



**SIEMENS**

*Ingenuity for life*



Line Card



## Oil & Gas Downstream Solutions

Complete offering – products, software, solutions and services

**50% of the world's data was created in the past twelve months. Less than 1% of it was used or analyzed.**

In the next few years, billions of new devices will join the Internet of Things. Devices in your own operations - like valve positioners, gas analyzers and motors of every type - will be online and sharing their data. We saw this coming and we're ready to help Oil and Gas Downstream companies turn this into competitive value.

We make the digital enterprise real for customers, from the field level to the management level. For decades we have advanced the integration and information capabilities of our industrial portfolio. We have added software offerings for engineering, design and operations management. We have added service offerings for cybersecurity and operational networking. Now, MindSphere, our cloud-based, IoT operating system, can turn your operational data into insights for better – even transformational – decision-making.

In this document you will discover a Siemens portfolio that is ready to serve you today and for decades into the future. From electrification to automation to digitalization, here are the products, software, solutions and services that will help you to define and realize your digital enterprise.

[usa.siemens.com/oilandgas-downstream](http://usa.siemens.com/oilandgas-downstream)

## MindSphere

### MindSphere – the cloud-based, open IoT operating system from Siemens

- Open standards and interfaces to exchange data of many different manufacturers
- Connectivity suite is available as hardware and software
  - MindConnect Nano, MindConnect IoT 2040, MindConnect Software
  - Integration in SIMATIC S7, Sinumerik and other Siemens products
- Industry applications and partner development ecosystem
  - MindApps from Siemens and its partners
  - Application Programming Interfaces (API) for developers
- Aligned with relevant industry security standards (IEC 62443, ISO/IEC 27001)



## Automation Solutions

### Distributed Control System (SIMATIC PCS 7)

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• Distributed Control System (SIMATIC PCS 7)</li> <li>• Continuous, batch and sequential control</li> <li>• Integrated asset management</li> <li>• Advanced process control</li> <li>• Flexible and scalable architectures</li> <li>• Integrated control and process safety</li> <li>• Batch management</li> <li>• Cyber security</li> <li>• High performance graphics</li> </ul> | <ul style="list-style-type: none"> <li>• Virtualized solutions</li> <li>• Service and support</li> <li>• Process simulation (SIMIT)</li> <li>• Energy management solutions</li> <li>• Alarm management</li> <li>• Redundant real time IO bus (PROFINET)</li> <li>• Compact, fault tolerant, environmentally robust IO (SIMATIC ET 200SP HA)</li> <li>• Configurable IO (CFU)</li> <li>• Scalable, redundant capable Controller (CPU 410 E)</li> </ul> |
|--|---|



## Safety Systems

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>• TUV certified to IEC 61508 to SIL 3</li> <li>• Flexible Modular redundancy</li> <li>• Burner management (BMS)</li> <li>• High integrity protection (HIPPS)</li> <li>• Fire and gas (F&amp;G)</li> <li>• Fault tolerant architecture to reduce spurious trips</li> </ul> | <ul style="list-style-type: none"> <li>• Safety Life cycle tools via cause and effects programming</li> <li>• Compliant to IEC 61511 and ANSI/ISA standards</li> <li>• Low cost standalone solutions</li> <li>• Supports OSHA PSM requirements</li> <li>• Cyber security</li> </ul> |
|--|---|



## Plant Engineering Software (COMOS)

- Integrated data management over the entire plant life cycle
- Common database with object-oriented data management
- Process engineering, pipe specification and isometrics
- Electrical, instrumentation and control and control system engineering
- Project and plant documentation
- 3D virtual reality visualization



## Industrial Identification

- 1D, 2D code reading, OCR and pattern recognition
- HF and UHF RFID systems



## Automation Solutions (continued)

### Industrial Power Supplies

- The first PROFINET enabled power supplies with OPC UA
- Single phase and three phase power supplies
- 24VDC power supplies and power security



### Migration Solutions

- Honeywell
- ABB/Bailey
- TI
- APACS
- Gateways for integration – CM104, CM105
- Rockwell
- Allen Bradley
- Siemens S5
- Teleperm XP

### Operations Intelligence Software (XHQ)

- Aggregating, relating and presenting operational and business data
- Asset performance management, analytics and visualization solutions



## Process Instrumentation & Analytics

### Analytical Products & Solutions

- Process gas chromatographs
- Continuous gas analyzers
- In-situ laser spectroscopy
- Front End Engineering (FEE)
- Turnkey system integration
- Lifecycle customer support



### Pressure

- Gauge
- Absolute
- Differential
- Hydrostatic



### Temperature

- Head, rail and field mounted transmitters
- Temperature transmitters
- Sensors
- Wireless transmitters
- Fiber-optic Sensors



### Level

- Radar & Guided Wave Radar
- Ultrasonic
- Capacitance
- Point Level



### Flow

- Electromagnetic
- Ultrasonic clamp-on
- Coriolis
- Vortex



### Valve Positioners

- Digital
- Electro Pneumatic
- Pneumatic



## Factory Automation

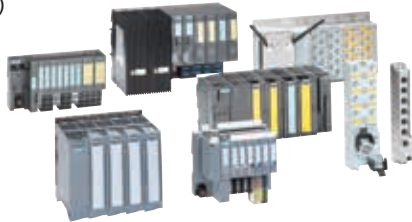
### SIMATIC Controllers

- Basic controllers for simple & stand-alone automation tasks (S7-1200)
- Advanced controllers for medium & highly complex machine/plant automation (S7-300/S7-400/S7-1500)
- Distributed controllers for serial machines with limited footprint & machines with distributed architecture (ET 200SP/ET 200S/ET 200pro CPU)
- Software controllers for PC-based Automation (S7-1500 software controller, WinAC)



