Industrial cloud computing

**Open to the world, succeed securely –
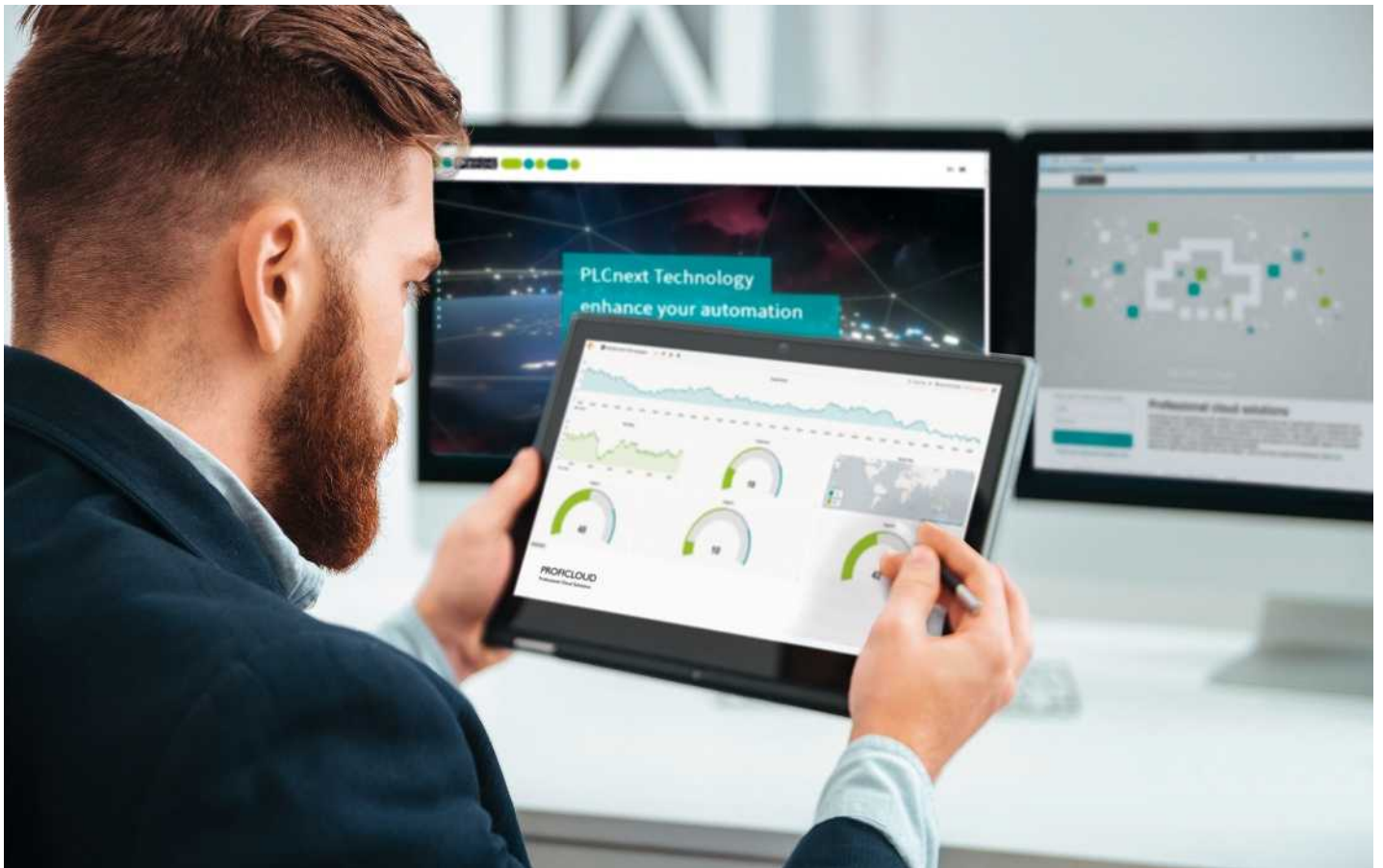New market opportunities with
Proficloud**

Proficloud from Phoenix Contact offers
comprehensive cloud solutions that are
tailored to your needs. Network your
production and development operations
worldwide beyond enterprise boundaries.

As an open, scalable IoT platform,
Proficloud offers intelligent communication,
networked control technology, smart cloud
services, and comprehensive data analysis.
The platform delivers the highest level of
security. Proficloud solutions meet the new
requirements of automation and enable
new digital business models.

