Easy Automation

The flexible system for easy automation

PHŒNIX CONTACT

INSPIRING INNOVATIONS

PHOENIX CONTACT –
In dialog with customers and partners worldwide

Phoenix Contact is a worldwide market leader in the field of electrical engineering and automation. Founded almost 90 years ago, the family company now employs around 12,300 people. A sales network with over 46 subsidiaries and more than 30 additional sales partners guarantees customer proximity directly on site, anywhere in the world.

Our range of services consists of products surrounding various different electrotechnical applications. This includes numerous connection technologies for device and machine manufacturers, components for modern control cabinets, and tailor-made solutions for many applications and industries, such as automobile production, wind energy, photovoltaics, the process industry or applications in the field of water supply, power distribution, and transportation infrastructure.

Global player with personal customer contact

Company independence is an integral part of our corporate policy.
Phoenix Contact therefore relies on in-house competence and expertise in a range of contexts: the design and development departments constantly come up with innovative product ideas, developing special solutions to meet customer requirements. Numerous patents emphasize the fact that many products have been developed exclusively by Phoenix Contact.

The turn-key solution from a single source

Automation does not have to be expensive and complicated. The Easy Automation system from Phoenix Contact is proof of that. It is optimized for small to medium-sized applications, which you can automate easily and cost-effectively with Easy Automation.

Create your individual solution from the comprehensive system covering all aspects of the modular class 100 compact controllers. Your advantage: all the components are coordinated, their complexity has been reduced, and they are inexpensive. This means that you can implement an automation solution for your system that is easy to operate and consistent.

Web-based automation for more efficiency

The class 100 programmable logic controllers are real team players and work perfectly with numerous I/O and special function modules, web panels, and network components. A particular highlight is that all the controllers feature an integrated web server. This means that you can access the PLC using a standard browser. So if you are on the go, you do not need any additional software to perform your control and regulation tasks.

*For additional information on Easy Automation, please
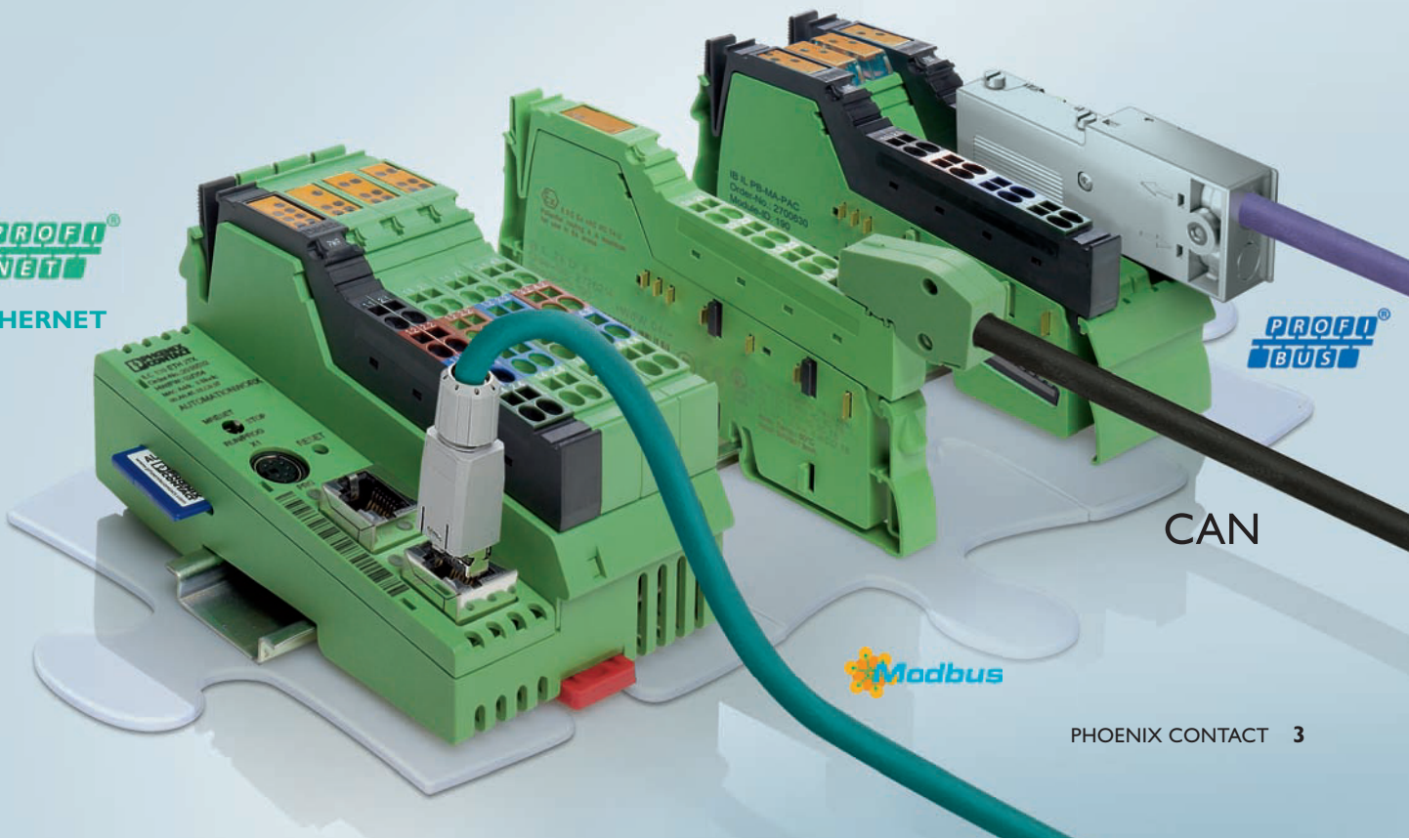also visit: www.phoenixcontact.com*

Contents

PROFI NET®

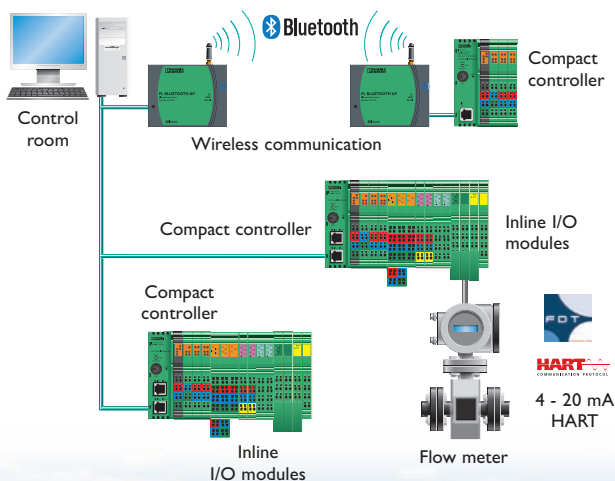**ETHERNET**

PROFI BUS®

CAN

Modbus

The right automation solution for every task: Easy Automation

Water and waste water

In water management, a compact controller can be used as distributed intelligence (a remote terminal unit), for example, which ensures the reliable automation of sewage treatment plants, waterworks, and external stations. The PLC controls the interaction between wells, pumps, and elevated tanks.

Your user advantages:
• Permanently reliable supply, thanks to continuous connection to the higher-level control system, e.g., with integrated GSM modem
• Flexible adaptation of the remote control station, thanks to the modular structure
• Connection to existing systems with standardized protocols such as IEC 60870-5-101/104

Control room

Bluetooth

Wireless communication

Compact controller

Compact controller

Inline I/O modules

Compact controller

Inline I/O modules

Flow meter

HART
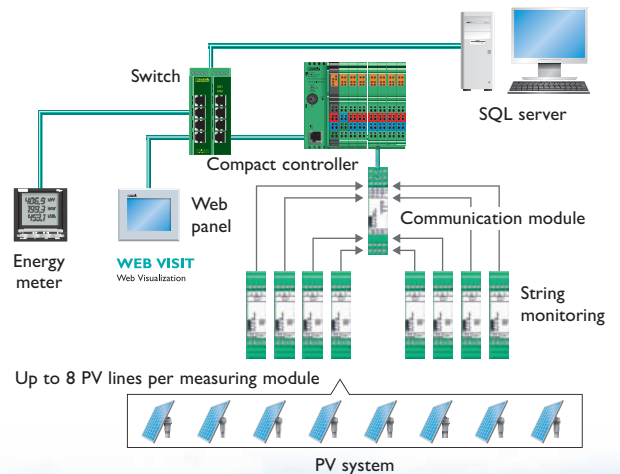COMMUNICATION PROTOCOL

4 - 20 mA HART

Photovoltaics

Monitoring is the key to efficient roof-top and free-standing photovoltaic systems. Easy Automation not only allows you to control the complete system, but also to implement continuous monitoring.

Your user advantages:
• Increased efficiency: acquire energy and performance data, store on SQL server, and evaluate
• Reliable PV system monitoring – detect electrical interference or contamination quickly
• Easy and inexpensive operation and monitoring, thanks to integrated web server and WebVisit visualization software

Switch

SQL server

Compact controller

Energy meter

WEB VISIT
Web Visualization

Web panel

Communication module

String monitoring

Up to 8 PV lines per measuring module

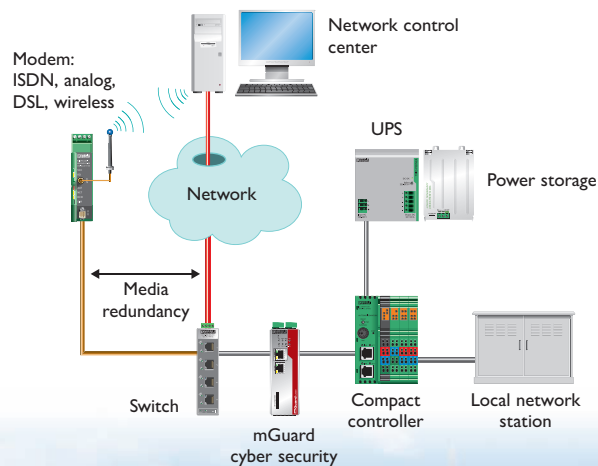PV system

Versatile and cost-effective

Discover the numerous possible applications of the Easy Automation system. As required, you can extend the compact controllers with input and output modules and automate applications ranging from waterworks to machine building and system manufacturing.