### SIMATIC Distributed I/O

- I/O Systems for Control Cabinets, IP20 (ET200SP / ET200MP / ET200S / ET200M / ET200isp)
- I/O Systems without Control Cabinets, Machine Mount IP65/67 (ET200AL / ET200pro / ET200eco PN)
- Modular/scalable/compact
- I/O modules can be configured as remote or local
- PROFIBUS, PROFINET, or EtherNet/IP\* (\*only in ET200S / ET200pro)
- Failsafe options
- Intrinsically safe options (ET200S / ET200M / ET200isp)
- Integrated motor starter option (ET200SP / ET200S / ET200pro)



### LOGO!8 Logic Module

- Full communication options via standard Industrial Ethernet
- Integrated web server with read and write access to variables as well as loadable custom designed HTML pages
- Local and Remote communications via WIFI and phone network
- Built in Modbus TCP/IP for communication with devices that support Modbus TCP/IP
- Supports automatic synchronization of date and time with other NTP devices. The LOGO can be a NTP master and Slave on the network
- Supports new access tool for reading, evaluating and saving data with Microsoft Excel in RUN for all LOGO! 8 basic units



## Totally Integrated Automation (TIA) Portal Software

- Single engineering framework
- Reduced engineering time
- Increased transparency & diagnostics
- Intuitive
- Common tag database
- Custom libraries



## SIMATIC PC-based Automation

- Industrial PCs:
  - Rack (IPC347E, IPC547E, IPC647D, IPC847D)
  - Box (IPC227E, IPC427E, IPC627D, IPC827D)
  - Panel (IPC277E, IPC477E, IPC677D, HMI Panel PC Ex)
- Industrial Monitors & Thin Clients (SCD Monitors, Flat Panels, Industrial Flat Panels, Thin Clients)
- Expansion Components/Accessories
- Customization
- PC-based Controllers (S7-1500 Software Controller)
- Embedded Controllers (S7-1500 Open Controller)
- Embedded Bundles / Software Packages (Box Bundles, PC-Bundles, Software Packages)



## SIMATIC HMI Panels

- Comfort Panels for performance and functionality (Standard/Outdoor/INOX)
- Basic Panels for economical, high-resolution visualizations (2nd gen)
- Mobile Panels for maximum mobility and flexibility (2nd gen)
- Key Panels for flexible expansion with keys or safety functions (KP8/KP8F, KP32F)



## SCADA System SIMATIC WinCC

- User-friendly, scalable system to meet your needs
- Absolute openness
- Integrated process database and Plant Intelligence
- Innovative web solutions
- Openness and international standards



## Factory Automation (continued)

### SCADA System SIMATIC WinCC Open Architecture

- Object orientation
- Scalable to plus 10 million tags
- Platform-independent
- SIL3 certified according IEC 61508
- Platform for customized solutions
- Comprehensive range of drivers and connectivity



### SIMATIC Safety Integrated

- One controller, engineering & communication for standard and fail-safe automation
- Wide range portfolio from micro-processors to PC-base controller
- Ability for local safety modules
- Centralized Safety IO, PC based Safety, Wireless safety
- Wide range of integrated drive technology
- Safety controller with single processor for TUV approval



### Motion Controllers

- Drive-based (SIMOTION D)
- PC-based (SIMOTION P)
- Controller-based (SIMOTION C)
- Distributed level-event monitoring and power metering



## Industrial Controls – Power Circuit Components

### SIRIUS Motor Starter Protectors

#### SIRIUS 3RV20 Motor Starter Protectors

- UL approved as Self Protected Combination Motor Controllers (Type E)
- Manual motor controller, disconnect, short circuit protection, and overload protection
- 3RV201 & 2 – Size S00, S0, Trip Class 10 up to 40A
- 3RV203 – Size 2, Trip Class 10 or 20 up to 65A
- 3RV204 – Size 3, Trip Class 10 or 20 up to 100A
- Screw or spring clamp connections



#### SIRIUS 3RV27 & 28 Circuit Breakers

- UL489 rated
- Size S00 to S3
- For motor and transformer protection
- Range 0.16 A to 70 A
- S3 delta rating 10 A to 30 A at 480 VAC
- Screw or spring clamp connections

#### SIRIUS 3RV29 Infeed System

- Space saving infeed system for group motor starter installation
- Use with size 00 & 0, 3RV20 MSP and 3RT contactors
- Expandable up to 63 A
- Plug in design for quick installation and reduced wiring



### SIRIUS Overload Relays

#### SIRIUS 3RU Thermal Overload Relays

- Size 00 to S3
- Up to 100 A, Trip Class 10
- 1 NO + 1 NC Aux contacts
- Manual / automatic reset
- Switching position indication



#### SIRIUS 3RB2 & 3RB3 Solid-State Overload Relays

- Size 00 to S12
- Up to 630 A, Trip Class 5, 10, 20, or 30
- 1 NO + 1 NC Aux contacts
- Manual / automatic reset
- Self evaluating, and indication



### NEMA Overload Relays

#### ESP200 Solid-State Overload Relay

- Rugged and reliable design for both industrial and commercial applications
- Self-powered
- Market leading trip accuracy, greater than 99%
- Trip class selectable (5, 10, 20, 30)
- Class 958 version provides protection for sealed compressors and artificially cooled motors
- Class 958L version is designed for oil market and pumping applications with precise trip curve



