

TROX GmbH

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PI/7.2/14/EN/1



When functions were being implemented, only standard network variables (SNVT) were used. This enables the LON-WA1/FT2 and LON-WA1/PL2 to be flexibly and easily integrated into higher-order systems. The Functional Profile 100.01 Fire and Smoke Damper Actuator from LONMARK<sup>®</sup> was used to the fullest extent possible. The unit is certified by LONMARK<sup>®</sup>.



## 1 Sphere of Application

The LON-WA1/FT2 and LON-WA1/PL2 are functional modules specially conceived for monitoring motorised fire/smoke dampers.

Up to four motorised fire/smoke dampers can be operated with a single LON-WA1/FT2 or LON-WA1/PL2. The connections for the fire and smoke drives are designed for 230 V.

An FTT10A transceiver is used as the LON<sup>®</sup> interface with the LON-WA1/FT2. A separate bus line using the LON<sup>®</sup> standard must be used for the communication line.

Powerline technology is used in the LON-WA1/PL2, i.e. by using the Powerline transceiver, the LON<sup>®</sup> data are modulated to the 230 V AC power supply line and transmitted. No separate bus line is required. Suitable routers, e.g. from the Sysmik and WHO companies, are available for conversion to other communication lines.

## 2 Technical Data LON-WA1/FT2 or PL2

### Distribution voltage:

230 V AC  $\pm 10\%$ , 50/60 Hz  
Double terminals for looping through

### Power consumption:

Approx. 30 VA without actuators

### Inputs:

8 digital inputs for potential-free switch contacts

### Outputs:

5 digital outputs via relays  
Changeover relay

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**LON-WA1/FT2 LON interface**4-pole 90° plug-in terminals for 0.3 mm<sup>2</sup> - 1.3 mm<sup>2</sup>  
FTT10 free topology**LON-WA1/PL2 LON interface:**

Powerline

**Type of protection:**

IP54

**Operating temperature:**

+10 °C to +60 °C

**Humidity:**

20% to 95% relative humidity, non-condensing

**Connection terminals:**Actuator control, 3-pole 90° plug-in terminals for  
0.3 mm<sup>2</sup> - 1.5 mm<sup>2</sup>Actuator end positions, 4-pole 90° plug-in terminals for  
0.3 mm<sup>2</sup> - 1.5 mm<sup>2</sup>**Distribution voltage, LON-WA1/FT2/PL2:**2 x 3-pole 90° terminals for 0.08 mm<sup>2</sup> - 2.5 mm<sup>2</sup>**FireChain signal:**3-pole 90° plug-in terminals for 0.3 mm<sup>2</sup> - 1.5 mm<sup>2</sup>**Housing:**

Synthetic, 254 mm x 180 mm x 90 mm

**Software application:**The available applications (xif/apb file) can be  
downloaded for the LON-WA1/FT2 and LON-WA1/PL2  
from the Internet under [www.trox.de](http://www.trox.de).**3 General Information on Functionality**In principle, up to four fire dampers or smoke dampers  
can be administered via the LON-WA1/FT2 or LON-  
WA1/PL2.If fewer than four fire/smoke dampers are connected, a  
jumper is to be put in place between the terminals (E1,  
E3, E5 and E7) with end position OPEN on the 4-pole  
terminal blocks. This prevents alarm indications being  
generated for non-existent dampers.The fire damper or smoke damper is operated via the  
ActuDrive input variable.The output variable ActuPosn signals the current  
position of the damper.

