Digital Distribution and Warehouse

Thinking intralogistics further! – Digital Connectivity & Power
Warehouse Overview

- New Technology
  - Industrial 5G
  - OT/IT Network Integration
  - Network Management
  - Cybersecurity for Industry
  - Remote Communication

- Industrial Network Systems
- Industrial Wireless LAN
- Industrial Identification and Locating
- Power Supply
- Weighing Systems

- Wireless Communication
  - Automated Guided Vehicle (AGV)
  - Shuttle Systems
  - Stacker Cranes
  - Tray Sorter Systems

- RFID Systems
  - In/Outbound Logistics
  - Conveyor Systems
  - Pouch Sorter Systems
  - Machine Access Control

- RTLS Systems
  - Automatic Finding
  - Yard Management
  - Safety & Access Control
  - Location Intelligence Software

- Power Supply
  - Automated Guided Vehicle (AGV)
  - Add-on modules

- Weighing Systems
  - Conveyor Systems
Industrial Network Systems

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  - In-Outbound Logistics
  - Conveyor Systems
  - Pouch Sorter Systems
  - Machine Access Control
- RTLS Systems
  - Automatic Finding
  - Yard Management
  - Safety & Access Control
  - Paperless Warehouse
  - Location Intelligence Software
- Power Supply
  - Add-on modules
- Weighing Systems
- Conveyors
- Stacker Cranes
- Optical Code Reading
- RTLS Systems
  - Yard Management
  - Safety & Access Control
  - Paperless Warehouse
  - Location Intelligence Software
- Yard Management
- Remote Communication
- OT/IT Network Integration
- Cybersecurity for Industry
- New Technology
  - Industrial 5G
Industrial 5G

Increased performance and efficiency

Reliable warehouse operation thanks to high performance wireless communication

Network infrastructure is designed to be operated by own personal

Longer maturities of battery-powered mobile vehicles thanks to energy efficient communication
Industrial 5G

Flexible and reliable wireless communication

System tested end-to-end wireless communication solution for mobile applications in distribution and warehouses

Connecting a large number of autonomous automated guided vehicles (AGVs) or automated mobile robots (AMRs) in a single network

Highest reliability with lowest latencies with Ultra-Reliable Low-Latency Communication
New Technology Industrial 5G – TECHNICAL ADVANTAGES

Industrial Identification and Locating

Industrial Wireless LAN

Power Supply

Weighing Systems
OT/IT Integration

Perfect interaction between OT and IT networks in logistics

Maximum availability guaranteed in a segmented and redundant network architecture from the machine to the cloud level with open standards for all major clouds.

Highest security with multilevel protection concept using user-based and protocol-based access control to end systems of network cells.

Minimal response times with cutting-edge network portfolio of robust hardware products with extended temperature range and different IP protection classes.
OT/IT Integration

Perfect interaction between OT and IT networks in logistics

SCALANCE products are part of Totally Integrated Automation, the industrial automation solution from Siemens stands for efficient interoperability of all automation and network related components

Complete tested and approved automation solution including industrial Ethernet from a single source

Investment protection by tested functional compatibility of successor products
Your benefits

OT/IT Network Integration – TECHNICAL ADVANTAGES

Back to overview

Industrial Network Systems

Industrial Wireless LAN

Industrial Identification and Locating

Power Supply

Weighing Systems
SINEC NMS

Maximum transparency for your warehouse network

Easy monitoring and diagnostic with graphical representation and topological recognition of the network (24/7 visibility of network status)

Maximum transparency for industrial network systems with automatic documentation of the whole network

SINEC NMS manages efficiently large-scale networks following IEC 62443 security guidelines
SINEC NMS

Time-saving management for warehouse network

Central policy based management ensures secure configuration backup and firmware updates

Manages entire network infrastructures for Siemens, partner and third-party devices at ease, onsite or remotely

Excellent scalability for any size of networks due to distributed architecture
Network Management – TECHNICAL ADVANTAGES

Fault Management

Security Management

Graphic representation

Transparent diagnostics

Validation and documentation

Openness and flexibility
Cybersecurity for Industry

Industrial Cybersecurity is essential for secure logistic processes

**High Availability** – Avoiding disturbances caused by attacks

**Integrity** – Reduction of malfunctions, production errors and downtimes

**Confidentiality** – Protection of confidential data, information and intellectual property
Cybersecurity for Industry

Protect the productivity and availability of your plant

High transparency via security threats in daily operation published / tracked by Siemens CERT over the lifecycle

High investment security through certified secure development Siemens products according to IEC 62443-4-1

