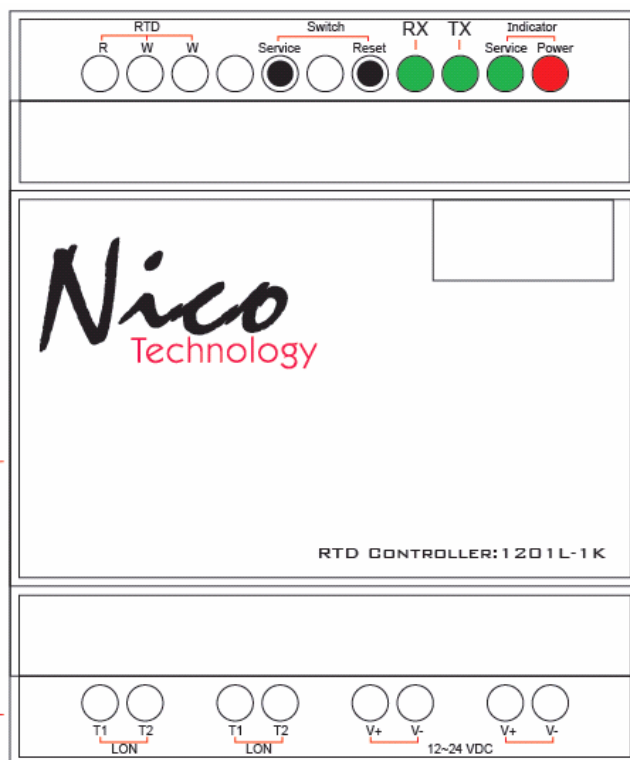




# 1201L-1K RTD Controller

Revision 1.1



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## This Manual

This manual provides any required information for installation, configuration and operation of the Nico Technology Ltd.1201L-1K RTD Controller.

It exclusively treats the handling of this device. It neither describes the LonWorks technology by Echelon nor the LonMark profile implemented in detail. More specific information concerning these subjects can be found in the documentation of Echelon ([www.echelon.com](http://www.echelon.com)) and the LonMark Interoperability Association ([www.lonmark.org](http://www.lonmark.org)).

The first part of this manual provides a survey about the device and its installation in chapters 1 to 3. The 2<sup>nd</sup> part describes the implemented application for lighting control and its configuration possibilities. Chapter 4 contains a description of the firmware interface while chapter 5 describes the implemented LonMark Objects in detail providing an outlook of the individual objects, their tasks and their relevant configuration parameters.

Chapter 6 explains the basics required to connect the objects to each other.

This manual is relevant for all variants of the Nico Technology Ltd.1201L-1K RTD Controller where applications for building automation control are implemented.

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2 Product Information

2.1 Functional Elements



Figure 1.1 1201L-1K RTD Controller

No	Description
1	Power Indicator
2	Service Pin LED indicator
3	Transmission LED indicator
4	Receive LED indicator
5	Reset button
6	Service Pin button
7	Pt1000 Sensor Probe
8	12~24VDC Input Power
9	LonWorks FTT-10 Channel

### 3 Installation

This chapter first describes the installation of the device; the installation of the configuration software is described in section 3.4.

#### 3.1 Warnings

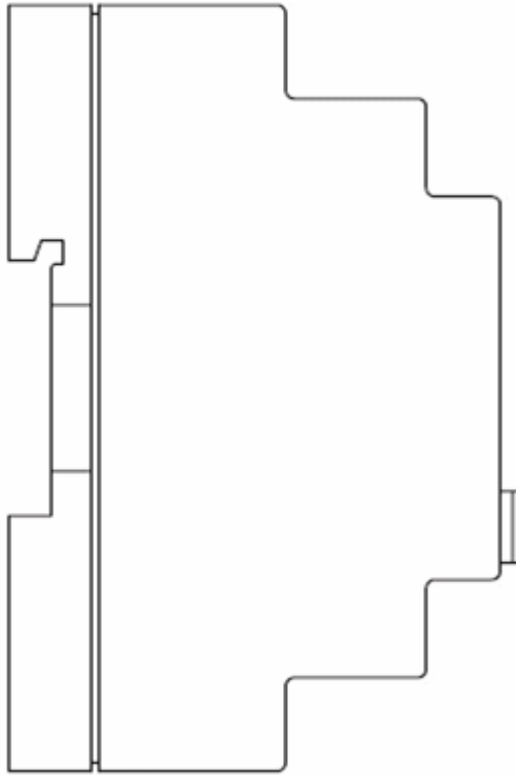
##### Attention

The device must be installed in compliance with the relevant DIN/VDE regulations or the relevant national standards. The connection to the supply voltage must be performed in accordance with VDE 0100 and VDE 0160 or the relevant national standard Installation should perform by qualified and technical experienced personnel only.