Make the right decisions today for your
future and join us in the world of Proficloud.

**Future-proof automation
with Proficloud**

To implement the guiding principles of the IoT, machines and facilities around the world must be comprehensively networked, and field devices equipped with additional cloud services. This is the only way to exchange data easily, safely, and reliably and to integrate external information into the overall solution. Implementation using the open and scalable Proficloud IoT platform ensures the required performance and flexibility in your automation solutions.

Big data applications

With Proficloud, you can capture your machine and system data from anywhere in the world and combine large volumes of data from different sources. Using modern data analysis as a foundation, you can make informed decisions, produce forecasts, and improve your operations process control.

Integration of services

Cloud services can be easily integrated into your automation solution. Extend your applications with services such as monitoring, reporting, energy data management, calculations, and predictive maintenance. You can do this using existing cloud services from our range, or create your own individual cloud services with our Software Development Kit.

Consistent security concept

A deeply integrated security concept provides you with maximum security. The Trusted Platform Module (TPM) for secure encryption management protects against unauthorized access to stored data. All data is transmitted with TLS 1.2 (Transport Layer Security) encryption and authentication.

Cloud services

With the Time Series Data (TSD) and PROFINET cloud services, Phoenix Contact provides you with cloud-based automation solutions that are perfectly tailored to your company's requirements. You can thus benefit from rapid value creation and full cost transparency, thanks to pay-per-use billing.

Your advantages:
– Maximum availability, as you can access your data anytime, anywhere
– Openness, as you can develop your own cloud services for Proficloud and operate them in Proficloud
– Flexibility, thanks to the ability to integrate new functions and technologies quickly and easily
– Scalability, thanks to dynamic IT services that can be quickly and individually adapted to your requirements
– Secure and certified communication, thanks to TLS encryption

TSD and PROFINET cloud services

Time Series Data (TSD) cloud service

PROFINET cloud service

Time Series Data (TSD)

Time Series Data enables you to capture, evaluate, and visualize the process data from your machines and systems. This forms the basis for predictive maintenance and other big data applications. Thanks to web-based dashboards, you have access to your data anywhere and at any time.

The TSD service provides simple and user-friendly device management. In addition to the Cloud IoT Gateway, other devices from Phoenix Contact can be integrated into the solution and managed, e.g., the PLCnext Control AXC F 2152 controller. Using a UUID (Universally Unique Identifier), each component can be clearly identified and integrated into Proficloud. Once the devices have been added to Proficloud, the transmitted data appears in the cloud immediately. Just a click of the mouse takes you to the TSD Analytics application, which you can use to configure custom dashboards online.
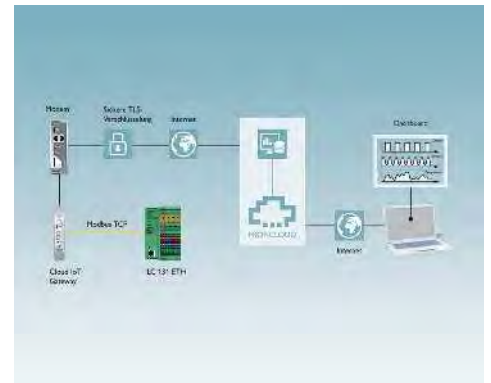
Phoenix Contact offers other devices with Modbus/TCP communication. These include small-scale controllers from the Inline product family and energy measuring devices from the EMpro series. When used in conjunction with the Cloud IoT Gateway, any data from the controller can be stored in Proficloud. You can then analyze the data there, in order to identify optimization potential in the system, for example.
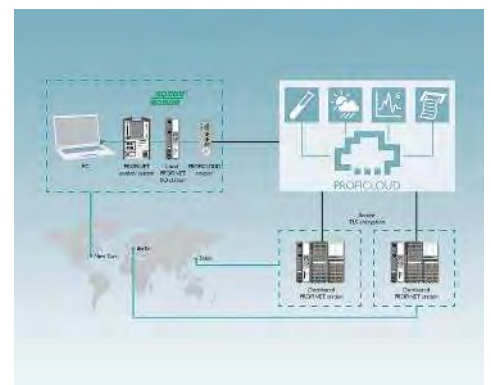
PROFINET

Easily connect your existing PROFINET network to the cloud. Benefit from the advantages, e.g., for remote applications or when using services such as monitoring, reporting or calculation.

