

# easyConnect SmartWire – Connecting Instead of Wiring.



## **xStart**

The complete range of contactors, efficient motor starters and variable speed drives for the motor circuit. New, simple to install solutions based on clever communication.

Contactors DIL

Motor-protective circuit-breakers PKZ

Motor starters MSC

Soft starters DS, DM

Frequency inverters DF, DV

Rapid Link

## Product Information easyConnect SmartWire

# MOELLER



We keep power under control.

For Smartwire Sales and Support call [KMparts.com](http://KMparts.com) (866) 595-9616

## **Darwin. The Technological Quantum Leap.**



Moeller's Darwin technology heralds a fundamental change in the conventional control cabinet. A missing link between the automation and switchgear worlds. Switching devices and automation devices are merging. The conventional control wiring between I/O modules and switching devices is being replaced by a new and simple connection technology. The Darwin project covers the entire Moeller product range for the control cabinet in evolutionary stages. The areas affected are controlling, switching, protecting, HMI operations and drives.

It was our customers that set us the objective: the movement away from complex and unmanageable structures that can only be handled by exclusive and expensive specialists towards simple, transparent solutions based on the latest standards.



# Darwin.

## Evolution in the Control Cabinet.

The complete redesign of the control cabinet can naturally only be achieved in evolutionary stages. Not only the PLC but also all the switching devices, the drives and the visualisation have to be included in this project.

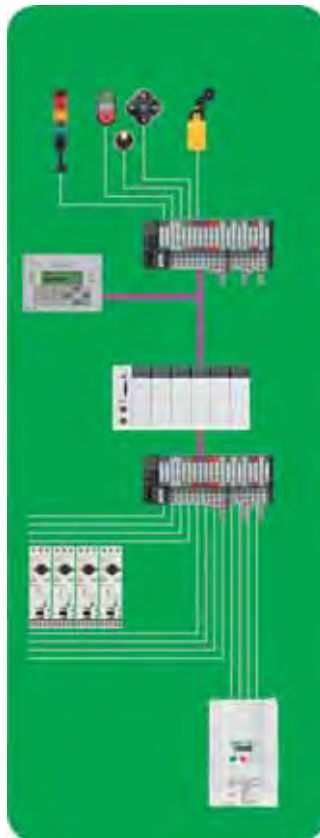
A process which, due to its depth and scope, can only be implemented by a leading manufacturer. Here are the development steps already achieved and those yet to come.



### Yesterday

Every sensor and actuator is wired separately to the inputs and outputs of the central PLC.

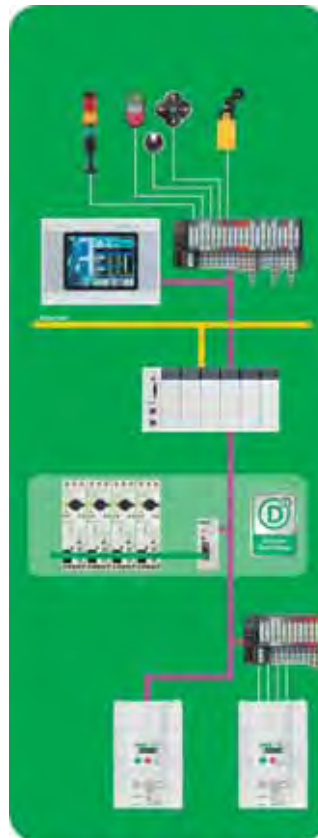
Result:  
High wiring requirements, massive, expensive control cabinets and complex commissioning.



### Today

The sensors and actuators are wired on decentralised pre-processing stations and connected from there to the central controller via a field-bus.

Result:  
Reduced wiring thanks to remote I/Os and fieldbus technology. The control system is distributed over several small control cabinets positioned along the machine. High configuration requirement.



### Today with easyConnect SmartWire

With SmartWire motor starters are connected directly with the PLC. The rest of the wiring is carried out according to current practice.

Result:  
The wiring requirement for contactors and motor starters is considerably reduced as well as the number of remote I/Os, including terminals and connectors, thus preventing wiring faults. The I/O level is transferred directly to the contactor.