The following allocation applies:

Normal = fire damper open

Fire = fire damper closed

Normal = smoke damper closed

Fire = smoke damper open

When voltage is applied to the LON-WA1/FT2 or LON-  
WA1/PL2 module, the connected dampers move to the  
normal position automatically.If the test button in the module is pressed, the connected  
dampers are moved to the fire position and then back to  
the normal position once the OffTime + 10 sec. passes.If a fault occurs, the following provisions have been  
made in accordance with VDMA standard sheet 24200-1  
"Automated Fire and Smoke Systems".If a fault occurs, the relevant safety position is assumed  
and an alarm is triggered.The FireChain variables can pass on a signal by  
"chaining it" from the first damper to the last damper, but  
do not trigger the signal here. The corresponding  
FireChain relay in the LON-WA1/FT2 or LON-WA1/PL2  
module is operated by this and can be used for a  
general fault signal or to switch systems off.  
This function is only available with the fire damper.

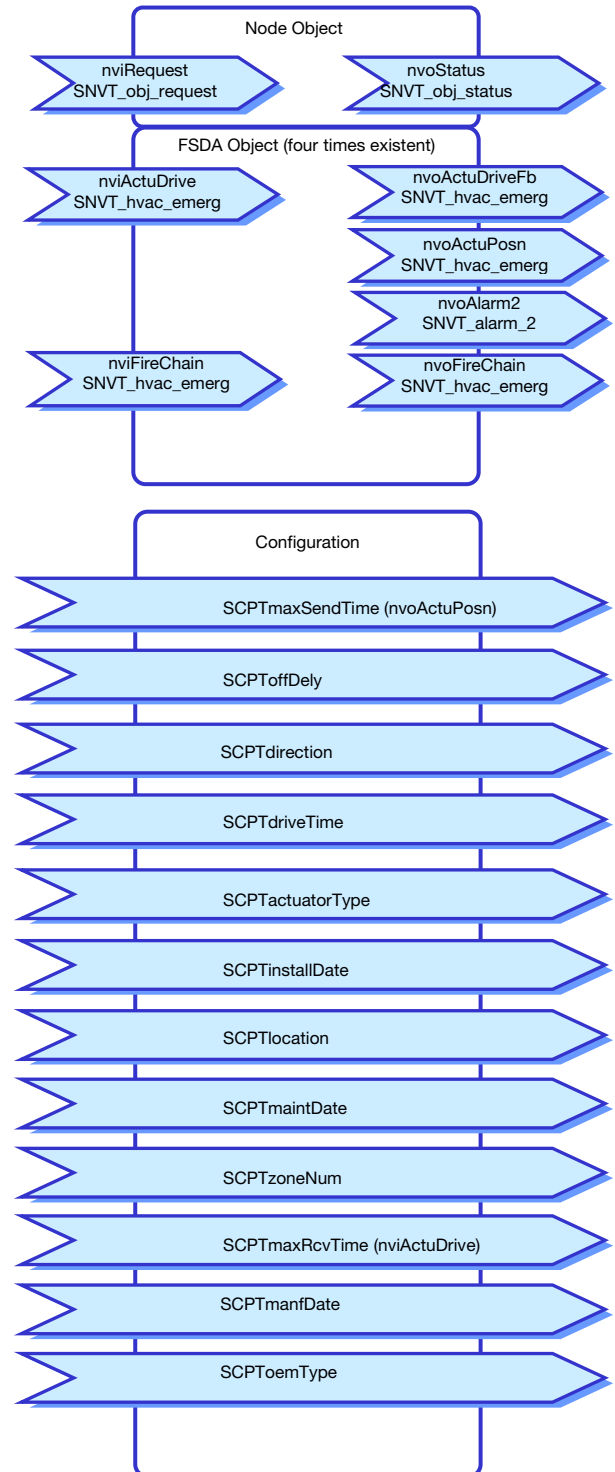
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## 4 Description: Function Object

The LON<sup>®</sup> node consists of a node object and four FSDA objects. The FSDA objects consist of network variables and configuration parameters. All variables and parameters are based on standard network variables (SNVT), which guarantees the easy integration of the LON-WA1/FT2 or LON-WA1/PL2 in a LONWORKS<sup>®</sup> network.



