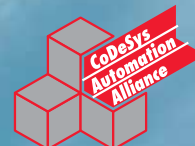


Powerful Modular PLCs



xSystem

Automation products, system solutions and services. The recognised brand name all around the PLC, enhancing the performance of machines and systems.

PC based HMI-PLC and PLC

Embedded HMI-PLC

Modular PLC

Compact PLC

HMI

Remote I/O

Operator and control relays

Product Information Modular PLCs XC100/XC200

MOELLER 

We keep power under control.

Moeller – Electrifying Efficiency

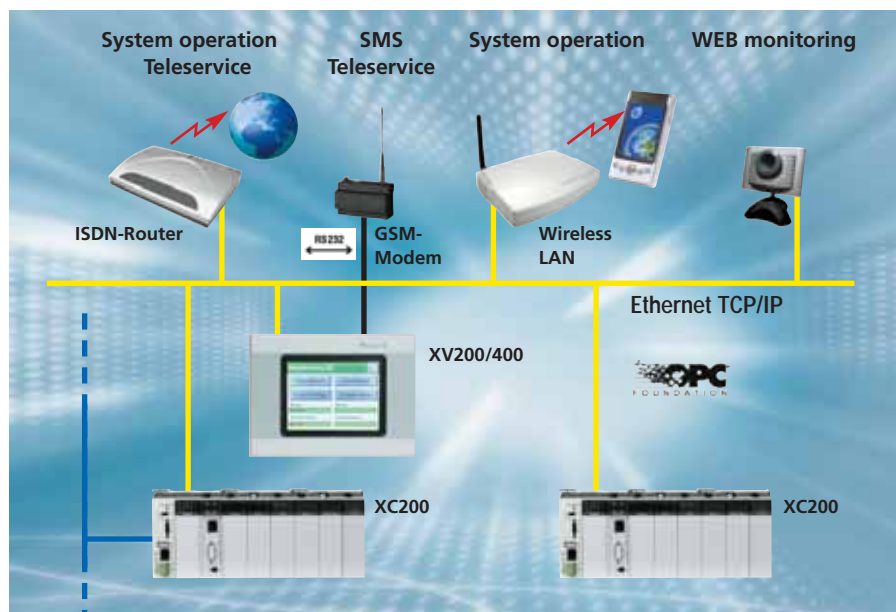


For switching and protecting, commanding and controlling, signalling and visualization, Moeller offers holistic solutions, guaranteed from a single source. The benefit for you: optimum compatibility. After all, the problem-free mechanical, electrical and digital combinability of products not only ensures the greatest possible flexibility but is also highly economical, ensuring fast, individual and cost-efficient solutions.

Flexible automation – XC100/200 modular PLCs

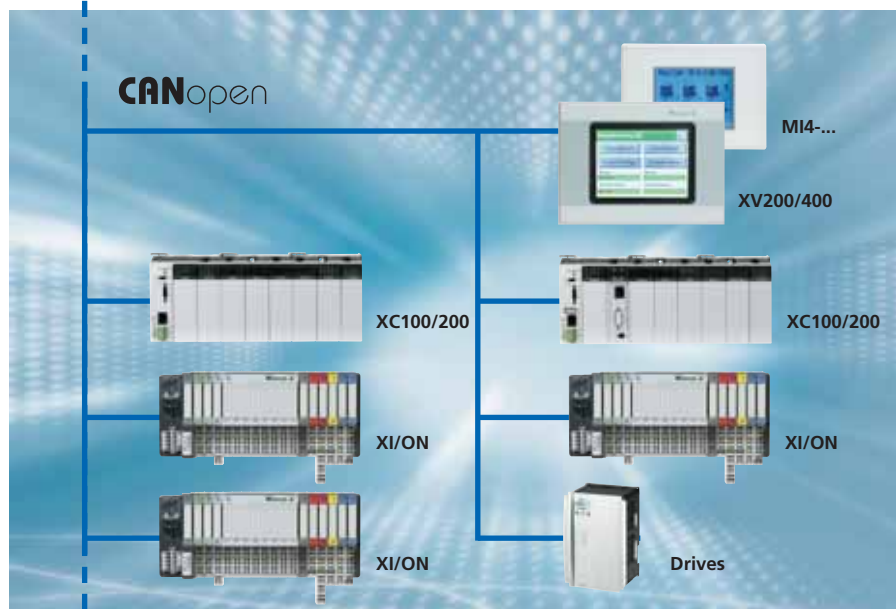
Modular PLCs stand out on account of their flexibly scalable design. This offers users the flexibility required to create individual automation systems of their own. Another important feature is their ability to be integrated in modern communication concepts. Ethernet access is

indispensable for a large number of applications: for efficient communication between the controllers on the one hand, and for data exchange to higher-level control systems on the other, using communication standards such as OPC.



