

# Xtra Combinations

## Clever Solutions for Greater Efficiency

We want you to find more efficient technical solutions – with Moeller. To this end, we offer you Xtra Combinations, – products and services for machines, systems and buildings.

The range provides:

- Flexibility and simplicity of combination options
- Great system availability
- The highest level of safety

### **Combination options provide more flexibility**

Our products support flexible combinations through a comprehensive offering, from a single source. The simplicity of the mechanical, electrical and digital product combination options, enables our customers to achieve flexible solutions quickly and efficiently.



### **Optimised combinations**

With scalable and modular products the solutions can be tailored to the requirement. The customer pays only for what he actually needs.

### **Simplicity saves time and money**

All the product developments at Moeller are based on the principle that the results must be easy to combine. This saves our customers time by simplifying planning and engineering, as well as speeding up assembly and facilitating commissioning.

### **Safety for personnel**

In our view, the human being has the highest priority when it comes to the safety of electrical equipment. For this reason we offer a comprehensive range of solutions in connection with personnel protection.



### **Safety for machines, systems and buildings**

Mutually compatible safety concepts protect machines, systems and buildings. Moeller offers graduated concepts for protection – from the simple Emergency-Stop device up to full system and building protection.

### **Safety that prolongs the service life of the machine**

Moeller products have a high standard of safety. They are noted for their durability and dependable quality and are applicable worldwide, since they are built and tested to all the current national and international Standards.

**"Moeller offers a range of products and services that can be optimally combined with one another, and thus optimises the economic viability of machines and systems."**

#### **System availability**

Moeller is well known for its dependable, high-quality products and solutions that ensure operational continuity.



#### **Product availability**

The state-of-the-art logistics operation at Moeller and our extensive dealer network ensures that our products and services are available worldwide, in the shortest possible time.

#### **Service availability**

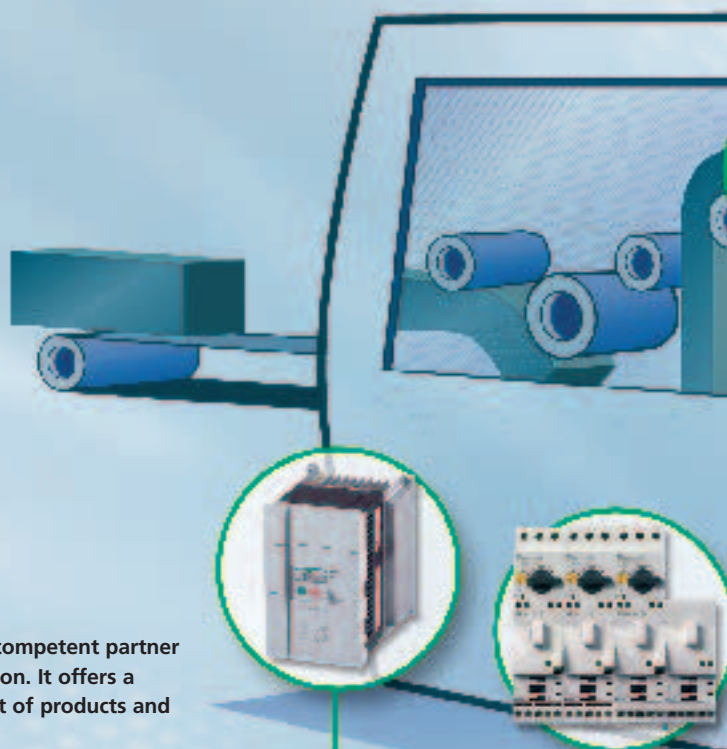
We are at your service wherever you need us. Moeller has a presence in 350 outlets and agencies in 80 countries around the world.