### Tomorrow with easyConnect

The control circuit wiring between the controller and the switching devices is completely replaced by easyConnect.

Result:  
All the devices connected with easyConnect function as local and remote inputs/outputs of the easyControl. The system is self-configuring. Wiring faults are prevented.

## Darwin Stage One: "Plug & Work" for Motor Starters.



SmartWire enables switching devices to be connected to a PLC without any complex control circuit wiring necessary. The control circuit wiring between the PLC and the switching devices is completely replaced by pluggable, pre-assembled connection cables. The wiring requirement is drastically reduced and wiring faults thus become a thing of the past. This allows savings in mounting, commissioning and troubleshooting during operation. SmartWire is an addition to the tried and tested Moeller range of switching devices and is designed as an accessory for standard devices. The flexibility of all switching devices is fully retained since even existing system accessories can still be used. The use of standard devices means that inventory costs are not unnecessarily increased and the worldwide availability of spare parts is ensured.





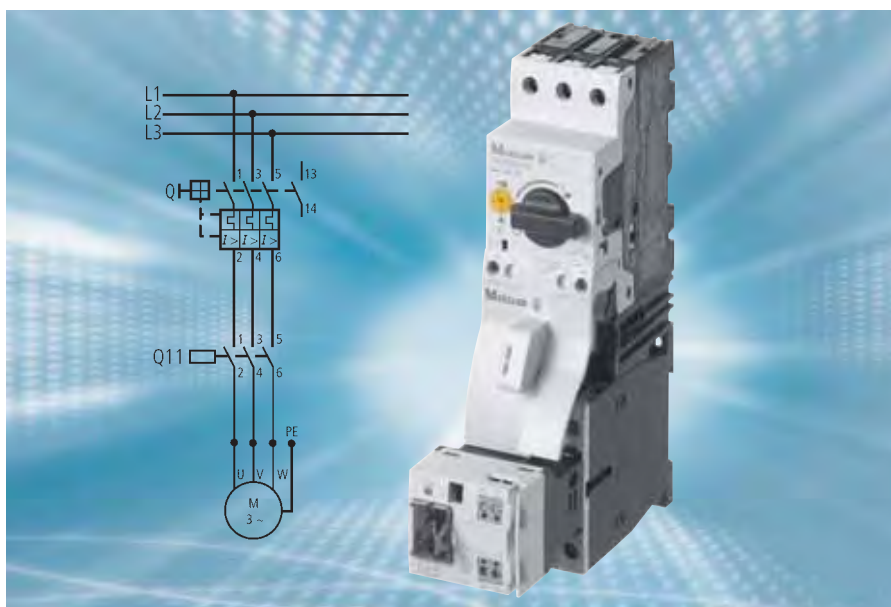
### Replacing the control circuit wiring

The connection of motor starters usually involves the laying of a separate control cable for each individual connection. This means a very high wiring requirement. Experience has shown that every single wire increases the risk of faults during the installation. On the other hand, connecting motor starters with SmartWire offers an astonishingly simple and manageable solution. In order to make a motor starter SmartWire-compatible, the user simply plugs an additional SmartWire module onto the contactor. This module provides a six-pole plug connector that replaces the control circuit connections. SmartWire is simply connected and not wired.



### Eliminating the PLC I/O level

The control circuit wiring is eliminated not only on the switching devices but also on the PLC. This also saves the costs for I/O modules which are now no longer required. Wherever compact design is called for, the space saved provides options for effective control cabinet design. SmartWire also eliminates wiring faults here since only plug connections are used.



### Easy engineering

SmartWire considerably simplifies the engineering of motor starters. Where previously the control circuit wiring had to be adapted individually to the machine or system configuration at hand and the connection of the motor starter to the PLC required an individual circuit diagram, this is now completely unnecessary. Only the main circuit connection to the motor has to be planned separately. Up to 16 SmartWire-enabled motor starters can be connected together and with a gateway without any complex control circuit wiring necessary.

