

TROXNETCOM AS-i

Switching power supply units



Switching power supply unit for a 24 V supply voltage

Controlled power supply for sensors, actuators, sensor electronics and controller

- High efficiency of > 87 %
- Input and output with overvoltage protection
- Can be attached to a mounting rail, no tools required
- Output voltage adjustable up to 28 V DC
- Overload protection, up to 1.5 × nominal current
- Very high efficiency, hence very low heat build-up
- LED for secondary voltage indication



Type		Page
Switching power supply units	General information	6.2 – 29
	Special information – TNC-D1020	6.2 – 30
	Special information – TNC-D2011	6.2 – 32
	Special information – TNC-D2012	6.2 – 34
	Special information – TNC-D2013	6.2 – 36
	Basic information and nomenclature	6.4 – 1

Description



TROXNETCOM AS-i
Switching power supply units

Application

- 24 V power supply for AS-i controllers and for operating and display units
- Highly efficient module that transform 230 V input voltage to 24 V.

Order code

TNC – D1020
<div style="display: flex; justify-content: center; align-items: center;"> <div style="border: 1px solid black; width: 15px; height: 15px; margin-right: 5px;"></div> <div style="font-size: 10px;">1</div> </div>

1 Type

- TNC-D1020
- TNC-D2011
- TNC-D2012
- TNC-D2013**

Description



TNC-D1020

Application

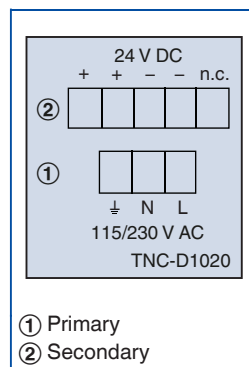
- Switching power supply unit TNC-D1020 (24 V DC; 1.3 A)
- Power supply for AS-i controllers and for operating and display units
- Very high efficiency of 87.5 %
- Low ripple, < 50 mV
- High reliability

Technical data

Description	TNC-D1020
Output current	1.3 A
Nominal voltage, primary	115/230 V AC
Input voltage range	100 – 240 V AC
Nominal frequency	50 – 60 Hz
Efficiency	87.5 %
Casing	Polycarbonate
IP protection level	IP 20
IEC protection class	I (protective earth)
Connection	Terminals up to 2.5 mm ²
Temperature range	-10 to +70 °C
Derating	Typically 1 W/K (60 – 70 °C)
Output voltage	24 – 28 V DC (± 2 %) to SELV/PELV
Power ON delay time	< 20 ms
Residual ripple	< 50 mV
Mains buffering time	> 190 ms
Short-circuit protection / overload protection	Yes (to IEC 61140)
EMC	EN 61000-6-2; EN 61000-6-3
MTTF	411 years
Overvoltage protection	<40 V
LEDs	Green: output voltage

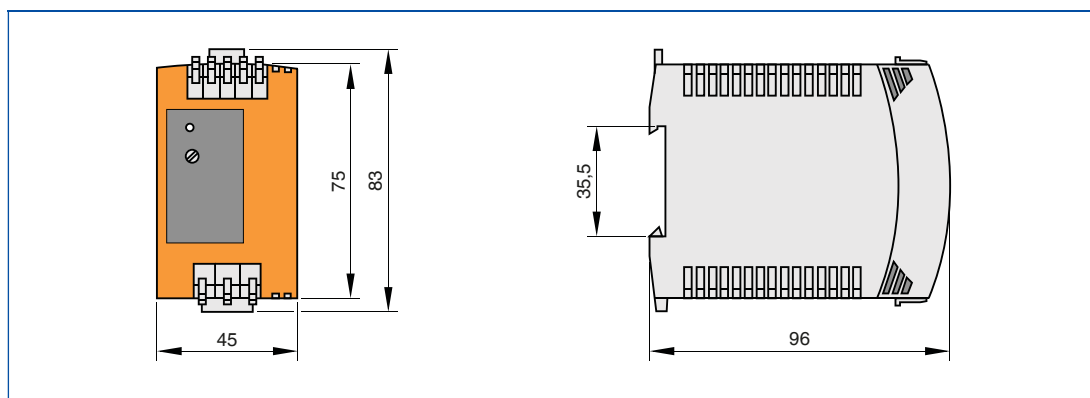
Wiring

**Connecting cable core identification
 TNC-D1020**



Dimensions

AS-i switching power supply unit TNC-D1020



Specification text

Standard description (characteristics)

Switching power supply unit TNC-D1020, supplying voltage to the controller or text display.