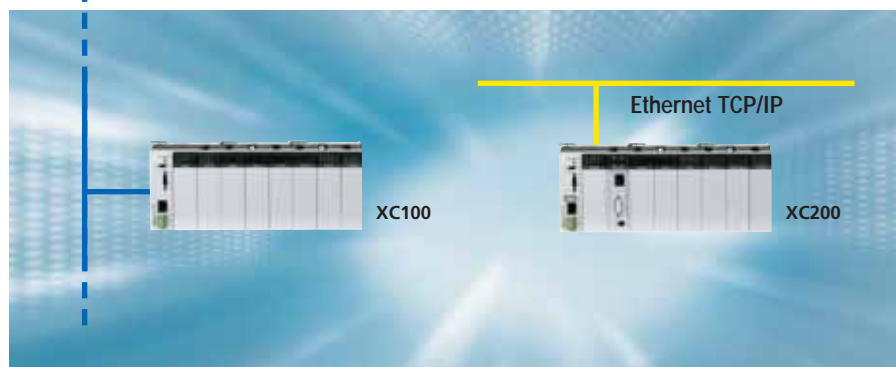
Ethernet on board

The 10/100 Mbit Ethernet interface of XC200 guarantees the perfect connection to IT communication. Whether for fast programming access, data exchange between the PLCs, web server or OPC server: it couldn't be simpler.



Integrated CANopen interface

The CANopen fieldbus system is designed for fast and efficient communication. The integrated CANopen interface enables the XC100 and XC200 to communicate with a wide range of devices, such as remote I/O, drives or visualisation systems.



Simple modular expansion

The XC100 and XC200 can naturally also be used as conventional modular PLCs for compact applications. This is made possible by the high channel density of 32 I/Os per module.

XC100/XC200

The System

Analog I/O modules

- 4 or 8 analog inputs (current / voltage)
- 2 or 4 analog outputs (current / voltage)
- Analog mixed modules 2/1 or 4/2 analog inputs/outputs

Communication modules

- Profibus DP Master
- Profibus DP Slave
- Suconet K Master
- Suconet K Slave
- Modbus Master/Slave
- Transparent serial communication



RS 232

Suconet K

CANopen

Ethernet TCP/IP

USB



Controllers

- XC-CPU100 with 64, 128 or 256 KByte program memory
- XC-CPU200 with 256, or 512 KByte program memory
- RS232 and CANopen
- Ethernet, USB and web server (with XC-CPU200)
- Slot for MMC card



XI/OC modules

- Up to 32 channels on 30 mm
- Either spring-loaded or screw terminal
- Up to 15 XI/OC modules on one XC
- Toolless exchange

Moeller Software

Moeller CoDeSys - IEC 61131-3

- Programming of the XC100/200

I/Oassistant

- Engineering / configuring
- Parameterisation / monitoring
- Commissioning

Base modules (backplane)

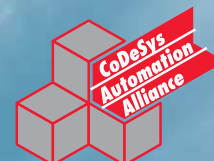
Digital I/O modules

- 8, 16 and 32 digital inputs
- 8, 16 and 32 digital outputs
- AC inputs and relay outputs
- Configurable mixed module

Modular PLC

Powerful Modular Controllers

Tailor-Made for the Application



The XC modular PLCs are available in two CPU versions: the XC100 for small and medium-sized control tasks and the XC200 with Ethernet onboard for additional performance requirements.

All XC controllers have eight digital inputs (of which four are interrupts) and six galvanically isolated digital outputs. CANopen is provided as an integrated interface. Programming access is implemented either via the RS232 interface or alternatively via Ethernet with the XC200.

The XC controllers can be expanded locally with up to 15 XI/OC modules. The XI/OC modules are directly connected with the CPU via a parallel backplane bus, allowing extremely short reaction times.



XC100

The XC100 series modular PLC is a powerful automation system for small and medium-sized applications, and is locally expandable with up to 15 XI/OC modules.

