powered by

niagara
framework

Controller for building infrastructure

IIoT-based networking of complex infrastructures

PHŒNIX CONTACT

INSPIRING INNOVATIONS

Delivering on the true meaning of IIoT, from buildings to infrastructure

The ILC 2050 BI industrial Niagara controller offers I/O modularity, integrated security, and a flexible software-licensing model. This makes the controller ideal for the most demanding applications in buildings, infrastructure, and data centers.

The integrated Niagara Framework® enables IIoT-based automation through standardization of various data types. This makes it easy to connect with various sensors and actuators regardless of the manufacturer and communication protocol.
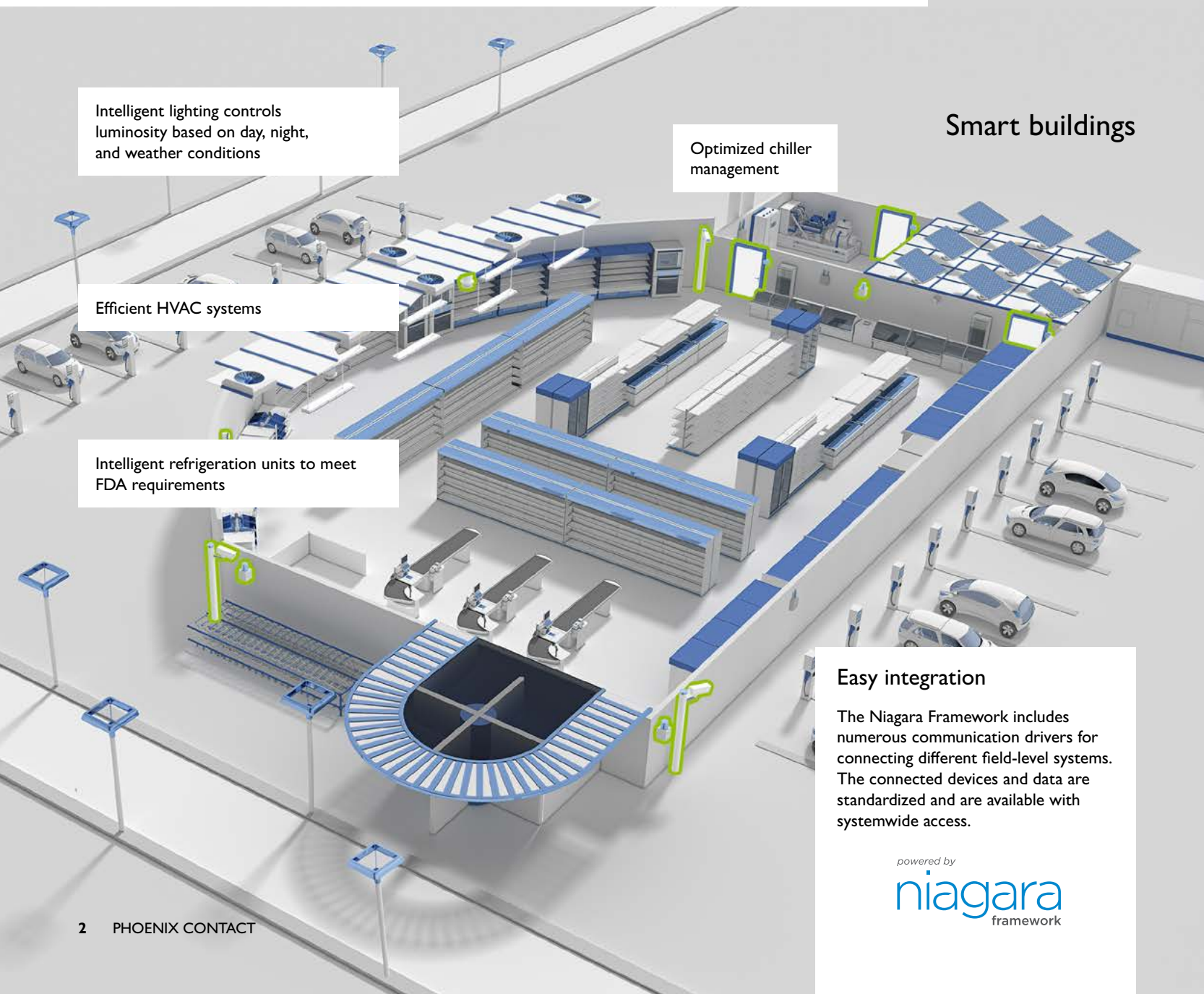
Smart buildings

Intelligent lighting controls luminosity based on day, night, and weather conditions

Optimized chiller management

Efficient HVAC systems

Intelligent refrigeration units to meet FDA requirements

Easy integration

The Niagara Framework includes numerous communication drivers for connecting different field-level systems. The connected devices and data are standardized and are available with systemwide access.