- Nominal voltage: 115/230 AC V
- Output voltage: 24 – 28 V DC ($\pm 2\%$), SELV/PELV
- Output current: 1.3 A
- Nominal frequency: 50 – 60 Hz
- Efficiency: 87.5 % (230 V AC; 24 V DC/1.3 A)
- Connection: Spring clips up to 2.5 mm²
- Casing materials: polycarbonate
- Ambient temperature: -10 to +70 °C
- IP protection level: IP 20
- Status display: LED green
- Make: TROX GmbH or equivalent
- Type: TNC-D1020

Description



TNC-D2011

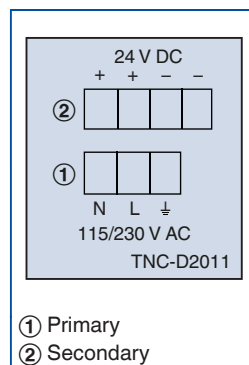
Application

- Switching power supply unit TNC-D2011 (24 V DC; 2.5 A)
- Power supply for AS-i controllers and for operating and display units
- Very high efficiency of 87.5 %
- Low ripple, < 0.25 mV
- High reliability

Technical data

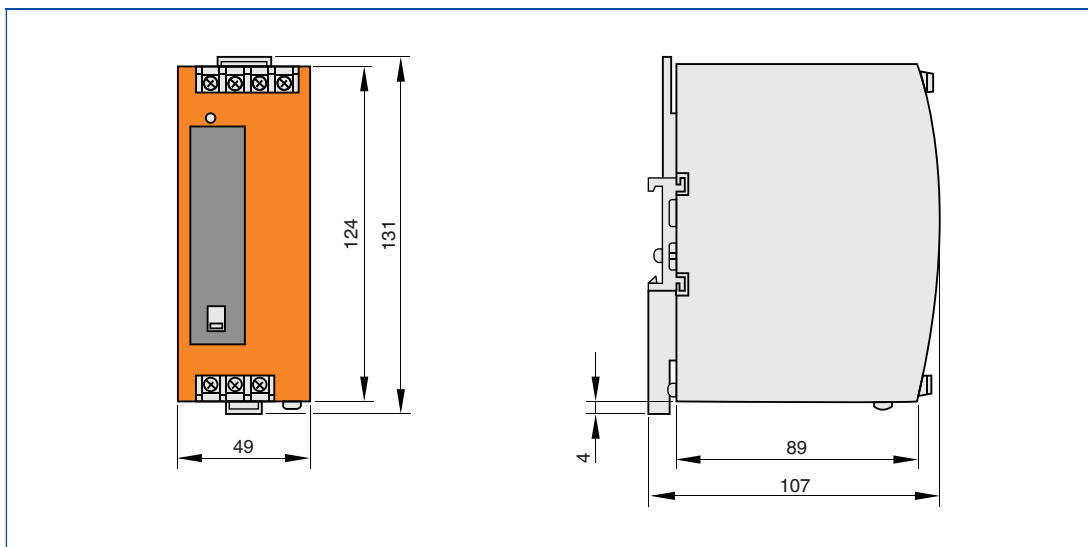
Description	TNC-D2011
Output current	2.5 A
Nominal voltage, primary	115/230 V AC
Input voltage range	85 – 132 V AC/176 – 264 V AC/160 – 375 V DC
Nominal frequency	47 – 63 Hz
Efficiency	87.5 %
Casing	Aluminium
IP protection level	IP 20
IEC protection class	I (protective earth)
Connection	Terminals 1.5 – 6 mm ²
Temperature range	-10 to +60 °C
Derating	1.5 W/K (60 – 70 °C)
Output voltage	24 V DC (± 5 %/-1 %) to SELV/PELV
Power ON delay time	< 20 ms
Residual ripple	< 25 mV
Mains buffering time	> 20 ms
Short-circuit protection / overload protection	Yes (to IEC 61140)
EMC	EN 50081-1; EN 61000-6-1; EN 61000-6-2; EN 61000-6-3; EN 61000-6-4
MTTF	294 years
Overvoltage protection	32 V
LEDs	Green: output voltage

Wiring

Connecting cable core identification
TNC-D2011

Dimensions

AS-i switching power supply unit TNC-D2011



Specification text

Standard description (characteristics)

Switching power supply unit TNC-D2011, supplying voltage to the controller or text display.