# The System Module for Your Individual Solution.

## Motor starters from standard components



+ Tool-less plug connector

+ SmartWire

+ Tool-less plug connector  
+ SmartWire

+ Three-phase commoning link

+ Tool-less plug connector  
+ SmartWire

+ Busbar adapter

- Conventional wiring

- Saving space and main circuit wiring

- Saving space and main circuit wiring
- Saving control circuit wiring and PLC I/O

- Saving space and main circuit wiring
- Saving control circuit wiring and PLC I/O
- Saving power supply wiring

Machine builders, panel builders and electricians are able to use SmartWire straightaway since the SmartWire system is an addition to the established Moeller range. For example, the SmartWire module for DILM is plug fitted simply like an auxiliary contact onto contactors up to 32 A. The motor-protective circuit-breaker from the standard range is added to create a motor starter. This combination can now be fitted directly to a top-hat rail, extended with a three-phase commoning link or mounted on a busbar adapter. The system accessories for contactors and motor-protective circuit-breakers can still be used. For example, the space-saving SmartWire module for DILM can be used to create motor starters up to 15 kW.





### Emergency-stop

The control voltage for contactors is fed centrally on the gateway. This means that an emergency-stop disconnection of the control circuit can be implemented on the gateway. An emergency-stop disconnection consequently includes the entire motor starter group. A power module enables several emergency-stop groups to be implemented on each gateway. In this case, the power module feeds the control circuit for any selected group of contactors.



### Emergency control

The SmartWire concept also allows the implementation of an Emergency control. The user can make use of the SmartWire module to disable the activation of the contactor via an isolated contact. In this case the contactor is switched on by means of an additional manual operation level. This makes it possible to switch the motor during commissioning on the field level or in the event that the PLC fails.



### One system up to 1600 A

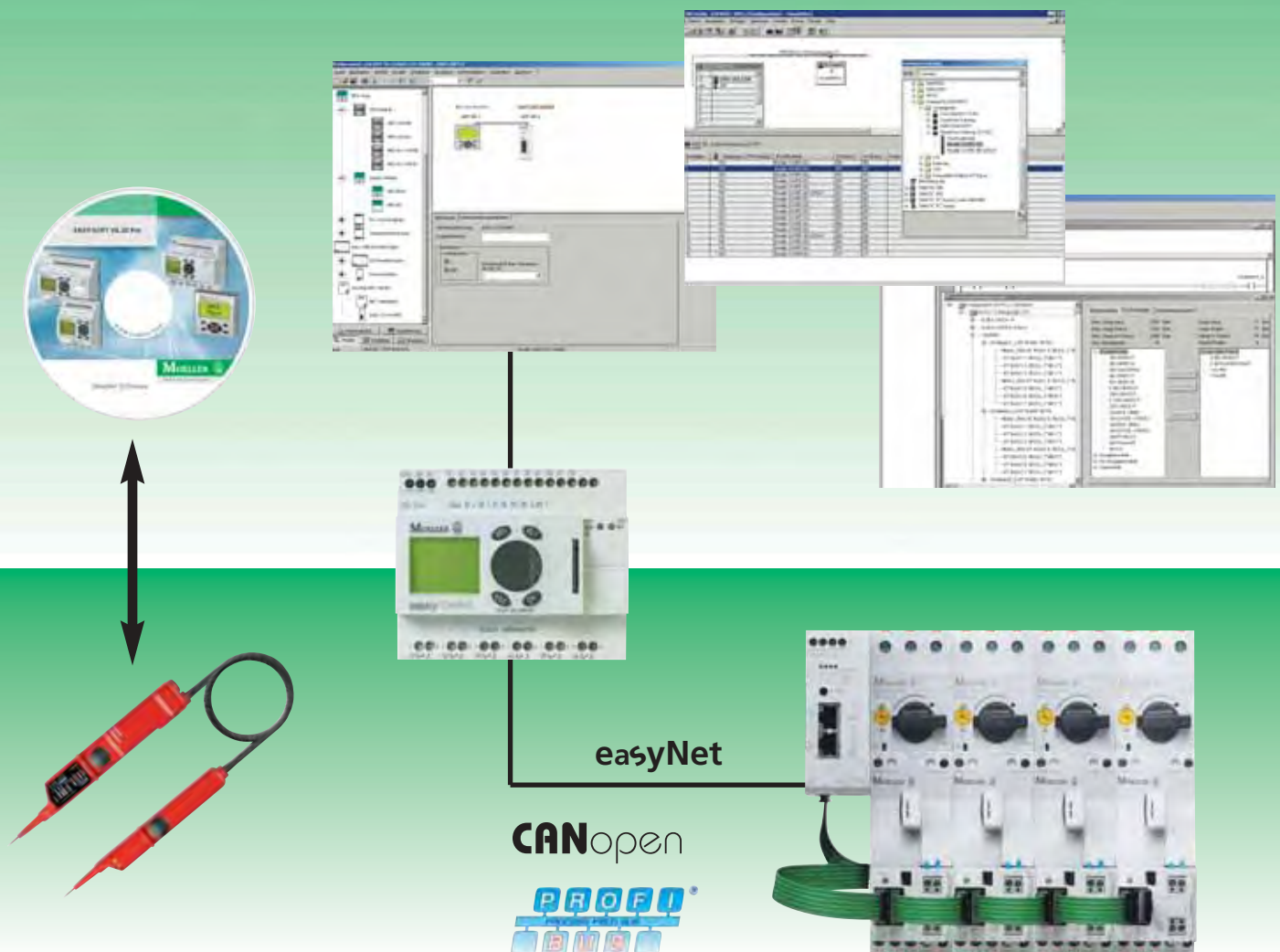
Additional I/O elements can be added to the system for more complex tasks. The modules can be used flexibly: for example, they can also be used to connect up motor starters with ratings higher than 15 kW, to monitor an NZM incoming circuit-breaker or to integrate components from other manufacturers into the system. This does however require some additional wiring.