Increased security level by comprehensive product and service offerings for secure OT network architectures for large distribution and warehouses
Cybersecurity for Industry – TECHNICAL ADVANTAGES

Industrial Network Systems

Industrial Wireless LAN

Industrial Identification and Locating

Power Supply

Weighing Systems

Physical protection
Security Management
Security Operation Center

Your benefits

Back to overview

Industrial Identification and Locating
SINEMA Remote Connect

Easy and secure remote access for material handling systems

Cost saving thanks to easy integration and connection of different machines and plants using the central management platform SINEMA Remote Connect

Time saving via fast remote access without any special IT Knowledge

Highest security thanks to VPNs for secured remote communications
SINEMA
Remote Connect

Flexible and secure remote access for material handling systems

Secured access to remote automation cell via web-based management or TIA Portal

Flexible media access from mobile wireless networks up to private lines – for every requirement the right device

High transparency thanks to central administration of all user and device connections
SCALANCE W

Future-Proof Industrial Network solutions enable efficiency

Save energy costs thanks to energy-optimized operations via digital output to remotely switch off all automation components

Fewer charging stations required in the warehouse by activating the sleep mode to eliminate energy consumption

Highest availability thanks to easy-to-use diagnostic functions e.g. integrated signal recorder
SCALANCE W

Future-Proof Industrial Network solutions enable efficiency

High flexibility in fulfilling customers wireless technology demands (Wi-Fi 6/5G) by leveraging same form factor and operating systems of SCALANCE W and SCALANCE M

Fast serviceability by non-specialized maintenance personnel with configurations saved on Configuration Plugs

Easy configuration and scalable commissioning thanks to a powerful toolbox (PRESET PLUG, TIA Portal, SINEC NMS, NAT functionality)
Your benefits

Wireless Communication Automated Guided Vehicle (AGV) – TECHNICAL ADVANTAGES

- Industrial Identification
- Industrial Locating
- Power Supply
- Weighing Systems
Wireless Communication Shuttle Systems – YOUR BENEFITS

SCALANCE W

Flexible Industrial Wireless LAN solution for every shuttle concept

Higher throughput in storage and retrieval communication systems based on real-time communication thanks to Siemens iFeatures

Cost-effective and maintenance-free IWLAN solution as opposed to systems with contact conductors

Maximum availability due to smaller impact of maintenance with selective downtime of aisles or levels thanks to dedicated safety concepts based on iFeatures

Website Brochure/video

Industrial Wireless LAN

Industrial Identification and Locating

Power Supply

Weighing Systems
SCALANCE W

Flexible Industrial Wireless LAN solution for every shuttle concept

Highest stability of the wireless communication in challenging high bay storage environments thanks to Siemens iFeatures

Safe and selective maintenance of shuttles thanks to PROFIsafe applications enabled through real-time communication via iPCF

Policy based network configuration and central firmware management as well as diagnosis enabled by the network management system SINEC NMS
Wireless Communication Shuttle Systems – TECHNICAL ADVANTAGES

- Industrial Wireless LAN
- Industrial Identification and Locating
- Power Supply
- Weighing Systems
SCALANCE W

Industrial Wireless LAN for safe and reliable crane operation

High availability thanks to wear-free and robust contactless communication with a controlled and defined radio field along its route

Maintenance-free operation as opposed to optical systems or conductor lines

Highest availability thanks to easy-to-use diagnostic functions e.g. integrated signal recorder
SCALANCE W

Industrial Wireless LAN for safe and reliable crane operation

Remote operation and remote diagnostics available thanks to high data rates over the newest wireless technology standard

Easy configuration and scalable commissioning thanks to a powerful toolbox (PRESET PLUG, TIA Portal, SINEC PNI)

Highest stability of the wireless communication in challenging environments thanks to Siemens iFeatures
Wireless Communication Stacker Cranes – TECHNICAL ADVANTAGES

- **Industrial Identification and Locating**
- **Weighing Systems**

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**PROFINET/Industrial Ethernet**
SCALANCE W

Maintenance-free industrial wireless LAN solutions with RCoax

Less errors in sorting due to fast and reliable industrial wireless communication

Increased performance thanks to unique Siemens iFeatures securing real-time communication

Cost-effective due to maintenance-free RCoax cable solution as opposed to systems with conductor lines

Website  Brochure/video
SCALANCE W

Maintenance-free industrial wireless LAN solutions with RCoax

Flexible installation with no need for long term preparation and time expensive infrastructure design

RCoax cable solutions are considerably more cost-effective compared to systems with high maintenance contact conductors and trailing cables

Real-time wireless communication with iPCF is fulfilling the requirements of the automation protocols (e.g. PROFINET or Ethernet/IP) in the sorting system
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- RTLS Systems
  - Safety & Access Control
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- Industrial Identification and Locating
SIMATIC RF600

Scalable identification system for supply-chain solutions

Optimized material flow and automated data acquisition with comprehensive and scalable industrial identification portfolio

Maximum transparency from shop floor to cloud thanks to seamless integrated communication and security solutions

Future-proofed portfolio of robust hardware – products and efficient software tools ensure highest efficiency
SIMATIC RF600

Improved visibility of product and item information

RFID technology enhance the effortless and seamless tracking of moving products and items along the supply chain significantly.