- Nominal voltage: 115/230 AC V
- Output voltage: 24 V DC (+5 %/-1 %), SELV/PELV
- Output current: 2.5 A
- Nominal frequency: 47 – 63 Hz
- Efficiency: 87.5 %
- Connection: Terminals, 1.5 to 6 mm²
- Casing materials: Aluminium
- Ambient temperature: -10 to +60 C°
- IP protection level: IP 20
- Status display: LED green, output voltage
- Make: TROX GmbH or equivalent
- Type: TNC-D2011

Description



TNC-D2012

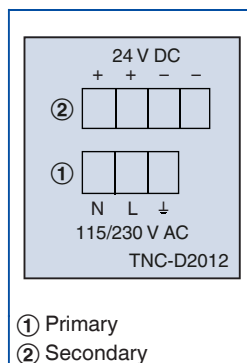
Application

- Switching power supply unit TNC-D2012 (24 V DC; 5 A)
- Power supply for AS-i controllers and for operating and display units
- Very high efficiency of 90 %
- Low ripple, < 50 mV
- High reliability

Technical data

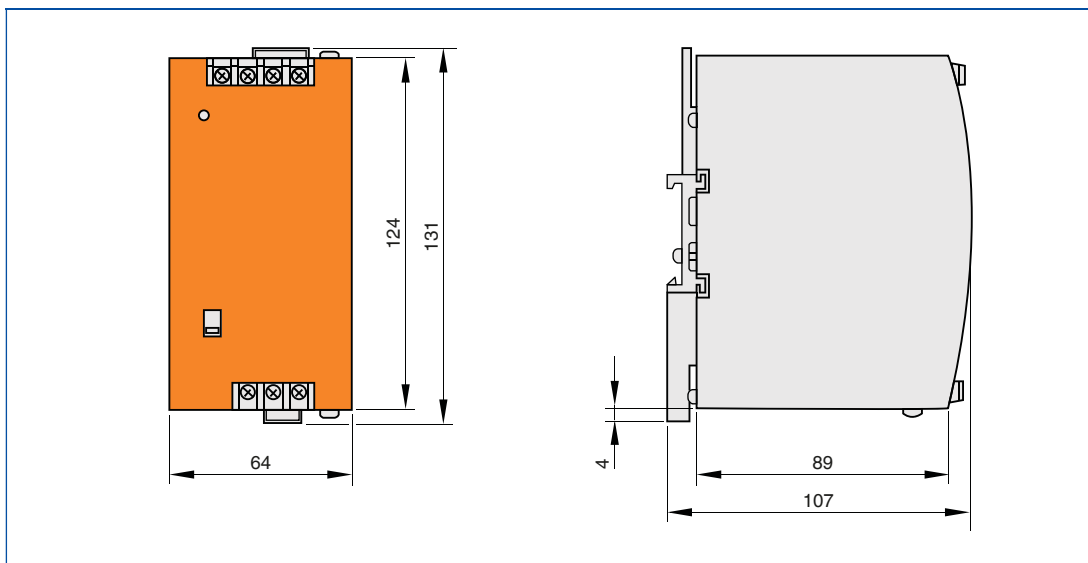
Description	TNC-D2012
Output current	5 A
Nominal voltage, primary	115/230 V AC
Input voltage range	85 – 132 V AC/176 – 264 V AC/210 – 375 V DC
Nominal frequency	47 – 63 Hz
Efficiency	90 %
Casing	Aluminium
IP protection level	IP 20
IEC protection class	I (protective earth)
Connection	Terminals 1.5 – 6 mm ²
Temperature range	–10 to +60 °C
Derating	3 W/K (60 – 70 °C)
Output voltage	24 V DC (± 5 %/–1 %) to SELV/PELV
Power ON delay time	< 20 ms
Residual ripple	< 50 mV
Mains buffering time	> 37 ms
Short-circuit protection / overload protection	Yes (to IEC 61140)
EMC	EN 50081-1; EN 61000-6-1; EN 61000-6-2; EN 61000-6-3; EN 61000-6-4
MTTF	241 years
Oversvoltage protection	29 V
LEDs	Green: output voltage