# Products for Industrial Automation – All from a Single Source



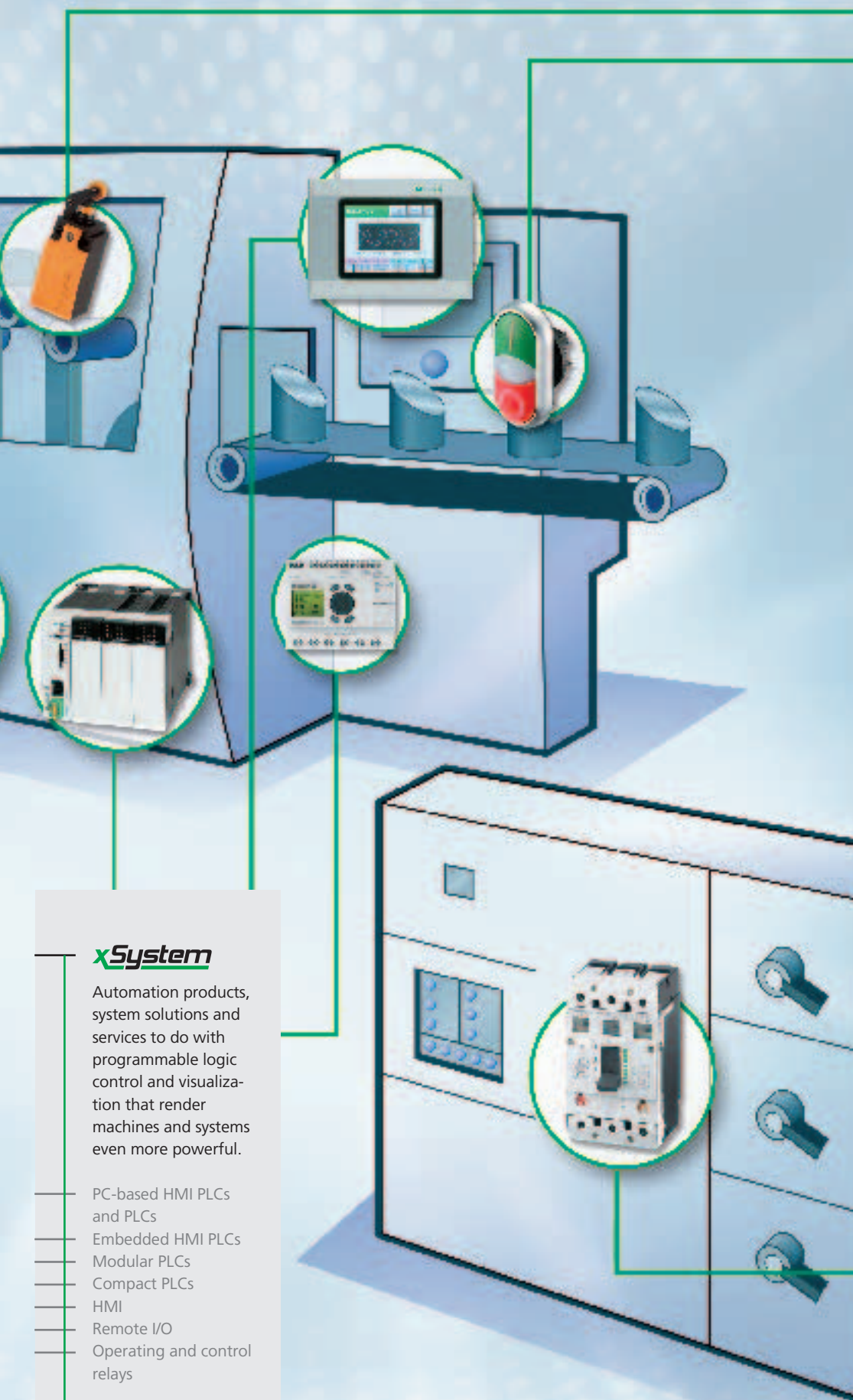
"Moeller is always a competent partner in industrial automation. It offers a comprehensive basket of products and services."



## **xStart**

The complete range for the motor circuit. From the contactor via efficient motor-starters to controlled drives. New solutions that rely on communication.