Power transmission and distribution

In order to ensure optimum network availability, local network stations and the power quality must be monitored. The supply of renewable energy must be controlled. For this we offer compact controllers that support modular expansion and, taking the specifications of the network operator into consideration, provide a tailor-made control solution.

Your user advantages:
- Easy parameterization, thanks to integrated web server
- Connection to existing SCADA systems
- Communication via standardized transmission media and protocols such as IEC 60870-5-101/104
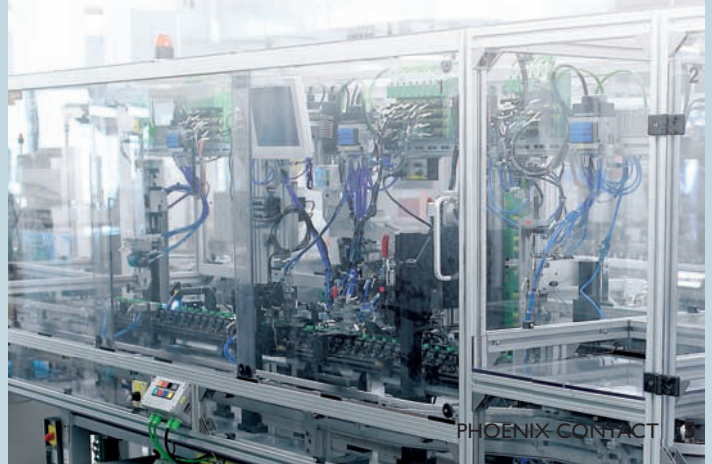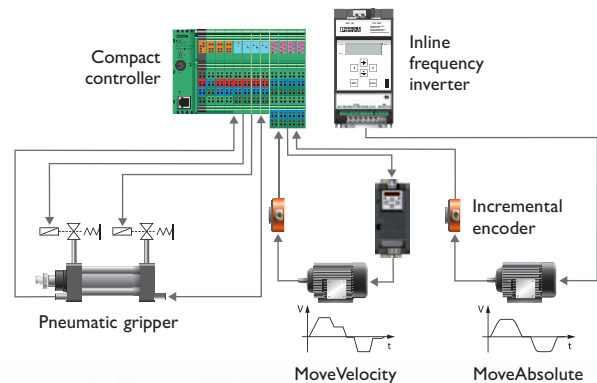- Secure data transmission with security routers

Network control center

Modem: ISDN, analog, DSL, wireless

UPS

Power storage

Network

Media redundancy

Switch

mGuard cyber security

Compact controller

Local network station

Machine building

In machine building, the compact controllers are used in test equipment, for example, to control grippers, levers or adapters. Thanks to the integrated motion functions, particularly precise and dynamic machines can be designed.

Your user advantages:
- Numerous functions such as 8 digital inputs and 4 digital outputs
- PROFINET device functionality, realtime clock, and data memory in a confined space
- Ideal for closed-loop control circuits and positioning tasks, thanks to special I/O devices and floating point unit (ILC 191 ME)

Compact controller

Inline frequency inverter

Incremental encoder

Pneumatic gripper

MoveVelocity

MoveAbsolute

Our system for compact controllers:
A lot of automation for a small amount of money

For the inexpensive automation of your application, Phoenix Contact offers a complete system for all aspects of the class 100 compact controllers. All the components in this system are optimally coordinated. Extensive interoperability tests ensure smooth interaction and operation.

Combine the various products according to your requirements and create your ideal automation solution.

Easy networking
Industrial network technology

Use reliable network components such as wireless solutions, switches or security routers to create industrial Ethernet networks.

More information from page 28 onwards

Easy communication
Industrial telecommunications

Access your systems from anywhere in the world and integrate remote networks as well – with industrial telecommunications products tailor-made for your application.
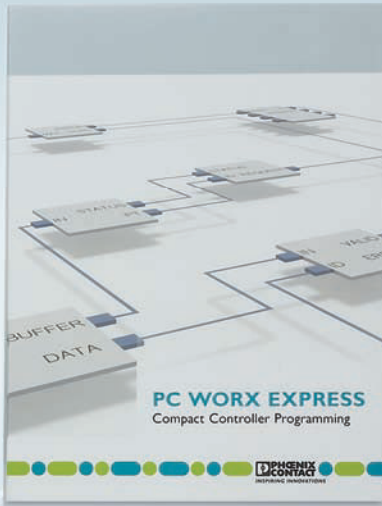
More information from page 26 onwards

Easy connection
I/O systems for the control cabinet

Transmit input and output data using robust IP20 I/O modules from our versatile I/O range.

More information from page 16 onwards

Easy control

Class 100 compact controllers

Modular and highly communicative – compact controllers provide the ideal easy introduction to automation.

More information from page 8 onwards

Easy programming

Software for programming and visualization

Use the tailor-made software tools for all phases of engineering: the focus is on efficient and intuitive operation.

More information from page 12 onwards

Simply safe

Network safety solutions

Integrate functional safety without using an expensive safety controller – with I/Os with integrated SafetyBridge technology.

More information from page 22 onwards

PC WORX EXPRESS
Compact Controller Programming

Status:	ok
Mode:	automatic
Level	87 %
Temperature:	55°C
Pressure:	2,71 bar

F1　F2　F3　F4

Easy connection

I/O modules for field installation

The I/O devices with IP65/IP67 protection enable you to acquire input and output data even in harsh industrial environments.

More information from page 20 onwards

Easy overview

Panels for operation and monitoring

HMI devices with modern web technology are the smart solution for operating and monitoring machines and systems directly on site.

More information from page 24 onwards

Class 100 compact controllers: Easy control

Class 100 compact controllers are at the heart of the Easy Automation system. They can be optimally adapted to every application, as the various Inline I/O modules can be easily mounted. Thanks to the integrated web server and Ethernet interface, the compact controllers offer comprehensive communication options. Programming is easy using the PC WORX EXPRESS software.

Pre-assembled test structure

ILC 130 STARTERKIT Order No. 2988515

The pre-assembled test structure includes all components necessary for operation:
• ILC 130 ETH compact controller
• 2-channel analog input terminal
• Potentiometer for analog value definition
• 8-fold switch strip for specifying digital signals
• CAT5 Ethernet cable
• Power supply unit
• CDs with example projects and documentation

Your advantages with the class 100 compact controllers:

• Highly flexible, thanks to modular expansion
• Easy integration in existing networks
• Integration of IT standards such as FTP, HTTP, SNMP, SMTP, SQL, ODP, and OPC
• Intuitive programming in accordance with IEC 61131 using the free PC WORX EXPRESS software

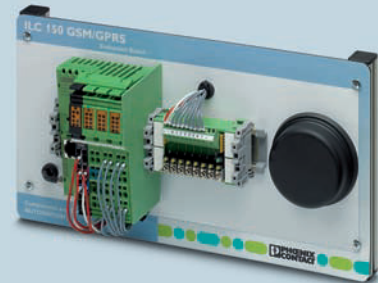## Most cost-effective PLC

ILC 130 ETH   Order No. 2988803

- Processing speed of 90 µs per 1000 instructions (bit data types)
- 1 INTERBUS interface and 1 Ethernet interface
- 192 kbyte program memory and 192 kbyte data memory
- 8 kbyte retentive data memory
- 8 direct inputs and 4 direct outputs
- Max. 2048 I/O points
- 24 V DC supply voltage
- Integrated web/FTP server
- OPC functionality

Standard PLC

ILC 150 ETH   Order No. 2985330

- Processing speed of 90 µs per 1000 instructions (bit data types)
- 1 INTERBUS interface and 1 Ethernet interface
- 256 kbyte program memory and 256 kbyte data memory
- 8 kbyte retentive data memory
- 8 direct inputs and 4 direct outputs
- Max. 4096 I/O points
- 24 V DC supply voltage
- Integrated web/FTP server
- OPC functionality

PLC with 2 Ethernet ports

ILC 170 ETH 2TX   Order No. 2916532

- Plug-in 256 MB parameterization memory with required SD card (not supplied as standard)
- Processing speed of 90 µs per 1000 instructions (bit data types)
- 1 INTERBUS interface and 2 Ethernet interfaces
- 512 kbyte program memory and 512 kbyte data memory
- 48 kbyte retentive data memory
- 8 direct inputs and 4 direct outputs
- Max. 4096 I/O points
- 24 V DC supply voltage
- Integrated web/FTP server
- OPC functionality

PLC with integrated FPU

ILC 190 ETH 2TX   Order No. 2700527

- Integrated floating point unit (FPU) for fast floating point arithmetic
- Plug-in 256 MB parameterization memory with required SD card (not supplied as standard)
- Processing speed of 90 µs per 1000 instructions (bit data types)
- 1 INTERBUS interface and 2 Ethernet interfaces
- 1 Mbyte program memory and 1 Mbyte data memory
- 48 kbyte retentive data memory
- 8 direct inputs and 4 direct outputs
- Max. 4096 I/O points
- 24 V DC supply voltage
- Integrated web/FTP server
- OPC functionality

PLC with modem

ILC 150 GSM/GPRS   Order No. 2916545

- The ideal controller for remote control and remote maintenance
- Integrated GSM/GPRS modem
- Processing speed of 90 µs per 1000 instructions (bit data types)
- 1 INTERBUS interface and 1 Ethernet interface
- 512 kbyte program memory and 512 kbyte data memory
- 48 kbyte retentive data memory
- 16 direct inputs and 4 direct outputs
- Max. 4096 I/O points
- 24 V DC supply voltage
- Integrated web/FTP server
- OPC functionality

Pre-assembled test structure

ILC 150 GSM/GPRS Eval-Board
Order No. 2988447

The pre-assembled test structure includes all components necessary for starting up the ILC 150 GSM/GPRS:

- ILC 150 GSM/GPRS compact controller
- Quad-band antenna
- Power supply unit

The current PC WORX EXPRESS software is available to download free of charge from the Internet.

