STANDARDS: ALL MODULES ACCORDING TO EN 50155

E T H E R N E T T E C H N O L O G Y

SYSTEM OVERVIEW
ETHERNET TECHNOLOGY

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THE SEAMLESSLY INTEGRATED SYSTEM
ACCORDING TO THE TCN STANDARD

Ethernet Technology for Rail Vehicles

STANDARDS: ALL MODULES ACCORDING TO EN 50155

AMBIENT TEMPERATURE
Class T2: -40 °C ... +70 °C

RELATIVE HUMIDITY
Annual average ≤ 75%
On 30 days per year 95%

VIBRATION AND SHOCK
Installation in rack and housings, inside the vehicle or underframe:
Input: 0.1 g – 3 g
Output: 0.05 g – 1.5 g

LONG-TERM AVAILABILITY
Available for 20 years from market release; then repairable or replaceable for a further 10 years.

FIRE PROTECTION
EN 45545

Selectron Systems AG
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3250 Lyss
Switzerland
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Fax: +41 32 397 61 00
WWW.SELECTRON.CH

EMC
EMC measures according to EN 50121-3-2

Climatic conditions refer to a defined environment at the company’s technical capability. These values are subject to verification and change without notice. Always check the latest data in the technical data sheets or contact your local Knorr-Bremse representative.

THE SEAMLESSLY INTEGRATED SYSTEM
ACCORDING TO THE TCN STANDARD

Selectron
NEW ETHERNET TRAIN CONTROL AND MONITORING SYSTEM TCMSCOMPREHENSIVELY INTEGRATED*

THE INTEGRATED SELECTRON® MAS AUTOMATION, CONTROL AND MONITORING SYSTEM WITH IP TECHNOLOGY

- High bandwidth network technology for vehicle control technology and multimedia applications
- Ethernet is deployable in multiple units as a vehicle bus, as a network in coupled trains (ECN), or as a train bus (ETB)
- An end-to-end Ethernet platform integrates all vehicle systems into a single logical network
- The use of a standardized technology (IEC 61375-2-5/-3-4) provides access to the most cutting edge and popular communication technology for rolling stock manufacturers and operators
- Various physically separate networks can be logically consolidated into one network
- Ethernet security gateways offer secure data exchange between safety and non-safety networks
- The linking of wireless data connections provides solutions for preventive vehicle maintenance, vehicle diagnostics, and software updates
- Train Backbone Nodes enable dynamic train composition and the transparent connection of other vehicle segments
- The system can be extended with decentralized Ethernet (DC) modules
- High reliability of linear topologies thanks to bypass functionality
- A graphical configuration tool for easy configuration of switches and routers

**NEW ETHERNET TRAIN CONTROL AND MONITORING SYSTEM TCMS COMPREHENSIVELY INTEGRATED**

**SYSTEM OVERVIEW**

**ETHERNET TECHNOLOGY**

EFFICIENT ETHERNET COMMUNICATION ACCORDING TO THE IEC 61375-2-5/-3-4 STANDARD

- High-bandwidth network technology for vehicle control technology and multimedia applications
- Ethernet is deployable in multiple units as a vehicle bus, as a network in coupled trains (consist network), or as a train bus (Ethernet Train Backbone)
- An end-to-end Ethernet platform integrates all vehicle systems into a single logical network
- The use of a standardized technology (IEC 61375-2-5/-3-4) provides access to the most cutting edge and popular communication technology for rolling stock manufacturers and operators
- Various physically separate networks can be logically consolidated into one network
- Ethernet security gateways offer secure data exchange between safety and non-safety networks
- The linking of wireless data connections provides solutions for preventive vehicle maintenance, vehicle diagnostics, and software updates
- Train Backbone Nodes enable dynamic train composition and the transparent connection of other vehicle segments
- The system can be extended with decentralized Ethernet (DC) modules
- High availability of linear topologies thanks to bypass functionality
- A graphical configuration tool for easy configuration of switches and routers