Memory card:

MMC

Integrated fieldbus:

CANopen (500 Kbaud)

OPC server

Additional interfaces:

RS232

XC-CPU101-C64K-8DI-6DO

Program memory 64 KByte

Data memory 64 KByte

XC-CPU101-C128K-8DI-6DO

Program memory 128 KByte

Data memory 128 KByte

XC-CPU101-C256K-8DI-6DO

Program memory 256 KByte

Data memory 256 KByte



XC100-FC

The XC-CPU101 -FC is a modular PLC with an integrated CANopen fieldbus interface using fibre optic technology. It is therefore particularly suitable for use in environments susceptible to severe electromagnetic interference.

Memory card:

MMC

Integrated fieldbus:

CANopen (FO)

OPC server

Additional interfaces:

RS232

XC-CPU101-FC128K-8DI-6DO

Program memory 128 KByte

Data memory 128 KByte



XC200

The modular PLC of the XC200 series offers a high CPU performance and outstanding communication options. This includes an integrated Ethernet interface in addition to an RS232 interface and CANopen fieldbus interface. A technological highlight of the range is that all XC-201...-XV devices come with an integrated web server.

Memory card:

MMC

Expandability:

Up to 15 XI/OC modules

Integrated fieldbus:

CANopen (1 MBaud)

OPC server

Additional interfaces:

RS232, USB, Ethernet

XC-CPU201-EC256K-8DI-6DO*

Program memory 256 KByte

Data memory 256 KByte

XC-CPU201-EC512K-8DI-6DO*

Program memory 512 KByte

Data memory 512 KByte

* -XV for types with integrated web server

Accessories



Memory card:

XT-MEM-MM32M for data, program and recipe memory



Programming cable:

XT-SUB-D/RJ45 (XC100, XC200)
XT-CAT5-X-2 (XC200)



Backup battery:

XT-CPU-BAT1



Rack:

XIOC-BP-XC (for PLC)
XIOC-BP-XC1 (for PLC and 1 XI/OC module)

XI/OC

Simple Expansion



Analog I/O modules



XI/OC - compact I/O and more

XI/OC are local expansion modules for direct connection to all XControl PLCs. Up to 15 modules can be connected directly to each PLC. You can also choose between a wide range of digital, analog and technology functions.

Compact design

Up to 32 I/O points can be connected on only 30 mm mounting width and at a height/depth of 100 mm. This saves space in the control panel and enables the creation of compact automation solutions.

Free selection of terminal design

All connections can be implemented using pluggable screw and spring-loaded terminal blocks.

As well as simplifying pre-wiring, this is also advantageous for exchanging modules quickly.

High-speed analog inputs

A 1 ms conversion time for inputs and outputs of the analog combination modules frees up performance capacity for processing analog signals in your application.

Positioning made easy:

The XIOC-2CNT-2AO-INC counter module allows direct connection of two 5 V incremental encoders, including the power supply. The two integrated +/- 10V analog outputs provide the interface to the drive. The modular XC100/200 PLC, the counter module and the Motion-Control-Toolbox are the ideal tools for implementing efficient and accurate positioning solutions.

Cost-optimised designing

What's the point of integrating unnecessary reserves if there's an alternative? The XIOC-16DX digital combination module offers the flexibility needed. With 4 inputs and 12 freely configurable inputs/outputs you can configure your own I/O level with a cost-optimised and compact design.

Analog input modules

XIOC-8AI-U1	8 inputs, 0-10 V
XIOC-8AI-U2	8 inputs, +/- 10 V
XIOC-8AI-I2	8 inputs, 4-20 mA
XIOC-4T-PT	4 inputs for temperature measuring PT100/1000

Analog output modules

XIOC-2AO-U2	2 outputs, +/- 10 V
XIOC-4AO-U1	4 outputs, 0-10 V
XIOC-2AO-U1-2AO-I2	2 outputs, 0-10 V, 2 outputs, 4-20 mA

Analog combination modules

XIOC-2AI-1AO-U1	2 inputs, 0-10 V 1 output, 0-10 V
XIOC-4AI-2AO-U1	4 inputs, 0-10 V 2 outputs, 0-10 V
XIOC-2AI-1AO-U1-I1	2 inputs, 0-10 V, 0-20 mA 1 output, 0-10 V, 0-20 mA Can be switched individually
XIOC-4AI-2AO-U1-I1	4 inputs, 0-10 V, 0-20 mA 2 outputs, 0-10 V, 0-20 mA Can be switched individually