Accelerated material flow, forecasts and schedules with real-time data information about assets and item movements.

High failure prevention due to automatic detection which ensure instant visibility and end-to-end traceability.
SIMATIC RF600

Innovative identification system for optimized material flow

Proven “UHF for Industry” algorithms ensure reliable identification of products and assets at all stages in your material handling process.

Cost-efficient and scalable reader portfolio, modular antennas and large transponder selection.

Maximum efficiency in integration thanks to simple cloud connection via OPC UA.
SIMATIC RF600

Enhanced productivity and optimized routing of deliveries

Sorting processes can be optimized faster and more easily without higher-level systems thanks to the directly stored information on the RFID-transponders.

Improvement of sorting processes by RFID technology increasing material flow performance thanks to minimum no-reads.

Simplified outbound processes enable the capture of errors at the carton level in-time before the assembling and shipping process of pallets.

Weighing Systems

Power Supply

Industrial Network Systems

Industrial Wireless LAN

Industrial Identification and Locating
SIMATIC MV500

Powerful code reading system for transparent logistic processes

Best-in-class reading results in dynamic read distances with electronic focus and automated, switchable light segments

Secure and reliable connection to cloud applications thanks to TIA integration

Easy-to-use with one-click configuration for network connection and code reading parametrization
**SIMATIC MV500**

Standardized and integrated industrial proven components

Increased performance and flow-rate through image-based readers which are decoding challenging 1D and 2D codes accurately and quickly in distribution centers.

Reliable operation thanks to powerful code reading systems with industrial proven protection factor.

High efficiency in reduction of maintenance costs thanks to intelligent and secured remote support and services.
SIMATIC RF300

Industrial identification system ensures maximum transparency

High economic efficiency with scalable, robust and compact readers ensure seamless tracking of logistics processes

Seamless integration from the field and control levels up to cloud-based solutions by using scalable interface modules

Highly efficient configuration, commissioning and diagnostics by using the unique “IDENT” technology object in TIA Portal
SIMATIC RF300

Efficient sorting through automatic mapping

Sorting processes can be optimized faster and more ease without higher-level systems thanks to the directly stored information on the RFID-transponders.

Maintenance-free and reliable operation thanks to robust contactless RFID identification system without visual contact.

Highly efficient identification system to store, transport, sort and sequence items in pouches and hooks.
SIMATIC RF1000

Electronic access control for secured machine operations

Controlled machine access:
Traceability of access and changes

Individual control of access rights enable a definition of any number of user groups with different access rights

User-friendly operation integrated in the company-wide industrial security concept
SIMATIC RF1000

Efficient and secured access control to process areas

Individual control of access rights using existing employee ID cards

Secured and documented access to material handling systems prevents operating errors

Enables documentation of processes and storage of user-specific instructions
**SIMATIC RTLS**

Full product tracking in real-time leads to maximized productivity

Increased efficiency due to reduction of search times with high accuracy of real-time locating data within centimeters

Identification of bottlenecks enables an optimization of material flows and individual orders

High transparency ensures seamless tracking In- and Outdoor
**SIMATIC RTLS**

Optimized and automated processes in the warehouse

Efficient productivity due to reduced search times enabled by real-time locating data and the integration of search functions in the location intelligence software

High automation rate due to fast implementation of automated processes possible by virtual geofence-based events

Fast improvement of quality management on the base of geofences enabled by automation of error messages in case of wrong assignments of partial orders
RTLS Systems – Automatic Finding – Use Case 1: Reduction of Search and Downtimes

Weighing Systems
Power Supply
Industrial Networks
Industrial Wireless LAN

Your benefits
Back to overview

Your benefits
Back to overview
RTLS Systems – Automatic Finding – Use Case 3: Improving QM and Prevention

Weighing Systems
Power Supply
Industrial Network Systems
Industrial Wireless LAN

Back to overview  Your benefits

Industrial Identification and Locating
SIMATIC RTLS

Real-time logistic management

High product box standard thanks to protection class IP65 of transponder and gateways enable an ease and seamless real-time tracking in- and outdoor