## Industrial Controls – Power Circuit Components (cont.)

### Motor Management

#### SIRIUS 3RB24 Electronic Overload Relay with IO-Link communications

- Overload protection, control, and monitoring of three-phase and single phase motors
- Easy 3-wire connection interface to IO-Link master
- Flexible trip class selection 5, 10, 20, 30
- Spring or screw connections (removable)
- Available operator panel for local interface



#### SIRIUS 3UF SIMOCODE Motor Management System

- Multifunctional, solid-state full motor protection independent of the automation system
- Detailed operational, service, and diagnostic data
- Open communications via PROFIBUS DP, PROFINET, OPC UA, Modbus RTU or Ethernet/IP
- Safety relay function for the fail-safe disconnect of motors up to SIL 3, PL e, Category 4
- Spring or screw connections (removable)
- Available in basic (Pro S), and advanced models (Pro V)
- Configured with SIMOCODE ES V14 software (TIA Portal integration)



### Contactors

#### SIRIUS 3RT2 Contactor

- Designed for premium efficient motor control (IE3/4 ready)
- Energy efficient coil and contacts reduces energy costs, and heat generation during operation
- Available in sizes S00 to S3 (75HP)
- Available extended temperature and rail certified
- Resistive load rated up to 110A with 3RT23 series
- Screw or spring-loaded terminals
- Safety rated to IEC 60947-4
- S6-12 up to 400 HP available



#### SIRIUS 3RF Vacuum Contactor

- UL rated to 700 HP at 480V
- AC and DC coil options
- Ideal by-pass contactors for large low voltage Softstarters, and VFDs
- Accessories available



### Contactors (continued)

#### Siemens NEMA rated Class 40 Contactor

- Available NEMA size 00 to 8
- AC and DC coil options
- Open and enclosed options
- Enclosed NEMA 1, 4/4X SS, 4X FG, NEMA 7 & 9 Hazloc, NEMA 12 & 3/3R water proof
- Up to 900 HP at 480 V
- Accessories in
- Reversing version Class 43



### Reversing Contactors

#### SIRIUS 3RA2 Reversing Contactors

- Designed for premium efficient motor control (IE3/4 ready)
- Energy efficient coil and contacts reduces energy costs, and heat generation during operation
- Completely assembled out of the box with 3RT2 contactors
- Touch safe connection system
- Available in sizes S00 to S3 (75HP)
- Resistive load rated up to 110A with 3RT23 series
- Screw or spring-loaded terminals
- Safety rated to IEC 60947-4
- S6-12 up to 400 HP available



### DC Contactors

#### SIRIUS 3TC VDC Power Contactor

- Ideal applications include, battery chargers / testing, solar, rail, heaters, lamps, cranes, plating etc.
- 1 and 2-pole
- Up to 600 VDC at 330 A
- AC and DC coil options
- Available in size 2, 4, 8, 12
- 2 NO and 2 NC mirror Aux contacts



### Motor Starters

#### SIRIUS 3RM1 Hybrid Motor Starter

- Up to 3 HP at 480V
- Slim design, only 22.5mm width
- Non-reversing, reversing, O.L protection, and available safety integrated
- Hybrid start uses solid-state switching on start-up and relay on run
- Optional control bus and comb system reduces wiring for installation with 3SK safety relays



## Industrial Controls – Power Circuit Components (cont.)

### Motor Starters (continued)

#### SIRIUS 3RA6 Compact Motor Starter

- Up to 20 HP at 480V
- Modular motor control system with plug-in design for non-reversing and reversing motor starters
- 3RA68 power bus offers snap-in design for adding starters up to 63 / 100A
- Available in standard and networkable, AS-Interface and IO-Link
- Spring or screw connections (removable)
- Motor modules consist of circuit breaker disconnect, contactor, and overload protection



#### SIRIUS 3RA2 Combination Starter

- Integrated 3RV2 MSP and 3RT contactor offers circuit, O.L protection and contactor in one unit
- Mounting rail or Fast Bus busbar system mounting
- Designed for premium efficient motor control (IE3/4 ready)
- Energy efficient coil and contacts reduces energy costs, and heat generation during operation
- Available in sizes S00 to S3 100A
- Screw or spring-loaded terminals



#### SIRIUS 3RA22 Reversing Combination Starter

- Integrated 3RV2 MSP and 3RT contactor offers circuit, O.L protection and dual contactors in one unit
- Mounting rail or Fast Bus busbar system mounting
- Designed for premium efficient motor control (IE3/4 ready)
- Energy efficient coil and contacts reduces energy costs, and heat generation during operation
- Available in sizes S00 to S3 100A
- Screw or spring-loaded terminals



#### Siemens NEMA rated Class 14 Motor Starter

- Available NEMA size 00 to 8
- AC and DC coil options
- Includes ESP200 solid-state overload relay on common mounting plate
- Open and enclosed options
- Enclosed NEMA 1, 4/4X SS, 4X FG, NEMA 7 & 9 Hazloc, NEMA 12 & 3/3R water proof
- Up to 900 HP at 480 V
- Accessories and field kits available



### Motor Starters (continued)

#### Siemens NEMA rated Class 22 Reversing Starter

- Same features as Class 14, but with dual contactors.