Wiring

Connecting cable core identification
TNC-D2012

Dimensions

AS-i switching power supply unit TNC-D2012



Specification text

Standard description (characteristics)

Switching power supply unit TNC-D2012, supplying voltage to the controller or text display.

- Nominal voltage: 115/230 AC V
- Output voltage: 24 V DC (+5 %/-1 %), SELV/PELV
- Output current: 5 A
- Nominal frequency: 47 – 63 Hz
- Efficiency: 90 %
- Connection: Terminals, 1.5 to 6 mm²
- Casing materials: Aluminium
- Ambient temperature: -10 to +60 C°
- IP protection level: IP 20
- Status display: LED green, output voltage
- Make: TROX GmbH or equivalent
- Type: TNC-D2012

Description



TNC-D2013

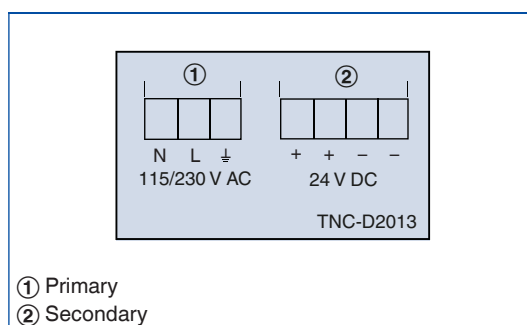
Application

- Switching power supply unit TNC-D2013 (24 V DC; 10 A)
- Power supply for AS-i controllers and for operating and display units
- Very high efficiency of 90 %
- Low ripple, < 30 mV
- High reliability

Technical data

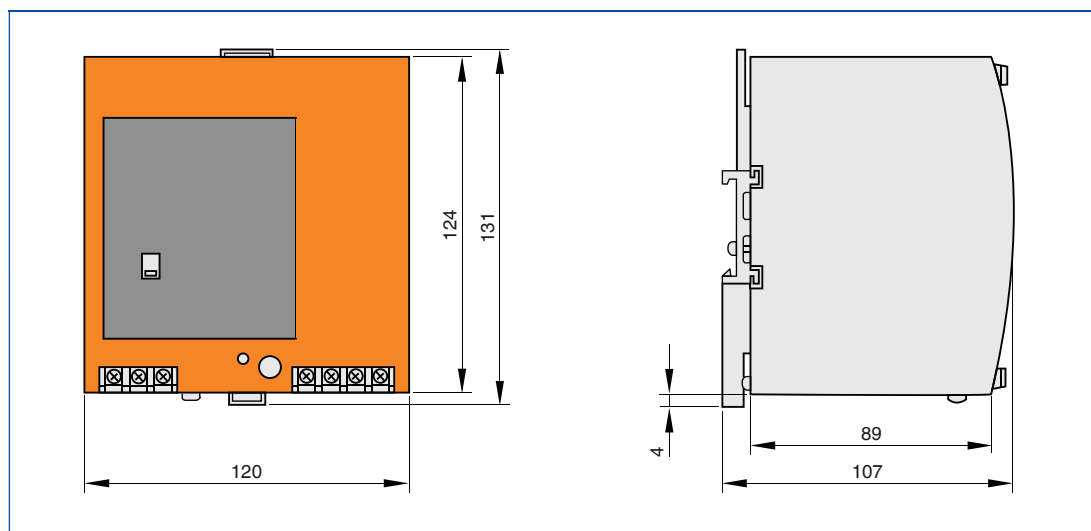
Description	TNC-D2013
Output current	10 A
Nominal voltage, primary	115/230 V AC
Input voltage range	85 – 132 V AC/176 – 264 V AC/240 – 375 V DC
Nominal frequency	47 – 63 Hz
Efficiency	90 %
Casing	Aluminium
IP protection level	IP 20
IEC protection class	I (protective earth)
Connection	Terminals 1.5 – 6 mm ²
Temperature range	–10 to +60 °C
Derating	12 W/K (60 – 70 °C)
Output voltage	24 – 28 V DC (± 5 %/–1 %) to SELV/PELV
Power ON delay time	< 20 ms
Residual ripple	< 30 mV
Mains buffering time	> 20 ms
Short-circuit protection / overload protection	Yes
EMC	EN 50081-1; EN 61000-6-2
MTTF	195 years
Overvoltage protection	29 V
LEDs	Green: output voltage