Digital I/O modules



Digital input modules

XIOC-8DI	8 inputs 24 V DC
XIOC-16DI	16 inputs 24 V DC
XIOC-32DI	32 inputs 24 V DC
XIOC 16DI-AC	16 inputs 230 V AC

Digital output modules

XIOC-8DO	8 outputs, 24 V DC
XIOC-16DO (-S)	16 outputs, 24 V DC
XIOC-32DO	32 outputs, 24 V DC
XIOC-12DO-R	12 relay outputs

Digital combination modules

XIOC-16DX	Configurable inputs/outputs 4 inputs, 24 V DC 12 outputs, 24 V DC
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Counter modules



XIOC-1CNT-100KHZ

1 Counter input up to 100 kHz 24 V DC
2 Digital outputs

XIOC-2CNT-100KHZ

2 Counter inputs up to 100 kHz 24 V DC
4 Digital outputs,

XIOC-2CNT-2AO-INC

2 Counter inputs up to 400 kHz 24 V DC
2 Analog outputs, +/-10 V

Network modules



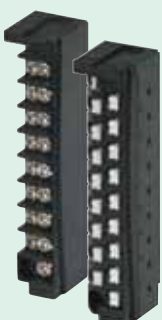
XIOC-SER

Serial interface RS232C, 485, 422

XIOC-DP-M

PROFIBUS-DP Master

Accessories



Connection terminals:

XIOC-TERM-18S
(screw terminals)

XIOC-TERM-18T
(spring-loaded terminals)



Connection cable:

XIOC-TERM-30-CNT4 (for CNT 100kHz)
XIOC-TERM-32 (for 32DI/DO)



Rack:

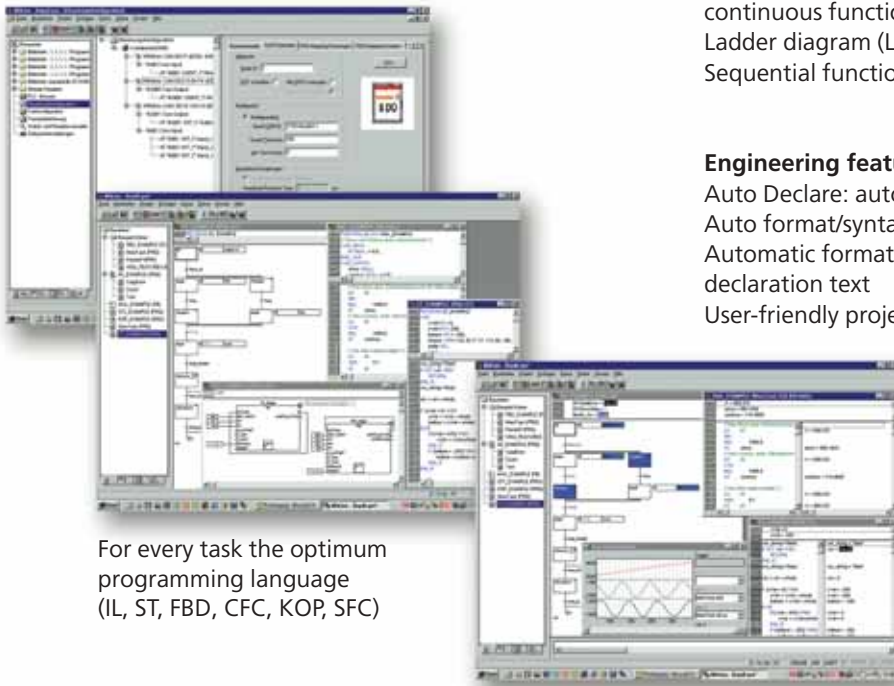
XIOC-BP-2 (for 2 XI/OC modules)
XIOC-BP-3 (for 3 XI/OC modules)
XIOC-BP-EXT (for expansions from 8 modules for 3 XI/OC modules)

Moeller Automation Software: Programming Compliant with International Standards

All Moeller xSystem controllers are programmed with the IEC 61131-3-compliant Moeller CoDeSys programming system. Matured technical features, simple handling and the widespread use of this software in the automation components of different manufacturers are guarantees for success.