Thanks to the innovative linking of proven automation standards and current IT technologies, Proficloud enables you to bring the PROFINET fieldbus system to the cloud. This means that you can now monitor the state of your remote systems distributed around the world no matter where you are. By evaluating the data that is collected, potential failures can be detected in good time, thereby avoiding unnecessary costs and work.
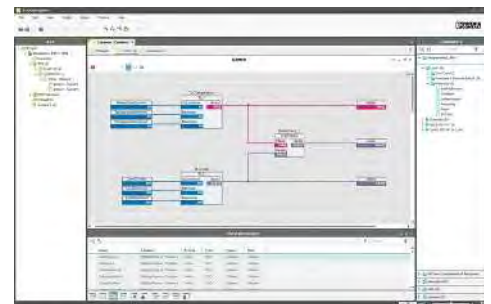
Proficloud-capable controllers at distributed locations connect to Proficloud via the Internet. Thanks to the patented technology, the Proficloud coupler provides easy access to the distributed controllers from the local network – without the need for further configuration or additional programming.

Grafana web-based dashboard

Cloud IoT Gateway

The Cloud IoT Gateway connects new and existing systems to the Internet of Things without interfering with the automation logic. The Gateway collects and processes sensor and process data, and transmits it to Proficloud. This data can be used, for example, for machine monitoring or data analysis.

Features:
– Direct connection to Proficloud, the open IoT platform
– Easy configuration, thanks to web-based management
– Various protocols supported, e.g., Modbus/TCP
– Robust hardware for use in the industrial environment
– Secure transmission, thanks to TLS (Transport Layer Security) encryption
– Dashboard for easy visualization of sensor and processor data

PROFICLOUD
Professional Cloud Solutions

Cloud IoT Gateway

Technical data	
Interfaces	
Ethernet	2 x RJ45
RS-232	COMBICON connector
RS-485	1 x COMBICON connector
USB 2.0	1 x USB type C
IEC 61131 runtime system	
Processor	Arm® Cortex®-A8 1x 600 MHz
Power supply	
Supply voltage	24 V DC -20% / +15%
Supply voltage range	18 V DC ... 30 V DC
Typical current consumption	200 mA
General data	
Dimensions W / H / D	22.5 mm / 99 mm / 114.5 mm
Degree of protection	IP20
Ambient temperature (operation)	-25°C ... 55°C up to 2000 m above mean sea level

Ordering data			
Description	**Type**	**Order No.**	**Pcs./Pkt.**
Cloud IoT Gateway for integrating new and existing systems into Proficloud without additional engineering effort	CLOUD IOT GATEWAY	1031235	1

Software Development Kit

With Proficloud you can network your production systems across locations. The Software Development Kit (SDK) allows you to freely program individual cloud services.

Your advantages:
– The PROFINET network can be extended to include individual cloud services
– Free programming possible with the SDK in Java

Software Development Kit

Ordering data		
Description	**Type**	**Order No.**	Pcs./Pkt.
Software Development Kit, for freely programming individual cloud services	CLOUD SDK4J	2404475	1

Cloud credits

Different cloud credits are available for using devices in Proficloud. The credits are simply activated in the cloud application. Thanks to the pay-per-use model, you have full control of costs and are not locked into a fixed contract.

Cloud credits for Proficloud

Ordering data		
Description	**Type**	**Order No.**	Pcs./Pkt.
Cloud credits, for using devices in Proficloud			
- Credit: 8760 units	CLOUD CREDIT-1	2402989	1
- Credit: 17,520 units	CLOUD CREDIT-2	2402988	1
- Credit: 43,800 units	CLOUD CREDIT-5	2402987	1
- Credit: 87,600 units	CLOUD CREDIT-10	2402986	1

Industrial cloud computing

Professional cloud solutions

Cloud controller for PROFINET service

The cloud controller is based on the modular Axiocontrol controller. It is connected to the Internet and links to Proficloud.