Class 100 compact controllers:
Now even more communicative

The ILC 1x1 series is the new generation in the compact controller range. These controllers also offer direct Modbus/TCP integration. This means that all devices can communicate with a wide range of fieldbus devices without having to be programmed.

In addition, the new compact controllers have an optional plug-in Flash memory. The advantage for you is that you can increase the memory capacity as required using an SD card, e.g., to add more user libraries.

Most cost-effective PLC

ILC 131 ETH   Order No. 2700973

- 192 kbyte program memory and 192 kbyte data memory
- 8 kbyte retentive data memory
- 1 INTERBUS interface and 1 Ethernet interface
- 8 direct inputs and 4 direct outputs
- Max. 2048 I/O points
- Integrated web/FTP server
- OPC functionality
- Modbus/TCP integrated
- Optional: plug-in 256 MB or 2 GB parameterization memory (SD card) (not supplied as standard)

In addition to all the features of performance class 100, the new versions in the compact controller range also offer:

- Easy integration of the Modbus/TCP IT standard into the firmware
- Quick and inexpensive expansion of the parameterization memory using plug-in SD cards

Standard PLC

ILC 151 ETH   Order No. 2700974

- 256 kbyte program memory and 256 kbyte data memory
- 8 kbyte retentive data memory
- 1 INTERBUS interface and 1 Ethernet interface
- 8 direct inputs and 4 direct outputs
- Max. 4096 I/O points
- Integrated web/FTP server
- OPC functionality
- Modbus/TCP integrated
- Optional: plug-in 256 MB or 2 GB parameterization memory (SD card) (not supplied as standard)

PLC with 2 Ethernet ports

ILC 171 ETH 2TX   Order No. 2700975

- 512 kbyte program memory and 512 kbyte data memory
- 48 kbyte retentive data memory
- 1 INTERBUS interface and 2 Ethernet interfaces
- 8 direct inputs and 4 direct outputs
- Max. 4096 I/O points
- Integrated web/FTP server
- OPC functionality
- Modbus/TCP integrated
- Optional: plug-in 256 MB or 2 GB parameterization memory (SD card) (not supplied as standard)

PLC with integrated FPU

ILC 191 ETH 2TX   Order No. 2700976

- 1 Mbyte program memory and 1 Mbyte data memory
- 48 kbyte retentive data memory
- Integrated floating point unit (FPU)
- 1 INTERBUS interface and 2 Ethernet interfaces
- 8 direct inputs and 4 direct outputs
- Max. 4096 I/O points
- Integrated web/FTP server
- OPC functionality
- Modbus/TCP integrated
- Optional: plug-in 256 MB or 2 GB parameterization memory (SD card) (not supplied as standard)

PLC with modem

ILC 151 GSM/GPRS   Order No. 2700977

- The ideal controller for remote control and remote maintenance
- Integrated GSM/GPRS modem
- Processing speed of 90 µs per 1000 instructions (bit data types)
- 1 INTERBUS interface and 1 Ethernet interface
- 512 kbyte program memory and 512 kbyte data memory
- 48 kbyte retentive data memory
- 16 direct inputs and 4 direct outputs
- Max. 4096 I/O points
- 24 V DC supply voltage
- Integrated web/FTP server
- OPC functionality

PLC with extended temperature range

ILC 131 ETH/XC   Order No. 2701034
ILC 151 ETH/XC   Order No. 2701141

- Temperature range from -40°C to +55°C
- 192 kbyte (ILC 131 ETH/XC) and 256 kbyte (ILC 151 ETH/XC) program/data memory
- 8 kbyte retentive data memory
- 1 INTERBUS interface and 1 Ethernet interface
- 8 direct inputs and 4 direct outputs
- Max. 2048/4096 I/O points
- Integrated web/FTP server
- OPC functionality
- Modbus/TCP integrated
- Optional: plug-in 256 MB or 2 GB parameterization memory (SD card) (not supplied as standard)

Function blocks

SD FLASH APPLIC A... 2 GB
     Order No. 2701190

Flash memory with license key for the function block libraries, e.g.:

- Data transfer between the controller and SQL database by means of SQL communication and Data Manipulation Language (DML)
- IT library with SMTP function, with DHCP client, DNS, and FTP client function

Class 100 compact controller versions for machine building

The ME versions of our compact controllers have been specifically developed for the requirements of machine building. They are the ideal solution when it comes to addressing drives via step motor drivers or frequency inverters. All the functions of the ILC 1x1 and important interfaces are integrated. This means that various drive types and sensors can be connected without any additional external modules.

Depending on the version, analog or incremental input channels can be used for position detection. The ME versions are an attractively priced solution, tailor-made for any small machine building application.

Compact controller programming

PC WORX EXPRESS Order No. 2988670

- Programming of class 100 controllers
- Configure automation systems
- Parameterization of Modbus and INTERBUS devices
- Programming languages supported: FBD, LD, ST
- 128 kbytes of I/O data (mix)
- Supports German, English, French, Italian, Spanish, and Chinese
- The current PC WORX EXPRESS version is available to download free of charge from the Internet

The impressive features of the ME model series of compact controllers include:

- Functions that are optimally tailored to machine building
- Excellent price/performance ratio with high functional density
- Two-channel drive control, without additional I/O components
- Flexibility thanks to the direct connection of step motor drivers and frequency inverters
- Precise position detection with analog and incremental input channels
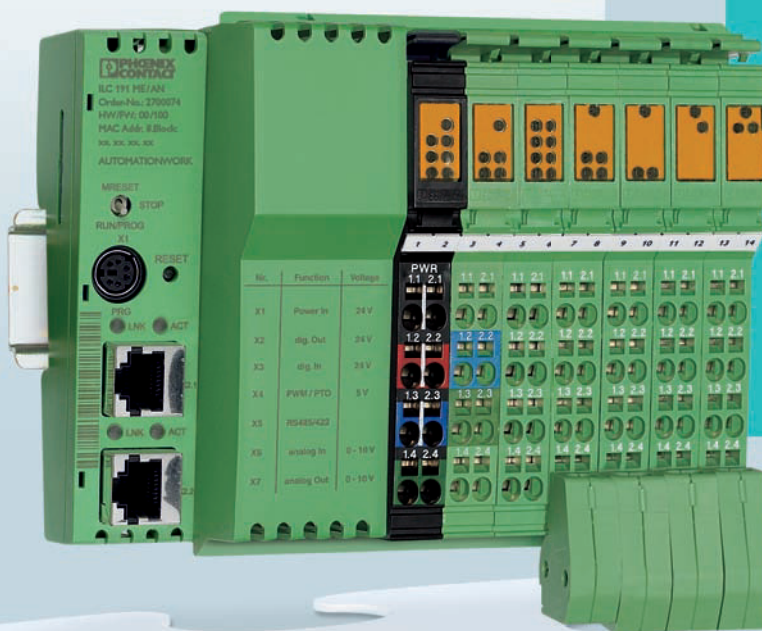
PLC for drive control

ILC 191 ME/AN   Order No. 2700074

- 8 digital inputs and 4 digital outputs
- 2 analog inputs and 2 analog outputs
- RS-232 to PS/2
- RS-485/RS-422
- 2 pulse/direction outputs (5 V)
- 10 V reference voltage source
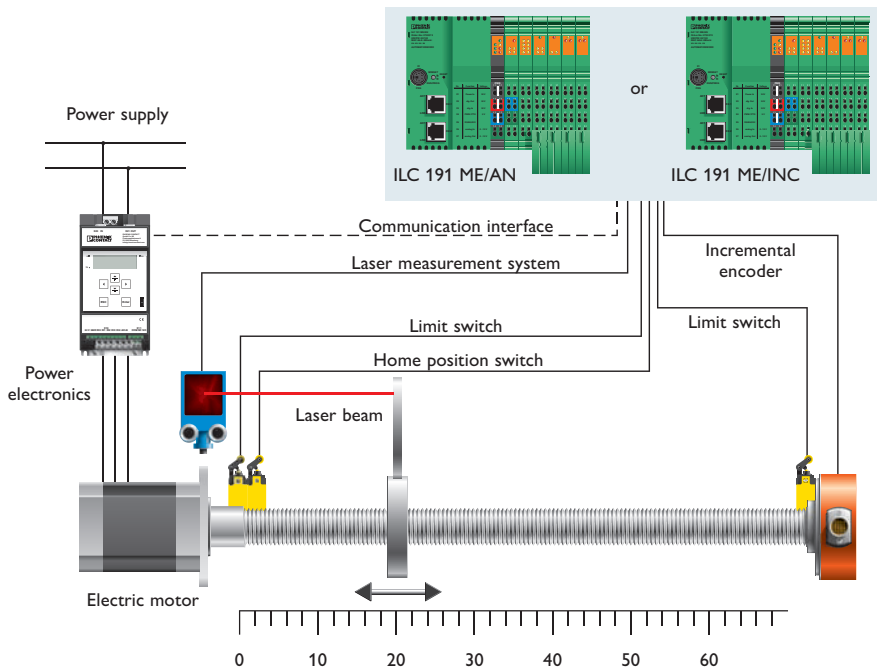
PLC for drive control