Convenient PLC configuration



For every task the optimum programming language (IL, ST, FBD, CFC, KOP, SFC)

Programming languages

- Instruction list (IL) and structured text (ST)
- Function block diagram (FBD)
- Freely definable function block chart/continuous function chart (CFC)
- Ladder diagram (LD)
- Sequential function chart (SFC)

Engineering features

- Auto Declare: automatic variable declaration
- Auto format/syntax colouring
- Automatic formatting and colouring of the code/declaration text
- User-friendly project comparison

Powerful debugging and commissioning tools save time and money

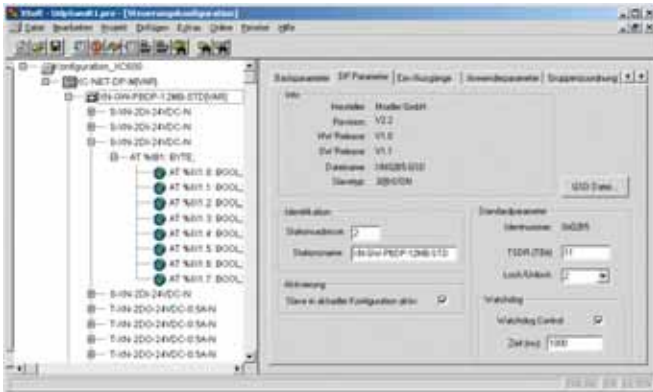
A number of features simplify the creation of applications and are designed for one purpose: cost saving by reducing project design times. A selection of other features: Global search and replace, generation and use of libraries, context-sensitive help, cross-reference list output, checking of unused variables etc.

Debugging and commissioning

CoDeSys offers a number of different important functions to debug, test and commission your control applications quickly and efficiently. All these features are available as soon as you have logged into the PLC (Online mode).

Simulation

You can even test your application program without a PLC being connected. This is offered by the integrated online simulation function. You don't have to leave your usual operator interface, and handling is the same as online mode with the PLC connected.



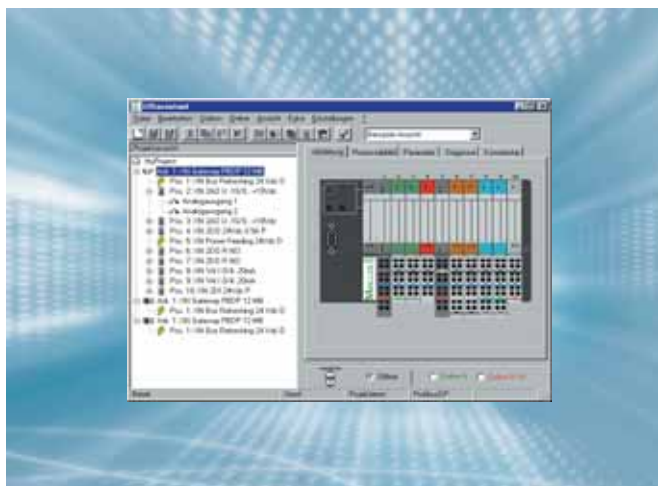
Multi-tasking

Structuring the application into several independent runtime programs (multi-tasking) optimises your PLC resources and simplifies the implementation of time-critical tasks. In this way, you can give fast processes priority and slower processes only as much processing time as is necessary.



Fieldbus configurator included

The XSoft hardware configurator shows all local I/Os and the remote periphery (Profibus or CANopen) on one user interface. You can configure and parameterise the inputs and outputs directly and assign them symbolic names. In this way, assignment errors between the periphery and the IEC program are excluded. You can also test the variables during online operation.



I/O Assistant

Instantly online, instantly viewed, instantly tested: The I/Oassistant provides you with a universal tool that supports you interactively throughout the planning and implementation stage of your remote XI/ON station. First of all, you need to create and structure a project on screen. To do this, you select gateways, electronics/base modules and the appropriate accessories. Then you configure the individual stations either offline or online. Once everything is set to your satisfaction, you can put the system into operation.

Multi-tasking
Up to 16 time and/or event controlled tasks

Visualization
Integrated tool for diagnostics and commissioning

Configuration
Configurator for local I/Os, as well as CANopen and DP stations

Communication
RS232, Ethernet, in distributed networks via CANopen, OPC server, UDP, TCP/IP, FTP client/server, Modbus Master/Slave, Email, SMS

Web page creation
Yes

Password protection
8 levels

Languages
D, GB, F

Libraries
IEC, MMC access, closed-loop control, motion control etc.

