

# LON analogue input modules



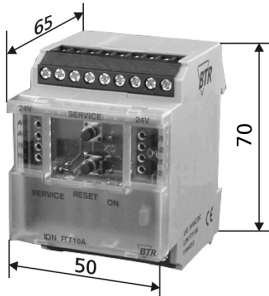
## LAE 8

24 V AC/DC, 8 inputs configurable as temperature or voltage inputs

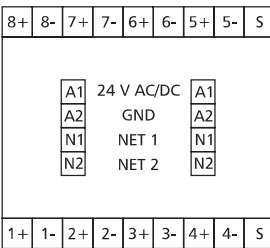
### Part Number

110 443 13

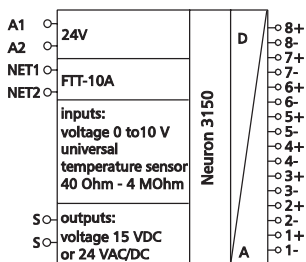
### Dimensions - C18 housing



### Wiring



### Wiring Diagram



### Use

LON module with 8 inputs, each configurable as temperature or voltage input, to record temperatures or voltages e. g. of passive or active temperature sensors, electrical ventilation or mixing valves, valve positions etc.

### Functional description

The network variables SNVT allow simultaneous scanning of all 8 inputs in a LON installation.

### LON interface

transceiver	FTT10A free topology
neuron	3150
data format	standard network variables (SNVT)
transmission rate	78 kBit/s
max. length (see page 7)	
line topology	2700 m / 64 nodes
free topology	500 m / 64 nodes
cabling	twisted pair

### Application software

XIF and NXE files are available as downloads under [www.btr-electronic-systems.de](http://www.btr-electronic-systems.de).

### Technical Data

<b>Housing</b>	dimensions w*h*l	50 x 68 x 65 mm
	weight	126 g
	mounting position	any
	material	housing + terminal blocks polyamide 6.6 V0 cover plate polycarbonate housing IP40 terminal blocks IP20
	type of protection (DIN 40050)	terminal blocks IP20
<b>Terminal blocks</b>	supply and bus	pluggable terminal block 1.5 mm <sup>2</sup> (terminal block and jumper plug are included to each packing unit)
	analogue inputs	2.5 mm <sup>2</sup>
<b>Supply</b>	operating voltage range	20 ... 28 V AC/DC
	current consumption	67 mA (AC) / 24 mA (DC)
	duty cycle	100 %
	recovery time	550 ms
<b>Input</b>	temperature input for all sensors in the range of	40 Ω bis 4 MΩ
	temperature range	adjustable
	resolution	0.2 K
	error	about ±0.2 °C
	voltage input	0 ... 10 V DC
	resolution	10 mV (0.0 ... 100 %)
	error	ca. ±100 mV
<b>Temperature range</b>	operation	-5 °C ... +55 °C
	storage	-20 °C ... +70 °C
<b>Protective circuitry</b>	operating voltage	polarity reversal protection
<b>Display</b>	operation	green LED
	function	yellow LED for status (service)

### Note

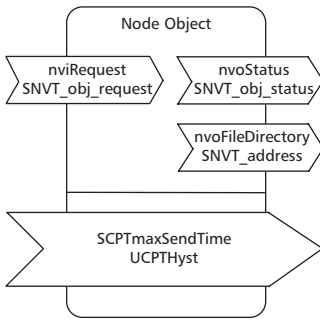
The modules can be mounted in series without interspace. The max. number of modules connected in series is 15, each group needs an external power supply.

# LON analogue input modules

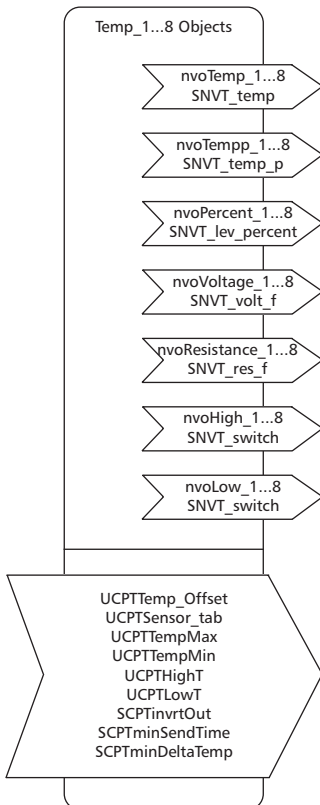
## Description of the LonMark objects and network variables

### LAE 8

#### Node Object



#### Temp\_1...8 Objects



#### Node Object

**nviRequest** SNVT type: NVT\_obj\_request  
**nvoStatus** SNVT type: SNVT\_obj\_status  
**nvoFileDirectory** SNVT type: SNVT\_address  
**Function**: The Node Object monitors and controls the functions of the different objects in the device. It supports the basic functions Object-Status and Object-Request required by LonMark.

**SCPTmaxSendTime** SNVT type: SNVT\_time\_sec  
**Function**: All output variables described below will be issued at the end of the preset period even without status change.  
**Time settings**: 0 timer function off-state, 6553,8 s (factory setting 60 s)

**UCPTHyst** SNVT type: SNVT\_temp\_p  
**Function**: Setting of the hysteresis; the output variables nvoHigh and nvoLow switch over when the hysteresis is expired (factory setting 2 Kelvin).