### Other NEMA

- Class SMF Fractional HP Starters
- Class MMS and MRS Switches
- Class 11 Starter and Switches
- Class 17, 18 Combination Starters
- Class 25, 26 Combination Reversing Starters
- Class 30 Multi-Speed Starters
- Class 32 Combination Multi-Speed Starters
- Class LE, LC, CLM Lighting Contactors

### Busbar System

#### Siemens 8US FastBus

- Ideal applications include automotive power distribution panels
- 3-phase insulated busbar system
- Permits flexible, high-density panel design of motor starters and power control components up to 1400A at 600V
- Ideal for 3RA2 and 3RA22 combination starters up to 75HP, 3VA, VL and Sentron circuit breakers
- Busbar shoes available for circuit breakers, starters, and other products
- U.S and International approvals
- Extensive line of accessories available



### Soft Starters

#### SIRIUS 3RW Soft Starters

- Reduces current peaks on motor starts with configurable ramp-up times, integrated by-pass contactor after ramp reduces heat and provides increased energy efficiency
- Available in (3) series depending on the motor size and needs of the application
- 3RW30 – standard applications, 2 phase controller for 1.5 HP to 75 HP 200-480V
- 3RW40 – standard applications, 2 phase controller for 7.5 HP to 300 HP 200-600V, overload protection, current limiting
- 3RW44 – high-feature, 3 phase controller for 15HP to 900HP, communications and advance motor management, configuration with Soft Starter ES software
- Available in enclosed versions



## Industrial Controls – Control Circuit Components

### Pilot Devices

#### SIRIUS 3SU1 Pilot Devices

- 22 mm pilot devices includes indicator lights, pushbuttons, illuminated pushbuttons, emergency-stop pushbuttons, selector switches & stations
- Quick & easy installation, mounting is 50% faster with single screw installation
- High-degree of protection: IP69K standard
- Available in plastic, metal options
- Options for 30mm mounting
- Innovative 4-position RFID selector switch available
- Networkable via IO-Link, AS-Interface, and PROFINET, including PROFIsafe



#### Class 50 Pilot Devices

- Available standard NEMA 1 & 1B, and heavy duty NEMA 4 pushbutton stations
- Flush or surface mounting



#### Class 51 Pilot Devices

- 30.5 mm hazardous location NEMA type 7 & 9 pilot devices, selector switches, pushbuttons & stations
- UL and cUL Listed for Class I (gases), Groups C & D; Class II (dust), Groups E, F & G; Class III (fibers) hazardous location ratings



#### Class 52 Pilot Devices

- 30.5 mm heavy duty, watertight/oiltight pilot devices, selector switches, pushbuttons & stations
- Meets type 1, 3, 3R, 4, 4X, 12, 13 NEMA protection standards
- BlackMax version is available for increased corrosion resistant in harsh environments



### Signaling Columns & Beacons

#### SIRIUS 8WD4 Signaling Columns

- Two series available, 8WD42 50 mm, IP54 and 8WD44 70 mm, IP65
- Flexible and modular design for visual and acoustic warning
- Shock and vibration resistant
- Available with AS-Interface for 2-wire networking with power



#### SIRIUS 8WD53 Beacons

- 70 mm, IP65 protection
- 24V to 230V AC/DC operating voltage
- LED and Incandescent lamp options
- 360 degree continuous or flash indication
- Easy mounting base with screw and nut



### Function Relays

#### SIRIUS 3RS Temperature Monitoring Relays

- Monitors temperatures of solids, liquids, and gaseous medias
- Two series available; 3RS14 for RTD (1&3 channel), and 3RS15 for thermocouple (1 channel)
- 3 relay outputs (3 A)
- Spring or screw connections (removable)
- Local or remote configuration
- Built-in IO-Link communications



#### SIRIUS 3RN2 Thermistor Motor Protection Relay

- Overheating protection for motors
- Bimetallic and PTC sensor inputs for low cost and high feature protection options
- Plug and play installation, no configuration required
- Spring or screw connections (removable)
- ATEX hazardous location options



#### SIRIUS 3UG4 & 3RR2 Electrical & Mechanical Monitoring Relays

- Monitoring & protection of various electrical and mechanical parameters
- Digital local, and IO-Link configuration
- Stand alone (3UG4), or integrated on 3RT2 contactors (3RR2)
- Line and single-phase voltage monitoring (3UG4)\*
- 3RT2 contactor mounting for current monitoring (3RR2)\*
- Current & power factor monitoring (3UG4)\*
- Residual current monitoring (3UG4)\*
- Speed monitoring of motors and belts (3UG4)\*
- Spring or screw connections (removable)
- \*Available with IO-Link communications



#### SIRIUS 3RP15 Timing Relays

- Cost effective 17.5 mm and high feature 22.5 mm relay options
- Wide voltage range 12-240 V AC/DC
- Up to 27 timing functions makes relay flexible for all timing applications while reducing inventory
- Spring or screw connections (removable)



#### SIRIUS 3RA28 Timing & Electrical Interlocking Functions for 3RT2 Contactors

- Direct mount to 3RT2 contactors expands functionality
- Timing, IO-Link, and AS-interface
- Local configuration
- Load and auxiliary functions





## Industrial Controls – Control Circuit Components (cont.)

### Function Relays (continued)

#### SIRIUS 3RQ3 Coupling Relays

- Cost effective and space savings isolation only 6.2 mm width
- Multiple options for voltage and contacts or solid state
- Available with replaceable relays and indication
- Bridging combs, and universal accessories available
- Push-in or screw connection
- Built-in arc suppression diode



#### SIRIUS 3RS70 Interface Converters

- Simple signal conversion of standard and non-standard signals, both analog and frequency for interface to controllers or other devices
- 3-way isolation keeps signals separate
- Screw and push-in connections



### Control Relays

#### SIRIUS 3RH2 Control Relays

- (4) pole control circuit relays
- 10 A current rating
- AC or DC coil options
- Surge suppressor options
- Spring or screw connections



### Terminal Blocks

#### 8W Terminal Blocks

- Globally accepted
- Connection types available:
  - 8WA1, 8WH1 – screw
  - 8WH2 – spring loaded
  - 8WH5- combination
  - 8WH6 – push-in
  - 8WH3 – insulation displacement
- Single and multi-tier
- Compact design
- Accessories available