ILC 191 ME/INC   Order No. 2700075

- 8 digital inputs and 4 digital outputs
- RS-232 to PS/2
- RS-485/RS-422
- Pulse/direction outputs (5 V)
- 2 fast counters (max. 200 kHz)
- 2 incremental encoder inputs

Inline frequency inverters

VFD 50... IL   Order No. see website

- 4 versions, for motor power up to 0.75 kW, 1.5 kW, 2.2 kW, and 4.0 kW
- 3 x 400 V mains input (±15%), 50/60 Hz
- 8 freely programmable parameter records
- Integrated line filter
- U/f linear and U/f square operating modes
- S-ramp function
- Motor protection function (I^2t)
- Voltage boost

Reliable and precise axis control

ILC 191 ME/AN   or   ILC 191 ME/INC

Power supply

Communication interface

Laser measurement system

Incremental encoder

Limit switch

Limit switch

Home position switch

Power electronics

Laser beam

Electric motor

0   10   20   30   40   50   60

The ME versions of the compact controllers offer Ethernet, RS-485 or pulse/direction interfaces. This means that electric motors can be driven via frequency inverters or other power electronics. In addition, limit switches and home position switches are connected directly to the controller.

Analog inputs (ILC 191 ME/AN) are available for the position detection of a tool using a laser measuring system, for example. The ILC 191 ME/INC offers digital sensor inputs for incremental encoders.

Data logger kits for energy data acquisition: Logging made easy

Make system operation even more energy efficient and save costs. Use the complete data logging packages to monitor and log the energy and process states of your machines and systems. You will be informed of any change in state via SMS or e-mail.

In addition to the basic functions of the BASIC data logger kit, the FLEX solution kit, which supports modular expansion, communicates directly via SQL and sends e-mails via GPRS or DSL. No programming knowledge is required to configure the data loggers, a web browser is all you need.

BASIC data logger kit

PSK DL BASIC   Order No. 2700726

- Parameterization and startup with a web browser
- 16 digital inputs and 4 digital outputs
- Status messages via e-mail and SMS
- Acquisition of machine data, production data, and consumption data
- Fields of application e. g., measuring compressed air consumption or water mass flow, as well as temperature recording

GPRS

Ethernet
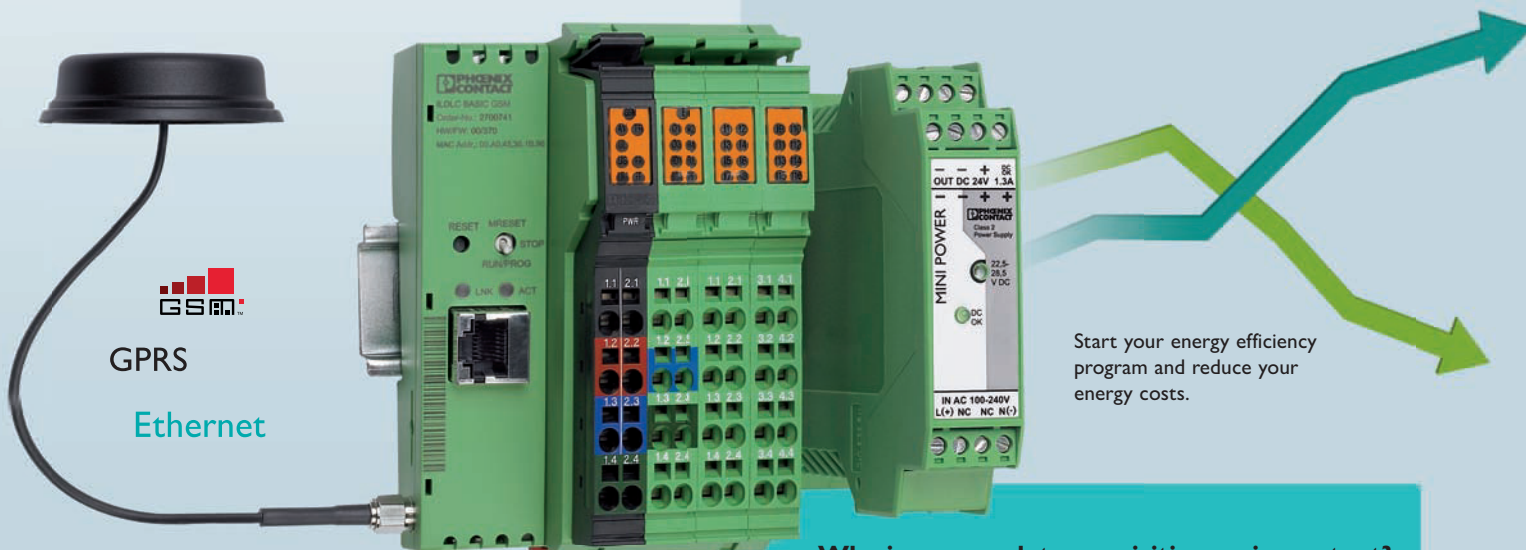
Start your energy efficiency program and reduce your energy costs.

Why is energy data acquisition so important?

Continuously recorded energy flow provides the basis for target-oriented operational energy management. The analysis of measured energy values is essential for:

- Identifying potential cost savings
- Avoiding peak loads
- Optimizing system capacity

FLEX data logger kit

PSK DL FLEX   Order No. 2700727

In addition to all the properties of the basic version, the PSK DL FLEX extendable version also offers the following:
- A parameterizable communication interface for MS SQL and My SQL database connection
- Status messages via e-mail, SMS, and Ethernet
- Expansion to include 32 digital inputs, 24 analog inputs

A maximum of **three Inline Modular digital input terminals** and **four Inline Modular analog input terminals** from the tables below can also be connected to the FLEX data logger kit.

Inline Modular digital input terminals

Order No.	Type	Description
2861221	IB IL DI2-PAC	2 digital inputs, 24 V DC, 4-conductor connection technology
2861234	IB IL DI4-PAC	4 digital inputs, 24 V DC, 4-conductor connection technology
2861247	IB IL DI8-PAC	8 digital inputs, 24 V DC, 4-conductor connection technology
2861250	IB IL DI16-PAC	16 digital inputs, 24 V DC, 4-conductor connection technology
2897020	IB IL DI8/S0-PAC	8 digital inputs, 24 V DC, SØ counter

Inline Modular analog input terminals

Order No.	Type	Description
2861302	IB IL AI2 /SF-PAC	2 analog inputs, 0 - 20 mA, ±20 mA, 0 - 10 V, ±10 V, 2-conductor connection technology
2861412	IB IL AI8/SF-PAC	8 analog inputs, 0 - 20 mA, ±20 mA, 0 - 10 V, ±10 V, 2-conductor connection technology
2861661	IB IL AI8/IS-PAC	8 analog inputs, 0 - 20 mA, 4 - 20 mA, 0 - 40 mA, ±20 mA, ±40 mA, 2-conductor connection technology

Various connection options of the FLEX data logger kit

SQL server

Microsoft

Sun

MySQL

GSM

GPRS

Ethernet

Digital output   Digital input   Analog input

FLEX data logger kit

Digital sensor   Power meter   PSK AFS … compressed air meter
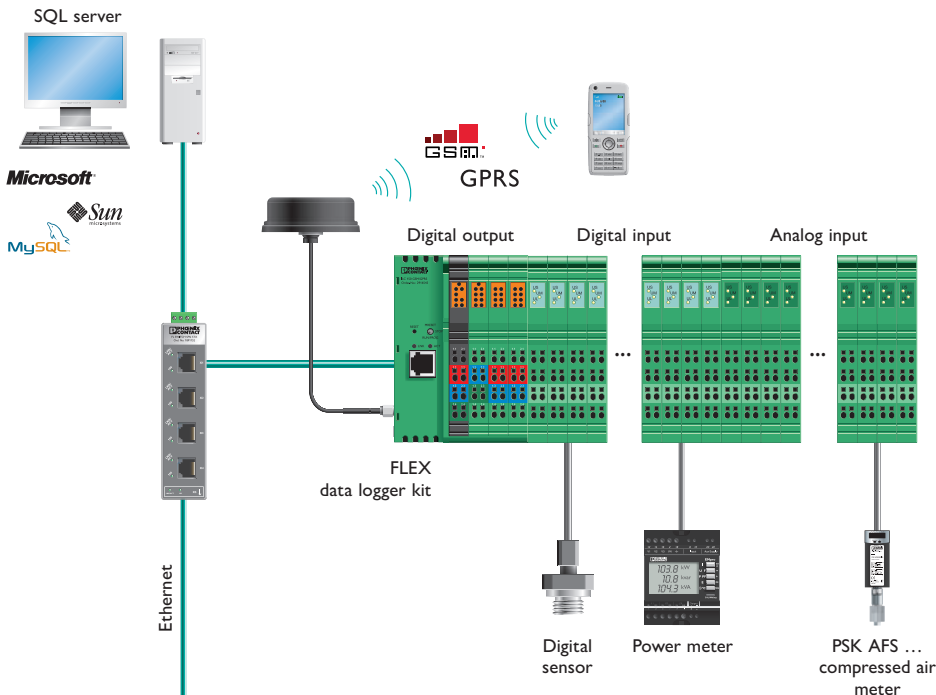
The FLEX data logger kit offers various connection options. Up to three digital terminals with a varying number of channels can be connected as an alarm or as counter inputs.