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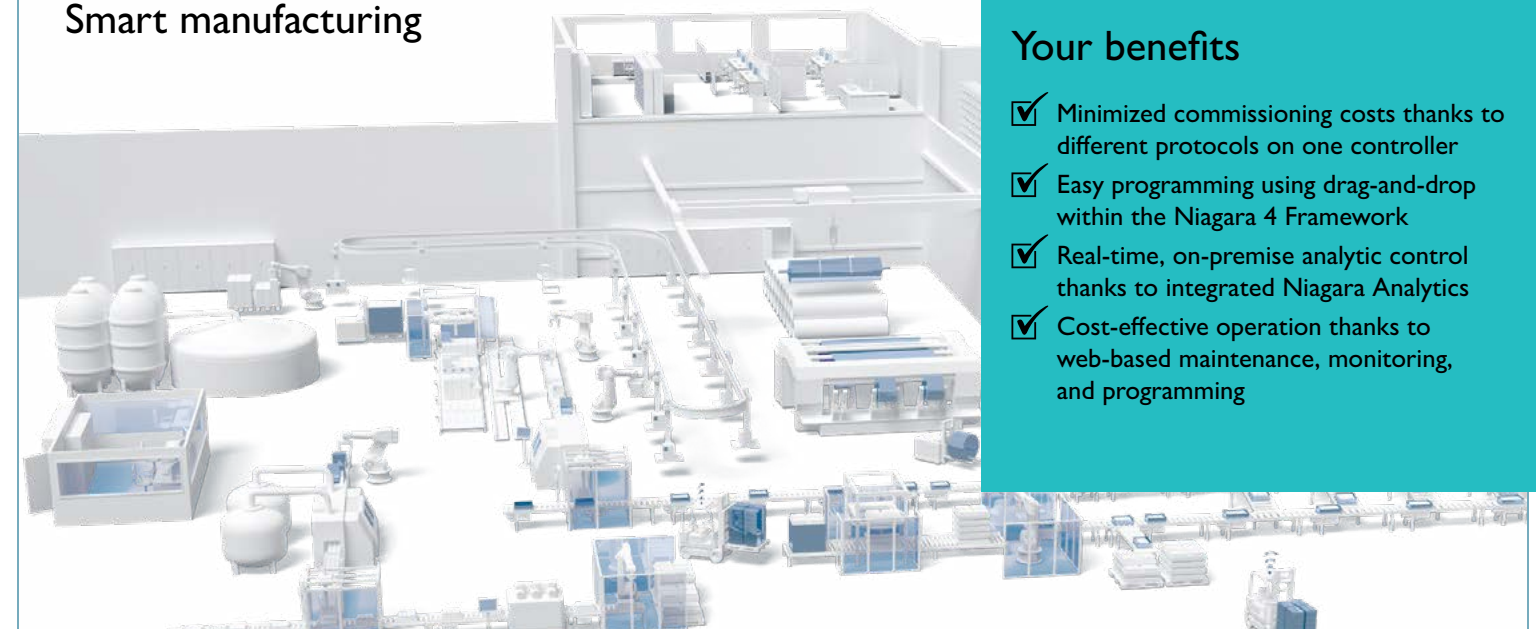
Smart infrastructure
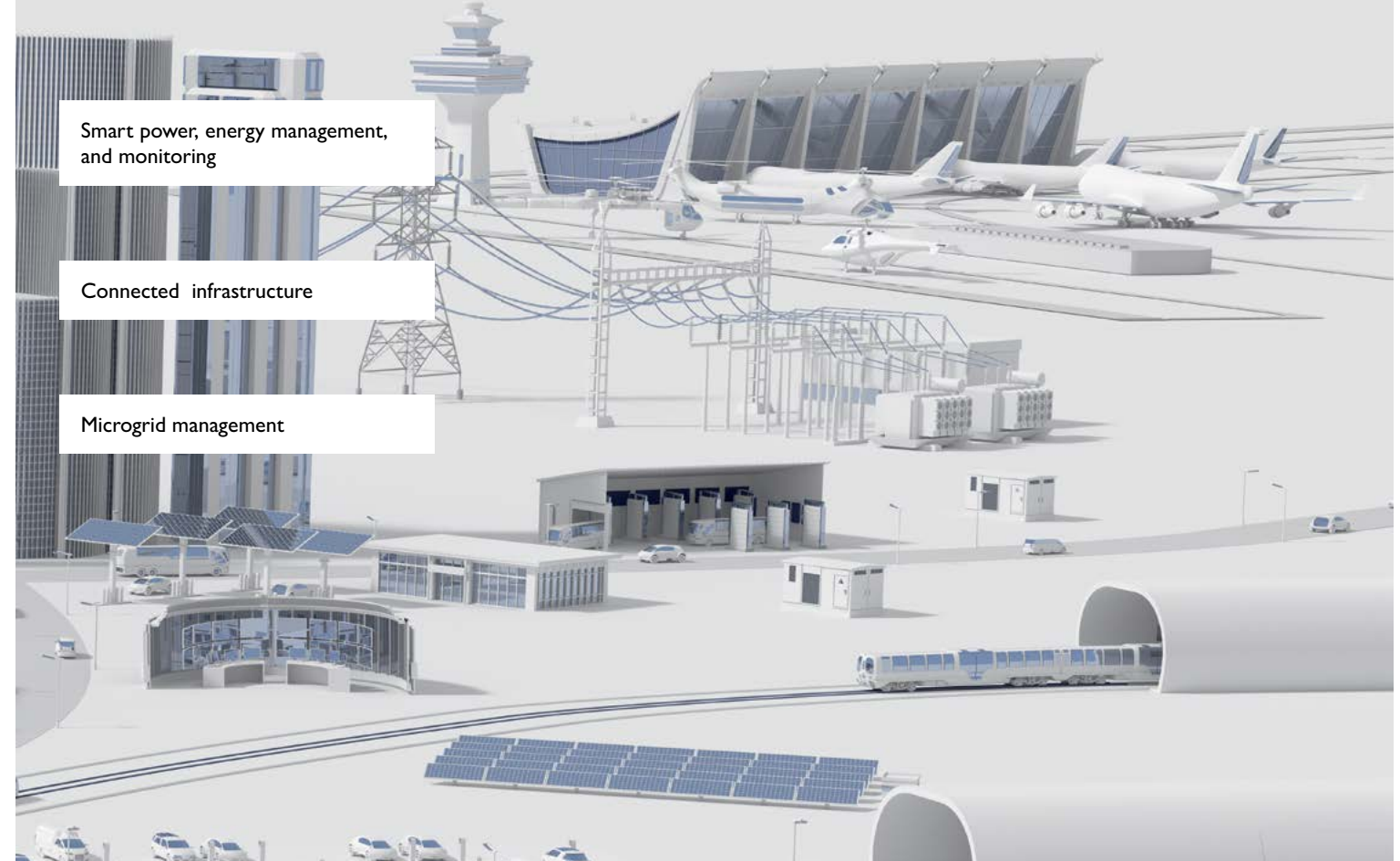
Smart power, energy management, and monitoring

