

Tier 1



Identification of Seats

- The RFID system BL ident® allows transparent and efficient seat assembly
- A data carrier on the tray enables clear identification of type and status
- A smart label in the vehicle seat allows the just-in-sequence production and a clear traceability



Identification of Bumpers in Production

- UHF smart labels glued directly to the bumper of the RFID system BL ident® are the basis for a highly efficient bumper production and subsequent JIS delivery to the carmaker.
- The data carriers allow a clear type and variant identification of each bumper at any time
- Intelligent processing of RFID data in MES and ERP systems

Powertrain



Contactless Control of Pallets

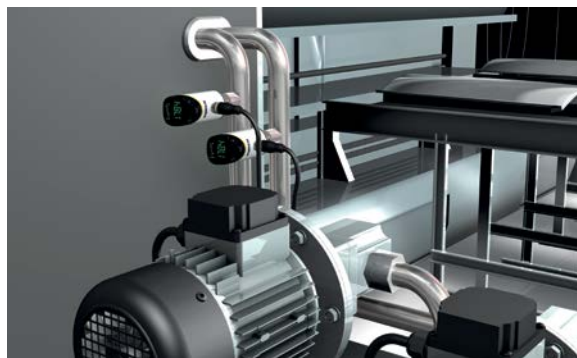
- The inductive coupler NIC allows the contactless and wear-free transmission of power and data to the sensors/actuators on the transport pallet
- The relevant pallet is clearly identifiable without further measures thanks to the I/O hub



Identification of Gears

- The screwable data carriers of the RFID system BL ident® allow for the automated assembly and disassembly of the motor or gear housing
- All relevant information of the product exist in the screwed data carrier, which is important especially in repair places or during removal from the pallet

Press Shop



Pressure Monitoring of Hydraulic Presses

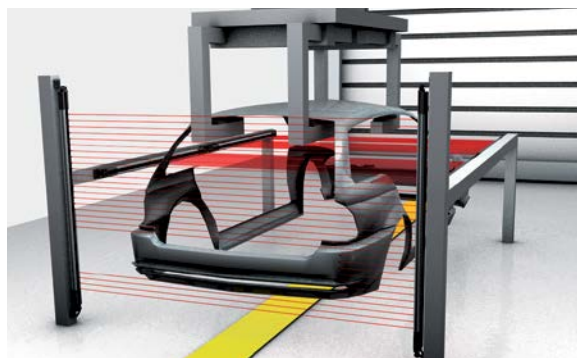
- Rugged P5 pressure sensors on hydraulic presses ensure consistently high quality compression of the body parts
- The pressure sensors are easily adjustable and guarantee high accuracy



Presence Inspection of Sheet Metal/Tool Identification

- The RFID system BL ident® clearly identifies the proper press tools
- Inductive sensors check the presence and correct position of the inserted metal sheets
- Crash risk and downtime are thus significantly reduced

Paint Shop



Recognition of different body types

- The measuring light grids EZ array with downstream BL67 IO-system recognize reliably different body types
- Prevention of downtime or crash, for example, when passing on the bodies from skid to hanger system



Identification of Skids

- The high-temperature RFID data carriers remain firmly mounted on the skid during the complete production process
- The tags withstand temperatures up to +230 °C and traverse the entire painting process, so that delivery errors are excluded

Body Shop



Presence Test of Weld Nuts

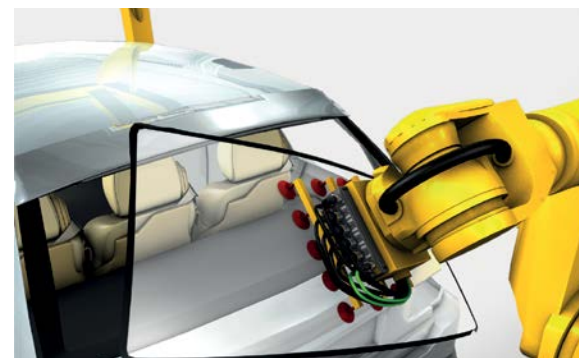
- Weld-proof inductive Factor 1 sensors of the uprox® series guarantee safe and precise welding and assembly operations
- The Weld nut sensor prevents expensive rework by missing weld nuts. The stainless steel centering sleeve protects the sensor and ensures the correct positioning of the weld nut