##### CAUTION

At the connections of the input channel (Fig. 1.1, terminal 7) and the power supply (terminals 8) 12~24VDC main voltage with load guard band is accessible. The installation of the unit therefore has to be effected in a switch cabinet or behind a respective cover.

### 3.2 Mounting



### 3.3 Connections

The 1201L-1K RTD Controller has to be connected to a 12~ 24VDC power supply and to the LonWorks network. According to the respective application peripheral equipment has to be connected to outputs.

**Attention**

Before connecting peripheral equipment the power supply device has to be switched off.

The connection is effected by means of the included plug-screw terminals.

Clamping range of the plug-screw terminals:

- DC power and network connections (terminals **8**): 2.5 mm

The pin assignment of the connections is described in chapter 3.1, also containing wiring details.

**Voltage**

The 12~24 Volt Direct Current connections are through connected in order to achieve easy wiring.

**LonWorks Network**

The connection to the LonWorks network is made by means of twisted-pair cables. The connection "shield" has to be connected to ground in order to achieve a reliable dissipation of over-voltage on the LON circuits.

**Analog Inputs**

The actors to be controlled are connected to the RTD Pt1000 inputs. In each case the connection is effected terminal **1**).

**Attention**

The 1201L-1K RTD Controller input power supply must within 12~ 24VDC power supply only.

**3.4 Software Installation**

The configuration software of the 1201L-1K RTD Controller has to be installed by starting the program Setup.exe on the data carrier provided. It runs under Windows 9x/2000 and NT.

## 4 Device Description

The 1201L-1K RTD Controller for LonWorks network in building automation. Its peripheral scope has been specially designed for the use as temperature or humidity sensor device spreading control of applications such as valve control or lighting control thru Lux sensor.

For the use in building automation control the 1201L-1K RTD Controller realizes 1 independent input channel.

The LonMark object available per channel flexible use of the 1201L-1K RTD Controller; The configuration of the building automation application is effected via any LonWorks network management tool.

Of course, the 1201L-1K RTD Controller is also freeing programmable in Neuron C. As a flash module is used the application can be load via the LonWorks network, making the 1201L-1K RTD Controller, e.g. for detail info please contact: [Thomas@nico-tech.com](mailto:Thomas@nico-tech.com)

### 4.1 Hardware Survey

The 1201L-1K RTD Controller disposes of eight output circuit for each. The output circuit can be accept individually input RTD Pt1000 single.

### 4.2 Operation and Display Elements

The 1201L-1K RTD Controller is fitted with a service button accessible via a small gap on the front panel (see Figure. 1.1, **6**). Activation of the buttons generates a service-pin message transmitted via the LonWorks network. The processor status as well as the service-pin status are displayed by the service LED (figure. 1.1, **2**), which is on while the service button is activated. By use the network management function Wink the service LED flashes.

Furthermore the 1201L-1K RTD Controller is fitted with a reset LED (figure. 1.1, **1**) same as Power indicator, displaying the availability of device occur reset. The LED is connection to an I/O pin of the Neuron chip processor.

### 4.3 Connection Pin Assignment

The following tables show the connector pin assignment of the individual connectors. Connections the **1** marking cf. Figure. 1.1 On previously page. In each clamp block pin 1 is situated on the left. For further wiring



information see figure 3.2.

**LonWorks Network Connection**

The double-core bus line can be connection either to LON A or to LON B. No polarity has to be considered by connecting the LonWorks network.



