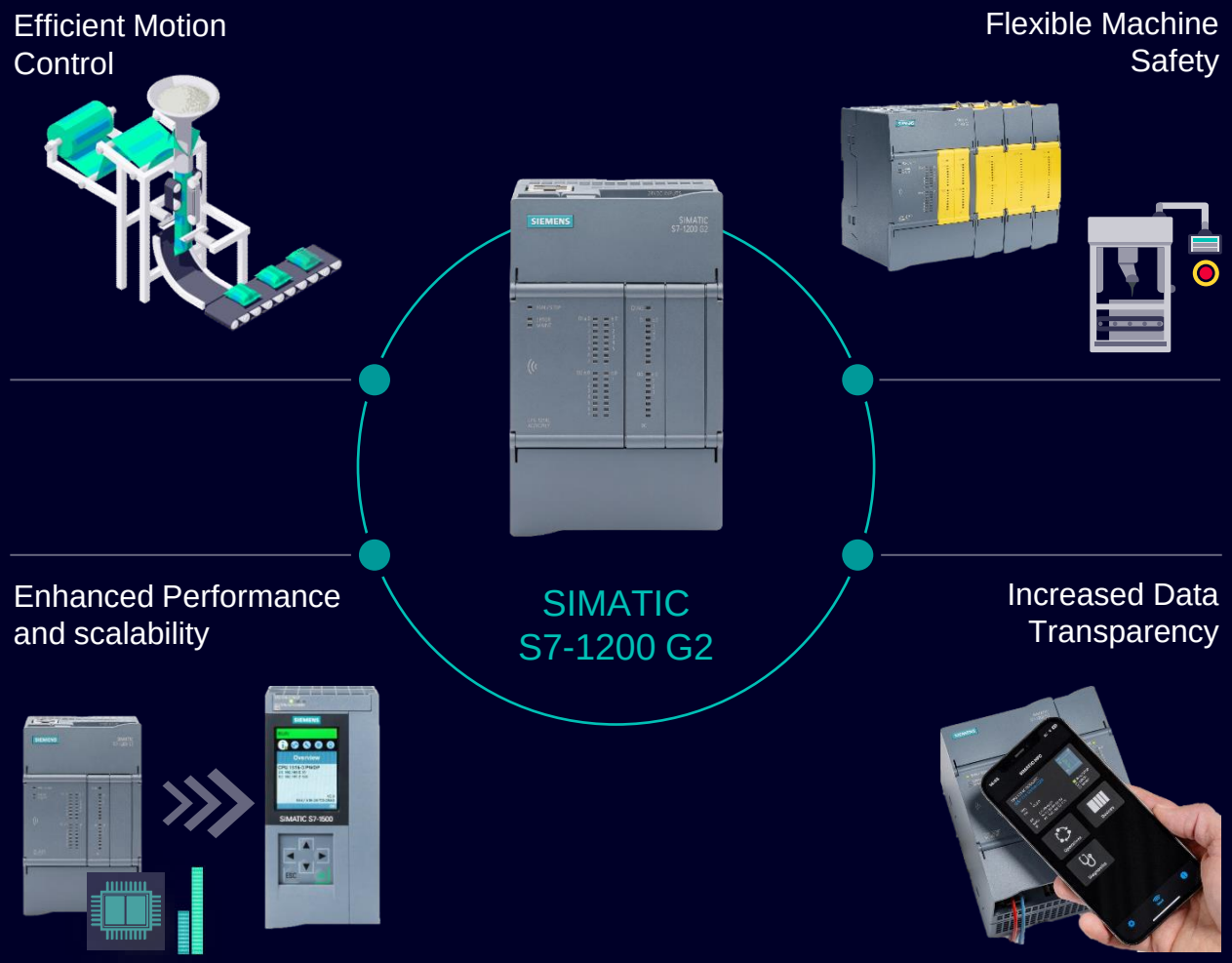
Increased data transparency

- Near Field Communication (NFC) for wireless access to diagnostic, operational and device data
- Web API as an interface for reading and writing CPU data

i Scalable, cost-optimized and powerful portfolio for the basic automation segment

SIEMENS

Enhanced performance and scalability
New standards for entry into scalable automation



Challenge

- Increasing demand for **enhanced performance and functions** in basic automation machines:
  - Integrated **motion control functionality**
  - More **flexible machine safety** solutions
  - **Higher data communication** performance and **data transparency**
- High **machine life cycle costs**, ranging from initial investments to operational and maintenance expenses
- **Limitations of a non-scalable system** lead to restricted flexibility for individual customer requirements