Flow Sensors in Robot Media Panels

- Temperature, pressure and flow sensors monitor all cooling water and compressed air parameters on welding robots and ensure a consistently high quality of welding
- The media panel serves as interface of all supply media – such as cooling water for welding guns and compressed air for vacuum gripper

Final Assembly



Robot Assembly of Windcreens and Accessories

- Rugged block-I/O modules in IP67 for installation directly on the robot or gripper allow space-saving construction and quick installation
- TURCK multiprotocol allows the use of a module in PROFINET, EtherNet/IP™ and Modbus TCP
- Integrated Fast-Startup/Quick-Connect function for removable tool applications



Worker Guide on Manual Assembly Areas

- Pick-to-Light sensors show the respective picking bin of the component to be deployed and acknowledge the recent pick movement
- Poka Yoke in pre-commission/supermarket areas
- JIS pre-commissioning of material boxes directly associated with the vehicle

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Collect Precisely

Inductive Sensors

- Largest switching distances and factor 1 for all metals
- Extended temperature range, highest tightness with IP68 protection class
- Protection and increased EMC strength
- Wide variety of designs
- Magnetic field immune for body construction
- PTFE coated versions
- Special versions for capturing welding nuts



Linear position and draw-wire sensors

- Measuring lengths up to 40 m
- Interference-free signal detection thanks to contactless, wear-free operation
- Analog and digital output interfaces



Rotation, angle and inclination sensors

- 360° angle detection
- Best shock and vibration resistance
- High protection class (up to IP69K) and interference immunity even at high rotational speeds
- Permanent tightness due to contactless and wear-free measuring principle



Ultrasonic Sensors

- V4A metal-encased sensors for extremely harsh application conditions
- Compact sensors with teach function
- Measuring range up to 6 m



Vision Sensor iVu

- Compact image processing solution for inspection tasks and code reading
- Integrated or external display
- Taught and operated without PC



Magnetic field sensors

- Detects reliably the piston position on pneumatic cylinders
- Magnetic field immune versions



Photoelectric Sensors

- Improved tightness and resistance to chemicals
- Detect filling levels with glass tip



Indicators

- Easy assembly and installation (e. g. M12 connector)
- Versions with and without acoustic alarm (adjustable, max. 95 dB)
- Green, yellow, red, blue or white LEDs
- Excellent luminosity, good visible even at greater distances



Pressure, Temperature, Flow Sensors

- Different designs, measuring principles, and process connections
- Easy handling and mounting
- Highest accuracy and safety



Connect Reliably

Cables and Connectors

- High protection class (Nema 6P, IP67), shock and vibration proof
- Thermostable, oil and chemical-resistant materials
- Welding splatter resistant
- Many different connector types, ready-made and injection-moulded
- For sensors, actuators and fieldbus systems



Passive Junctions

- Signal transfer and voltage distribution
- Different wirings and designs available
- Robust design (potted), protection class IP67



Inductive coupler

- Contactless transmission of data and power
- Large transmission distance up to 7 mm
- High power transmission (up to 12 W)
- Wear-free transmission of PNP and IO-Link signals



Communicate Effectively

Compact I/O Modules in IP67 and IP20

- Multiprotocol technology for PROFINET, EtherNet/IP™ and Modbus TCP
- Stainless steel flange for harsh environments
- Fully encapsulated (IP67), vibration and shock tested
- Different designs with 4 to 16 I/O channels, analog signals and IO-Link master
- Hybrid module for safety and standard I/Os
- Spanner module for master-master communication and connection of different Ethernet-network protocols
- Netload Class III