Connected infrastructure

Microgrid management

Smart manufacturing

Your benefits

☑ Minimized commissioning costs thanks to different protocols on one controller
☑ Easy programming using drag-and-drop within the Niagara 4 Framework
☑ Real-time, on-premise analytic control thanks to integrated Niagara Analytics
☑ Cost-effective operation thanks to web-based maintenance, monitoring, and programming

Preventive maintenance tools to avoid unscheduled shutdowns

Overall Equipment Effectiveness (OEE) to ensure optimal use of plant machinery

Integrated security functions, such as encryption, access control, and permission management, to ensure maximum data security

Niagara for the industrial environment

Robust and high-speed control for the most demanding applications using the Niagara 4 Framework. Go beyond building automation with the ILC 2050 BI providing industrially hardened control and modular I/O running the Niagara 4 Framework.

Terminal, conductors, cables, and devices can be marked quickly and easily using the MARKING printing system

Status and diagnostic LEDs
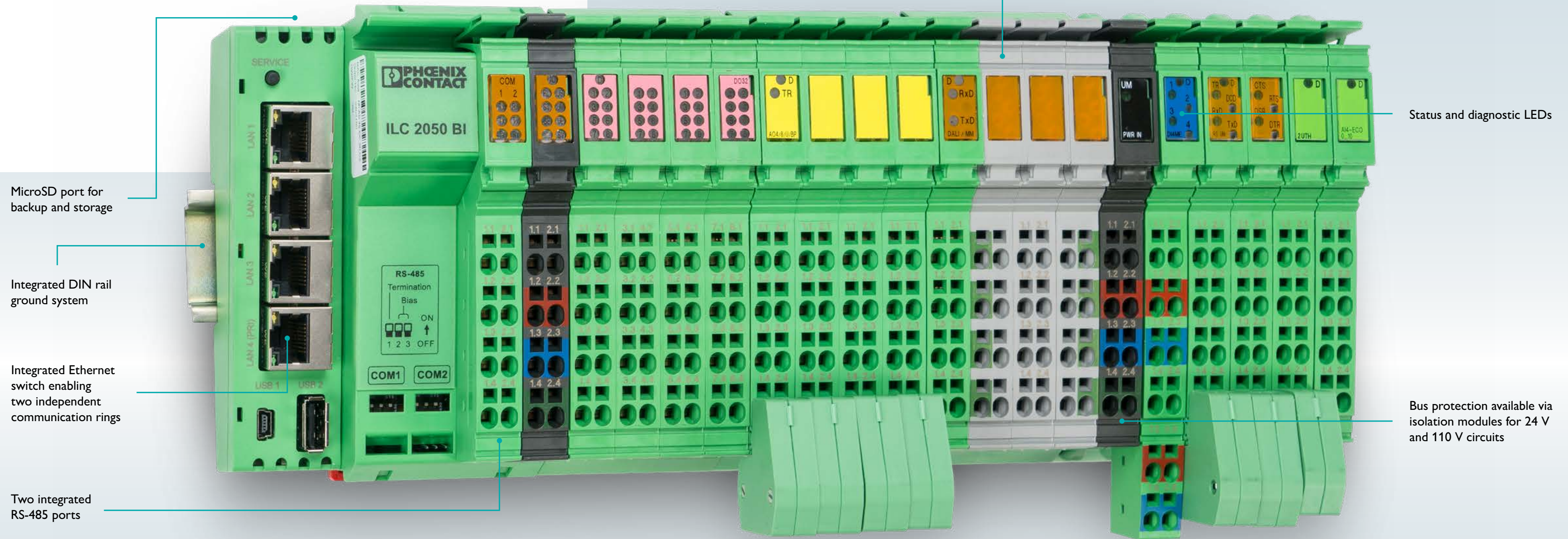
MicroSD port for backup and storage