Solution

SIMATIC S7-1200 G2 controllers with integrated technological functions:

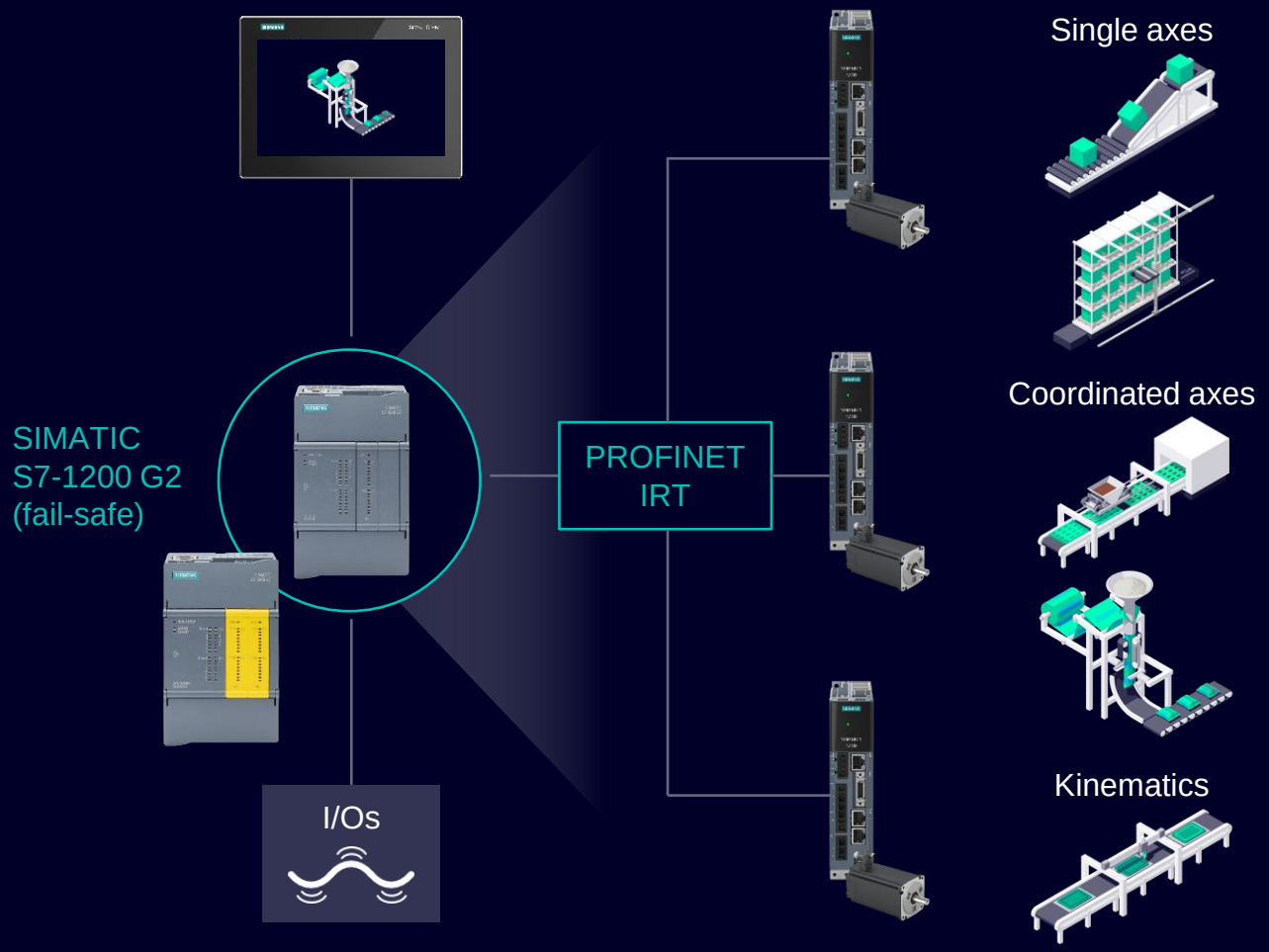
- **Efficient motion control** for basic automation machines to implement a wide range of automation task
- **Flexible machine safety** implementation with a cost optimized safety portfolio and multiple operating modes to ensure maximum productivity
- **Enhanced performance and scalability** with increased processing power, dedicated communication performance and more memory
- **Increased data transparency** with access to diagnostics via Near-Field-Communication