Special features
Network variables for cross traffic via CAN and Ethernet
Web page creation

Application Libraries Expand PLC Functionality



True to the principle of "Parameter definition instead of programming", Moeller is offering ready-to-use closed-loop and motion control function block libraries for its PLC devices. All libraries can be imported in the Moeller CoDeSys IEC 61131-3 programming software. These function blocks, which have been quality assured and tested, can then be used as standard or application function blocks inside the PLC program. The user interfaces of the function blocks are largely self-explanatory and can be understood without the manual. The libraries are being continuously further developed and are future-proof with upwards compatibility to new Moeller PLCs.

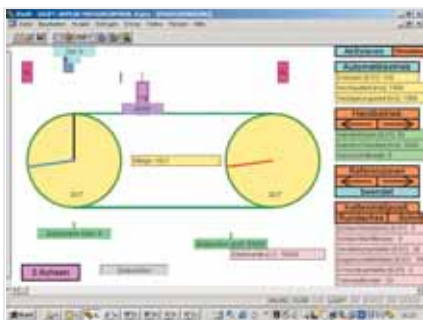
Motion control toolbox

The motion control toolbox contains approximately 40 function blocks that can be individually integrated and adapted to the automation solution in question.

Positioning

Basic positioning function blocks are available for elementary tasks and also more powerful function blocks with the following features:

- Asynchronous point-to-point positioning
- Master-slave positioning (e.g. interpolation)
- Incremental coordinate positioning
- Rotary axis positioning (bending, turning) with optimised paths over the zero point
- Automatic referencing, Manual mode with step width limitation,
- Contouring error, wire break and positioning range monitoring
- Crawl speed zone at the end of positioning
- Compensation of the zero point coverage of hydraulic axes

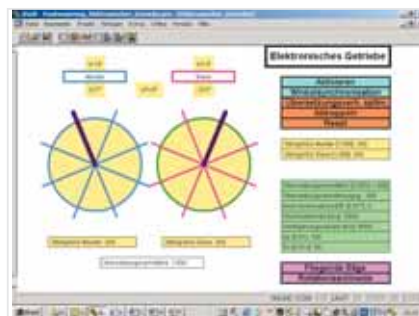


Possible applications include handling tasks in the automobile supplier industry (manufacture of cup springs and spiral springs), winding of spiral springs, cable winding machines, pipe bending, positioning and synchronisation of stages or curtains in theatres.

Electronic gears

An electronic gear system can be implemented with the synchronisation function blocks. Different speeds can be synchronised with any transmission ratio.

Angle synchronisation with online configurable offset between master and slave axes is also possible. Three master axis variants are provided. The internal master is controlled in the same program. The external master is controlled by an external device. An incremental encoder records the motion of the master axis. With the virtual master, the slave axes follow a simulated axis.



Applications include: press synchronisation control with virtual master; angle and speed synchronisation of belts; drawing of weaving materials with 5 slave axes and increasing transmission ratio per axis.

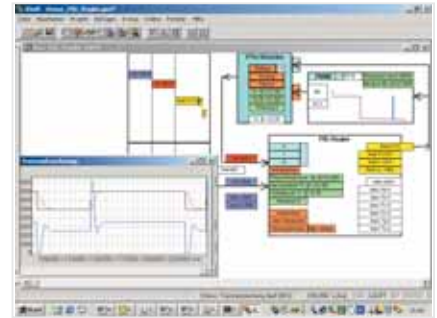
Flying saw

The "flying saw" function is a combination of positioning and electronic gears. Positioning operations are carried out relative to the synchronised motion.

Closed-loop control toolbox

The closed-loop control toolbox contains around 120 function blocks. The standard function blocks allow full utilisation of the closed-loop control know-how implemented, and it is also possible to create special application solutions by combining and cascading function blocks.

PID controllers: The right controller can be selected for any control task. For example, typical heating/cooling temperature controls can be implemented using the split range PID controller. The autotuning controller can be used for the automatic setting of parameters at the beginning of the control process.



Three-point step controller: In addition to the standard PID three point step controller, other robust and easy-to-use versions are available, for which the valve opening time is not important. The scan times of differentiation and integration elements are optimised automatically.

Pulse width modulation (PWM): If the control system does not have an analog actuator, the pulse width modulation function blocks are incorporated behind the PID or fuzzy controllers. Conventional PWM algorithms are available and the noise-shape process with a highly dynamic switching frequency.

Fuzzy control: The fuzzy function blocks enable even inexperienced users to integrate fuzzy systems/controllers in a control concept. Even the gain factor or setpoint of a PID controller can be programmed effortlessly with fuzzy logic.