- DIL contactors
- PKZ motor-protective circuit-breakers
- MSC motor-starters
- DS/DM softstarters
- DF/DV frequency inverters
- Rapid Link



## **xCommand**

Command and signalling – in ergonomic shape and attractive design. Switching control currents reliably and precisely.

- RMQ control circuit devices
- FAK foot and palm switches
- SL signal towers
- LS-Titan position switches
- T/P rotary switches
- ETR timing relays
- EMR measuring relays
- ESR safety relays

## **xSystem**

Automation products, system solutions and services to do with programmable logic control and visualization that render machines and systems even more powerful.

- PC-based HMI PLCs and PLCs
- Embedded HMI PLCs
- Modular PLCs
- Compact PLCs
- HMI
- Remote I/O
- Operating and control relays

## **xEnergy**

Managing, switching, controlling power safely. In industry, in buildings and in machine construction. Innovative protective concepts. Diagnostics and communication built-in. Packaged in state-of-the-art switchgear assemblies.

- NZM circuit-breakers
- IZM circuit-breakers
- Switchgear systems

# If you want efficient solutions, it pays to include Moeller in your plan.

Thinking on. Questioning the established yet again. Shaping the future. This is our philosophy. With more than 100 years of experience. With the passionate desire to make everything that little bit better still. And by concentrating on what we know best: power distribution and automation.

Products, systems and services for greater economic viability and availability in industry. We offer what you need for the future.

## Otto Group

RAPID LINK decentralized drive control technology ensures the material flow in the goods distribution centre at Haldensleben.



**Bayer AG – MAP Ta Phut, Thailand**

MODAN power distribution centre for effective availability in polycarbonate production.

## Klöckner-Hänsel Processing

Automation solutions for the food industry to the International Food Standard.





#### **BMW AG**

Production oriented power supply for motorbike manufacturing in Berlin.



#### **Windflow Technology, NewZealand**

Switchgear with international approvals for application world-wide.

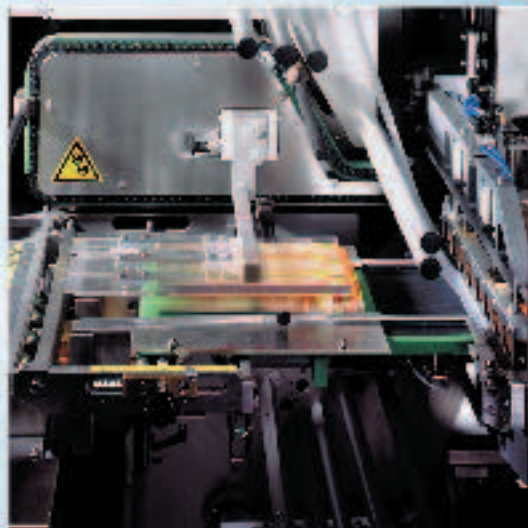
#### **Cologne-Bonn airport**

MODAN provides reliable power distribution round the clock.



#### **Packaging systems from Meurer**

Scaleability and interface flexibility for the automation of modern packaging machines.



# xStart, the New Generation of Motor-Starters With Numerous Benefits



## Powerful drives every time – just in case

The new magnet system is the heart of the contactors. Based on our traditionally extensive engineering expertise, Moeller is again setting standards with this generation of contactors, and at the same time increasing the economic benefits of the product system. This new generation of contactors is equipped with DC

drives, whose energy consumption is electronically matched to the power required in each case.