Integrated DIN rail ground system

Integrated Ethernet switch enabling two independent communication rings

Bus protection available via isolation modules for 24 V and 110 V circuits

Two integrated RS-485 ports

Your benefits

☑ Maximum flexibility from a large variety of I/O modules
☑ Connect up to 63 I/O modules on the local bus
☑ Special function modules provide support for DALI, MP-Bus, and M-Bus

Programming environment
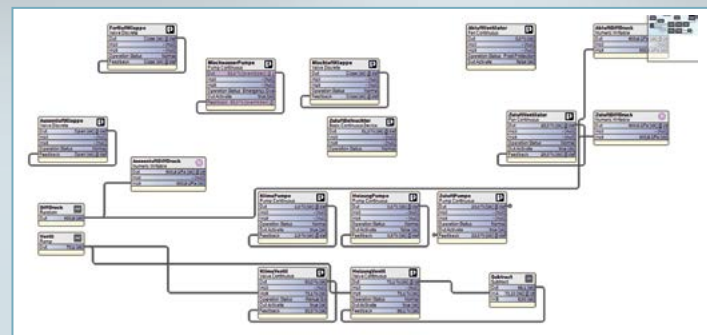

Niagara workbench – easy to configure wiresheets

Monitoring and analytics

Inline I/O system

Flexible industrial I/O

The industrialized inline I/O system offers a wide range of digital, analog, and special- function terminals. The range offers the high performance and accuracy needed for the most demanding applications, while providing modularity, even for unique applications.
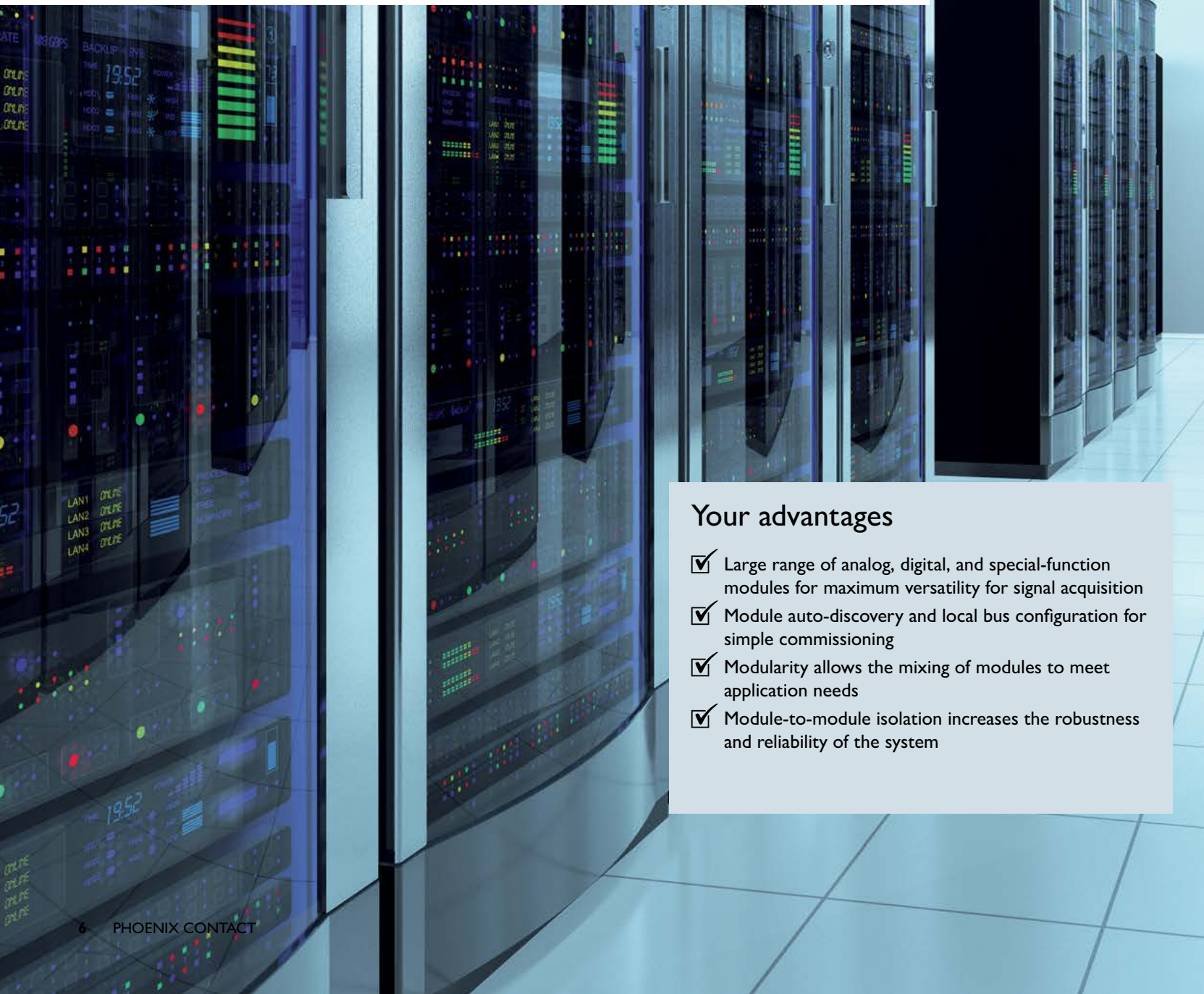
Your advantages