**ETHERNET MODULES**

- Consistent Switch ESM xxs for Pre-/Fast Ethernet: Gigabit
- NW Displays SIL and Non-SIL
- Train Backbone Node ERT xxs-Tx
- CPU xxs-Tx/SIL w/ Fast Ethernet Vehicle Control Unit (VCU)
- VGA xxs Remote SIL Connection

**CONFIGURATION TOOL NED61375**

- Ethernet security gateways offer secure data exchange between safety and non-safety networks
- The linking of wireless data connections provides solutions for preventive vehicle maintenance, vehicle diagnostics, and software updates
- Train Backbone Nodes enable dynamic train composition and the transparent connection of other vehicle segments
- The system can be extended with decentralized Ethernet (DC) modules
- High availability of linear topologies thanks to bypass functionality
- A graphical configuration tool for easy configuration of switches and routers
SYSTEM OVERVIEW
ETHERNET TECHNOLOGY

- 8/13 Port 10/100/1000 Mbit/s
- Bypass function
- PoE
- Autoconfiguration
- DHCP
- USB Interface: Master, Slave
- 24–36 VDC / 96–110 VDC

- 2x Ethernet (10/100 Mbit/s)
- Safety-oriented Communication
- CANopen
- Speaker external
- Touch Displays 10.4” and 12.1”
- Touch and UIC 612 Display 10.4”
- SW Tool MaestroDesigner®
- 24–110 VDC

- GSM/UMTS/EDGE/LTE
- GPS/GLONASS/Galileo
- WLAN (2.4 GHz, 5 GHz)
- 2x Ethernet
- Open LAN feature
- 24–110 VDC

- Firewall
- Security according to IEC 62443 SL-1

- 1x Ethernet
- 2x CAN
- SD card slot
- Service interface
- SIL/non-SIL
- 24 / 110 VDC

- 480 VAC/DC/AC/DC/DC
- GPS/GLONASS/Galileo
-師/AD-4 CAN / 2 CAN
- 4 Ethernet
- Open LAN feature
- 24–110 VDC

- Security Gateway SGW 901-TW

ETHERNET MODULES

Consit Switch ESM 83x-Tx PoE Fast Ethernet / Gigabit

HMI Displays SIL and Non-SIL

Train-Bus/Bus Node 6RT 901-Tx

CPU 83x-TX(SIL) with Fast Ethernet Vehicle Control Unit (VCU)

Modular DEM HU-TM, WLAN, LTE

Security Gateway SGW 901-TM

Remote I/O Connection

SIL/non-SIL

24 / 110 VDC

Smart terminal
Digital and analog I/Os
Capacitive, Ethernet, MSR 4/110 VDC
24 / 110 VDC

*Router with integrated Switch

IEC 61375-2-5

*Contact us for embedded solution
STANDARDS: ALL MODULES ACCORDING TO EN 50155

Ambient Temperature
Class T2: -40 °C ... +70 °C

Relative Humidity
Annual average: ≤ 75%
On 30 days per year: 95%

EMC
EMC measures according to EN 50121-3-2

Fire Protection
EN 45545

Long-Term Availability
Available for 20 years from market release, then repairable or replaceable for a further 10 years

Vibration and Shock
Installation in racks and housings, inside the vehicle or underframe, value 0.3 g ... 30 g

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THE SEAMLESSLY INTEGRATED SYSTEM
ACCORDING TO THE TCN STANDARD

Ethernet Technology
for Rail Vehicles
STANDARDS: ALL MODULES ACCORDING TO EN 50155

AMBIENT TEMPERATURE
Class A: -40 °C ... +50 °C

RELATIVE HUMIDITY
Annual average: ≤ 75%
On 30 days per year: 95%

VIBRATION AND SHOCK
Installation in racking and housings, inside the vehicle or underframe;
vertical, horizontal and axial acceleration value: 0.3g ... 30g

LONG-TERM AVAILABILITY
Available for 20 years from market release, then repairable or replaceable for a further 10 years

FIRE PROTECTION
EN 45545

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