Wiring

Connecting cable core identification
TNC-D2013

Dimensions

AS-i switching power supply unit TNC-D2013



Specification text

Standard description (characteristics)

Switching power supply unit TNC-D2013,
supplying voltage to the controller or text display.

- Nominal voltage: 115/230 AC V
- Output voltage: 24 – 28 V DC ($\pm 2\%$),
SELV/PELV
- Output current: 10 A
- Nominal frequency: 47 – 63 Hz
- Efficiency: 90 %
- Connection: Terminals, 1.5 to 6 mm²
- Casing materials: Aluminium
- Ambient temperature: –10 to +60 C°
- IP protection level: IP 20
- Status display: LED green, output voltage
- Make: TROX GmbH or equivalent
- Type: TNC-D2013

TROXNETCOM

Basic information and nomenclature



- Communication systems for fire protection systems
- Colour codes according to IEC 60757
- AS-Interface
- LON

Description

Information and communication are becoming more and more important in today's world. People not only want more information, they also want more detailed information. This development is also visible in building automation, and there is no end in sight. A building becomes 'transparent' through distributed intelligence and new decentralised communication systems.

These new technologies allow us to develop bespoke system solutions for various building services and to integrate them with building management systems. In this way, the best solutions for the different building services can be combined to create the best possible overall solution. Decentralised communication systems offer you the most advanced technology for your application requirements.

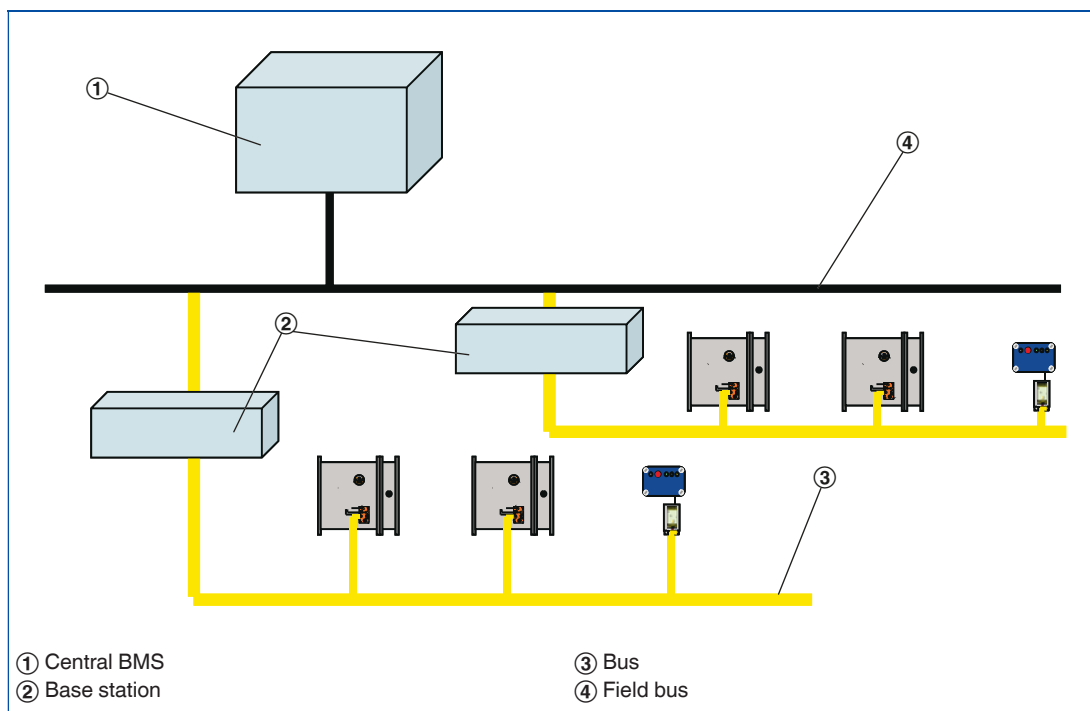
Communication systems for fire protection systems