Figure 3.1 Connector pin assignment LonWorks network

Input circuit

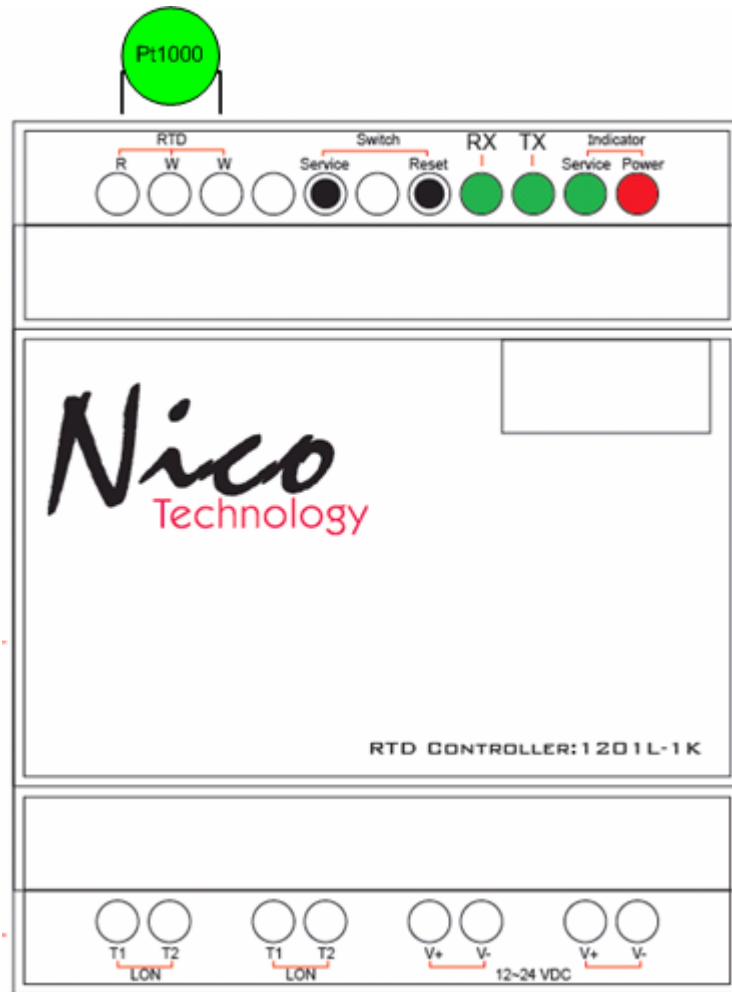


Figure 3.2 Connector pin assignment input circuit.

Power Supply

The 1201L-1K RTD Controller has to be connected via connector 2, 3, 5, 7 to 24VDC main voltage. Also see figure. 1.1.