- ☑ Large range of analog, digital, and special-function modules for maximum versatility for signal acquisition
- ☑ Module auto-discovery and local bus configuration for simple commissioning
- ☑ Modularity allows the mixing of modules to meet application needs
- ☑ Module-to-module isolation increases the robustness and reliability of the system

Modular I/O

The Inline I/O modular system provides the flexibility for an application to be designed with only the points needed, saving space and unnecessary connections. When a system needs to be expanded, modules can easily be added to the local bus, increasing the I/O count.
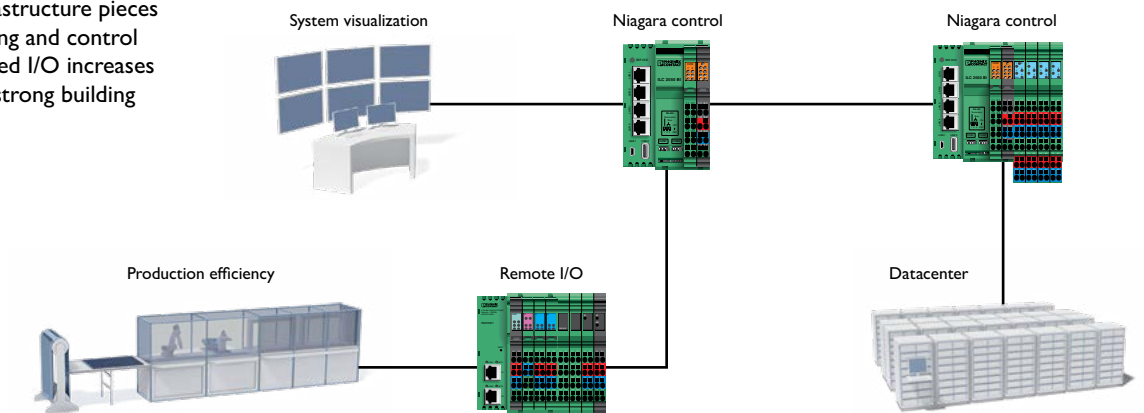

Analog

Digital

Special function

Hardened Niagara 4 with Phoenix Contact industrial hardware

Connect different building infrastructure pieces to a single system for monitoring and control using the ILC 2050 BI. Hardened I/O increases robustness and accuracy for a strong building management system.

System visualization

Niagara control

Niagara control

Production efficiency

Remote I/O

Datacenter

Remote I/O
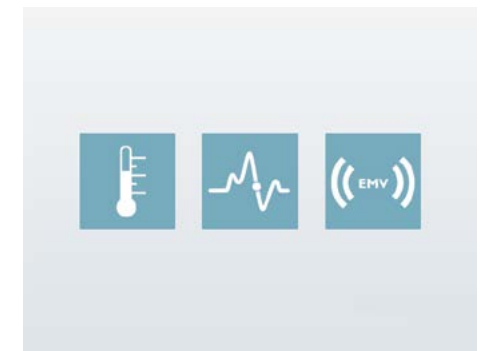
Inline I/O system can be integrated into all common industrial fieldbus systems and Ethernet networks.

Reduce space

Modularity allows the use of only the modules needed for the application, reducing the costs and the space requirements of the application.