The functional safety of programmable electronic systems is becoming more and more important in fire protection and is implemented with regard to protection goals and risks. According to IEC 61508, the requirements for these systems are based on a risk analysis. Components are given an SIL rating (safety integrity level) and must meet the corresponding requirements to ensure safety even in case of a malfunction.

General advantages of decentralised bus systems

It is no longer necessary to wire every single actuator and every single controller. Modern bus systems only need one bus cable, and in some cases a supply cable, to connect all components. This saves not only installation time but also cables, connectors, terminal blocks, and control cabinet space. It also drastically reduces the fire load and the installation costs. All signals from all components on a bus can be retrieved and recorded by the central unit. Inspection is simplified, and measurement and control can be optimised.

Communications system



Wiring

Colour codes according to IEC 60757

Code	Colour
BK	black
BN	brown
RD	red
OG	orange
YE	yellow
GN	green
BU	blue

Colour codes according to IEC 60757

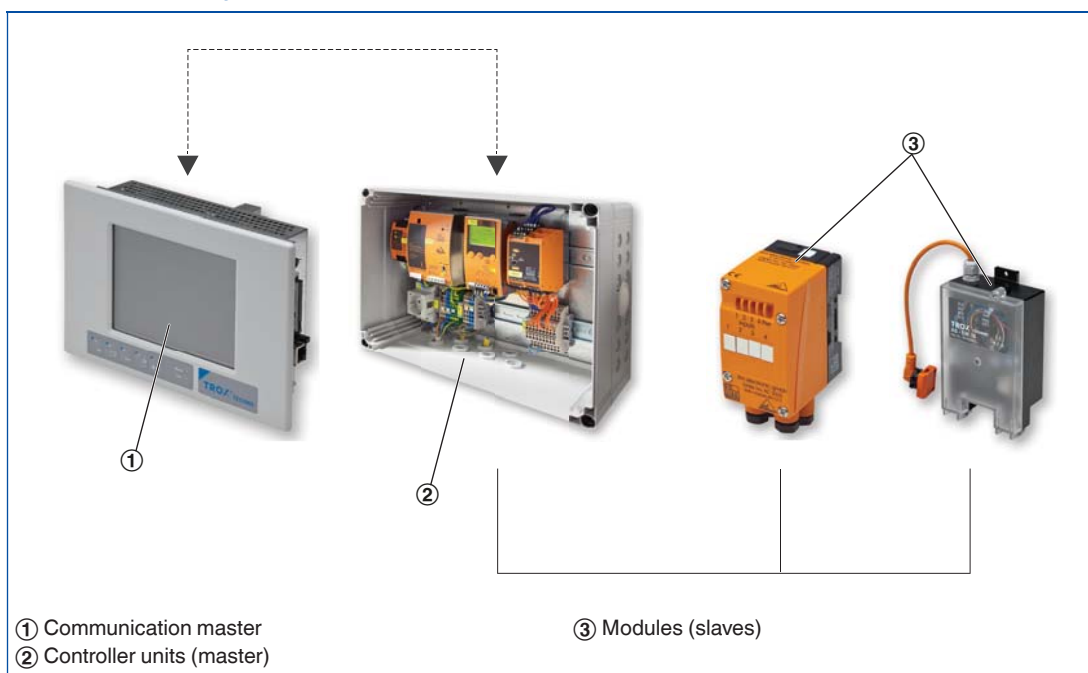
Code	Colour
VT	violet
GY	grey
WH	white
PK	pink
TQ	turquoise
GNYE	green-yellow

Description

The AS interface is a world-standard bus system according to EN 50295 and IEC 62026-2. It enables the integration of different components (modules) in a network regardless of the manufacturer and the design. The modules control actuators and/or receive signals from sensors. TROX provides a system for controlling fire dampers, smoke protection dampers and smoke control dampers based on the AS-i standard. TROX modules are characterised by a wide spectrum of functions yet simple cabling.