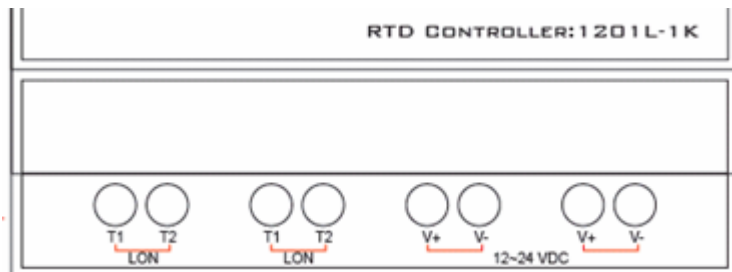


Figure 3.3 Connector pin for Power Supply near LonWorks channels side

4.4 Wiring Diagram

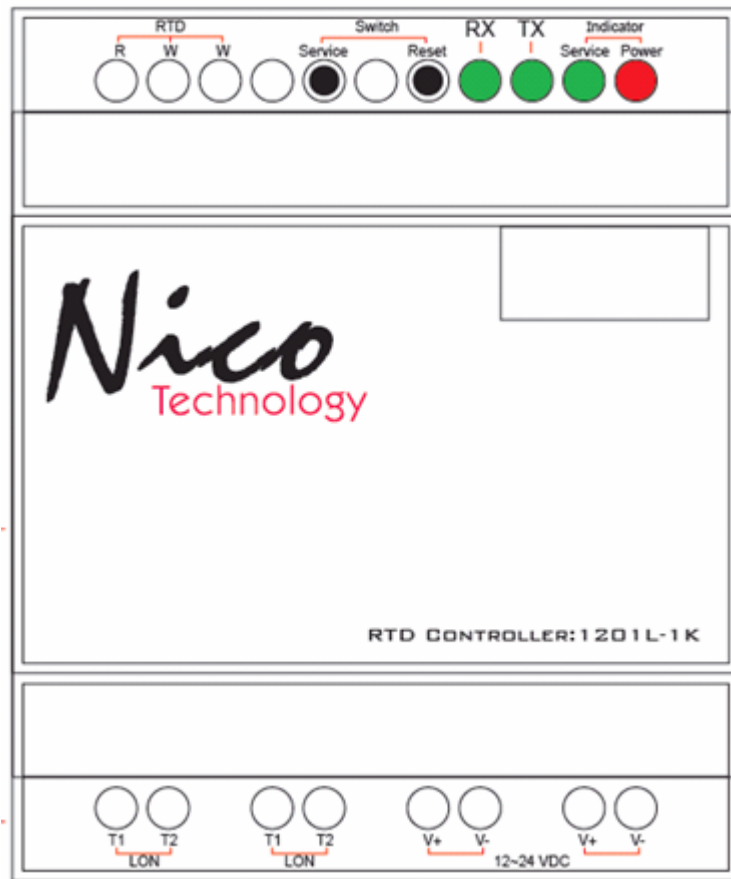


Figure 3.5 Connecting to 1208L

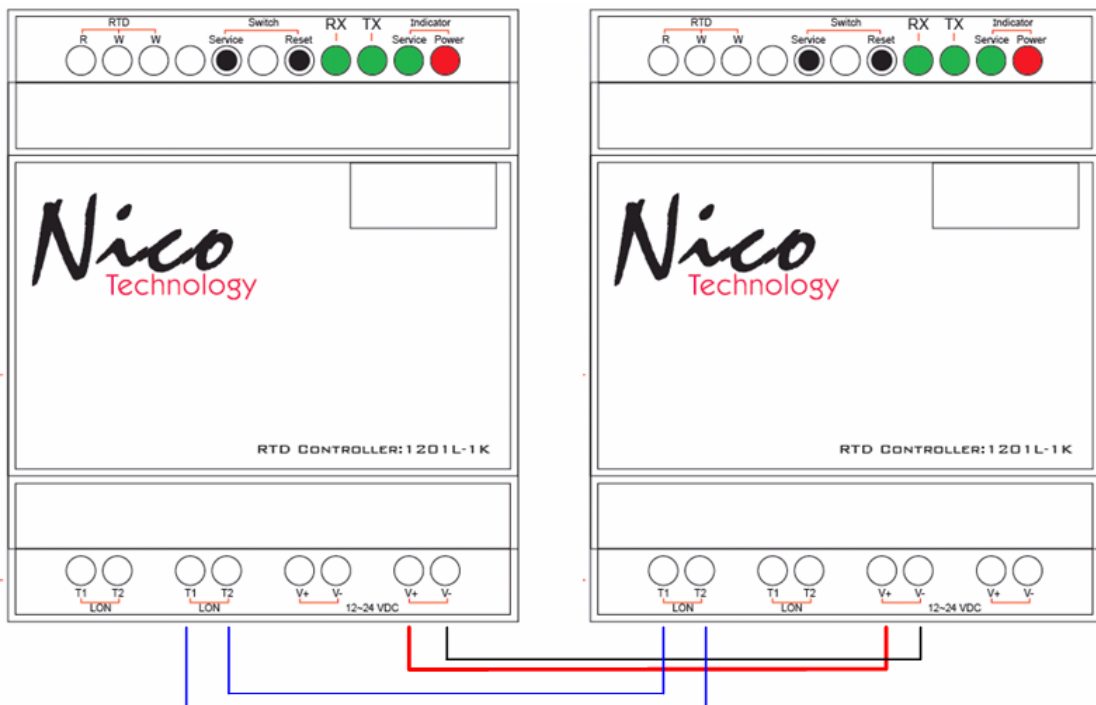


Figure 3.6 Connecting to other one of 1201L-1K or LonWorks device

#### 4.5 EMC

The 1208L Analog Input Module is a CE certified device according to the regulation **89/336/EEC** for electron magnetic compatibility, **modified by 92/31/EEC**". Concerning the emission it fulfills classification B (living area) according to EN 55022A/B, EN 55011 A/B and EN 50081-1/2 and, concerning the interference sensibility, classification A (industrial area) according to EN 50082-2.