**micro innovation**  
A MOELLER Company

SmartWire is a self-contained communication concept that is nevertheless designed for openness. The SmartWire interface slice has therefore been added to the tried and tested XI/ON system. In this way, standard Moeller motor starters and contactors can be connected directly to XI/ON as well as a number of different inputs and outputs. On each XI/ON station 3 SmartWire lines can be connected with 16 modules each. The XI/ON SmartWire interface slice is offered by Moeller's subsidiary, Micro Innovation.

## Convenient Configuration and Commissioning.



The motor starters are now no longer addressed manually with coded addresses. As soon as the installation is completed, pressing a button on the gateway is all that is needed and the addresses are assigned automatically. The configuration of the SmartWire modules in the higher-level PLC depends on the fieldbus used and is carried out using standard fieldbus procedures. A Moeller easyRelay, for example, does not require any configuration, and the inputs and outputs on the SmartWire modules are used like easyNet inputs/outputs. With Profibus DP the configuration is created up to the individual SmartWire module with exactly the same procedure that users are accustomed to. On system startup the reference configuration is compared with the actual configuration present on the SmartWire.





### **It all starts with the planning**

SmartWire already helps you in the planning of the control cabinet. The savings made in I/O modules not only means you have more space but also that fewer terminal points need to be designed.

As SmartWire can be combined with standard devices from the xStart range, procurement is kept very simple. Only a few different device types are needed to implement your application solutions with maximum flexibility.

The xStart system module provides the basis for individual and expandable SmartWire solutions. Existing projects can thus be changed to SmartWire later without any problems.



### **Mounting and wiring was never easier**

The familiar DILM contactors and MSC motor starters can still be used in the workshop. To utilise the benefits of these components, a SmartWire module just has to be plugged onto the contactors. In this way, the control wiring is simply replaced by the SmartWire technology. Cables no longer have to be prepared, labelled and wired. The modules on SmartWire are simply addressed with the push of a button.

No specialist knowledge or special tool is required. Commissioning can be carried out without any problems since, with SmartWire, wiring faults are a thing of the past.