In addition, up to four analog input terminals with a varying number of channels can be connected.

The data logger's digital outputs are activated via SMS.

I/O systems for the control cabinet: Easy installation

The focus is on flexibility: the Inline automation kit offers practically all the functions you will require for your automation. You just need to mount the I/O modules on the compact controllers. You can therefore quickly and easily extend the functions of your controller.

The principle of "plugging instead of wiring" simplifies setup and saves installation time. Thanks to the fine granularity of the modules, you have a cost-effective automation solution, as you only need to include the functions that you actually require.

I/O planning

PROJECT+   Order No. 2988667

- Free software for planning the I/O configuration
- Automated creation of Inline (IP20) and Fieldline (IP65/IP67) I/O stations
- Automatic selection of accessories
- Representation of the configured station structure
- Automatic creation of parts lists
- Export to CLIP PROJECT and PC WORX software
- Project report via MS Word and MS Excel
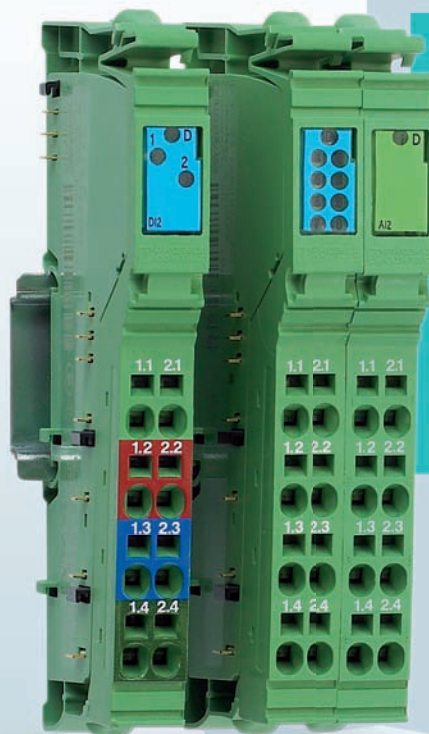
Your advantages with our IP20 I/O modules:
- Flexible use, thanks to the wide range of functions
- Tailor-made station structure with high granularity
- Particularly maintenance friendly, thanks to plug-in modules
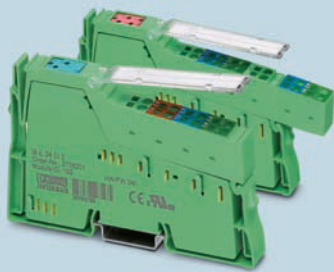
Digital input/output

IB IL 24 D...PAC

Order No. see website

• Signal level: 24 V DC or 120/230 V AC
• PNP and NPN inputs/outputs
• 1 to 32 channels
• Inputs:
  – Standard inputs according to EN 61131-2/
    type 1 and type 2
  – 1 to 4-conductor connection
  – Sensor supply with extended diagnostics
• Outputs:
  – 500 mA outputs/2 A outputs, optional,
    1 to 3-conductor connection
  – Relay output, PDT, 5 to 50 V DC,
    5 to 253 V AC, 2 A

Analog input/output

IB IL A...PAC

Order No. see website

• Voltage and current signals:
  0 to 20 mA/4 to 20 mA
  0 to 10 V/-10 V to +10 V
• Resolution: 12 to 16 bits
• 1 to 8 channels
• Integrated sensor supply
• With HART protocol

Temperature recording

IB IL TEMP...PAC

Order No. see website

• Temperature control for resistance
  temperature detectors
• For type K, J, E, R, S, T, B, N, U, L, C, W,
  HK thermocouples
• Resolution: 16 bits
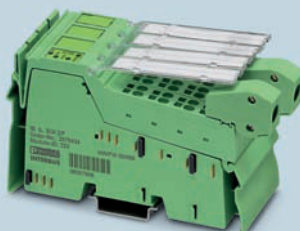• 1 to 8 channels
• Evaluation of motor PTC thermistors

Serial communication

IB IL RS...-PAC

Order No. see website

• Serial interface
• Coupling of scanners, barcode readers,
  scales, printers
• Baud rate can be selected up to
  250,000 baud
• 3964R protocol
• XON/XOFF protocol
• Modbus/RTU (ASCII)

Strain gauge

IB IL SGI...PAC

Order No. see website

• Connection of load cells, force and mass
  pressure transducers
• Connection of strain gauges in 4 and 6-wire
  technology
• Acquisition of Wheatstone bridges
• Sensitivity: 1 mV/V to 4 mV/V
• Calibratable version available
• Summation of measured values with parallel
  connection of the strain gauges (SGI)
• 2 channels
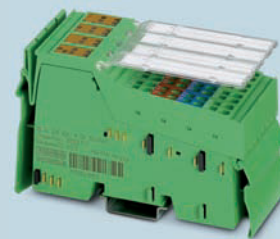
IO-Link master

**IB IL 24 IOL 4 DI 12-PAC**

Order No. 2692717

• 4 IO-Link ports for transmitting process
  and service data. The IO-Link ports can
  also be used in SIO mode as a 24 V input
  or output.
• Additional 12 digital inputs,
  24 V DC according to EN 61131-2/type 3
• 2 or 3-conductor connection

A list of all products relating to I/O systems
for the control cabinet can be found on the Internet at: **phoenixcontact.com**

Special function modules for the I/O system: Simply versatile

The Inline I/O automation kit can be used to design tailor-made solutions to connect sensors and actuators to the relevant network or bus system.

The new power measurement terminal combines the practical Inline design with innovative measuring technology. This means that you can acquire energy and consumption values directly from your I/O system and forward them for evaluation or storage.
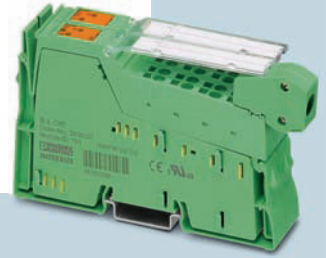
Pulse/frequency counter

IB IL CNT-PAC   Order No. 2861852

- 5 V/24 V signal level
- Pulse counting up to f < 100 kHz (24 bits)
- Frequency/speed measurement up to f < 100 kHz (24 bits)
- Time/interval measurement up to 16 bits
- Additional control input (gate)
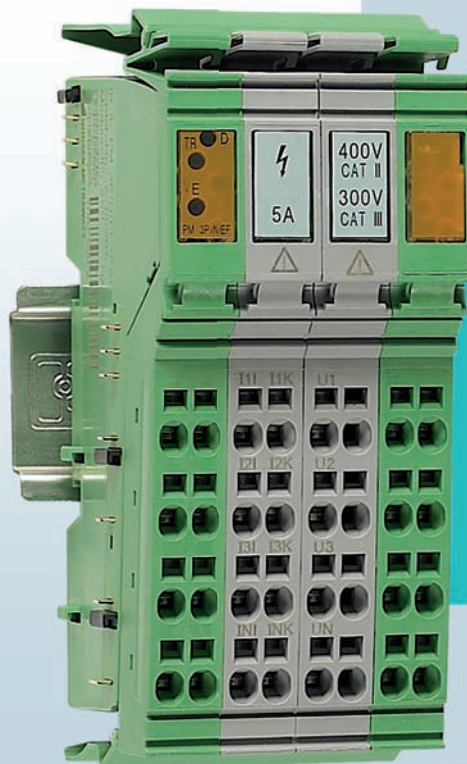
Energy data acquisition – your key to success

- Easy control of energy costs
- Improve energy efficiency
- Make all consumption costs transparent
- Detect and stop unnecessary energy consumption
- Improve the degree of efficiency and utilization
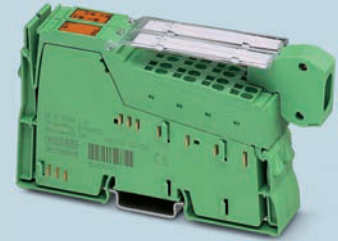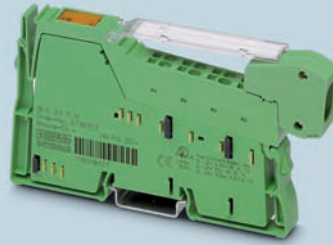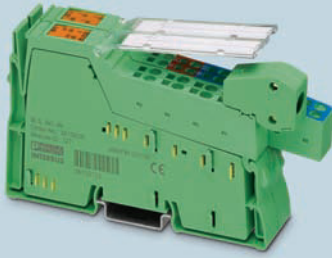
Position detection

IB IL…PAC Order No. see website

• For incremental/absolute encoders
• Symmetrical/asymmetrical signals
• Homing function
• Touch probe function
• Supports linear/rotary encoders
• Magnetostrictive encoders
• Start/stop encoders

Connection of IP20 and IP67

IB IL 24 FLM-PAC Order No. 2736903

Inline branch terminal for connecting Fieldline M12 or M8 devices.