### Limit Switches

#### 3SE5 International (IEC) Limit Switches

- Different operator types and styles
- Available in plastic and metal
- Different sizes available (31, 40, 50, 56mm)



#### 3SE03 North America (NEMA) Limit Switches

- Modular, plug-in design
- Heavy duty
- NEMA 6P rated submersible available
- Different connections available (Plug-in, Pin connector, Prewired cable)



### SIRIUS Safety Integrated

#### SIRIUS 3SE Mechanical Safety

- Machine door and perimeter guarding solutions
- (5) different families with many options of plastic and metal
- 3SE7 Cable-operated switches
- 3SE5 Interlock switches with separate actuator
- 3SE5 interlock switches with solenoid locking
- 3SE5 / 3SE2 hinge switches
- 3SE6 RFID non-contact safety switches
- 3SE6 Magnetic monitoring systems



#### SIRIUS 3SU1 Two-Hand Control Station

- Cost effective and configurable operator control stations for two-hand machine cycling
- Integrated E-stop
- Capacitive or operator actuator buttons



#### SIRIUS 3SK Safety Relays

- Simple to advanced safety functions can be handled by the 3SK series of safety relays
- Modular, and flexible design
- Available bus for simple expandability
- Safety rated to SIL3, PL e
- 3SK1 Standard – Simple functions with DIP switch settings
- 3SK1 Advanced – Same as standard, and expandable with additional functions
- 3SK2 – Software configurable and expandable with up to 20 inputs, configurable independent outputs
- 3SK2 Diagnostic display optional
- Easy integration with 3RM1 motor starters



#### SIRIUS 3RK3 Modular Safety System

- For advanced safety functions and networking interface to PROFIBUS DP or AS-Interface
- Expandable safety IO
- Software configured with MSS ES
- Safety rated to SIL3, PL e



### Control Power Transformers

#### Siemens Control Power Transformers (CPT)

- Rugged and reliable design for both industrial and commercial applications
- Domestic and global application by class; Class MT for domestic only, Class MTG for domestic and global
- 50 VA up to and including 5000 VA, 600 volts 50/60 Hz primary, secondary 24 to 240 volts.
- NEMA ICS2, UL-506 listed, CSA certified, MTG class also meets IEC and EN requirements
- Class KT kit available for mounting and wiring



## Industrial Controls – Control Circuit Components (cont.)

### DC Power Supplies & Power Security

#### SITOP Power Supplies & Power Security

- Extensive line of single phase and three phase DC Power Supplies, some with networking
- UPS battery and capacitor
- Power Security modules



PROFI  
NET

### Circuit Protection

#### Siemens 5S Branch Circuit & Supplementary Protectors

- 1-Pole to 4-Pole circuit protection
- UL 489 or UL 1077 rated
- AC or DC voltage options
- Up to 63A (5SP4 up to 125A)
- DIN rail mountable
- Accessories available



#### Siemens 3VA Molded Case Circuit Breakers

- 3VA available from 15A to 600A, and up to 150kAIC
- VL-150-1600A frame, global ratings and up to 100kAic interrupt ratings
- G Frame -125A and less and interrupt ratings to 65kAic
- Supplementary protection
- UL489- 5SJ- power circuit protection
- UL 1066- 5SY-control circuit protection



PROFI  
NET  
PROFI  
BUS  
ModbusTCP  
Modbus

## Industrial Communications

### ASIsafe

#### F-CM AS-I Safety ST for SIMATIC ET 200SP

- AS-I fail-safe master
- Supports PROFIsafe communications to fail-safe S7 controller (PROFIBUS DP, or PROFINET)
- Process image supports up to 31 fail-safe inputs, and 16 fail-safe outputs
- Supports simple replacement thanks to automatic importing of safety parameters from the coding element
- Extensive diagnostic including 8 LEDs on module
- Configures with TIA Portal V14



#### SIRIUS 3RK1105 ASIsafe Safety Monitors

- Monitors safety slaves and performs safety operations up to SIL3, PL e, Category 4
- Option for 1 or 2 enabling circuits
- Screw or spring connection system
- Versions available with integrated safe slave
- AS-Interface 3.0



### ASIsafe (continued)

#### SIRIUS K20F Compact Safety IO Module

- 20mm width for confined space applications
- IP67 degree of protection
- 2 fail-safe digital inputs
- M12 AS-I connection for use with round cable



#### SIRIUS K45F Compact Safety IO Module

- 45 mm width
- IP67 degree of protection
- Options for 2F-DI, 2F-DI/2-DO, or 4F-DI (M12)



#### SIRIUS SC17.5F SlimLine Compact Safety IO Module

- 17.5 mm width
- IP20 degree of protection
- DIN rail mounting
- Options for 2F-DI, 2F-DI/2-DO
- Screw or spring connection system



### AS-Interface Masters

- AS-I Master
- Supports connection up to 62 AS-I slaves
- Configures with TIA Portal Step 7
- AS-Interface 3.0



- AS-I Master
- Supports connection up to 62 AS-I slaves
- Configures with TIA Portal Step 7
- AS-Interface 3.0



### AS-Interface Slaves

#### SIRIUS K20 Compact AS-I Module

- AS-I Slave
- P67 degree of protection
- IO combinations available: 4I/4O, 4I, 2I/2O, 4O
- Round cable only



#### SIRIUS K45 Compact AS-I Module

- AS-I Slave
- IP67 degree of protection
- IO combinations available: 8I, 4I/4O, 4I, 2I/2O, 4O, 3O
- Flat cable only