Robust

Inline offers robust isolation of signals among modules, reducing system errors caused by wiring or faulty sensors.
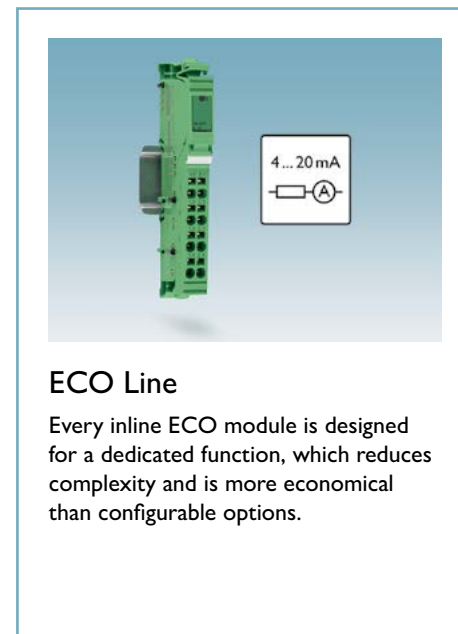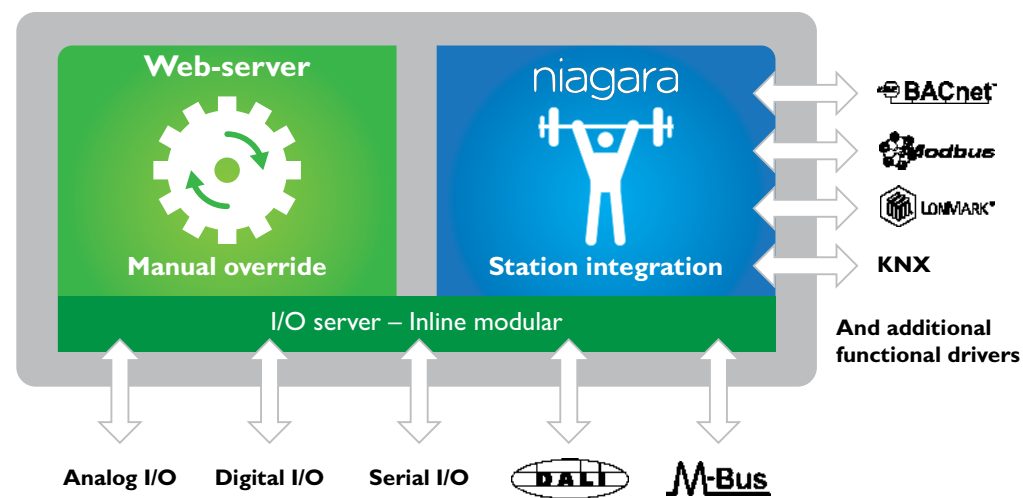
Product overview

Controllers

Industrial Niagara 4 Controller and remote I/O head stations: connect up to 63 I/O modules on each head station.

Niagara Controllers	Designation	Order no.
Industrial Niagara 4 Controller	ILC 2050 BI	2403160

Remote I/O head station	Designation	Order no.
Interface for Modbus TCP	IL ETH BK DI8 DO4 2TX-PAC	2703981

Power-segment terminals

Feed-in, boost, and segment terminals with and without fuse.

24 V DC power terminals	Designation	Order no.
24 V DC, (UM, US) for refreshing sensor and output power	IB IL 24 PWR IN-PAC	2861331
24 V DC, (UL, UANA, UM, US) for refreshing logic, analog, and output power*	IB IL 24 PWR IN/R-PAC	2861674

120-230 V AC power terminals	Designation	Order no.
120 V AC, (L, N) for injecting line power sensor and digital output power	IB IL 120 PWR IN-PAC	2861454
230 V AC, (L, N) for injecting line power sensor and digital output power	IB IL 230 PWR IN-PAC	2861535

*Needed after approximately 15 analog modules

Niagara programming environment

- Access to multiple communication protocols via drivers to enable communication to new and existing solutions.
- Open building automation platform with more than 750,000 installations world wide.
- Ability to simulate I/Os and test your application prior to going live.

ECO Line

Every inline ECO module is designed for a dedicated function, which reduces complexity and is more economical than configurable options.

Digital input and output terminals

Digital I/O terminals with 1 to 32 channels supported by the ILC 2050 BI

Digital inputs (DC)	Designation	Order no.
8 channels, 1 conductor, 24 V DC – ECO version	IB IL 24 DI 8/HD-ECO	2702792
16 channels, 3 conductors, 24 V DC (purchased in QTY of 4)	IB IL 24 DI 16-ME	2897156

Digital inputs (AC)	Designation	Order no.
1 channel, 2 conductors, 120 V AC	IB IL 120 DI 1-PAC	2861917
1 channel, 2 conductors, 230 V AC	IB IL 230 DI 1-PAC	2861548

Digital outputs (DC)	Designation	Order no.
8 channels, 1 conductor, 24 V DC – ECO version	IB IL 24 DO 8/HD-ECO	2702793
16 channels, 3 conductors, 24 V DC	IB IL 24 DO 16-ME	2897253