The new solution, now for the first time also used in the lower rating range, offers customer-orientated benefits: DC and AC contactors are identical in their physical size. This significantly reduces the contactor width – down to match that of protective circuit-breakers. In addition, it enables auxiliary contacts to be integrated into the base units. Moeller has significantly improved the performance of the drives and the ratio

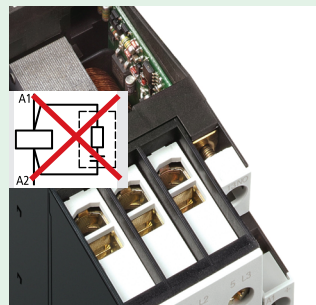
between actual switched load and the auxiliary power required. All the contactor drives with current ratings above 12 A and up to 150 A, i.e. 75 kW motor rating, have a DC sealing consumption of just 0.5 to 1.5 Watt. Furthermore, all the DC drives have a built-in suppressor circuit.

The voltage tolerance of the magnet systems in the DC operated contactors – with 24 V drives – by far exceeds that specified by the Standards, thus providing extraordinary compatibility with electronics and the under-voltage and overvoltage protection necessary for practical application. Furthermore, Moeller offers the option of directly connecting DC operated contactors up to 32 A to many electronic control systems, without additional coupling relays being required.

AC and DC contactors can also be used together. The reduced mounting depth of the DC operated contactors is of great benefit for equipping small and non-standard enclosures. The reduction in component width and width adjustment to match protective circuit-breakers now enable optimisation of the layout in the switchgear cabinet. Motor-starters up to 15 kW now fit on to 45 mm wide busbar adapters.

## High-speed suppressor

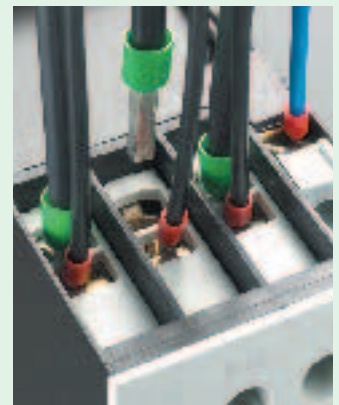
The new standard xStart contactors up to 32 A can be actuated directly from a PLC. The new magnet system for contactors above 12 A is now supported



*aDC contactors have suppressor circuits built in ex factory.*

electronically in such a way that the power consumption of the drive is matched to the power required by the contacts. The power required is greater while the contacts are closing than once they are closed. This power matching also prolongs the contact life, because the absence of surplus energy significantly reduces contact bounce.

Another benefit of the new drives lies in the integration of a high-speed suppressor circuit. The suppressor reduces the breaking voltage peaks of the operating coils to a safe level. This saves having to provide an external suppressor circuit. Contacts between electronics outputs and contactor coils, for



*New dual-chamber box terminals for unequal conductor cross-sections.*

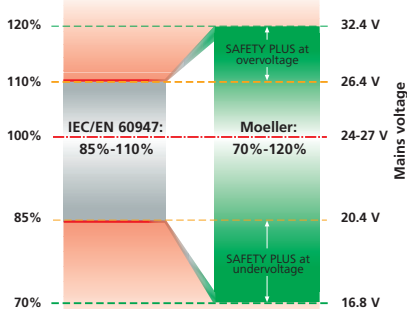
example for safety interlocking are now a possibility.

## Modular tool-less plug connection

xStart drastically reduces mounting and wiring times by allowing standard components to be combined into motor-starters – quickly and without errors. For direct-on-line starters, the user simply push-fits the components together with a click. For reversing starters, the time-consuming wiring of terminal points is reduced. The xStart modular tool-less plug connection offers to users an optional neutral interface between the standard switching devices PKZM0 motor-protective circuit-breaker and DILM contactor in the current range up to 12 A – without any extra cost. The optional interface contacts the corresponding auxiliary and/or main contacts in the switchgear.

The direct-on-line starter, as a complete unit, always consists of a PKZM0 motor-protective circuit-breaker and a DILM contactor. These two components are mechanically linked via a plug-in connection module. A plug-in contact module designed for tool-less connection provides the electrical link between motor-protective circuit-breaker and contactor. This switchgear combination can then be mounted directly on a carrier rail, without the need for an adapter.