Signal processing and simulations:

Ramp delay function blocks and PT1 filters can be used to improve signal quality. First to tenth order PTn control systems can be simulated with the toolbox function blocks without an additional software package.

Communication Libraries

Flexible, Versatile and Efficient

Communication functions are increasingly becoming a central element in automation solutions. In addition to the conventional decentralised connections for peripheral devices via fieldbus systems such as CANopen or Profibus, data communication between PLCs or higher-level systems are of major importance. OPC, FTP, TCP/IP, email, web are just some of the technologies here that can be used for data communication or for transferring files.

FTP server: Updating recipe data

XC200 uses a standard file system for internal program storage. This naturally also applies to the pluggable external MMC memory cards or a memory stick connected via the USB interface. Recipe data can be created really easily as a "normal" file, transferred to the PLC and read from there. Recipe data can thus be updated easily via any PC.

FTP client: Sending data archives automatically

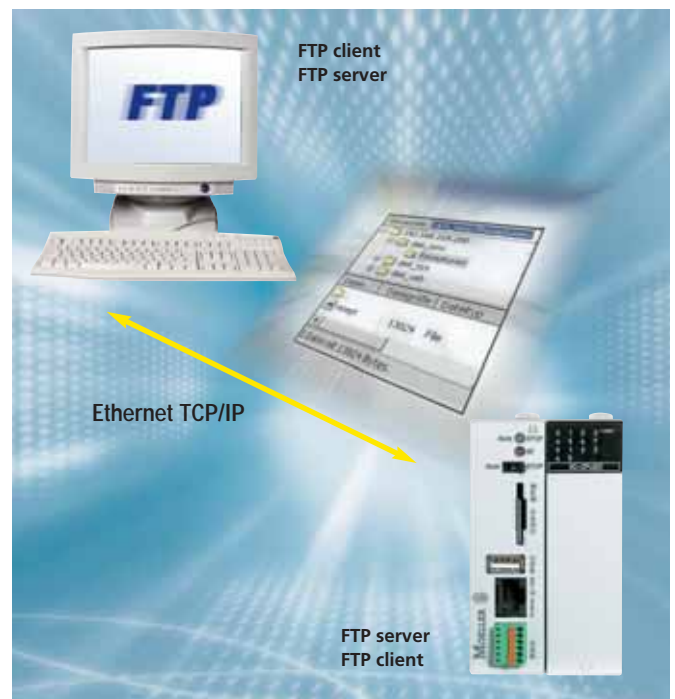
The FTP client function blocks enable files that were created by the PLC to also be stored on any drives that can be accessed via the network. If, for example, the drive is not accessible due to problems on the network, an alternative drive can be accessed. Daily or weekly logs can thus be stored locally and archived at any time. With a few function block calls, files can be saved from the PLC onto a network drive.

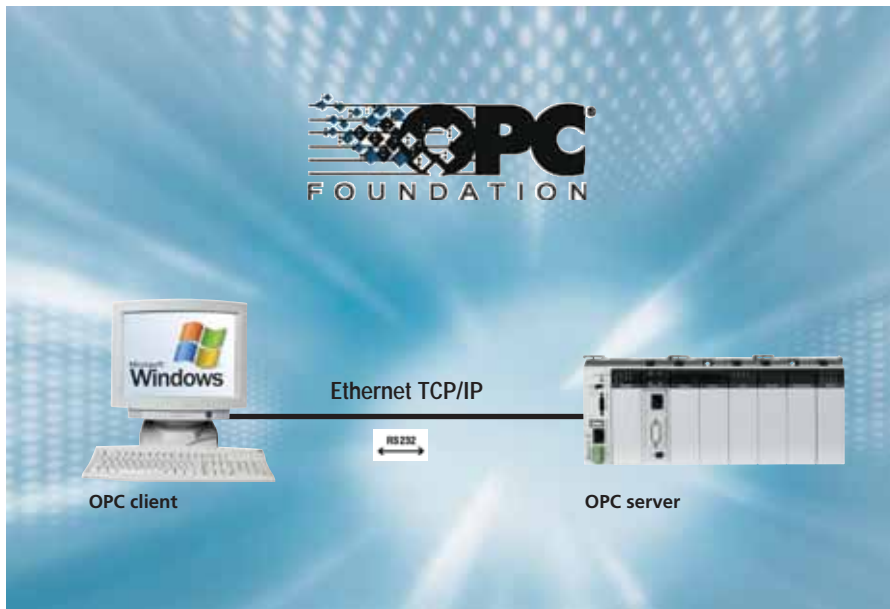
UDP and TCP/IP

UDP and TCP/IP are protocols used on very many operating system platforms, which enable a simple and standard data exchange between the PLC and external systems. This can be other controllers or even PC-based applications