#### 4.6 Technical Specifications

Model	1201L-1K RTD Controller	
CPU	Echelon Neuron 3120,10MHz	
Memory	4Kbytes flash EPROM,4Kbytes RAM, 12Kbytes ROM	
LonWorks Transceiver	FTT-10A/FT-X1	
Power supply	12~ 24VDC (12VDC is recommend)	
Power consumption	500mA(Per channel maximum) 38mA(Standby)	
Connection	Plug-screw clamp 2.5mm	
Temperature	Operation	0 ~ +70
	Storage	-25 ~ +85
Sensor Type	Pt 1000resistance measuring	
Sensor Connection	3-wire connection (factory preset) or 2-wire	
Sensor Temperature range	-220 °C ... +239 °C (PT)	
Resolution	0.04°C	
Measuring error	± 1.5°C of full scale value	
Conversion time	500ms (per channel)	
Admitted relative humidity	5 ~ 93%, non condensing	
Dimensions	90 x 71 x 57.7 mm, DIN 43880, incl. clamps	
Mounting	DIN rail(EN 50022, 35 x 15)	
Display & Operation	Service-pin and Reset LED indicator and button	
I/O Channels	1 RTD (resistive temperature device) input for Pt1000	

Table 3.1 Technical Specification

4.7 Dimensions

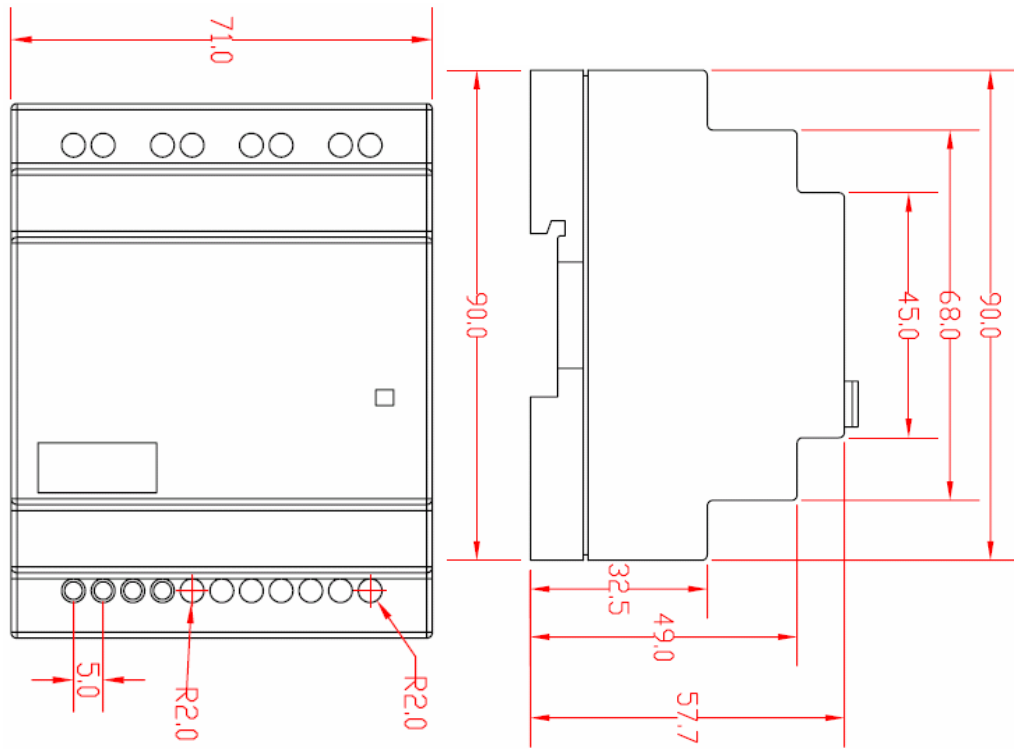


Figure 3.5 Device dimensions without plug-screw clamps

## 5 Application Software for Building Automation Control

On the 1201L-1K RTD Controller an application for building automation control is implemented, making output functionality as well as analog control functions available.

Therefore the relevant LonMark profiles stated in Table 4.1 are implemented. The use of network variables (NV) complies with the LonMark standard. SCPT's are used for parameterization by applying the read/write-memory method.