## DC coils from DILM17 suitable worldwide



*Reliability even at large voltage fluctuations.*

## New PKZM motor-protective circuit-breakers: pushbutton actuation instead of rocker or toggle

In the new xStart system, Moeller complements its motor-protective circuit-breakers by new contactors with reduced dimensions and lower power consumption. At the same time, Moeller reduces the number of its contactor frame sizes. The system renews and optimises all the motor-starter components in the range up to 150 A.

PKZM is regarded as synonymous with motor-protective circuit-breakers, throughout the world. With the new xStart product system Moeller reintroduces the push-button actuation for PKZM01 (up to 16 A) favoured by customers, while still offering the rotary drive alongside. Another returner is the mushroom button as Emergency-Stop operating element on simple machines. PKZM can be used either open, or in the insulated surface mounting enclosure with high degree of protection, or with flush mounting plate for fitting directly into the machine- or instrument housing. Switches with rotary handles are to be recommended for use in



the switchgear cabinet. Moeller has increased the current range of the PKZM0 to 32 A. Users frequently combine motor-protective circuit-breakers with contactors. For this purpose, Moeller gives all its motor-starters up to 15 kW at 400 V a uniform width dimension of 45 mm. This width is a useful engineering aid for top-hat rail mounting and for fitting to busbar adapters.

In decentralized electrical equipment, PKZM motor-protective circuit-breakers are increasingly being used as main switches or as mains Emergency-Stop switches. Door-coupling rotary handles with door interlocks are available for fitting into control panels. Shaft extensions with centring guide facilitate matching to differing panel depths. The PKZM04 now protects motors up to 65 A. The contactors, DIL M65, suitable for this purpose, have the same width as the switch, i.e. the contactor width has been reduced by about 20 percent.

## The FDT Navigator – the 'turn-key' service station for circuit-breakers



Using the new FDT Navigator software, remote control and remote diagnosis of electronic NZM circuit-breakers becomes completely uncomplicated for the user. The data of the circuit-breakers, networked via Profibus DPV1, are simply read into a connected service PC using the FDT Navigator. The software identifies the NZM types and represents them graphically in a topology.

Data and parameters from the NZM electronics and the connected data management interfaces (DMIs) are downloaded by mouse-click. A complete operating screen – the NZM-XPC-DTM,

opens for each breaker. It displays all the diagnostic and status data, as well as the currents and allows remote parameter definition and remote switching. The user can hereby quickly find out, for example, whether a load warning exists on a circuit-breaker, or whether it has tripped, and at the same time, what the reasons are for the warning or the trip. Using the FDT Navigator, parameter allocation and diagnostics are carried out in seconds via Profibus and Ethernet – without cumbersome diagram generation or assignment of communication variables: simply connect and download the data.

## Electronic position switches: LSE

A very special feature is the world first, the LSE electronic position switch (Limit Switch Electronic). Its freely programmable switching point can be set as required at any time: move to switching position – press the teach-in button – that's it! Two high-speed and bounce-free PNP switching outputs enable high operating frequency. They are protected against overloads and short circuits and are constructed as snap-action contacts. This guarantees a

defined and reproduceable switching point. LSE-Titan devices conform to the criteria of Safety Category 3, in accordance with the Machine Directive EN 954-1, – as do the electromechanical position switches. All the devices are thus suitable also for safety applications for personnel or process protection.



## The Next Generation: easy500, easy700



There is now a new product generation of the successful easy control relays from Moeller: they are more powerful, more versatile and quicker. From the 400 series for small applications, there arises the more efficient series easy500; from series 600 for medium-sized control functions arises the even more potent series easy700.

A control program memory that is up to three times the size of the previous ones, significantly expands the application range of the 'small' and 'medium-sized' easy for the user. Each of the new easy ranges provides 16 more function modules, such as timing relays, counters or analog value comparators. This multiplies the resources. In addition, the two new levels of processing capacity offer four times the processing speed. easy500 and easy700 now include up to four hours-run counters for monitoring the operational, maintenance and, if applicable, down-time intervals of machines and systems. Their contents are retentively stored, and can be erased only via a deliberate reset pulse. The easy control relay stores all the programs, i.e. the circuit configuration with associated function blocks, as well as all the retentive parameters and data in a zero-voltage safe EEPROM.