Customer value

- **High performance and productivity**: Perfect coordination between automation, safety and motion control program in a single PLC
- **Cost-optimized** across the machine lifecycle: Integrated technology functions, optimized hardware portfolio and smart engineering solutions
- **Seamless scalability** and state-of-the-art technology across all innovated SIMATIC controllers, offering flexibility for every automation requirement

SIEMENS

Efficient motion control
Integrated motion control for basic automation machines



Challenge

- Ensuring maximum productivity requires **safe, highly automated** and **coordinated** machine operating modes
- High-precision movement of machine components demand **synchronized processing of signals**
- **High complexity** in the **system architecture** and **selection of components**, as many devices are required to implement IO-connection, drive technology and machine safety
- **High level of expertise** required in the **engineering** of motion control solutions

Solution

SIMATIC S7-1200 G2 with **integrated motion control**:

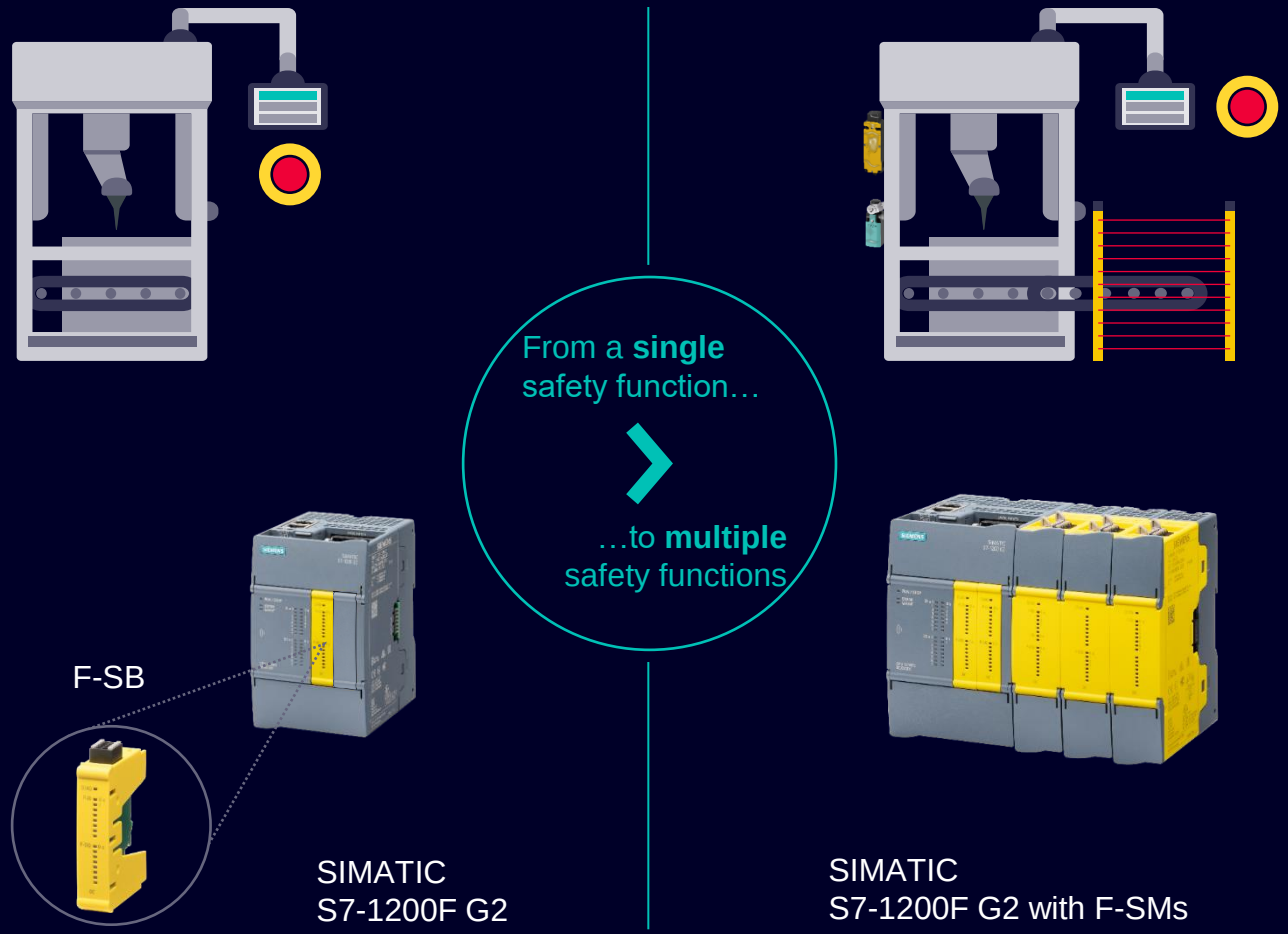
- Simple **single axes control** up to **coordinated axes control** and easy **kinematics**
- Integrated motion control **technology objects** simplifying system configuration
- **PROFINET IRT** for **fast program execution** at synchronized intervals
- **Coordinated machine safety** and **motion control** in one **single PLC** reducing system complexity supported by one common engineering platform (**TIA Portal**)
- **Ready-to-use applications** and comprehensive **motion control trainings**