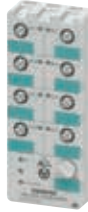


## Industrial Communications (continued)

### AS-Interface Slaves (continued)

#### SIRIUS K60 Compact AS-I Module

- AS-I Slave
- IP67 degree of protection, K60R IP69K
- IO combinations available: 8I/2O, 8I, 4I/4O, 4I/3O, 4I/2O, 4I, 2I/2O, 4O, 3O
- Analog IO options available; voltage, current, and RTD
- Flat / Round



#### SIRIUS SC17.5 and SC22.5 SlimLine AS-I Module

- AS-I Slave
- IP20 degree of protection
- IO combinations available: 4I/4O, 4I, 4I/2O, 4O
- Relay and solid-state output options
- Analog IO options available; voltage current selectable, or RTD
- Round cable only



### IO-Link Masters

#### SM 1278 IO-Link Master for SIMATIC S7-1200

- 4 channel IO-Link module
- IP20 degree of protection
- 32 bytes input and output per channel
- Up to 8 SM 1278 can be used per S7-1200 CPU
- IO-Link specification v1.1
- Data rates supported 4.8k, 38.4k, and 230.4k baud
- Configured with Port Configuration Tool (PCT)
- Programming and setup supported by TIA Portal



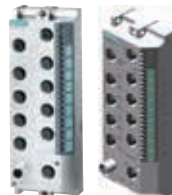
#### CM 4x IO-Link Master for SIMATIC ET 200SP

- 4 channel IO-Link module
- IP20 degree of protection
- 32 bytes input and output per channel
- IO-Link specification v1.0 & 1.1
- Data rates supported 4.8k, 38.4k, and 230.4k baud
- Configured with Port Configuration Tool (PCT)
- Programming and setup supported by TIA Portal



#### ET 200eco IO-Link Master

- 4 channel IO-Link module, additional non-IO Link inputs and outputs onboard
- IP67 degree of protection
- M12 connections
- 2 models available, 30 mm and 60 mm width
- 32 bytes input and output per channel
- IO-Link specification v1.0 & 1.1 on 30mm model, v1.0 only on 60 mm
- Data rates supported 4.8k, 38.4k, and 230.4k baud
- Configured with Port Configuration Tool (PCT)
- Programming and setup supported by TIA Portal



### IO-Link Masters (continued)

- 4 channel IO-Link module
- IP67 degree of protection
- M12 IO connections, M8 backplane & power connections
- 30 mm width
- 32 bytes input and output per channel
- IO-Link specification v1.0 & 1.1
- Data rates supported 4.8k, 38.4k, and 230.4k baud
- Configured with Port Configuration Tool (PCT)
- Programming and setup supported by TIA Portal



### IO-Link Input Modules

#### K20 IO-Link Input Modules

- Connection to IO-Link Master allows standard sensors, either 4 or 8, to be connected to 1 IO-Link channel
- Ideal for replacing “sensor boxes”
- IP67 degree of protection
- 2 models available, 4 input which uses M12 connections with Y pin, and 8 inputs which uses M8 connections
- 20 mm width



## Industry Services

### On-call, on-site, and on-line 24/7 services

- Service Programs and SIEPRO® Technical Service Agreements
- Original OEM Spare Parts and Asset Optimization
- Retrofit and Modernization
- Technical Support and Consulting
- On-site and Factory-certified Repair
- Field Service and Maintenance
- SITRAIN® Workforce Development Training
- Digital Monitoring and Data Analytics

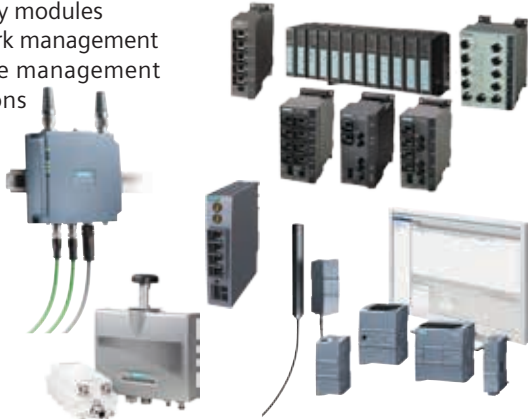
### Industry Customer Care Center 800-333-7421

On-line Support (<http://support.industry.siemens.com>)



## Industrial Network Solutions (continued)

- Industrial ethernet switches and routers for transparent industrial ethernet communications (SCALANCE and RUGGEDCOM)
  - Fiber options integrated and modular
  - Extended temperature range, ATEX, UL hazloc, Class I Div 2,
- IECex and IEC 61850
  - Integration support for PROFINET and Ethernet/IP
  - Durable wireless hardware for reliable communications
  - Security modules
  - Network management
  - Remote management solutions



## Drives, Motors and Motion Control

### Low Voltage Drives

#### General Purpose Drives

- SINAMICS V (.16–40 hp)
- SINAMICS G (.5–400 hp)

#### High-Performance Vector and Servo Drives

- SINAMICS
  - S120 (.25–1500 hp)

#### DC Drives

- DC Converters (3 – 2000 hp)
- Base Drive Panels (3 – 2000 hp)
- Control Modules for external power sections up to 40,000 hp

#### DC-DC Converters

- 30kW
- 120kW
- Up to 4 in parallel

#### Enclosed (Cabinet) Drives

- SINAMICS Enclosed (Cabinet) Drives – 480V
  - General Purpose 1– 800 HP
  - General Purpose Clean Power 50-1150 HP
  - High Performance Clean Power 150-1150 HP
- SINAMICS Enclosed (Cabinet) Drives – 600V NEMA / 690V IEC
  - General Purpose 150–800 HP
  - High Performance Clean Power 150-1150 HP
- SINAMICS Chassis (Open) Drives – 600V NEMA / 690V IEC
  - General Purpose 150–800 HP



