

Back to the Future

Turck's TBEN-S-2COM I/O module for serial communication simplifies the connection of RS232, RS485 and Modbus-RTU devices to Ethernet networks; the module is also able to handle Big Data applications

While serial interfaces have largely been replaced in the IT world by Ethernet and USB, they still have a good standing in industrial automation sector. Not only well-established devices are provided with onboard interfaces. There are many new products, from barcode scanners and light screens to printers, weighing scales and operator terminals, as well as many drives, that use these interfaces for communication. This is another reason why Turck has developed its IP67 Ethernet I/O module for connecting serial interfaces. Besides the two ports for RS232 or RS485, the TBEN-S2-2COM-4DXP provides four digital inputs or outputs. The characteristics of the serial ports (RS232, RS485 or Modbus RTU) can be selected as required. The I/Os can be used here as inputs or outputs without any configuration required.

QUICK READ

Serial interfaces still play an important role in many areas of industrial automation. This is why Turck has added the TBEN-S-2COM block I/O module to its TBEN-S portfolio and is thus consistently pursuing its "moving out of the cabinet" strategy. The IP67 module offers two serial interfaces and four I/O channels. It communicates with the controller via Turck's multiprotocol technology with Profinet, Ethernet/IP or Modbus TCP. This makes the module equally suitable for both general use in new installations and for retrofit projects. For anyone wishing to prepare for the future, the 2COM module brings serial interfaces into the era of Industry 4.0: The parallel communication via Profinet (to the controller) and Modbus TCP to Edge gateways or data hubs enables the intelligent evaluation of device data for predictive maintenance.

Wiring in the field saves time and money

The new TBEN-S modules simplify the connection of devices to a serial interface. Depending on the selected connection technology, the modules achieve IP65/67 protection or even IP69K, and can therefore be used directly in the field at the machine. This shortens the wiring runs from the module to the devices in the field. Only one Ethernet cable and one power supply are run from the I/O module to the control cabinet. Both cables, power and Ethernet, can be looped through from module to module in a daisy chain, and in the ideal case, just have to be run once from the control cabinet to the field. The TBEN-S-2COM supplies smaller devices such as barcode scanners with power via the bus connector – thus also reducing here the time and costs required for wiring.





Whether for serial interfaces, Ethernet multiprotocol technology or predictive maintenance – Turck's 2COM module is a universal tool for automation

Configuring instead of programming – Modbus RTU

Besides the savings possible in wiring, users of the module benefit from the fact that the programming required for communication with Modbus RTU devices is kept to a minimum. Modbus accesses normally have to be programmed and processed separately in the controller environment. Turck's serial module comes with Modbus RTU already integrated. The user just has to configure addresses and process data areas. The module then takes over the processing of the protocol and exchanges process data with the controller. Complicated function blocks for Modbus are not required.

The module is thus the perfect counterpart for several Modbus RTU devices, such as smart sensors or also the light curtains of Turck's optical sensor partner,

Banner Engineering. For example, up to 64 pick-to-light sensors of Banner's K50 series can be run on just one I/O module. Pick-to-light applications couldn't be cheaper to set up. The 2COM module is also the ideal link to integrate existing Modbus RTU nodes in modern Industrial Ethernet networks.

Motor control with predictive maintenance

Motors with serial interfaces are often used in the materials handling, logistics and packaging technology sectors. A good example of this are the Movimot motors of SEW Eurodrive. In RS485 operation, up to 32 motors per COM port can be connected to the TBEN-S2-2COM. Banner's QM42VT2 also provides a sensor for monitoring vibration and temperature that can likewise be connected with the module via RS485. When

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mounted directly on the drive, it enables bearing damage to be diagnosed early on, so that maintenance operations can be planned. This is a simple and efficient way of implementing predictive maintenance.

Additional PLC communication also in parallel

Another feature of the TBEN-S-2COM opens up opportunities for Industry 4.0. Like all devices of the TBEN series, the TBEN-S2-2COM also supports Turck’s Ethernet multiprotocol technology, which enables the devices to be used in Profinet, EtherNet/IP and Modbus TCP networks. It is even possible to access the device via Modbus even in parallel with the existing controller connections. For motor control with predictive maintenance, for example, the data of the vibration sensor can be sent directly to higher-level systems, such as Edge

gateways, data hubs or cloud systems for further analysis. Many commonly available systems, such as Microsoft Azure, IBM Bluemix, as well as OPC UA servers from Matricon and Kepware, support communication via Modbus TCP.

ARGEE makes the module into a field logic controller

Like all the latest TBEN modules, the 2COM module also features the browser-based ARGEE programming environment for serial interfaces. ARGEE enables PLC functions to be programmed directly on the modules of the TBEN-L, TBEN-S, BL compact and FEN20 block I/O series. These types of field logic controllers (FLCs) enable elementary controller functions to be outsourced to the I/O modules, thus relieving the workload on the central PLC and the bus communication. The ARGEE programming environment is a simple web application. It simply requires a PC with a web browser such as Chrome or Firefox. Simple requirements can also be implemented on the Turck block I/O modules completely autonomously with ARGEE.

Programming couldn’t be easier. In Simple mode, which is like a ladder diagram editor, drop-down fields provide the means by which inputs and outputs can be linked with Boolean operators and actions. This makes it therefore possible to program basic functions without any knowledge of a programming language. Professional mode makes the entire range of functions available, which can also be used, for example, to implement sequential function charts.

SPECIFICATIONS

- Ultracompact dimensions (W x L x H) 32 x 144 x 32 mm
- Two COM ports, configurable as RS232 or RS485
- Data rates from 9.6 Kbit/s to 230.4 Kbit/s
- 192 bytes of input and output data for each port
- Integrated Modbus RTU client function
- Four universal digital inputs or outputs
- Ethernet multiprotocol (Profinet IO, EtherNet/IP, Modbus TCP)
- Ethernet switch with two M8 ports
- Ethernet media redundancy (MRP, DLR)
- M8 power supply with two galvanically isolated groups
- Protection type: IP65/IP67/IP69K
- Extended temperature range from -40 to 70 °C

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