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## 4.1 Network Variables

### ➤ Node Object

#### nviRequest

SNVT Typ: SNVT\_obj\_request

Function:

Requesting diverse information and carrying out actions in the node. The following parameters can be received.

Valid values:

SNVT_obj_request	Function
RQ_Normal	Initialisation of the node, re-setting of the status
RQ_Update_Status	Status retrieval, reply about nvoStatus
RQ_Self_Test	Self-test of the node
RQ_Report_Mask	Masks of all possible status bits

#### nvoStatus

SNVT Typ: SNVT\_obj\_status

Function:

Output variable contains the reply to a previously made request via nviRequest with the desired status bits.

SNVT_obj_status	Funktion
Invalid_id	Incorrect object-ID requested or not available
Invalid_request	Incorrect parameter requested or not available
disabled	Node without function (not activated)
Feedback_failure	Dampers not in desired position
Comm_failure	Communication disturbed
In_override	Solder of the fusible link part / Thermal contact triggered
Fail_self_test	Test run faulty
Self_test_in_progress	Test run activated

### ➤ FSDA Object

#### nviActuDrive

SNVT Type: SNVT\_hvac\_emerg

Function:

This entry controls the position of the damper. The input variables can be polled, whereby the refresh rate is to be defined with the *SCPTmaxRcvTime* parameter.

Valid values:

Value	Function
EMERG_NORMAL	Normal Position
EMERG_FIRE	Fire Position

#### nviFireChain

SNVT Type: SNVT\_hvac\_emerg

Function:

The variables *nviFireChain* and *nvoFireChain* can pass a signal along the chain from the first to the last damper while not triggering them. In the event of fire, or when *nviFireChain* or *nviActuPosn* go to FIRE, the FC relay is de-energized. In this manner, for example, the ventilation system can be switched off.

Value	Function
EMERG_NORMAL	Normal
EMERG_FIRE	Fire

#### nvoActuDriveFb

SNVT Type: SNVT\_hvac\_emerg

Function:

This output variable reflects the status of the *nviActuDrive*. Valid values: Identical with the *nviActuDrive*.

#### nvoActuPosn

SNVT Type: SNVT\_hvac\_emerg

Function:

This output variable mirrors the current status of the damper. In the event of a change of this condition, the values will be spontaneously sent. This output variable can also be transmitted cyclically, whereby the refresh rate is to be defined with the *SCPTmaxSendTime* parameter.

Valid values:

Value	Function
EMERG_NORMAL	Normal Position
EMERG_FIRE	Fire Position
EMERGE_NUL	Zero position (between the normal and fire positions)

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### nvoFireChain

SNVT Type: SNVT\_hvac\_emerg  
 Function:  
 See: *nviFireChain*

### nvoAlarm2

SNVT Type: SNVT\_alarm2  
 Function:  
 This alarm output sends a signal to the monitor system indicating a possible error on the LON<sup>®</sup> node. The message contains all information necessary for conclusions to be drawn concerning the type of error. They are spontaneously sent when the error occurs.  
 Possible messages:

AlarmType	Description	PriorityLevel	Comment
AL_NO_COND	Normal	16	The damper is in the normal position
AL_FIR_TRBL	Fire	4	The damper is in fire position; also shown during test run
AL_FIR_MONITOR_COND	TimeToNormal Position	6	The damper requires more time to come from the fire to the normal position than is indicated under the "config" tab for "DriveTime".
	TimeToFire Position	6	The damper requires more time to come from the normal to the fire position than is indicated under the "config" tab for "OffTime".
AL_ERROR	ReceiveUpdate Error	6	The <i>nviActuDrive</i> input variable was not updated within the time period indicated in the "config" tab under "MaxRcvTime".
	LimitSwitchFault	6	The damper signals that that it is simultaneously in the normal and fire positions.

## 4.2 Configuration Parameters

### SCPToffDely

Function:

This parameter defines the maximum time required by a damper to move into the *fire position*. If this time is exceeded, the AL\_FIR\_MONITOR\_COND *alarm type* will be issued.