• An adapter is available for the transition from M12 to M8 devices
• Connects Fieldline devices to an Inline station easily

Pulse generator

IB IL PWM/2-PAC Order No. 2861632

• Generates square wave pulses:
 – With controllable pulse/pause ratio
 – With controllable frequency
• 5 V/24 V signal level
• For indirect step motor control (pulse direction signal)
• Ramp generator available as a function block

Power measurement terminal

IB IL PM 3P/N/EF-PAC

Order No. 2700965

• For analyzing AC networks, e.g., in distribution systems: for measuring current, voltage, and power, as well as identifying distortion and harmonics
• Direct current measurement up to 5 A AC
• Measurement of the neutral conductor current
• Supports direct connection of 3 inputs for phase conductor voltages up to 690 V AC

Energy data controlling
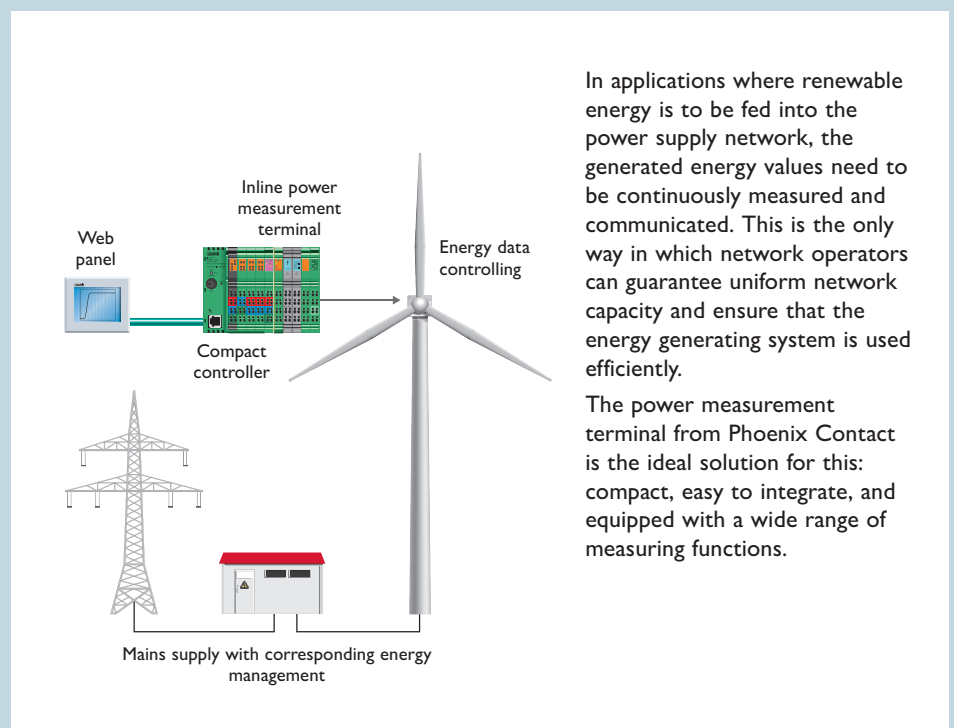
In applications where renewable energy is to be fed into the power supply network, the generated energy values need to be continuously measured and communicated. This is the only way in which network operators can guarantee uniform network capacity and ensure that the energy generating system is used efficiently.

The power measurement terminal from Phoenix Contact is the ideal solution for this: compact, easy to integrate, and equipped with a wide range of measuring functions.

I/O systems for field installation: Easy connection

From the control cabinet right down to field level: Phoenix Contact offers a wide range of I/O systems with IP65/IP67 protection. This means that you can connect sensors and actuators to the control level quickly and easily.

The wireless I/O modules enable you to integrate your time-critical signals from moving or difficult to access system parts wirelessly in your system.

In addition to M12 components, you can also use compact M8 versions of the I/O devices where space is limited. Thanks to the user-friendly connection technology, this not only saves space, but also time.

M8/M12 digital input/output

**FLM ... M8/M12**   Order No. see website

- Digital signals with 2 or 3-conductor connection
- Signal level: 24 V DC
- Standard inputs according to EN 61131-2/ type 1
- Overload protected sensor supply
- 500 mA/2 A outputs, can be selected
- 8 or 16 digital inputs
- 8 digital outputs
- 4 digital inputs and 4 digital outputs
- 8 digital inputs and 8 digital outputs

M12 analog input/output

FLM ... M12   Order No. see website

- IP67 analog signals
- 4 channels
- Voltage and current signals:
  0 to 20 mA/4 to 20 mA
  0 to 10 V/-10 V to +10 V
- Resolution: 15 bits
- For resistance temperature detectors, e.g., Pt 100, Pt 1000, Ni 1000, KTY 81, and KTY 84
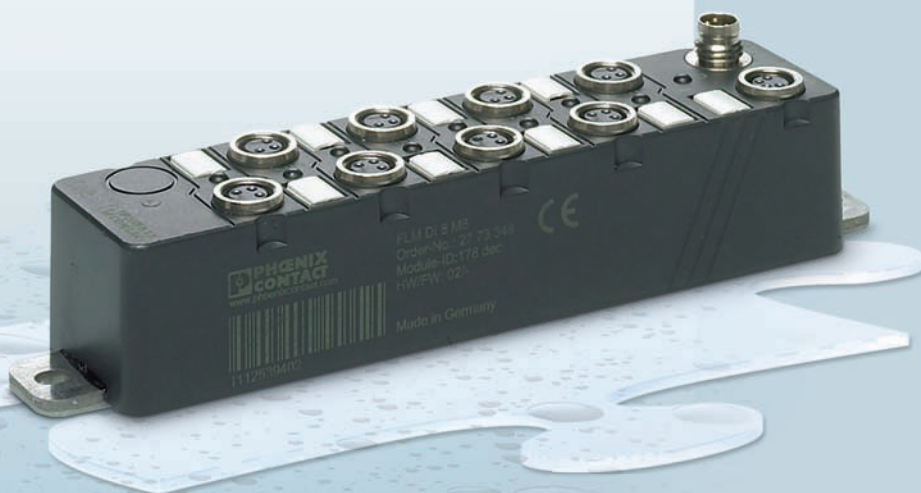
IO-Link

M12 IO-Link master

FLM IOL 4 DI 4 M12   Order No. 2736990

- 4 IO-Link ports for transmitting process and service data. The IO-Link ports can also be used in SIO mode as a 24 V input or output.
- Additional 4 digital inputs, 24 V DC
- 2 or 3-conductor connection

Bluetooth

Wireless I/O devices

FLM BT BS 3   Order No. 2736770

- Bluetooth base station in the Fieldline Modular local bus
- Master for up to 3 BT IO slaves
- Including antenna
- Black channel listing
- Low emission mode

Bluetooth

Wireless I/O devices

FLM BT DI 16 M12   Order No. 2693208

- Bluetooth IO slave
- 16 digital inputs
- 24 V DC
- 2, 3, 4-conductor connection
- Including antenna and FLM BT ID-PLUG M12

## Complex I/O communication – made easy
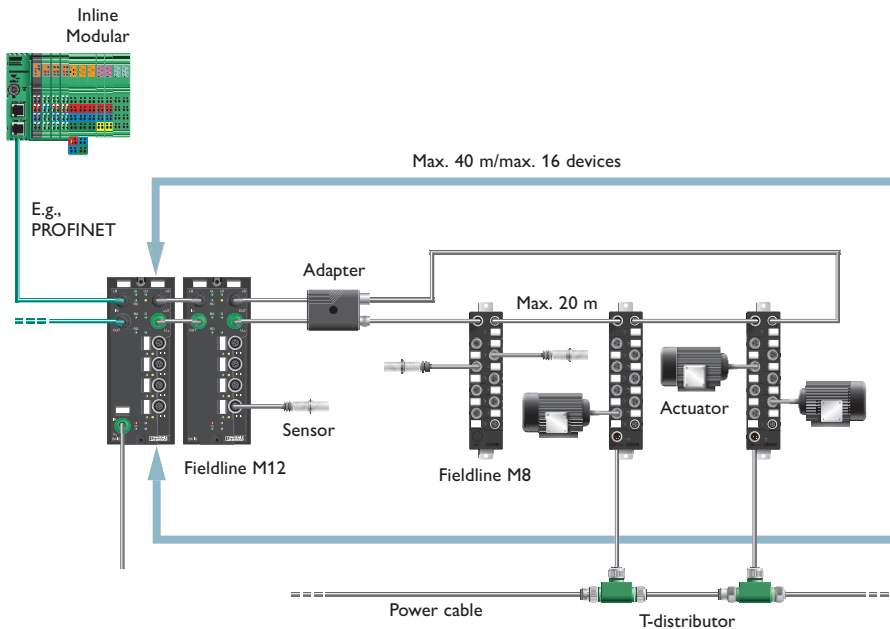
Custom design complex I/O communication from field and control cabinet systems quickly and easily.

Integrate the Fieldline I/O systems seamlessly into your Inline IP20 I/O system. Thanks to bus openness, you can connect both I/O systems flexibly to virtually any network.

Network safety solutions:
Simply safe

The easiest way to integrate safety in your system: intelligent, safe I/O modules with SafetyBridge technology. Here the safety function is processed directly in the I/O modules. In this way, you can implement functional safety without the need for an expensive safety controller or a safe fieldbus system. The safe I/O modules can be distributed in your network as required.

Freely selectable controller

Bus coupler
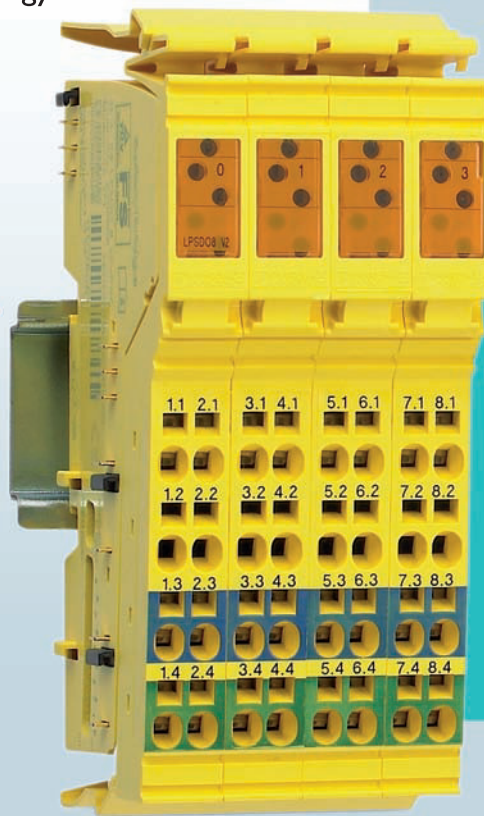Safe I/O module
Safe logic module

Emergency stop
Actuator
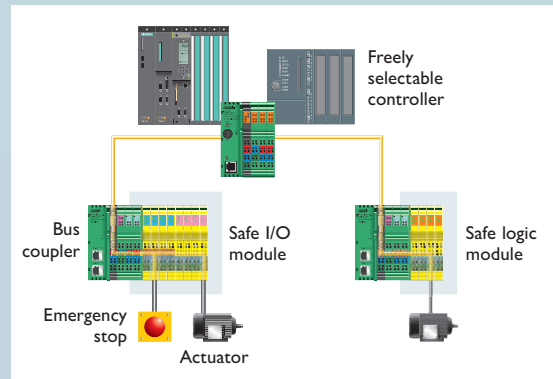
How does SafetyBridge technology work?

