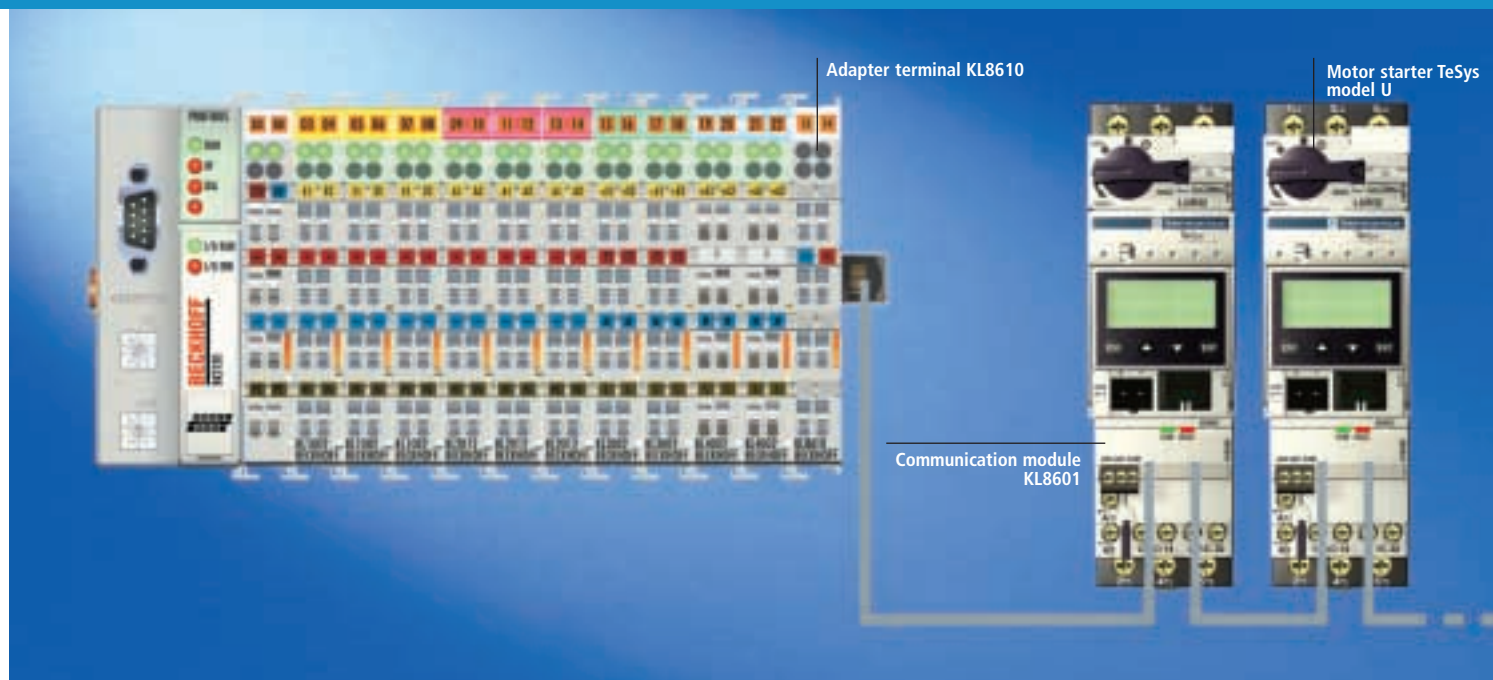


# Compact multi-functional motor starter

→ Builders of control cabinets have been dreaming about it for a long time: Protection and connection combined within a compact design, without having to give up diversity in terms of settings, plus an integrated fieldbus connection, cost savings, and all this with minimum space requirements. Many products try and meet these requirements. This has now been achieved with the motor starter TeSys® model U from Schneider Electric and the Beckhoff KL8601 communication module.



With the product TeSys model U, Schneider Electric takes a completely new route. The newly designed motor starter is a very compact and flexible solution, which is particularly suitable for users who wish to make modifications up to the last minute. The flexibility, with which this motor circuit can be quickly customized at any time, drastically reduces the commissioning effort and also enables cost savings through the simultaneous design of the mechanical and electrical system. A further highlight of this solution is the integration of the motor starter into the fieldbus world. Here, Schneider Electric relies on Beckhoff's experience and I/O product range.