Customer value

- **High level of productivity**: optimum integration of high-precision motion control and flexible machine safety operations
- **Faster time-to-market**: fast generation of user programs with less development effort and easily configurable motion profiles using Technology Objects
- **Seamless scalability**: from compact basic automation machines to high-end applications with many more axes, as the motion control functions are realized identically across all SIMATIC controllers

SIEMENS

Flexible machine safety
Efficient realization of safety functions and safety modes



Challenge

- Consideration of **different operating modes** in terms of operability and thus safety
- Machines of **various sizes and complexity** with different number of safety functions required
- **Need to change safety concept** if a certain level of complexity is reached
- **Many hardware devices necessary** in order to realize safety functions, leading to high wiring effort and complex system architectures

Solution

Fail-safe SIMATIC S7-1200 G2 with improved hardware portfolio:

- Flexible expansion of fail-safe I/Os according to the number of safety functions with **up to two fail-safe signal boards** or **fail-safe signal modules with mixed I/Os**
- Fail-safe engineering **integrated in STEP 7 Basic** (no safety license necessary)
- **Flexible machine safety** implementation with multiple operating modes (e. g., Safely-Limited-Speed) to ensure maximum productivity
- **Safety integrated** in SIMATIC S7-1200 G2, together with **motion control** and **standard machine control** with the associated communication (**PROFIsafe**)

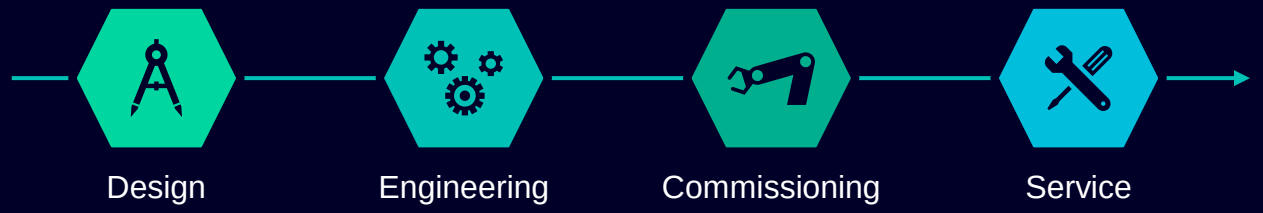
Customer value

- **Highest flexibility**: Use of exactly the required hardware and I/Os with the improved signal board and signal module concept
- **Cost-efficiency**:
  - Space savings, cost savings and reduced complexity by expanding the CPU with matching fail-safe I/Os for your safety application
  - Safety, Motion and Standard control in a single device enables seamless configuration (engineering), communication and thus highest productivity
- **Scalability and standardization**: Easy adaptation to different machine configurations across the whole SIMATIC Controller Portfolio

SIEMENS

Increased data transparency
Smart solutions along the machine life cycle

TIA Portal for all phases of the machine life cycle



Read and **Write** particular data via Near Field Communication

1 Only iOS devices supported with the initial release

Challenge

- **On-site programming** required for adaptation of customer-specific network settings in the PLC
- **Additional hardware devices** with direct access **necessary** to extract diagnostic data
- **Long machine downtimes** in the event of machine failure if efficient diagnostics are not provided
- **Availability of diagnostic information** usually requires high programming effort

Solution

SIMATIC S7-1200 G2 controllers:

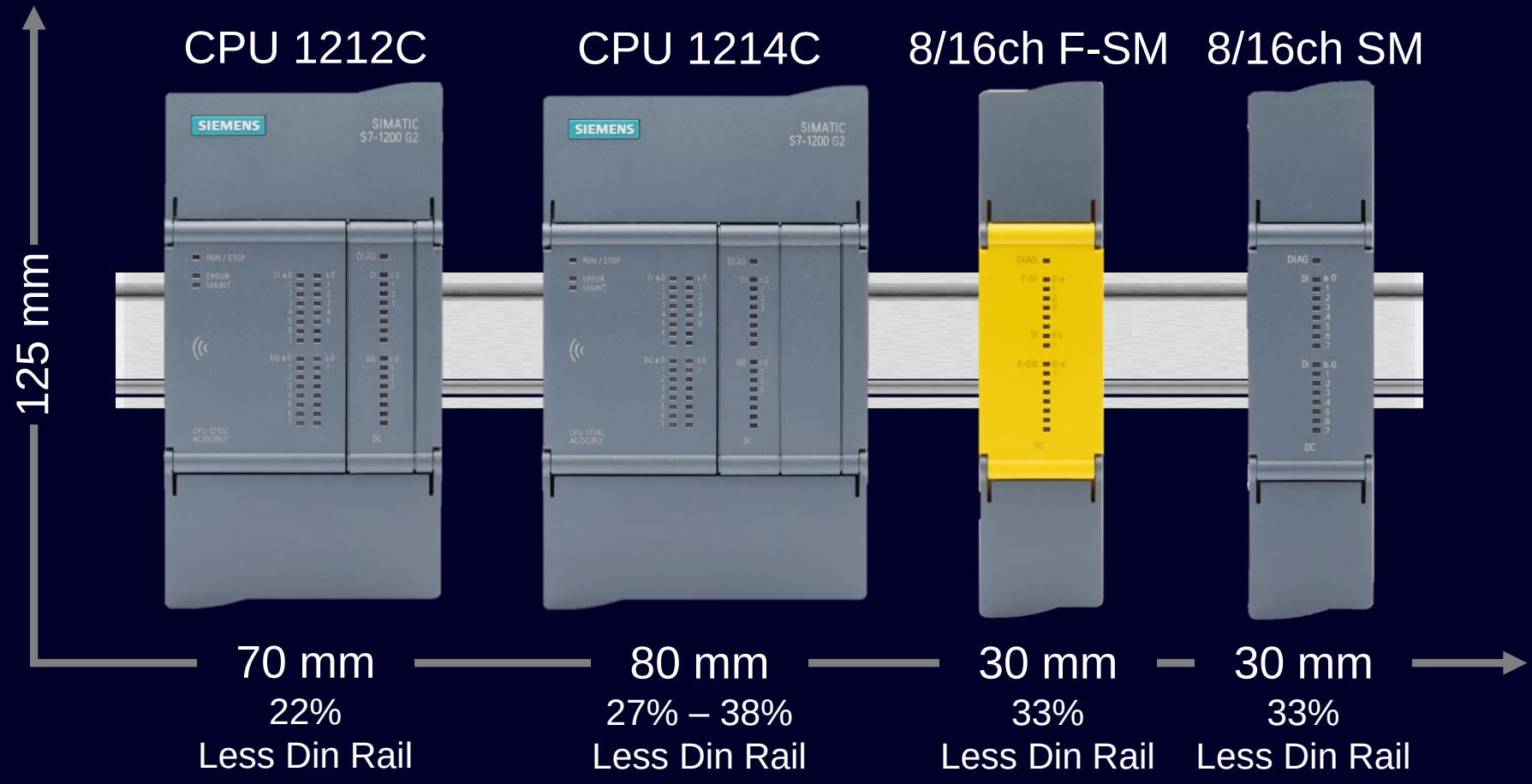
- **Near Field Communication** (NFC) functionality of all SIMATIC S7-1200 G2 controllers[1]
- Access to **diagnostic data** and previously configured **process data** for quick and efficient machine service
- Setting **IP-addresses** and other **network settings** without programming device during commissioning

Customer value

- **Shorter downtimes** thanks to plain-text diagnostic information about the entire PLC station and quick data access
- NFC functionality **eliminates the need for direct access** with additional programming device to the PLC
- **Significant time savings** thanks so simplified handling and configuration
- **Increased machine transparency** across the machine life cycle