Digital outputs (AC)	Designation	Order no.
1 channel, 2 conductors, 120/230 V AC	IB IL DO 1 AC-PAC	2861920
4 channels, 3 conductors, 120/230 V AC, 1 A	IB IL DO 4 AC-1A-PAC	2861658
1 relay output, 24 V AC/230 V AC, 3 A	IB IL 24/230 DOR 1/W-PAC	2861881
2 relay outputs, 24 V AC/48 V AC, 2 A	IB IL 24/48 DOR 2/W-PAC	2863119
4 relay outputs, 24 V AC/230 V AC, 3 A	IB IL 24/230 DOR 4/W-PAC	2861878
4 relay outputs, 24 V AC/230 V AC, 10 A	IB IL 24/230 DOR 4/HC-PAC	2897716

Analog input and output terminals

Analog I/O terminals with 1 to 8 channels supported by the ILC 2050 BI

Analog inputs	Designation	Order no.
2 channels, current/voltage can be configured	IB IL AI 2/SF-PAC	2861302
2 channels, current/voltage can be configured, 12 bit	IB IL AI 2/SF-ME	2863944
4 channels, 4-20 mA, 12 bit – ECO version	IB IL AI 4/I/4-20-ECO	2702495
4 channels, 0-10 V, 12 bit – ECO version	IB IL AI 4/U/0-10-ECO	2702496
8 channels, current/voltage can be configured	IB IL AI 8/SF-PAC	2861412

Temperature inputs	Designation	Order no.
2 channels, RTD, can be configured	IB IL TEMP 2 RTD-PAC	2861328
4 channels, RTD PT100 – ECO version	IB IL RTD 4/PT100-ECO	2702499
4 channels, RTD PT1000 – ECO version	IB IL RTD 4/PT1000-ECO	2702501
4 channels, 0-10 V/RTD, can be configured	IB IL AI/TEMP 4 RTD-PAC	2897952

Analog outputs	Designation	Order no.
2 channels, 0-10 V, ± 10 V	IB IL AO 2/U/BP-PAC	2861467
4 channels, 4-20 mA – ECO version	IB IL AO 4/I/4-20-ECO	2702497
4 channels, 0-10 V – ECO version	IB IL AO 4/U/0-10-ECO	2702498
8 channels, voltage can be configured	IB IL AO 4/8/U/BP-PAC	2878036

Function terminals

Interface modules interface to serial, DALI, M-Bus, and encoders, supported by the ILC 2050 BI

Communication terminals	Designation	Order no.
RS-232, RS-485/422 serial communication, can be parameterized	IB IL RS UNI-PAC	2700893
RS-232 serial communication – ECO version	IB IL RS 232-ECO	2702795
RS-485 serial communication – ECO version	IB IL RS 485-ECO	2702141
DALI master including power supply unit	IB IL DALI/PWR-PAC	2897813
DALI master, extension	IB IL DALI-PAC	2897910
DALI master including power supply unit, multi-master capable	IB IL DALI/MM-PAC	2700605
M-bus master	IB IL MBUS-PAC	2701927

Counter terminals	Designation	Order no.
8-channel S0 encoder counters	IB IL DI 8/S0-PAC	2897020

Niagara 4 product overview

Niagara 4 is an open framework that provides the tools necessary for an easy integration of a building infrastructure management system. The ILC 2050 BI uses the Niagara 4 Framework and is licensed as a device core along with the associated maintenance.

The Niagara 4 Supervisor license is a server-based application that offers the ability to network multiple IP-based controllers. This creates a single, centralized management station for your entire system.

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Niagara 4 license for ILC 2050 BI		
Core and I/O licenses	**Designation**	**Order no.**
5-device core, 250 points (requires maintenance)	NC4-250	2404194
10-device core, 500 points (requires maintenance)	NC4-500	2404195
25-device core, 1,200 points (requires maintenance)	NC4-1250	2404196
100-device core, 5,000 points (requires maintenance)	NC4-5000	2404197
200-device core, 10,000 points (requires maintenance)	NC4-10000	2404198
Maintenance licenses	**Designation**	**Order no.**
NC4-250 – 1-year extension or 18-month initial maintenance	NC4-250-SMA-1YR	2404204
NC4-250 – 3-year extension	NC4-250-SMA-3YR	2404205
NC4-250 – 5-year extension	NC4-250-SMA-5YR	2404206
NC4-500 – 1-year extension or 18-month initial maintenance	NC4-500-SMA-1YR	2404208
NC4-500 – 3-year extension	NC4-500-SMA-3YR	2404209
NC4-500 – 5-year extension	NC4-500-SMA-5YR	2404210
NC4-1250 – 1-year extension or 18-month initial maintenance	NC4-1250-SMA-1YR	2404212
NC4-1250 – 3-year extension	NC4-1250-SMA-3YR	2404213
NC4-1250 – 5-year extension	NC4-1250-SMA-5YR	2404214
NC4-5000 – 1-year extension or 18-month initial maintenance	NC4-5000-SMA-1YR	2404216
NC4-5000 – 3-year extension	NC4-5000-SMA-3YR	2404217
NC4-5000 – 5-year extension	NC4-5000-SMA-5YR	2404218
NC4-10000 – 1-year extension or 18-month initial maintenance	NC4-10000-SMA-1YR	2404221
NC4-10000 – 3-year extension	NC4-10000-SMA-3YR	2404222
NC4-10000 – 5-year extension	NC4-10000-SMA-5YR	2404223

Local I/O of the ILC 2050 BI are counted toward the points of a license.