Special characteristics

- Data exchange and power supply with just one cable
- Central control of actuators and monitoring of damper blade positions and duct smoke detectors
- Simple commissioning using standardised software
- Automatic function test including data logging

The system**Communications system**

The communication master is the central display and control panel for the entire system.

- Connection of up to 28 controller and power units
- Display of operating status
- Operation of actuators
- Menu-driven operation in case of errors or malfunctions
- System configuration at the time of commissioning
- Logging of function tests and error messages

The controller and power unit combines the control functions, the power supply, and the data exchange for all components on the bus.

- The controller and power unit is installed near the modules, e.g. as a floor distributor
- With TNC Basic User Software for fire and smoke protection
- Communication interface to higher level systems (BACnet/Modbus)
- Display, also for operation
- Units with: 1 master – for 31 modules, 2 masters – for 62 modules

The modules establish the link between the measurement and control signals (sensors and actuators) and the network on the so-called field level. A module provides the supply voltage for the operation of actuators.

- Modules can be part of a fire damper or used separately to connect one or more fire dampers
- Integrated monitoring function, e.g. for running time
- Connection to the bus cable is with a flat cable insulation displacement connector

Description

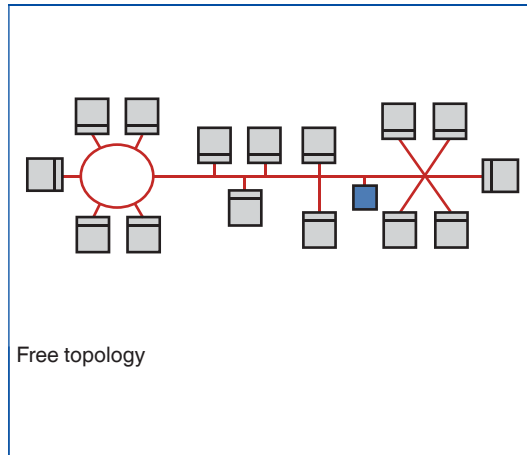
LON indicates a standard local operating network system with manufacturer-independent communications. Data is transferred by a microprocessor supplied by Echelon Corporation using a unified protocol. LonMark defines standards to ensure product compatibility. TROX offers components that meet LON standards. TROX modules are characterised by a wide spectrum of functions yet simple cabling.

Special characteristics

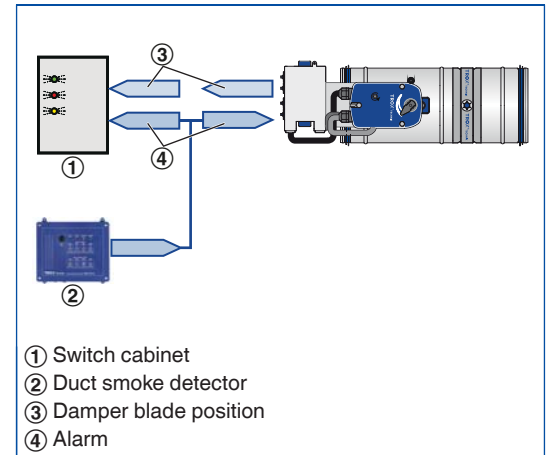
- Data exchange and power supply can be achieved with just one cable
- Decentralised structure with high operational reliability
- Standardised data transfer
- Manufacturer-independent compatibility

The system

Network topology



Binding network variables



Network

The local operating level (subnet) consists of the modules (nodes) and free topology data cables. A subnet can consist of up to 64 nodes or, alternatively, can be extended to 128 nodes using a repeater or router. Physical data transfer is via systems with or without a transfer of supply voltage. All nodes of a subnet must comply with the system. In larger networks the routers link the subnets with each other. The routers communicate with each other via the backbone, on a separate network level. Central monitoring of a LON network is possible and is connected to the backbone or above it.

Data exchange

Network variables are used for the communication between the nodes. These variables ensure unambiguous data exchange between the nodes. For commissioning, it is necessary to link the network variables between the nodes (binding). Project software is used to link the outputs of a node to the inputs of other nodes. Binding information is transferred to the subnet. Binding is carried out by a system integrator.