## Medium Voltage Drives

- Engineered drives
- SINAMICS AC drives 150 HP -100,000 HP
  - SINAMICS GL150 LCI drives
  - SINAMICS GM150/SM150 NPC drives
  - SINAMICS PERFECT HARMONY GH180/GH150 drives
  - All weather environmental enclosures (NEMA 3R, 4R and 4X)



## Mechanical Drives

### Helical, helical-bevel and planetary gear units and couplings

- Helical and helical-bevel gear units
  - Torques 25,000 – 12,400,000 in-lbs
- Planetary gear units
  - Torques 88,000 – 23,000,000 in-lbs
- Gearboxes for Pump Drives
- Coupling types
  - Flexible, gear, fluid and rigid
- Aerators
  - Torques 10.5 to 173 kNm
- Agitators
  - Torques up to 240,000 Nm
- Water Screw Pumps
  - Torques 5.8 to 1,400 kNm
- Water Turbines
  - Torques 8.5 to 195 kNm



## High-Performance Motors – Inverter Duty

### Low Voltage Motors

#### NEMA Induction Motors

- Severe Duty 1 HP - 400 HP
- Explosion Proof 1 HP - 250 HP
- Vertical Solid Shaft 3 HP - 250 HP
- Heat Exchanger 5 HP – 75 HP
- AboveNEMA (SLV Brg) 200HP – 800HP

#### IEC Induction Motors

- Severe Duty 0.18kW – 800kW
- Explosion Proof 0.25kW – 460kW

#### IEC Technology Motors

- Reluctance 7.5 – 40 HP
- Servomotors 0.06 – 1217 lb-ft
- Torque Motors 74 – 5163 lb-f t
- Linear Motors 34 - 2332 lbf



### Medium and High Voltage Motors

- AboveNEMA Horizontal and Vertical Motors
- 200 HP - 18,000 HP Standard Specific
- ODP / WPI / WP11 / TEAAC / TEFC / TEWAC / WP11
- NEMA / API 541 / API 547 / IEEE 841

#### IEC Trans Norm Motor

- Asynchronous Squirrel Cage Motors 0.15 - 38MW
- Asynchronous Slip Ring Motors 1.3- 8MW
- Synchronous Motors 2.1 - 100MW

## Drives, Motors and Motion Control (continued)

### Gear Motors

- Helical Bevel
- Parallel Shaft
- Helical In-line
- Available with integral induction or servo motors



### Power Distribution

#### Medium-Voltage Switchgear, Circuit Breakers & Controls

- Medium-voltage, arc-resistant and non-arc-resistant, air-insulated, metal-clad switchgear up to 63 kA
  - Integrated electrical-racking system for circuit breakers and auxiliaries
- Medium-voltage, arc-resistant, low-maintenance, gas-insulated switchgear in a unique isolated-phase design
- Medium-voltage, non-arc-resistant, metal-enclosed interrupter switchgear
- Medium-voltage, arc-resistant and non-arc-resistant controllers up to 63 kA
- Power distribution center solutions to house various types of electrical equipment
- Medium-voltage, outdoor, distribution circuit breakers
- Smart low-voltage switchgear with best arc flash mitigation solutions
- Arc-resistant switchgear up to 100 kA with outdoor plenum venting
- Medium-voltage vacuum roll-in replacement circuit breakers for most major models from 5-38 kV, 250-1,500 MVA, 1,200-3,000 amperes
- Low-voltage replacement circuit breakers designed with a direct connection to the primary contacts, and available Dynamic Arc Sentry (DAS) mode for arc flash mitigation.



### Motor Control Centers

#### tiastar™ Motor Control Centers

- Standard: High-density units
- Smart
  - PROFIBUS, PROFINET, MODBUS RTU, EtherNet IP
  - Sm@rtGear
- Arc Resistant
  - Dynamic arc-flash sentry (DAS)
  - High-resistance ground (HRG)

### Motor Control Centers (continued)

**SIMOCODE Pro** – provides solid-state overload protection, local control and extensive data communication:

- SIMOCODE pro C
- SIMOCODE pro V

#### Installed components:

- Automation
- Control
- Power distribution devices
  - AC drives
  - Circuit Breakers
  - NEMA Starters
  - Pilot Devices



### High Voltage Circuit Breakers

SF6 Dead Tank circuit breakers and Live Tank Breakers/Circuit Switchers are available from 15-550kV. 12 year inspection/25 year maintenance cycle, the high voltage circuit breakers are the workhorse of the system.

- Compact Construction
- Common Frame
- 3AP Arc-assist interrupter
- Spring-spring Mechanism
- All components are factory tested and require no in field adjustments.



High Voltage Dead Tank Breakers



Live Tank Circuit Breaker/Circuit Switcher

## Power Distribution (continued)

### Power and Distribution Transformers

Power and Distribution transformers are a critical link between power plants, supply systems and distribution networks. Each transformer is engineered to the customer's specific needs.