Niagara 4 Supervisor		
Supervisor licenses	**Designation**	**Order no.**
Supervisor with 0 Niagara network connections	SUP-0	2404065
Supervisor with 1 Niagara network connection	SUP-1	2404136
Supervisor with 10 Niagara network connections	SUP-10	2404165
Supervisor with 100 Niagara network connections	SUP-100	2404157
Supervisor with unlimited Niagara network connections	SUP-UNL	2404158
Maintenance licenses	**Designation**	**Order no.**
SUP-0 – 1-year extension or 18-month initial maintenance	SUP-0-SMA-1YR	2404175
SUP-0 – 3-year extension	SUP-0-SMA-3YR	2404176
SUP-0 – 5-year extension	SUP-0-SMA-5YR	2404177
SUP-1 – 1 year extension or 18-month initial maintenance	SUP-1-SMA-1YR	2404179
SUP-1 – 3-year extension	SUP-1-SMA-3YR	2404180
SUP-1 – 5-year extension	SUP-1-SMA-5YR	2404181
SUP-10 – 1-year extension or 18-month initial maintenance	SUP-10-SMA-1YR	2404183
SUP-10 – 3-year extension	SUP-10-SMA-3YR	2404184
SUP-10 – 5-year extension	SUP-10-SMA-5YR	2404185
SUP-100 – 1-year extension or 18-month initial maintenance	SUP-100-SMA-1YR	2404187
SUP-100 – 3-year extension	SUP-100-SMA-3YR	2404188
SUP-100 – 5-year extension	SUP-100-SMA-5YR	2404189
SUP-UNL – 1-year extension or 18-month initial maintenance	SUP-UNL-SMA-1YR	2404191
SUP-UNL – 3-year extension	SUP-UNL-SMA-3YR	2404192
SUP-UNL – 5-year extension	SUP-UNL-SMA-5YR	2404193

## Analytics and control in the palm of your hand

Ongoing communication with customers and partners worldwide

Phoenix Contact is a global, market leader based in Germany. Our group is known for its future-oriented components, systems, and solutions in the fields of electrical engineering, electronics, and automation.

With a global network reaching across more than 100 countries and 14,500 employees, we can stay in close contact with our customers, something we believe is essential to success. The wide variety of our innovative products makes it easy for our customers to find future-oriented solutions for multiple applications and industries. We especially focus on the fields of energy, infrastructure, process, and factory automation.
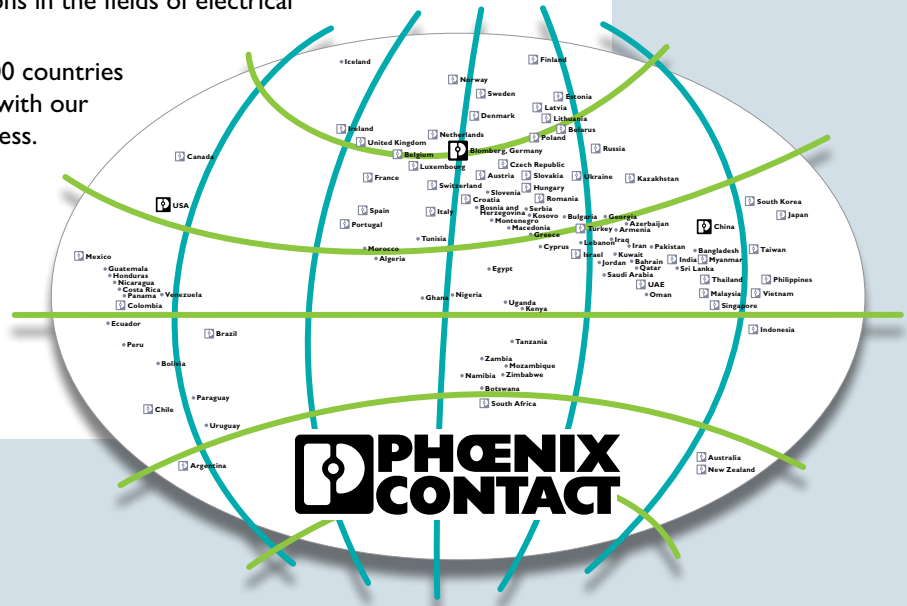
You will find our complete product range at:

www.phoenixcontact.com

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