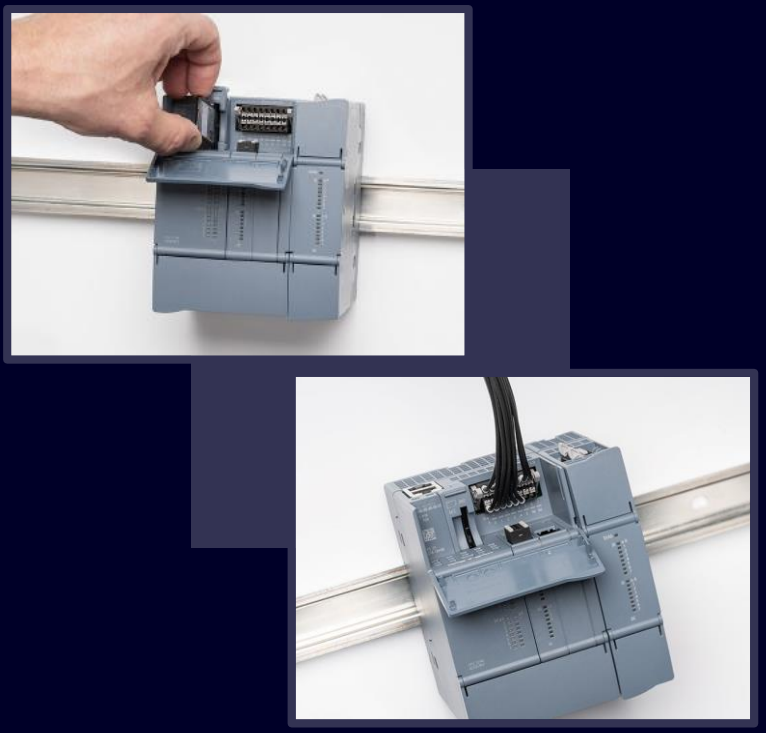
SIEMENS

New Hardware Design
Dimensions

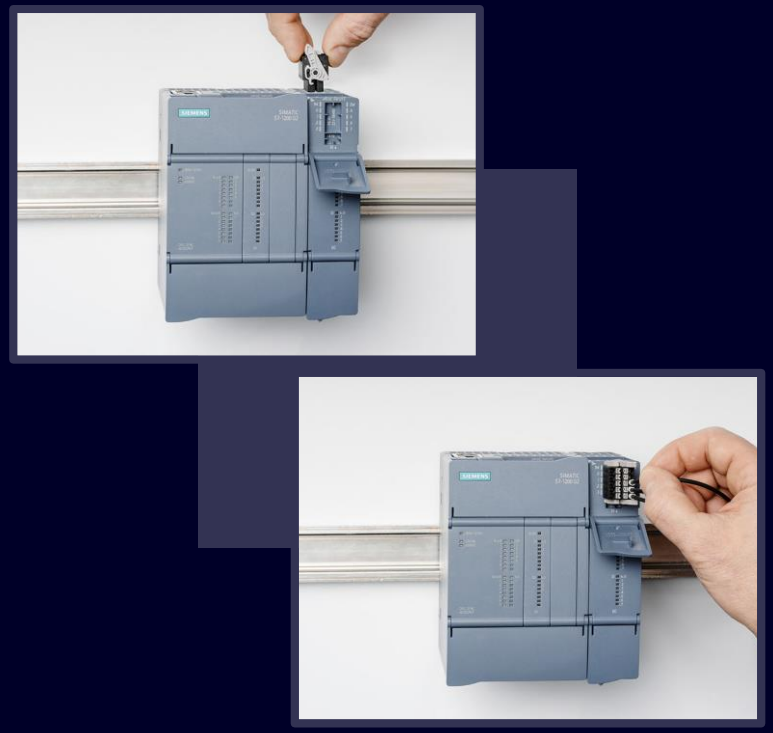


SIEMENS

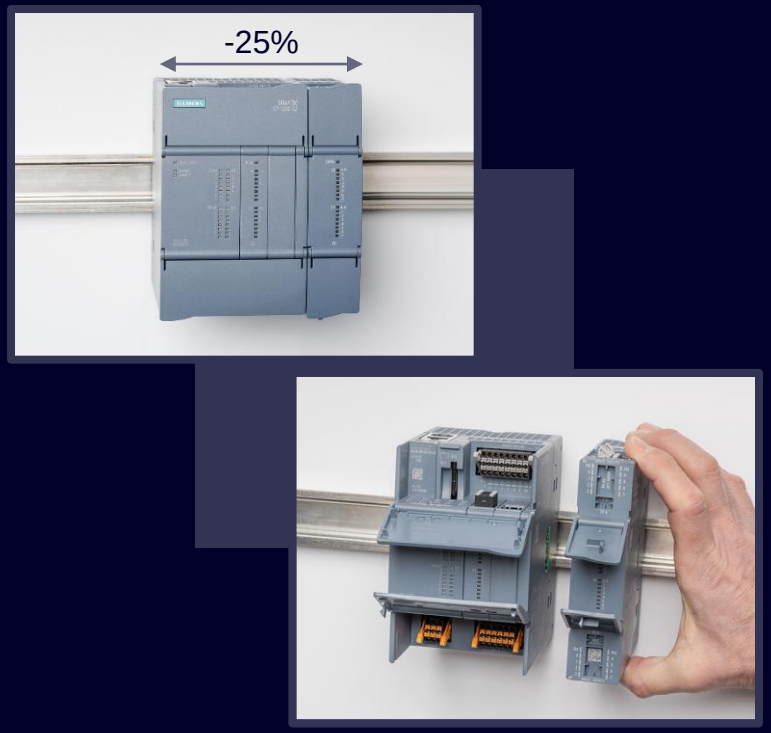
New Hardware Design
Handling



Memory Card access, 2xPN Ports and improved signal board concept (up to two SBs).