Title	Present Version	Identification
LonMark Application Layer Interoperability Guidelines	V3.1	078-0120-01D
The SNVT Master List and Programmer's Guide	V 8.0	
The SCPT Master List	V 8.0	
LonMark Functional Profile Open Loop Sensor Object	V 1.1	0001_11

Table 4.1 Referring document about LonMark profiles

### 5.1 System Scope

The 1201L-1K RTD Controller is equipped with single channel for RTD input.

The RTD input of the 1201L-1K RTD Controller allows the connection of Pt1000 type sensor. A Sensor object, according to LonMark Standard can be assigned to these output and configured.

The 1201L-1K RTD Controller is equipped with single resistor input to connect e.g. Temperature sensor, Humidity sensor, Lux sensor.

### 5.2 Interoperable Interface

The LonMark profile *0001\_11 Open Loop Sensor* is realized in the 1201L-1K RTD Controller. The network interface remains standardized, clear and especially it is interoperable. That means, the 1201L-1K RTD Controller can be used in connection with network components by other manufactures. The following table contains a survey of the network variables defining the 1201L-1K RTD Controller. network interface and

their assignment.

NV Name	Type	Allocated Object
nvo_temp	SNVT_temp_p	TempSensor (Close Loop Sensor)

Table 4.4 Allocation of NVs and LonMark objects

Under the order code 1201L-1K RTD Controller a data carrier containing the interface describing file ***Nico\_RTD-1201L-1K.XIF*** and the application ***Nico\_RTD-1201L-1K.APB*** is provided free of charge at simultaneous purchase of a 1201L-1K RTD Controller. The XIF-file is necessary for integration with LonMaker for Windows or any other LonWorks network management tool.

## 6 System Objects

This chapter describes the LonMark objects implemented in the 1201L-1K RTD Controller. For each it states the network variable used, special configuration properties, general object properties, response during modification of the configuration and after a reset, and, if available, further object properties.

### 6.1 Node Object

The functionality of the node object is defined in the Application Layer Guidelines of LonMark Interoperability Association ([www.lonmark.org](http://www.lonmark.org)).

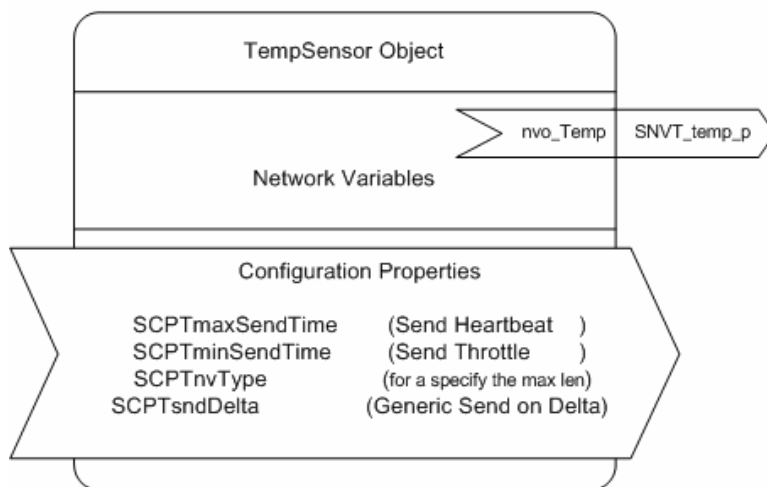
#### Network Variables

NV Name	NV Type	Comment
nviRequest	SNVT_obj_request	Status request
nvoStatus	SNVT_obj_status	Status response
nvoAlarm	SNVT_alarm	Alarm generating
nvoFileDirectory	SNVT_address	Address of file for parameterization



6.2 Temp Sensor (OLS) Object

# TempSensor



Network Variables

NV Name	NV Type	Comment
nvo_temp	SNVT_temp_p	Temperature value Valid range:-50~70

Configuration Properties

CP Name	Comment
SCPTmaxSendTime	Send Heartbeat
SCPTminSendTime	Send Throttle
SCPTnvType	For specify the network variable maximum length. (nvo_temp support changeable network variable type to SNVT_temp_p or SNVT_temp_f) <i>[Note] this feature was reserved for future use.</i>
SCPTsndDelta	Generic send on Delta