#### Temp\_1...8 Objects

**nvoTemp\_1...8 (index 3 ... 10)** SNVT type: SNVT\_temp  
**Function**: The output variable supplies a value with format °C depending on the input signal of 0 to 10.0 V and the settings in UCPTTempHigh and UCPTTempLow and/or the resistance of the selected temperature sensor.

**nvoTempp\_1...8 (index 11 ... 18)** SNVT type: SNVT\_temp\_p  
**Function**: See Temp\_1...8 but with format 0.01 K.

**nvoPercent\_1...8 (index 27 ... 34)** SNVT type: SNVT\_lev\_percent  
**Function**: The output variable supplies a value with format 0 to 100.0 % for voltage measurements depending on the input signal of 0 to 10.0 Volt.

**nvoVoltage\_1...8 (index 19 ... 26)** SNVT type: SNVT\_volt\_f  
**Function**: The output variable supplies a value with format 0 to 10.0 Volt depending on the input voltage.

**nvoResistance\_1...8 (index 35 ... 42)** SNVT type: SNVT\_res\_f  
**Function**: The output variable supplies a value with format Ohm depending on the input signal of 40 Ohm to 4 MOhm.

**nvoHigh\_1...8 (index 43 ... 50)** SNVT type: SNVT\_switch  
**Function**: When exceeding the temperature set in UCPTHight the output variable changes from 0,0 0 to 100,0 1. When under-running the temperature set in UCPTHight plus the hysteresis set in UCPTHyst the output variable changes from 100,0 1 to 0,0 0.

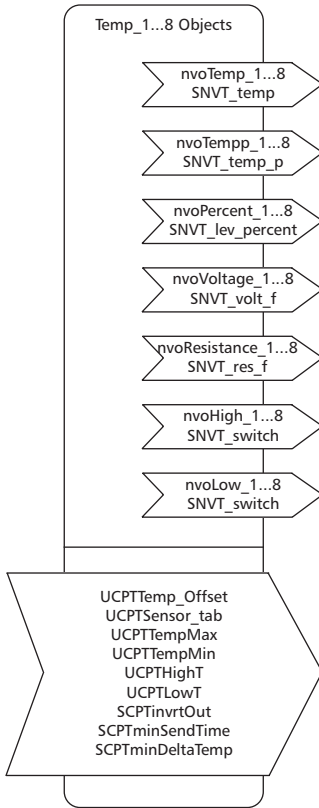
**nvoLow\_1...8 (index 51 ... 58)** SNVT type: SNVT\_switch  
**Function**: When under-running the temperature set in UCPTLowT the output variable changes from 0,0 0 to 100,0 1. When exceeding the temperature set in UCPTLowT plus the hysteresis set in UCPTHyst the output variable changes from 100,0 1 to 0,0 0.

# LON analogue input modules

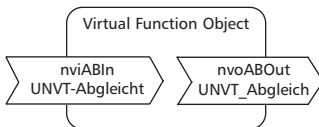
## Description of the LonMark objects and network variables

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### Temp\_1...8 Objects



### Virtual Function Object



### Temp\_1...8 Objects (continued)

#### UCPTemp\_Offset

SNVT type

Function

SNVT\_temp

Allows to readjust the output variable in steps of 0.1 K.

#### UCPTSensor\_tab

Function

Chart to define the input characteristic. The first 10 values are the temperatures in ascending order of the operating range of the sensor. The following 10 values are the corresponding resistance values. If the first resistance value is 0 the channel is configured as a 0 to 10 Volt input, if the first value is 1, the channel is configured for a LM235Z temperature sensor.

Factory setting

NTC20k in the range -30 °C to +130 °C

#### UCPTTempMax

SNVT type

SNVT\_temp

factory: +150 °C

#### UCPTTempMin

SNVT type

SNVT\_temp

factory: -50 °C

The temperature output variables are calculated according to an input signal of 0 to 10 V and the range selected in this variable.

#### UCPTHighT

SNVT type

SNVT\_temp

factory: +100 °C

#### UCPTLowT

SNVT type

SNVT\_temp

factory: -10 °C

Setting of thresholds to switch over the switch variables.

#### SCPTinvtOut

SNVT type

Function

SNVT\_lev\_disc

Inverting the values at nvoHigh or nvoLow.

#### SCPTminSendTime

SNVT type

Function

SNVT\_time\_sec

In case of changes in state the input states are only issued at the end of the preset period.

Time settings

0 timer function off-state  
6553,8 s (factory setting 1 s)

#### SCPTminDeltaTemp

SNVT type

Function

SNVT\_temp\_p

The output variables are only issued after a preset temperature difference (factory setting 0.5 Kelvin).

### Virtual Function Object

#### nviABIn (index 59)

SNVT type

Function

UNVTAbgleich

Input of the balancing orders. Made off-state by manufacturer.

#### nvoABOut (Index 60)

SNVT type

Function

UNVTAbgleich

Display of the balancing status.