The co-operation between Schneider Electric and Beckhoff is not new. As early as 1999, both companies realized joint products with the "Tego Power" series. Beckhoff's fieldbus know-how was used for the direct connection of contactors and motor protection. Compact modules for Profibus, Interbus, Interbus fibre optic, CANopen, DeviceNet and Fipio are available to customers. The integrated Beckhoff Bus Couplers are internally connected with the motor starters via ribbon cables.

## Schneider Electric worldwide

With approximately 72,200 employees in more than 130 countries, Schneider Electric is one of the leading producers of electrical and automation technology worldwide. Schneider Electric can look back on a company history spanning more than 160 years. The products and services are structured according to the four main markets of power supply, industrial equipment, infrastructure/transport technology and building services. Established brand names are Merlin Gerin, Modicon, Square D and Télemécanique.

### More information about Schneider Electric:

→ [www.schneider-electric.com](http://www.schneider-electric.com)

"The combination of our know-how has led to an unsurpassed solution, offering maximum flexibility and performance." Alain Dedieu, Vice President Protection and Control Power, Schneider Electric.



## TeSys model U – the smart device

### Alain Dedieu on the co-operation with Beckhoff:

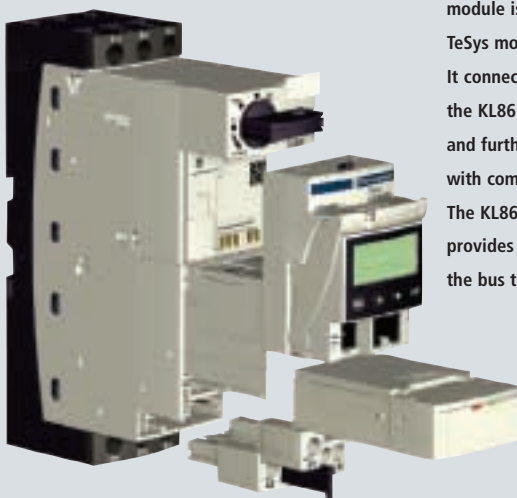
With TeSys model U, Schneider Electric offers a very innovative motor circuit concept, a real "smart device". TeSys model U has the same dimensions as a standard motor circuit and is the first motor circuit to combine such a wide range of functions and intelligence including disconnecting, connecting of power, electronic protection as well as automation and communication functions. This greatly simplifies implementation and operation.

Within its (for a 15 kW motor circuit) extremely compact design and architecture, control and power functions are separated, simplifying the installation in automation applications. Furthermore, the modular design offers the option of selecting the protection specification at any time and of expanding the functions for providing tailor-made solutions.

The fact that our product ranges are characterized by common values such as compact design, modularity and openness has naturally led us to strengthen our partnership with Beckhoff as one of the market leaders for modular I/O systems.

The functions of control, monitoring, maintenance and asset management, created through the combination of Beckhoff Bus Terminals and TeSys model U, are available for all main common communication networks, thus ensuring additional openness.

The design of TeSys model U enables customers to install the motor circuits directly adjacent to the inputs/outputs, or with a distance of several metres, thereby separating the low-voltage signals from the power circuits. This provides high adaptation flexibility and offers customers the option of developing the automation structure progressively as required. In a single operation, the dialog connection and the supply of the motor circuit with 1 or 2 directions of rotation are established via a simple shielded RJ 45 cable.



The KL8601 communication module is plugged into the TeSys model U motor starter. It connects the starter with the KL8610 adapter terminal and further motor starters with communication module. The KL8610 adapter terminal provides the connection with the bus terminal system.

### Versatile motor circuit

The TeSys model U system, which is currently being introduced into the market, has been further optimized. The motor starter consists of a power base unit with plug-in control devices and communication modules. The control unit, available up to 32 A, comes in three variants – standard, advanced and multi-function – ranging from the simplest to very advanced protective functions. The latter is equipped with an integrated display on which the alarm limit values and the motor parameters (e.g. current or thermal condition, error overview or operation time) can be visualized in real-time. A wide variety of information is thus available, which is extremely important for both operation and maintenance, contributing to the optimization of the manufacturing facilities.