Modules with SafetyBridge technology exchange safe signals via an automation network. This technology uses the standard control system and the existing network merely as a transport medium. The SafetyBridge logic module generates and monitors the SafetyBridge protocol and processes the safety-related application program.

SafetyBridge Technology
Designed by PHOENIX CONTACT

Your advantages with I/O modules with SafetyBridge technology:

- Easy integration into the standard network
- Central or distributed installation enables you to meet the requirements of functional safety technology
- Easy configuration using the SAFECONF software
- Supports all common automation networks
- Secure wireless communication

Logic module

IB IL 24 LPSDO 8 V2-PAC

Order No. 2700606

- Safety-related digital output module with integrated logic processing
- 4 safe digital outputs for 2-channel assignment or 8 safe digital outputs for 1-channel assignment

Output module

IB IL 24 PSDO 8-PAC

Order No. 2985631

- Safety-related digital output module
- 4 safe digital outputs for 2-channel assignment or 8 safe digital outputs for 1-channel assignment

Output module

IB IL 24 PSDO 4/4-PAC

Order No. 2916493

- Safety-related digital output module
- 4 safe digital outputs which includes one positive and one negative switching output depending on the parameterization

Input module

IB IL 24 PSDI 8-PAC

Order No. 2985688

- Safety-related digital input module
- 4 safe digital inputs for 2-channel assignment or 8 safe digital inputs for 1-channel assignment

Relay module

IB IL 24 PSDOR 4-PAC

Order No. 2985864

- Safety-related distributed relay output module
- 4 safe digital relay outputs, each with 2 contacts

Configuration software

**SAFECONF**

Order No. 2986119

- Easy, standard-compliant configuration of safety devices
- User-friendly creation of the safety logic for PSR-TRISAFE and SafetyBridge technology via drag & drop
- Available as a free download
- The current SAFECONF software is available to download free of charge from the Internet

Panels for operation and monitoring: Easy overview

Keep an eye on your application at all times and intervene in processes if required. Using HMI devices from Phoenix Contact, you can design cost-effective solutions for operation and monitoring.

For example, the minitouch is extremely compact and ideal for cost-sensitive applications where information needs to be displayed in alphanumeric format.

Web panels from Phoenix Contact can also perform graphical visualization tasks. Using the WebVisit software, you can create customized user interfaces for this purpose. With display sizes ranging from 4 to 15 inches, you will find the right solution for every system.
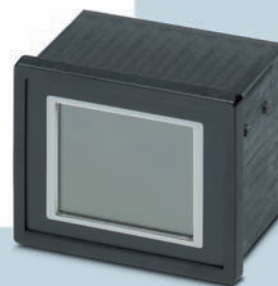
Minitouch

TD 1030T   Order No. 2701257

- 7.1 cm (2.8") TFT touch display
- 2-bit color depth, 4 colors can be displayed
- 320 x 240 pixel resolution
- LED backlighting
- 120 MHz CPU, 512 kB Flash, 96 kB SRAM
- 1 x Ethernet
- Includes RTOS and nano browser
- IP54 (front), IP20 (back)
- Temperature range from 0°C to +50°C

Your advantages with the minitouch:
- Fast startup, thanks to several predefined user interfaces
- No additional software or licenses required, as visualization is via the controller's PC WORX project
- Easy integration into existing systems, thanks to the Ethernet interface
- Inexpensive visualization unit: compact, communicative, tailor-made for small to medium-sized applications

PC WORX EXPRESS
Compact Controller Programming

Web panel

WP 04T	Order No. 2913632
WP 06T	Order No. 2913645
WP 10T	Order No. 2700934
WP 15T	Order No. 2700935

- 8.9 cm (3.5") - 37.8 cm (15")
- TFT display, 65,535 colors
- 320 x 240/800 x 600/1024 x 768 pixel resolution
- LED backlighting
- 32 MB Flash data memory
- 64 MB SDRAM main memory
- 1 x Ethernet, 2 x USB
- Windows CE and micro browser included
- 0°C - +50°C and 10% - 95% humidity

Widescreen web panel

WP 07T/WS	Order No. 2700307
WP 09T/WS	Order No. 2700309

- 17.8 cm (7.0") - 22.9 cm (9.0")
- TFT display, 65,535 colors
- 800 x 480 pixel resolution
- 32 MB Flash data memory
- 64 MB SDRAM main memory
- 1 x Ethernet, 2 x USB
- Windows CE and micro browser included
- 0°C - +50°C and 10% - 95% humidity

Outdoor web panel

WP 06T/XC	Order No. 2701555
WP 07T/XC	Order No. 2701556

- 14.5 cm (5.7") - 17.8 cm (7")
- TFT display, 65,535 colors
- 320 x 240/800 x 460 pixel resolution
- 32 MB Flash data memory
- 64 MB SDRAM main memory
- 1 x Ethernet, 2 x USB
- Windows CE and micro browser included
- -20°C - +70°C and 20% - 85% humidity

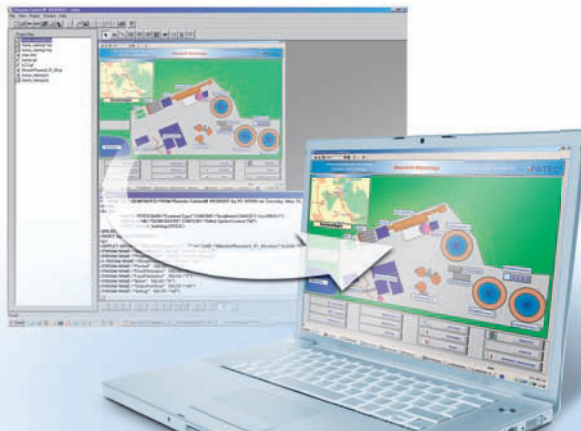## Easy visualization with WebVisit

The WebVisit editor enables you to easily create user interfaces for your visualization. WebVisit enables quick and user-friendly representation of your control variables. Monitor your system or machine via a PC using a standard browser or via a web panel.

Remote control also poses no problem with WebVisit. The visualization is created directly via the controller's integrated web server. No additional software or runtime licenses are required.

WEB VISIT
Web Visualization

Web visualization

WEBVISIT 6

– **EXPRESS**	Order No. 2700954
– **BASIC**	Order No. 2700948
– **PRO**	Order No. 2700949

- Visualization editor
- Enables user interfaces to be created quickly
- Easy handling
- Optimally integrates into workflow thanks to data coupling with PC WORX and PC WORX EXRESS

Industrial telecommunications:
Easy communication

Are you looking for a way to communicate reliably and securely with remote machines and system parts? The industrial telecommunications products provide easy solutions for efficient remote maintenance, continuous data acquisition or automatic early alarm generation. We offer the right device for every application: for all transmission technologies, transmission media, and interfaces.

Remote control software

RESY-DATA-A LIC   Order No. 2876847

• Preprogrammed function block library for remote control technology
• Reliable communication over large distances with a PLC
• Standardized protocols such as ODP, IEC 60870-5-101 and -104
• Transmission of online, historical, and event-oriented data
• Communication via the public telephone network, mobile phone networks or wireless connections

Your advantages with industrial remote control technology:

• Worldwide, universal data links
• Secure communication, thanks to integrated security functions
• Robust hardware: for reliable use in harsh industrial environments

UMTS/HSPA mobile phone router

PSI-MODEM-3G/ROUTER
Order No. 2314008

- Worldwide high-speed data links and alarm generation via 3G mobile phone networks
- UMTS/HSPA tri band, in the event of poor network coverage switches to GPRS/EDGE (fallback)
- Data rates of up to 7.2 Mbps
- 2 SIM card slots for maximum network availability
- Easy integration of remote stations in IP networks
- Firewall and VPN reliably protect your application against unauthorized access
- Easy configuration via web-based management

Analog LAN modem

PSI-MODEM/ETH
Order No. 2313300

- Worldwide data links via the public telephone network
- Data rates of up to 56 kbps
- Dialing into remote networks with dial-up connection for quick and easy access to machines and systems
- Automatic connection to remote networks for status transmission or in the event of an error

SHDSL Ethernet extender

### PSI-MODEM-SHDSL/ETH
Order No. 2313643

- Network very remote devices over distances of up to 20 km
- Transmission speed of up to 30 Mbps
- Fast startup, plug and play
- Point-to-point, redundancy, line, and ring structures
- Integrated log book for cable monitoring
- 2 digital switching outputs for alarm generation
- Also available with PROFIBUS and serial interface as an alternative
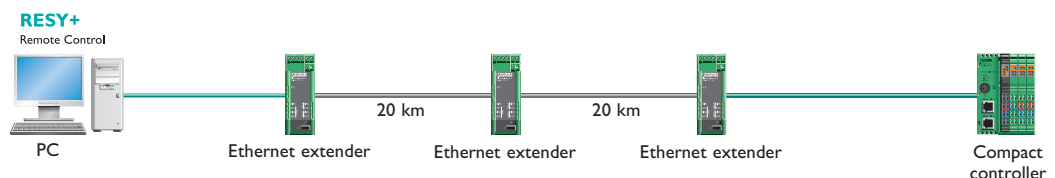
The right connection for every application