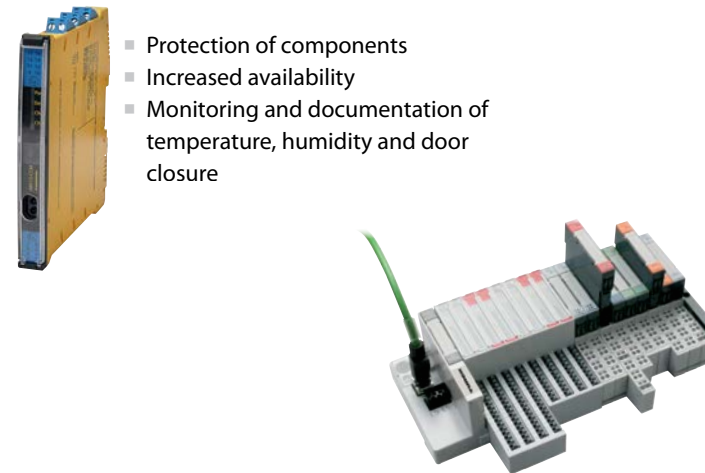
Multiprotocol Ethernet

- PROFINET, EtherNet/IP™ and Modbus TCP in a single device
- Automatic protocol detection
- Best in Class - Fast Startup/Quick Connect in less than 150 ms
- Media redundancy through MRP/DLR
- PROFINET Conformance Class B with topology detection
- PROFINET Netload Class III
- Monitoring access through SCADA or cloud systems in parallel with PROFINET or EtherNet/IP



Cabinet guarding

- Protection of components
- Increased availability
- Monitoring and documentation of temperature, humidity and door closure



Modular IP20 I/O system BL20

- Gateways for many different fieldbuses and EtherNet/IP™, can also be programmed with CODESYS V3
- Multiprotocol technology for PROFINET, EtherNet/IP™ and Modbus TCP
- I/O modules available as: digital, analog, temperature, counter, RS232/485/422, SSI, PWM and RFID and IO-Link master
- Economy gateways and I/O modules

Safety technology

- Compact I/O modules available as hybrid or full safety modules for Profinet with Profisafe or EtherNet/IP™ with CIP safety
- Space-saving PROFINET/PROFIsafe hybrid module for safety and standard I/Os with IO-Link
- Safety light curtains up to 2.000 mm, laser scanners, two-hand buttons
- Safety controller



Modular IP67 I/O system BL67

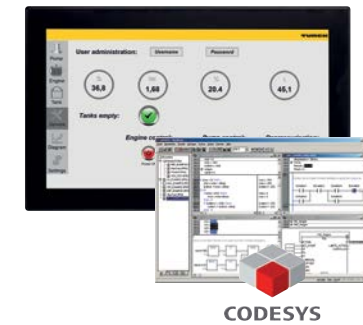
- Gateways for many different fieldbuses and EtherNet/IP™, can also be programmed with CODESYS V3
- Multiprotocol technology for PROFINET, EtherNet/IP™ and Modbus TCP
- I/O modules available as: digital, analog, temperature, counter, RS232/485/422, SSI, CANopen, RFID, valve manifolds and IO-Link master
- Connectivity: M8, M12, M23 and 7/8"



Automate Efficiently

HMI panel with CODESYS PLC

- Programming of control and visualization functions with CODESYS 3
- Flexible use as PROFINET, EtherNet/IP™ and Modbus TCP/RTU master
- Brilliant TFT displays with screen sizes of 4, 7, 10 or 13,15 and 21 inches
- Also available as pure HMI version
- Innovative multi-touch screen with gesture control



Peripheral Control

- CODESYS V3-programmable gateways for the I/O systems BL67 and BL20
- Modularly expendable with all available BL I/O modules
- Can be used as PROFINET, Ethernet/IP™, Modbus TCP slave and Modbus TCP master



Pick-to-Light

- Optical user guidance for manual assembly and commissioning processes
- Contactless pick-up alert
- Easily integrated in existing systems via the modular BL20 and BL67 I/O systems
- New series of PTL110 pick-and-place sensors with display



RFID System BL ident®

- Flexibly integrated in systems, thanks to the modular concept of the I/O systems BL67, BL20 and block modules
- Many application possibilities thanks to mixed HF and UHF operation
- Application-optimized data carriers, such as for direct installation in metal
- Integration in OPCUA



Image Processing

- Intelligent camera systems for numerous fields of application
- Integrated or external processing units, IP68 rated versions
- Standard and special lighting in all variances



IO-Link

- Fieldbus-neutral communication standard for sensors and actuators
- Largest integrated IO-Link portfolio - from the sensor to the master
- Simple device configuration via control system or FDT/DTM