### Open for all fieldbus systems

On a total area of only 150 mm x 45 mm for each motor circuit, the system offers the option of adding a communication module. Via the KL8601 communication module, the TeSys motor starter can be connected directly with the Beckhoff



Since May 2001, Beckhoff has focussed on expanding its OEM business. Key Account Manager Roland van Mark is responsible for this market segment. "The interfacing of the Schneider Electric/Télemécanique TeSys model U motor starter into the Beckhoff IP 20 fieldbus world bridges a significant gap. With its optimum price/performance ratio, the new Beckhoff module will influence numerous applications."



Bus Terminal system extension options: (top to bottom)  
Schneider Electric/Télemécanique TeSys model U, Beckhoff Power Terminal system,  
Terminal Bus extension system

Bus Terminal system. The KL8601 communicates with the higher level automation device via the appropriate Bus Coupler. Users of TeSys modules therefore have the complete fieldbus range available. Like in the Beckhoff Power Terminal system, in which the KL8001 Power Terminal is screwed onto a standard contactor, the motor starter integrates seamlessly into the terminal bus.

The motor starter is integrated into the fieldbus system via the KL8610 adapter terminal and a common, screened RJ 45 cable. The 24 V DC supply of the contactor systems is also transferred via this patch cable. The maximum distance between the KL8610 and the first motor starter module is 5 m, the maximum distance between two starters is 0.5 m. Up to 8 starters can be connected in series. With the Terminal Bus Extension, the number can be increased even further. Spatial separation of I/O and power plane can thus be realized within the control cabinet.

#### **Minimum inventory management with high availability reduces costs**

A glance into the working world of control cabinet and machine construction and engineering shows that Schneider Electric and Beckhoff have consistently followed the market requirements: The integration of TeSys model U into the Beckhoff fieldbus world offers users one of the most comprehensive I/O systems. Optimum solutions for each application can thus be configured. Standard plugs and cables simplify the wiring, increase security and minimize the costs. The spatial separation of control and power modules within the control cabinet prevents faults and increases plant availability.

The KL8601 communication module, the KL8610 adapter terminal and the accessory cables are available from Schneider Electric/Télemécanique and Beckhoff. The TeSys motor starters are only available from Schneider Electric, the Bus Terminal system only from Beckhoff.

### **Terminal Bus interface with high connectivity**

The flexibility of the Bus Terminal system in terms of fieldbus and signal variety is well known. With a total of 15 supported bus systems and more than 130 different Bus Terminals, the Beckhoff I/O system, introduced in 1995, is considered to be one of the most comprehensive systems on the market. Further connection options are available through coupling to the internal Terminal Bus interface. With TeSys Model U from Schneider Electric/Télemécanique, the direct integration of a device from another manufacturer with the internal Beckhoff Bus Terminal system has now been realized.

The Bus Coupler communicates as a head station with the connected Bus Terminals via the internal, serial Terminal Bus. During "normal" operation, the 6-pin Terminal Bus is terminated via an end terminal; if the system is expanded, an appropriate adapter terminal is used instead of the end terminal. An example is the power terminal system, where the KL800x Power Terminal is connected with the Beckhoff Bus Terminal system via the KL9060 Adapter Terminal. Together with a power contactor, the KL8001 Power Terminal forms a complete distributed motor starter. Apart from all the protective functions of a motor protection relay the power terminal contains comprehensive diagnostics.

With the Bus Terminal extension system, the system, normally limited to 64 Bus Terminals, can be expanded to 255 terminals. A further advantage is the high spatial flexibility. The Bus Terminal extension now permits Bus Terminals to be divided into up to 31 blocks in the control cabinet or in the plant. The physical connection from the "master system" with the KL9050 Coupler Terminals is via the KL9020 Adapter Terminal. The coupler terminal starts a bus terminal block located further away, and establishes the logical connection to the bus coupler via a standard Ethernet cable.

All Bus Terminal extensions have one thing in common: The extension is transparent for the fieldbus and for higher-level systems, and therefore "fieldbus-independent". The connected extension devices therefore have the complete fieldbus variety available for communication.