Removable high(er) density terminal blocks with push-in wiring for ease of use → non-contact pre-wiring position.



DIN rail footprint reduced by ~ 25%. Single, reliable bus connection system for both SMs and CMs.

SIEMENS

Overview
CPUs and communication

CPUs

	CPU 1212(F)C	CPU 1214(F)C
RAM Data	500 k	750 k
RAM Progr.	CPU 1212C: 150 k CPU 1212FC: 200 k	CPU 1214C: 250 k CPU 1214FC: 300 k
W x H x D (mm)	70 x 125 x 100	80 x 125 x 100
Integrated DI/DO	8/6	14/10
PROFINET/Modbus TCP	2 ports	2 ports
Communication Modules	3 max	3 max
Total SMs + CMs	6 max	10 max
Total SBs	1 max	2 max
Integrated Motion Control	✓	✓
NFC	✓	✓
Memory card	Optional	Optional
Power supply voltage/ input type voltage/ output type and power	DC/DC/DC DC/DC/RLY AC/DC/RLY (Std. only)	DC/DC/DC DC/DC/RLY AC/DC/RLY (Std. only)

Communication

CBs

RS485

CMs

PtP (RS232/RS485/RS422)
Additional Modules planned

SIEMENS

Overview
Signal boards and signal modules

SBs

Digital SBs	Analog SBs
8 DI 24V 100 kHz	4 AI
8 DQ 24V 100 kHz	4 AQ
4 DI / 4 DQ 24V 100 kHz	2 AI / 2 AQ
4 DI / 4 DQ 5V 200 kHz	4 TC
	2 RTD

SMs

Digital SMs	Analog SMs
DI 16 x 24 V DC	8 AI
DQ 16 x 24 V DC 0.5 A	8 AQ
DQ 16 x Relay	4 AI / 4 AQ
8 DI / 8 DQ	8 TC
8 DI / 8 RLY	4 RTD

SIEMENS

Overview
Fail-safe: signal boards and signal modules

SBs	SMs
4x F-DI(1oo1) / 2x F-DI(1oo2), 4-Vs*	8x F-DI(1oo1) / 4x F-DI(1oo2), 8-Vs*
2x F-DQ, PP-PM*	4x F-DQ, PP-PM*
2x F-DI(1oo1) / 1x F-DI (1oo2), 1x F-DQ. PP-PM*	4x F-DI(1oo1) / 2x F-DI (1oo2), 2x F-DQ. PP-PM, 2x DI

*Not within initial failsafe Portfolio release

1oo1 (One out of One):
1oo1 as simple redundancy, a single input connected to a fail-safe digital input

1oo2 (One out of Two):
Redundancy with cross-diagnosis: There are two independent sensors, each connected to an F-DI. Both sensors provide signals to the F-DI. The F-DI monitors the signals and makes decisions based on both inputs. This configuration is normally used in safety-critical applications

Vs: Integrated Sensor supply,
allows to detect short-circuit or overload scenarios, and react accordingly

SIEMENS

Overview
SIMATIC S7-1200 G2 configured in the TIA Portal V20 fits perfectly

Modular space-saving controller for automation systems requiring simple or extended functionality in the area of logic, HMI and networking.

- Perfect for stand-alone and interconnected machines as well as cost-effective automation solutions
- Enabling more flexible, scalable, and higher-performance motion control demands
- Increasing operational performance and reliability with smart automation solutions and fail-safe integration
- Simple integration into interconnected systems and into systems that require one or more HMI devices
- Extended functionality for small motion control systems and small process applications
- Two communication ports on each CPU