- New or replacement ANSI / IEEE transformers sales and installation, oil immersed or dry type cast resin.
- Fluid Immersed Distribution Transformers for industrial applications FITformer® IND, for ratings up to 50 MVA (ONAN) and 161 kV
- Medium Power Transformers up to 250 MVA and 230 kV



- Cast Resin Dry Type Transformers up to 50 MVA and 52 kV



### Substations & Transformers

- High, medium and low voltage distribution and protection
- Complete transformer rewind, remanufacture or replacement
- New transformer sales and installation, oil immersed or cast resin



### MV Protection and Control (SIPROTEC and SICAM)

- MV protection and control, motor, feeder, transformer protection, arch flash sensing
- Automatic transfer schemes, fast load shedding, remote breaker operation, automatic fault record retrieval and analysis, as set monitoring
- Sm@rtGear™ Power Monitoring and Control



### Power Distribution Solutions Energy Management

- Ethernet / MODBUS / PR PROFIBUS / PROFINET meters
- Energy and power monitoring and control software



### Power Monitoring

- Power quality meter with web technology
- High accuracy measurement
- Energy and demand tracking
- Historical trending and harmonic distortion
- Analyzer and controller
- PROFIBUS, Ethernet and MODBUS



### Power Distribution Services

- Provides local, national and international support 24/7 for both working-hour and on-call emergency after-hour technical support. **Siemens toll-free customer service number +1 (800) 347-6659**
- We support current-production Siemens products, as well as legacy medium-voltage and high-voltage products, including:
  - Power circuit breaker services
  - Medium-voltage switchgear services
  - High-voltage systems services
  - Protection and control services
  - Engineering and project management
  - Project planning and logistics
  - Installation and commissioning services
  - Preventative maintenance services
  - On-call maintenance agreements
  - Emergency services
  - Technical field assistance
  - Uprates, upgrades and life-extension solutions
  - After-market parts
  - T&D equipment training



## Building Technologies

### Building Comfort

- HVAC
- Building automation
- Energy management



### Fire Protection

- Fire safety systems



### Electronic Security

- Access control
- Intrusion detection
- Command and control
- Perimeter intrusion control
- Remote video
- Visitor management solutions
- Video management systems
- Video analytics



## Industrial Power Generation

### Gas Turbines

#### Aeroderivative Gas Turbines

- Flexible, lightweight and compact design ranging from 4 to 66 MW
- Suitable for power generation and mechanical drive applications, including peak, intermediate, cogeneration simple or combined cycle
- Line includes: SGT-A05 AE, SGT-A30 RB, SGT-A35 RB, and SGT-A45 TR, SGT-A65 TR

#### Industrial Gas Turbines

- Compact and rugged design ranging from 2 to 54 MW
- Industrial power generation and mechanical drive applications
- Line includes: KG2 SGT-100, SGT-300, SGT-400, SGT-600, SGT-700, SGT-750, and SGT-800

#### Large (Heavy Duty) Gas Turbines

- Robust and flexible engines ranging from 100 to 425 MW
- Electrical generators from 25 to 2,235 MVA
- Designed for large simple or combined cycle power plants
- Suitable for peak, intermediate or base load duty, as well as cogeneration applications
- Line includes: SGT-8000H, SGT-4000F and SGT-2000E



## Industrial & Utility Steam Turbines

### Industrial Steam Turbines

- Market leader with a reliable and versatile range from 0.1 to 250 MW
- Flexible layout provides easy constructability, fast start-up and economical operation
- Solutions with controlled and uncontrolled extractions
- Line includes: SST-150, SST-200, SST-300, SST-400, SST-500, SST-600, SST-600, SST-700/900, and SST-800
- Dresser-Rand, A Siemens Business line includes: Single-stage (RLA, RLVA, RLH, 350/500/700, AVTTW/GTW, 2TA, and C) and Multi-stage (GAF, K, U, R, RS, TT14, TT22, B, Tandems/Triple Turbine, and Custom Engineered)

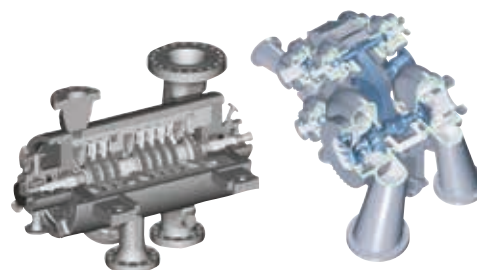
### Utility Steam Turbines

- Comprehensive range of products from 90 to 1,900 MW
- Used in conventional steam power plants and combined-cycle power plants
- Line includes: SST-3000, SST-4000, SST-5000, SST-6000, and SST-9000



### Compressors

- Turbocompressors, reciprocating compressors and expanders for the chemical industry as well as for refineries, petrochemical plants and further industrial applications
- Industrial as well as aero derivative gas turbines, steam turbines, reciprocating engines and e-drives to serve our customer needs
- Leading technology in PTA application securing future plant potential higher than 1.2 MTPA
- Process air compressor with highest efficiencies in the market for ammonia production
- Integrally geared compressors for urea production plants offering a high efficiency due to inter cooling stages
- CO2 compression solutions for various range of applications with volume flows of 140.000Nm3/h and pressures up to 200 bar



## Water/Wastewater Treatment Solutions for Oil & Gas

### Hydrothermal/Spent Caustic Treatment

- Zimpro® Wet Air Oxidation (WAO)
- Zimpro® Electro-oxidation (ZEO)
- Wet Air Regeneration (WAR)
- Thermal Hydrolysis

### Oil/Water Separation

- API Separators
- Corrugated Plate Separators (CPS)
- Hydrocyclones (Liquid/Liquid; Solid/Liquid)
- Dissolved Air/Gas Flotation (DAF/DGF)
- Induced Air/Gas Flotation (IAF/IGF)
- Monosep™ Walnut Shell Filters
- PerforMedia™ Oil Removal Media

### Biological Treatment

- Petro® Membrane Bioreactors (MBR)
- PACT® Systems
- PACT® MBR Systems



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