Ensuring a complete and transparent overview of the material flows on entire yard without any restriction

Optimized throughput and reduction of idle times by generating automated pickup notes based on geofence events

Your benefits

Back to overview
SIMATIC RTLS

Route optimization and automated access control

Optimization of routes and avoidance of bottlenecks by quick and strategic analysis of movement data

Higher security standards by implementing defined access controls induced by connecting real-time location data and events of the locating intelligence software

Improvement of pedestrian or object safety by initializing an alarm in case the distance of the forklift driver is below safety distance (zero harm culture)
SIMATIC RTLS

Paperless warehouse

Innovative e-paper transponders allow the reduction of paper consumption, foster sustainability and resource efficiency by replacing traditional, printed accompanying papers.

High flexibility by customized and individual paperless work instructions that are directly displayed and updated on the e-Ink display depending on position and object.

Reduced maintenance effort due to use case optimized battery management and according status notifications.
RTLS Systems – Paperless Warehouse – Use Case 8: Paperless warehouse

Industrial Identification and Locating

Your benefits

Back to overview
Your benefits

RTLS Systems – Location Intelligence Software

Full transparency

Digital twin of performance:
Visualize what is already known

Anomaly detection

Real-time analytics:
Understand the status and get aware of anomalies

Optimization

Optimization toolset:
Optimize the processes to avoid future anomalies

Analytics Highlight Features

Geofence analytics
Throughput analytics
Heatmap

Industrial Identification and Locating

Industrial Network Systems
Industrial Wireless LAN
Power Supply
Weighing Systems
SITOP Power Supply

For increasing system availability up to total all-round protection in warehouses

High availability due to 24 V all-round protection solution with redundancy, buffer or selectivity modules protects the material handling application

Full transparency is provided by the SITOP PSU6200 due to monitoring of important data like voltage, current, temperature and lifetime. Therefore predictive maintenance is possible to reduce downtimes

SITOP PSU6200 has an efficiency of up to 96.6% to save energy costs
Power Supply

For increasing system availability up to total all-round protection for AGV’s

Use of DC-DC converter SITOP PSU3400 to provide a power supply from batteries that powers different control products in automated guided vehicles

Stable 24 V supply despite fluctuating DC voltage of batteries due to wide input voltage range

Additionally the SITOP selectivity module can split the DC 24 V output voltage in up to eight channels with their own respective load. Each channel is protected and monitored individually.
**Power Supply – Automated Guided Vehicle (AGV) – TECHNICAL ADVANTAGES**

- **iWLAN SCALANCE W700**
- **Open Controller 1515SP PC2**
- **I/O Modules**
- **HMI KTP400**
- **Safety Laser Scanner**
- **Safety Buttons SIRIUS ACT**
- **SITOP PSU3400**
- **Battery**
- **Motors**
- **SIMATIC MICRO-DRIVE**

**Back to overview**

- **Weighing Systems**
- **Industrial Wireless LAN**
- **Industrial Identification and Locating**

**Your benefits**
**Power supply add-on modules and DC UPS**

Individual configuration possible up to complete all-round protection

Failure of power supply units: Redundant setup of power supply with SITOP redundancy modules

Against overload or short circuit in 24 V circuit: Selective protection of 24 V branches with SITOP selectivity modules

For power failures on the input side: SITOP buffer module (up to seconds), SITOP DC UPS with capacitors (minutes range), SITOP DC UPS with batteries (hours range)
Power Supply – Add-on modules – TECHNICAL ADVANTAGES

Weighing Systems
Industrial Network Systems
Industrial Wireless LAN
Industrial Identification and Locating

Power Supply

24 V DC

Selectivity module
PLC
HMI
Actuator/Sensor
SIWAREX

Real integration of all weighing applications into the SIMATIC automation environment

Weighing technology as an integrated part of the automation environment – no separate black box

Flexible and open system without dependencies

Full diagnostics and maintenance across all SIMATIC controllers and HMIs
SIWAREX

Real integration of all weighing applications into the SIMATIC automation environment

Full integration of hardware and software into TIA Portal

High scalability in combination with all other available SIMATIC components

Connectivity to PROFINET, Ethernet/IP and Modbus based controllers via SIMATIC ET 200SP Multi Field Bus IM. One hardware solution for all PLCs
Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens’ products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit [https://www.siemens.com/industrialsecurity](https://www.siemens.com/industrialsecurity).

Siemens’ products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer’s exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under [https://www.siemens.com/industrialsecurity](https://www.siemens.com/industrialsecurity).