Modbus / TCP

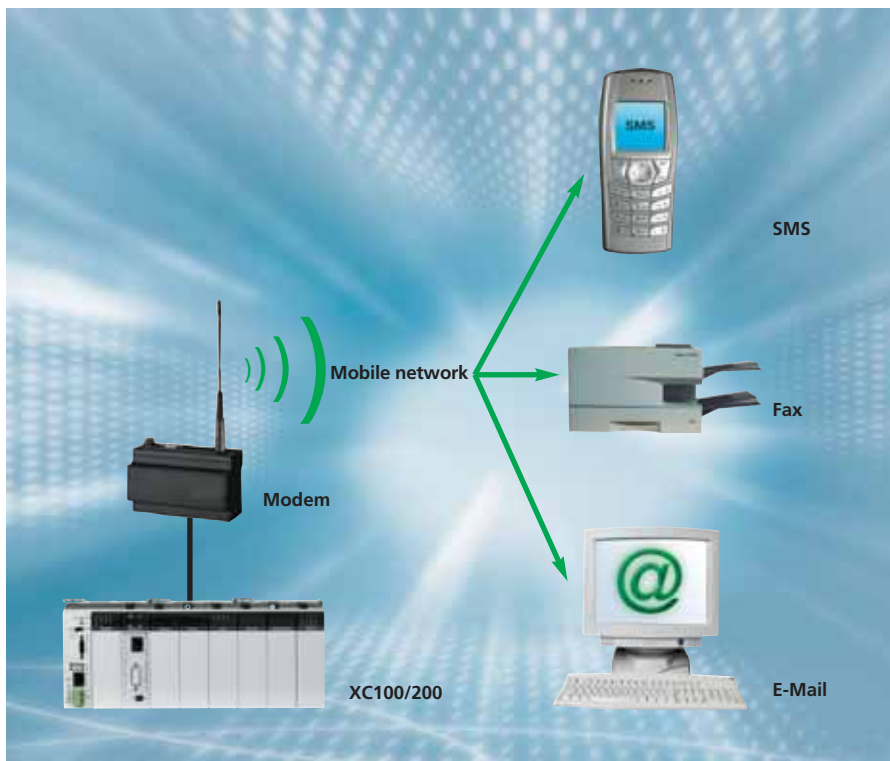
Modbus is communication protocol that is widely used in different communication media. Modbus can be implemented as a serial connection (RS232/485) or as a Modbus IP Ethernet version. Libraries for the masters and also the slave function come as part of the Moeller programming software.





OPC server

Virtually all SCADA, visualization and control systems support the OPC client/server interface. The OPC server is used by the controllers to present the process data to the OPC clients. The OPC server supports data access via the serial interface and via the Ethernet, and each OPC server is able to process requests from several clients. If data is to be used several times, for example by a visualization system or a database, different software packages can access the data of the OPC server without the need for any manufacturer specific conventions or additional implementations.



SMS messaging or email

System states or alarm messages can be sent simply by SMS or email – whether for logging or for direct communication with the service technician. The ready-made user modules provide you with all options you need to be always notified in time about the operating state of the machine or plant.

Further information and downloads are available from:

<http://www.moeller.net/de/support/index.jsp>

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www.moeller.net/address**

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Xtra Combinations

Xtra Combinations from Moeller offers a range of products and services, enabling the best possible combination options for switching, protection and control in power distribution and automation.

Using Xtra Combinations enables you to find more efficient solutions for your tasks while optimising the economic viability of your machines and systems.

It provides:

- flexibility and simplicity
- great system availability
- the highest level of safety

All the products can be easily combined with one another mechanically, electrically and digitally, enabling you to arrive at flexible and stylish solutions tailored to your application – quickly, efficiently and cost-effectively.

The products are proven and of such excellent quality that they ensure a high level of operational continuity, allowing you to achieve optimum safety for your personnel, machinery, installations and buildings.

Thanks to our state-of-the-art logistics operation, our comprehensive dealer network and our highly motivated service personnel in 80 countries around the world, you can count on Moeller and our products every time. Challenge us! We are looking forward to it!

MOELLER 

We keep power under control.