Features:
– Cloud controller for decentralized use of I/Os
– Numerous protocols supported such as: http, https, FTP, SNTP, SNMP, SMTP, SQL, MySQL, DCP, etc.
– Free engineering with PC Worx Express (IEC 61131-3)
– Up to 63 Axioline F I/O modules can be aligned directly
– Integrated UPS for targeted shutdown of the application
– Configuration via USB
– Web server HTML5 and JAVA
– SD card up to 2 GB as optional plug-in parameterization memory
– 2 x Ethernet interfaces (integrated switch)
– Increased resistance to EMI

PROFICLOUD
Professional Cloud Solutions

Cloud controller for PROFINET service

Technical data

Interfaces	
Axioline F local bus	Bus base module
Ethernet	2 x RJ45 socket
USB 2.0	1 x Micro USB type B
AXIOBUS master	
Number of supported devices	max. 63
IEC 61131 runtime system	
Programming tool	PC WORX
Processor	Altera Nios II 100 MHz
Processing speed	1.3 ms (1 K mix instructions)
	90 µs (1 K bit instructions)
Program memory	1 Mbyte
Mass storage	1 Mbyte
Retentive mass storage	48 kByte (NVRAM)
Number of control tasks	8
Real-time clock	Yes
Power supply	
Supply voltage	24 V DC
Supply voltage range	19.2 V DC ... 30 V DC
Typical current consumption	125 mA
General data	
Dimensions W / H / D	45 mm / 125.9 mm / 74 mm
Degree of protection	IP20
Ambient temperature (operation)	-25°C ... 60°C

Ordering data

Description	Type	Order No.	Pcs./Pkt.
Axiocontrol for communication with Proficloud, for direct control of Axioline I/Os, with 2 Ethernet interfaces, programming options in accordance with IEC 61131-3, complete with connector and marking field			
	AXC CLOUD-PRO	2402985	1

Accessories

	Type	Order No.	Pcs./Pkt.
Parameterization memory, Flash card without license			
- 2 GB	SD FLASH 2GB	2988162	1
- 512 MB	SD FLASH 512MB	2988146	1
- 2 GB	SD FLASH 2GB APPLIC A	2701190	1
- 512 MB	SD FLASH 512MB APPLIC A	2701799	1
Programming cable			
	CAB-USB A/MICRO USB B/2,0M	2701626	1
Function modules	See page 55		

Cloud coupler for PROFINET service

The cloud coupler securely connects the local PROFINET network to Proficloud via the Internet. Furthermore, the cloud coupler protects the local PROFINET network against unauthorized access from the Internet by means of two independent network interfaces.

Features:
– Web-based management
– Emulates up to 15 Proficloud devices
– The PROFINET network can be extended to include cloud services, without requiring any additional specialist knowledge
– Secure communication, thanks to TLS 1.2 encryption

PROFICLOUD
Professional Cloud Solutions

Cloud coupler for PROFINET service

Technical data	
Computer data	
Operating system	Linux
Interfaces	2x USB 2.0
Network	2x Ethernet (10/100/1000 Mbps), RJ45
Power supply unit	24 V DC ±20%
General data	
Dimensions W / H / D	155 mm / 145 mm / 49 mm
Degree of protection	IP20
Ambient temperature (operation)	0°C ... 50°C
EMC note	Class A product, see page 527

Ordering data			
Description	**Type**	**Order No.**	**Pcs./Pkt.**
Cloud coupler, for connecting the local PROFINET network to Proficloud	**CLOUD COUPLER-PRO**	**2402990**	1

Cloud components for PROFINET

With the help of cloud components for PROFINET, virtually all of the information provided via the cloud can be communicated directly to the field level. For example, you can transfer ERP task data directly from Proficloud to your production system via the PROFINET protocol. Taking the indirect route, via other levels in the automation pyramid, is no longer necessary.

The system coupler cloud component connects two PROFINET networks via Proficloud.
The calculation cloud component can be used to move complex calculations to the cloud. This takes the load off local hardware and reduces costs.
The weather cloud component provides weather data from the cloud. This means that a physical weather station is no longer necessary, for example.

PROFICLOUD
Professional Cloud Solutions

PROFICLOUD
Cloud Service

Cloud components for PROFINET

Ordering data			
Description	**Type**	**Order No.**	**Pcs./Pkt.**
License, for using a system coupler in Proficloud	**CLOUD SERVICE/SYSTEMCOUPLER**	**2404449**	1
License, for performing calculations in Proficloud	**CLOUD SERVICE/CALC**	**2403326**	1
License, for using meteorological information in Proficloud	**CLOUD SERVICE/WEATHER**	**2403325**	1