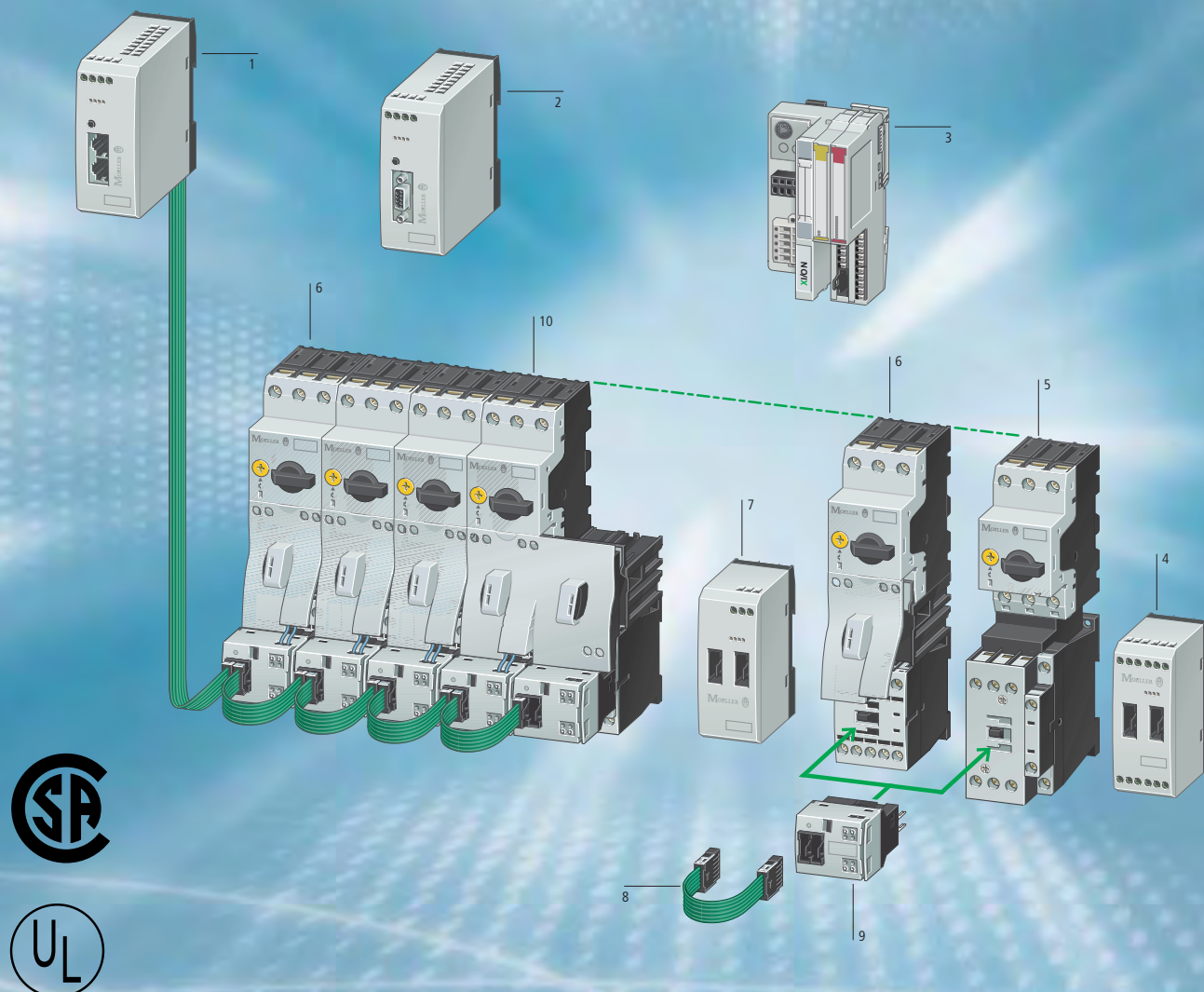


### **User-friendly operation, flexible expansion**

With Darwin technology, the operator is provided with a control cabinet that is clearly designed. Even the first expansion stages using SmartWire reduces the I/O level on the PLC and the wiring of the motor starters. An LED indicates the operational readiness of the SmartWire module. In this way, the cause of a fault can be localised quickly during operation. Exchanging modules is easy to learn since the only tool required is a screw driver. Furthermore, if the switching devices have to be replaced, the use of standard devices simplifies everything.