Controller, HMI and Networking
Everything developed in one software architecture

SIEMENS

SIMATIC S7-1200 G2
Roadmap – Summary and Outlook

2024

Global product announcement

Hanover Fair April 24

2025

Initial product release with TIA Portal V20

CPUs / Power supply

- CPU 1212C
- CPU 1212FC
- CPU 1214C
- CPU 1214FC
  with NFC iOS app
- PM 1207

Digital SM/SB

- SM 8DI/8DQ (+Relay)
- SM 16DI
- SM 16DQ (+Relay)
- SB 8DI, 8DQ, 4DI/4DQ

Analog SM/SB

- SM 8AI
- SM 8AQ
- SB 4AI, 4AQ, 2AI/2AQ

Further portfolio elements

First failsafe I/O module for at least 2 safety functions

Additional safety I/Os towards the end of this year / beginning of next year

Further portfolio elements

First communication / temperature modules

2026

S7-1200 G2 additions

Wide range of additional modules and functions

SIEMENS

SIMATIC S7-1200 G2
The right basic controller for all market challenges

Globalization
- Global service network
- Worldwide availability of products

Digitalization
- Extensive standardization opportunities
- Cloud connectivity
- Optimization, transparency through data analyses

Protection of humans and machines

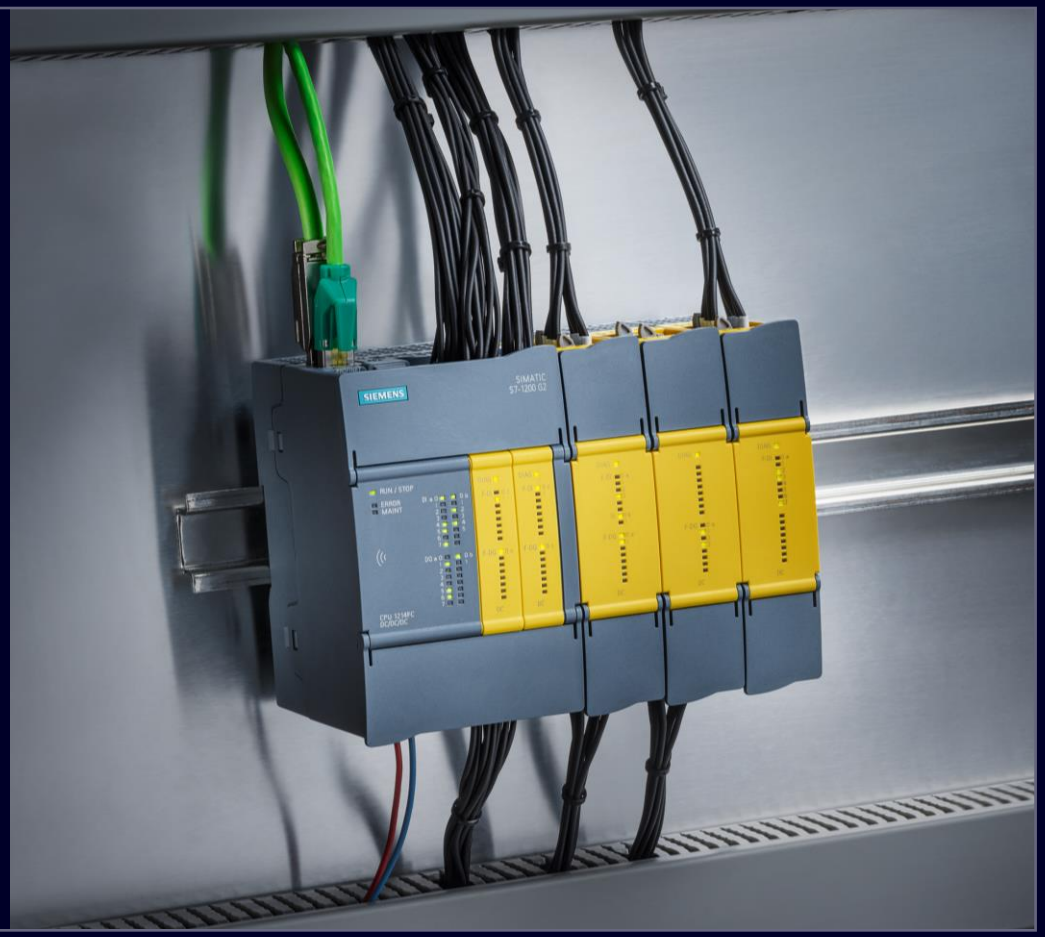
Integrated safety and leading-the-way security functions

Smart handling
- Easy installation, wiring, and fast, efficient commissioning
- Efficient engineering

Increased production output

High communication performance, fast system response and efficient data processing

Factory availability
- Fast error localization and elimination to reduce downtime
- High spare part compatibility and availability



SIEMENS

Disclaimer

Subject to changes and errors. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described, or which may undergo modification in the course of further development of the products. The requested performance features are binding only when they are expressly agreed upon in the concluded contract.