If a value of 0 seconds is entered, no run time review will be conducted. This is to be kept in mind when installing dampers without actuator!

### SCPTmaxSendTime

Function:

This parameter defines in which time interval the output variable *nvoActuPosn* will be cyclically sent. A definition of 0 seconds switches this function off.

### SCPTmaxRcvTime

Function:

This parameter defines within what amount of time the *nviActuDrive* input must be received. If the input is not updated, the damper will move into the fire position and the AL\_ERROR alarm type will be issued. If a value of 0 seconds is entered, no review will be conducted.

### SCPTdirection

Function:

This parameter describes the effective direction of the damper.

Valid values:

Value	Function
0	Fire / Smoke dampers
1	Smoke extraction damper

Standard value: 0

### SCPTdriveTime

Function:

This parameter defines the maximum time required by a damper to move into the *normal position*. If this time is exceeded, the AL\_FIR\_MONITOR\_COND *alarm type* will be issued and the damper will move back into the *fire position*.

If a value of 0 seconds is entered, no run time review will be conducted. This is to be kept in mind when installing dampers without actuator!

### SCPTactuatorType

Function:

Description of the connected damper with up to 30 ASCII characters.

### SCPTinstallDate

Function:

Date and time of the installation of the node in the LON<sup>®</sup> network.

### SCPTlocation

Function:

Description of the physical location of the LON<sup>®</sup> module with up to 30 ASCII characters.

### SCPTmaintDate

Function:

Date and time of the last maintenance or inspection of the damper and/or the actuator.

### SCPTzoneNum

Function:

Here the user can enter a zone number, which allows for conclusions to be drawn on the situation of the LON<sup>®</sup> module.

### SCPTmanfDate

Function:

Here the manufacturing date for the LON-WA1/B2 software can be read (fixed).

### SCPToemType

Function:

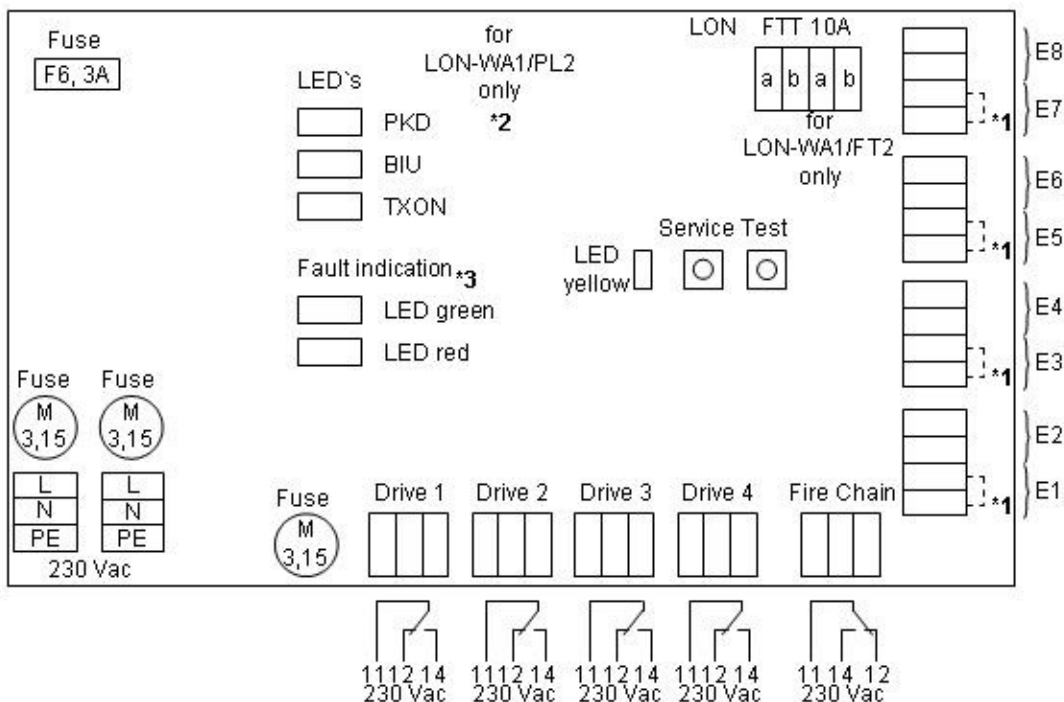
Display the OEM type (fixed).