1. Worldwide high-speed data link via 3G mobile phone networks
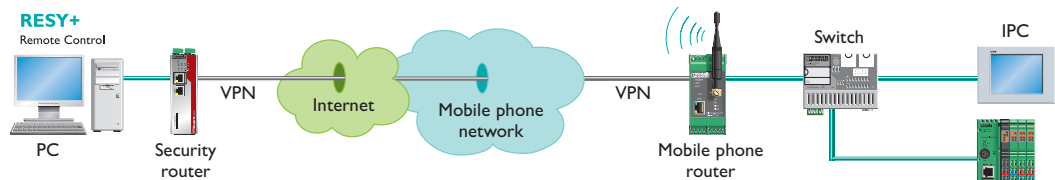
2. Worldwide data link via public telephone networks
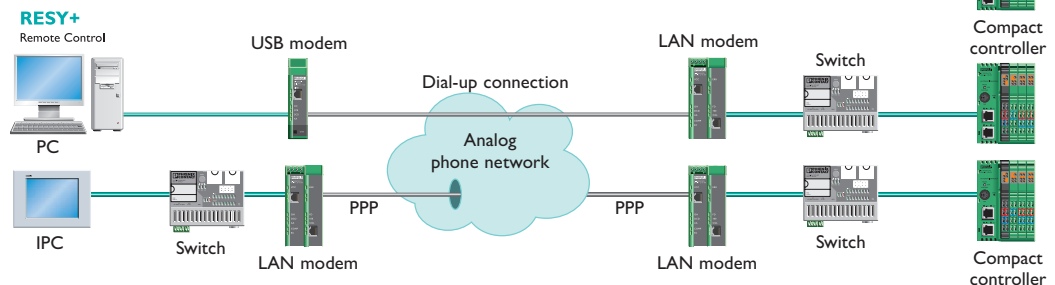
3. DSL high-speed connection via copper cables up to 20 km in length

Industrial network technology: Easy networking

Are you looking for an easy and inexpensive solution for networking your automation system based on your compact controllers? Then you need reliable network components that can be easily integrated into your automation infrastructure. Our comprehensive portfolio for Industrial Ethernet covers all possibilities: wireless solutions for easy cable replacement, high-performance switches and hubs or router and firewall products for secure remote maintenance.

Bluetooth

Wireless Ethernet cable

FL BT EPA AIR SET   Order No. 2693091

- Ready-to-use set including all accessories for cable replacement
- Establish communication in just a few seconds
- Data transmission via Bluetooth
- Integrated special antenna
- IP65 protection
- Max. transmission power: 20 dBm
- Power consumption of < 1.1 W

FL BT EPA   Order No. 2692788

- Individual module

We make Ethernet easy:

- Switches for inexpensive and reliable Ethernet networks
- Industrial firewall/router for individual protection of automation systems
- Bluetooth or WLAN Ethernet adapters for easy cable replacement

WLAN

Wireless Ethernet cable

FL WLAN EPA   Order No. 2692791

- 2 modules enable the data cable to be replaced
- Data transmission via WLAN according to IEEE 802.11 b/g
- Integrated special antenna
- Security thanks to data encryption
- IP65 protection
- Max. transmission power: 20 dBm
- Power consumption of < 1.8 W

Standard switches

FL SWITCH SFN 5TX
                          Order No. 2891152
- 5 RJ45 ports

FL SWITCH SFN 8TX
                          Order No. 2891929
- 8 RJ45 ports
- Fast installation, thanks to plug and play
- Prioritization of data with Quality of Service function (realtime)
- EtherNet/IP™-compatible

Standard fiber optic switches

FL SWITCH SFN 4TX/FX
                          Order No. 2891851
- 4 RJ45 ports/1 SC multi-mode port

FL SWITCH SFN 6TX/2FX
                          Order No. 2891314
- 6 RJ45 ports/2 SC multi-mode ports
- Fast installation, thanks to plug and play
- Prioritization of data with Quality of Service function (realtime)
- EtherNet/IP™-compatible
- Fiberglass uplink

Firewall/router

FL MGUARD RS2000 TX/TX VPN
                          Order No. 2700642

- Secure remote maintenance of machines and systems
- Easy configuration via 2-click firewall
- Quick and easy startup and device replacement with SD card
- Virtual addressing with the 1:1 NAT function

IP67 standard switch

FL SWITCH 1605 M12
                          Order No. 2700200

- Compact switch with a narrow design for easy integration, e.g., on standard profiles
- Quick and easy mounting
- Extended temperature range
- Low current consumption

Lean Managed Switches

FL SWITCH LM 4TX/1FX
                          Order No. 2989624
- 4 RJ45 ports/1 SC multi-mode port

FL SWITCH LM 4TX/2FX
                          Order No. 2832658
- 4 RJ45 ports/2 SC multi-mode ports

FL SWITCH LM 8TX Order No. 2832632
- 8 RJ45 ports

- Integrated web server for easy configuration and diagnostics
- For redundant networks, fast switch-over
- Temperature range from -40°C to +70°C

Service and support: We provide support over the phone and on site

Whatever the task at hand, the technological solution you are looking for to meet your objective or the products you would like to use: our specialists are always on hand no matter where you are.

Our flexible service concept enables an approach on every imaginable level, thanks to the extensive technological expertise of our specialists. At the same time, the specific requirements of all industries are taken into consideration. We always have the right solution for you.

Consultation and presentation

Our safety specialists are there to advise you about the entire safety lifecycle of your machinery. Following a safety consultation, you will know which steps you need to take to ensure compliance with the law, as well as why, how and in which order to do so.

We use on-site presentations to directly demonstrate the conformance process to your experts.

Your personal contact person will provide telephone support and in the event of a malfunction will organize immediate delivery of replacement parts or on-site service.
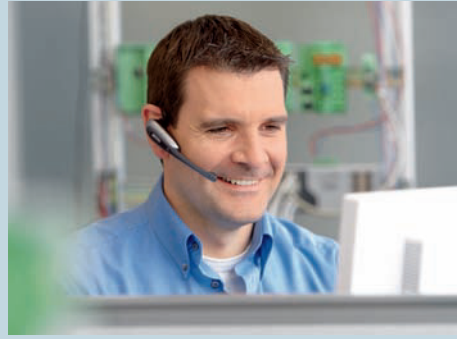
Special services for machine safety

Detailed Consulting Order No. 2700502

Consultation to clarify your specific requirements with regard to the measures required for machinery safety

Moderation Order No. 2700504

• Process assistance for practical on-site implementation
• Templates for verification documentation

Engineering

Do you need a customized solution? We can offer you the necessary technological expertise, combined with vast experience in many industries. Our expert project management team will guide you through all the important phases of your project. Together with you, we will arrange the necessary services and handle the subtasks during the implementation phase.

Service

Our service teams stand out thanks to their focused expertise, years of practical experience, and maximum degree of flexibility. Our service network is on hand to assist you during installation, startup, and operation, even in the most remote corners of the world.

Training and workshops

Thanks to intensive contact with our customers and years of on-site experience, we have developed a qualification concept whereby we can specify employee qualifications so as to meet your individual requirements. We will offer you the appropriate service depending on the project phase, target group, and prior knowledge.

Project Engineering Order No. 2850863
- Technical system concept using Visu+/ Genesis hardware and software-based visualization software
- Support with configuring and programming your application
- Creation of function blocks

Free system hotline with 24-hour product support

+ 49 5281 9-462888

Hotline Specialist   Order No. 2733427
Personal hotline specialist for situations that need to be dealt with very quickly.

Local Service   Order No. 2710123
On-site service for:
- Installation
- Startup
- Operation

We provide support for the following:
- PROFINET
- Industrial Ethernet
- Ethernet security
- Wireless LAN
- Bluetooth
- PC WORX
- SQL database communication
- Config+, Diag+, Visu+
- WebVisit
- INTERBUS installation and startup
- INTERBUS maintenance and diagnostics
- Individual seminars and workshops

Safety Engineering   Order No. 2692089
- Assessing safety integrity
- Safety specifications for machinery
- Programming the safety controller
- Creating safe function blocks
- Verifying verification documentation
- Validating safety functions

Free safety technology hotline with 24-hour product support

+ 49 5281 9-462777

Safety Service   Order No. 2851202
On-site service for:
- Installation
- Startup
- Operation

We provide support for the following:
- Machinery Directive
- EN ISO 13849-1
- Machine safety practical workshop
- Safety lifecycle practical workshop
- SISTEMA
- Safety technology basics
- INTERBUS-Safety
- PROFIsafe
- Individual seminars and workshops

Further information on the products presented here and on the world of solutions from Phoenix Contact can be found at

www.phoenixcontact.net/products

Or contact us directly.

Modular Terminal Blocks
CLIPLINE 1

Marking Systems, Tools, and Mounting Material
CLIPLINE 2

Connection Technology for Field Devices and Field Cabling
PLUSCON

Device Connection Technology and Electronic Housings
COMBICON

Power and Signal Quality
TRABTECH

Signal Converters, Switching Devices, Power Supply Units
INTERFACE

Automation Components and Systems
AUTOMATION

PHŒNIX CONTACT
INSPIRING INNOVATIONS