As with their predecessor products, the easy500 and easy700 with their digital inputs and relay outputs are available for 100 to 240 V AC supply. The 24 V DC supply types have either relay or transistor outputs. The new

control relays now cover two further voltage ranges: all the easy500 and easy700 series devices are also available for 24 V AC and 12 V DC. The signal output is via relays, each of which switches currents up to 10 A.

All the devices are fully downwards compatible.

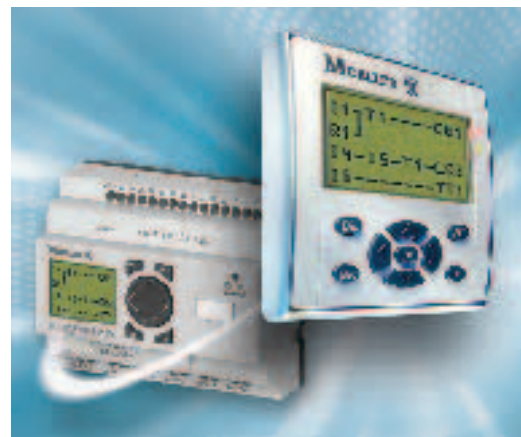
## New arrivals in the MFD-Titan family

The MFD-Titan multifunction display developed by Moeller, belongs to a new generation of automation devices that combines control and visualization functions in one device. The automation specialist from Bonn thus offers a real alternative to present PLC solutions for small to medium size machines.

The new MFD-AC-CP8 power supply and CPU modules now also offer to users 230 V AC versions for their applications.

## easy: Now With Portable, Plug & Play IP65 Display Unit

By means of the new MFD-CP4-500 and MFD-CP4-800 power supply and communication modules, Moeller now offers a portable, plug & play IP65 display unit for all easy500/700 and easy800 applications.



The user connects the MFD-Titan (MFD-80-B or MFD-80) display to the easy control relay via the MFD-CP4

power supply and communication module. For this purpose, a 5 m serial connecting cable that can be cut to length, is already integrated in the MFD-CP4 module ex factory. The display can then be operated at up to 5 m distance from the control relay.

This brings many benefits. There is no need for software or drivers for connection: MFD-CP4 offers a true plug & play function. The I/O circuitry can stay in the control panel. In addition, the display can be simply mounted using 2 x 22.5 mm fixing holes. The display

unit is constructed to IP65 degree of protection, with back-lighting and excellent legibility of the screen.

There are two versions available for easy control relays: MFD-CP4-500 is used for all easy500/700, MFD-CP4-800 for all easy800 and MFD-CP8.

This brings many benefits. There is no need for software or drivers for connection: MFD-CP4 offers a true plug & play function. The I/O circuitry can stay in the control panel. In addition, the display can be simply mounted using 2 x 22.5 mm fixing holes. The display



As with the already familiar 24 V DC version, these too are offered with a power supply/CPU module with easy-NET (MFD-AC-CP8-NT) and one without easy-NET (MFD-AC-CP8-ME). Where the user also needs 230 V AC inputs for his MFD-Titan applications, Moeller now offers the MFD-AC-R16 I/O module in combination with the two MFD-AC-CP8 power supply/CPU

modules. This means that there are now 12 inputs and 4 relay outputs available.

## HMI PLC: XVC600

Moeller designed the touch-screen display HMI PLC from the XVC600 series for the control, operation and monitoring of machines and systems. The XVC600 series introduces Pentium power to the compact class of PC-based HMI PLCs. Moeller has expanded the established features of a device combination consisting of graphics operator panel with touch screen and a powerful compact PLC – without fan or mechanically moving parts – by adding scalability and flexibility.