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## 5 Wiring Diagrams



### Legend

E1 = Drive 1 end position OPEN  
E2 = Drive 1 end position CLOSED  
E3 = Drive 2 end position OPEN  
E4 = Drive 2 end position CLOSED  
E5 = Drive 3 end position OPEN  
E6 = Drive 3 end position CLOSED  
E7 = Drive 4 end position OPEN  
E8 = Drive 4 end position CLOSED

### Designation of the Belimo drives

Position of cable designation CLOSED S1 + S2  
Position of cable designation OPEN S4 + S6

11 = common contact  
12 = normally closed contact  
14 = normally open contact

Connection 230 V fire damper – spring return drive to 11 and 14

Connection 230 V smoke damper – reversible actuator to 11, 12 and 14

\* 1 Set a jumper (Damper OPEN) at not used the inputs

\* 2 Transmission-LED's Powerline  
PKD = Packet detect (Detection)  
BIU = Band in use (Waveband covered)  
TXON = Data send

\* 3 Error indication of the module  
green = all okay  
red = error in the module/applic

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## 6 Specification Texts

### LON-WA1/FT2

LON<sup>®</sup> module for operating up to four motorised 230 V fire or smoke dampers.  
Control of the drives and detection of the end positions "Open" and "Closed".  
Transmission of all signals to higher-order systems and operation of the motorised dampers via "Standard Network Variable Types" using LON<sup>®</sup> field bus FTT10A; transmission of the system status; integrated watchdog and heartbeat circuit.  
Compliance with LONMARK<sup>®</sup> specification 110.01 "Fire and Smoke Damper Actuator".  
LONMARK<sup>®</sup> certificate.

The following parameters can be defined:

- max. time interval for sending data
- min. time interval for receiving data
- max. time interval for sending system status
- zone numbers
- damper name
- date and time of installation
- date and time of the last inspection, max. time to move the damper to the CLOSED position
- max. time to move the damper to the OPEN position

Connections:

- 8 digital inputs
- 5 digital outputs via relays, changeover contact 250 V/ 5 A
- 230 V AC voltage supply
- bus connection to LON<sup>®</sup> via FTT10A transceiver
- type of protection: IP54

Make: TROX

Type: LON-WA1/FT2

### LON-WA1/PL2

LON<sup>®</sup> module for operating up to four motorised 230 V fire or smoke dampers.  
Control of the drives and detection of the end positions "Open" and "Closed".  
Transmission of all signals to higher-order systems and operation of the motorised dampers via "Standard Network Variable Types" using Powerline technology via the 230 V AC supply line; transmission of the system status; integrated watchdog and heartbeat circuit.  
Compliance with LONMARK<sup>®</sup> specification 110.01 "Fire and Smoke Damper Actuator".  
LONMARK<sup>®</sup> certificate.

The following parameters can be defined:

- max. time interval for sending data
- min. time interval for receiving data
- max. time interval for sending system status
- zone numbers
- damper name
- date and time of installation
- date and time of the last inspection, max. time to move the damper to the CLOSED position
- max. time to move the damper to the OPEN position

Connections:

- 8 digital inputs
- 5 digital outputs via relays, changeover contact 250 V/5 A
- 230 V AC voltage supply
- Powerline transceiver, no separate bus line
- type of protection: IP54

Make: TROX

Type: LON-WA1/PL2

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