Later expansions can be carried out without any problems – just plug on the new modules. The modules are configured automatically by pushing a button.

# Simply Select – Extract From the Range.











- |   |   |    |   |
|---|---|----|---|
| 1 | easyNet / CANopen gateway                     | 6  | Direct-on-line-starter MSC-D up to 15.5 A |
| 2 | PROFIBUS DP gateway                           | 7  | Power module                              |
| 3 | XI/ON gateway with SmartWire interface slice* | 8  | Connection cable                          |
| 4 | I/O module                                    | 9  | SWIRE-DIL contactor module                |
| 5 | Direct-on-line-starter MSC-D up to 32 A       | 10 | Star-delta starter MSC-R up to 12 A       |

\* Product available from Micro Innovation GmbH. Information available at [www.microinnovation.com](http://www.microinnovation.com)



# Technical Data

easyConnect SmartWire		
	Description	Type Order No.
<b>Gateway</b> Profibus DP 	Gateway with integrated power supply for the SmartWire modules and control voltage for the switching devices. - Connection to PROFIBUS DP as slave. - Transfer rate: 9.6 Kbit/s to 12 Mbit/s. - 9-pole SUB-D socket. - Address range 1-126. - Connection to SmartWire as master. - Supports 16 SmartWire modules.	<b>SWIRE-GW-DP</b> 107027
easyNet/CANopen 	Gateway with integrated power supply for the SmartWire modules and control voltage for the switching devices - Connection to easyNet or CANopen - Supports 16 SmartWire modules. - Mode selectable: easyNet or CANopen	<b>EASY223-SWIRE</b> 106950
<b>Modules</b> Module for DILM 	SmartWire module for mounting on DILM 7 to DILM 32 contactor - One module is required for each module - Connection to SmartWire as slave. - Max. 16 SmartWire modules per line - 1 digital input for isolated contact - Indication of contactor switch position	<b>SWIRE-DIL</b> 107028
I/O module 	SmartWire I/O module for connecting switching devices over 15 kW - 4 digital inputs for isolated contacts - 2 relay outputs	<b>SWIRE-4DI-2DO-R</b> 107030
Power module 	SmartWire Power module for feeding the control voltage - Connection to SmartWire as passive module (no address)	<b>SWIRE-PF</b> 107029
<b>Accessories</b> Connection cable 	SmartWire connection cable fully made up  Length: 85 mm Length: 110 mm Length: 150 mm Length: 250 mm Length: 1000 mm Length: 2000 mm	<b>SWIRE-CAB-008</b> 107032 <b>SWIRE-CAB-011</b> 107033 <b>SWIRE-CAB-015</b> 107034 <b>SWIRE-CAB-025</b> 107035 <b>SWIRE-CAB-100</b> 107036 <b>SWIRE-CAB-200</b> 107037 <b>SWIRE-CAB-000</b> 107031
Termination plug 	Termination plug for last SmartWire Module, 6-pole, no electrical function.	<b>NHI-E-10L-PKZ0</b> 107040
NHI-E with cable 	NHI-E-10-PKZ0 with connection cable AWG18 blue, for connection to SmartWire module for DILM.	<b>NHI-E-10L-PKZ0</b> 107040

Note: The number of motor starters or DILM contactors to be connected depends on the power consumption of the magnet systems per SmartWire line. Power modules can be used to increase the number of SmartWire modules to be connected.

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Moeller shows the way. For over 100 years. Our latest development is called Darwin Technology – the evolution in the control cabinet. A quantum leap in the merging of switching devices and automation. And thus a leap forward into the technology of the future. For greater efficiency in all stages from planning to commissioning. Open up your control cabinets to the latest and most economical technological solution.  
**Darwin. The easy way to connect.**

**MOELLER**



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