All the devices are flexible in terms of their installation, because they allow operation at a distance using a compact PC and a DVI monitor. Via the digital DVI standard, the computer (box PC) can then be located at up to 10 metres distance from the display (DVI monitor) without

loss of quality. Users can choose between devices with infrared touch screen or seamless resistive film touch screen. The user programs the controller in accordance with industry Standard IEC61131. Graphics masks can be efficiently and simply configured using the EPAM visualization tool.

Moeller offers all the touch-screen display HMI PLCs with TV split screen. Customers can insert the screen contents of another HMI PLC online into the local device. All the touch-screen functions for the inserted screen contents are then usable without delay or restriction. The split screen technology (VNC remote control) is predominantly designed for telecontrol applications. The control concept of the HMI PLC series (Front IP65) is designed to be open, and can incorporate other manufacturers'

systems like valve islands, I/Os or drives via standard fieldbus interfaces. An Ethernet interface is incorporated.

### Emergency-Stop using xStart-XS1 motor-starters:

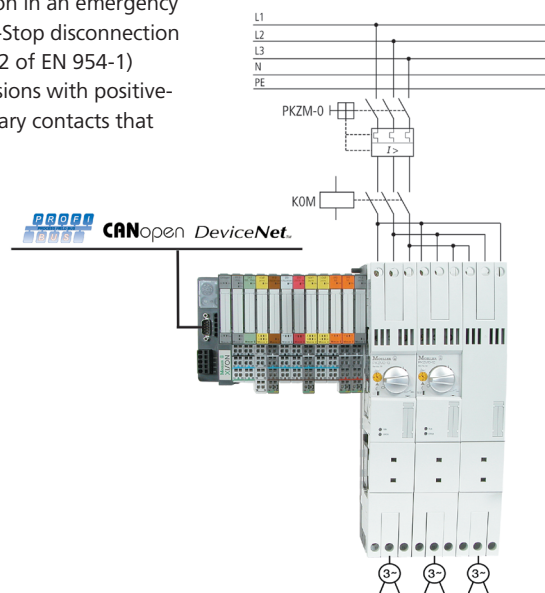
## Safety itself

xStart-XS1 modules confer the benefits of the remote I/O concept to industry-compatible motor-starters. They can be plugged in for direct-on-line as well as reversing starters. Connection to the various fieldbus systems is via the XI/ION gateway. xStart-XS1 motor-starters, as well as protecting motors, also reliably disconnect high short-circuit currents. xStart-XS1 conforms to Type "1" coordination to EN 60947-4-1, which means that persons and systems remain safe in the event of a fault.

Disconnection in an emergency (Emergency-Stop disconnection to category 2 of EN 954-1) requires versions with positive-action auxiliary contacts that

must be additionally connected with an external safety relay. The Emergency-Stop is applied where:

- An immediate disconnection of the power supply does not lead to hazardous conditions,
- Danger can arise for the operator or the machine,
- or the device used to effect the Emergency-Stop (Emergency-Stop actuator) and its supply line are exposed to a special hazard.



## XC200 compact programmable controller with onboard Ethernet

The new XC200 programmable controller impresses not only in classical PLC disciplines such as memory and processing speed (512K program, 256K data, 0.04ms/K). The multitasking operating system makes optimal use of the CPU resources. 8 digital inputs and 6 digital outputs are already provided for connection to peripherals. An incremental pulse encoder can be directly connected for positioning tasks.

Interrupt inputs ensure short response times to critical events. I/O expansion can be implemented via XI/OC modules. XC200 is equipped with a slot for multimedia memory cards. Among other features are the built-in battery-backed real-time clock and up to 32K retentive data.

Of interest to users is also the connection to other peripheral

equipment. One freely programmable serial interface, a CANopen fieldbus master, as well as a 100MBit Ethernet interface for this purpose, are included as standard. In addition, there are connection to the Ethernet, OPC and Web servers.

