



## 4201PL 1-10V Analog Adapter

### Manual

Revision 1.0



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## This Manual

This manual provides any required information for installation, configuration and operation of the 4201PL 1-10V Analog Adapter.

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 4201PL 1-10V Analog Adapter where applications for lighting and switch control are implemented.

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## 2 Product Information

### 2.1 Functional Elements

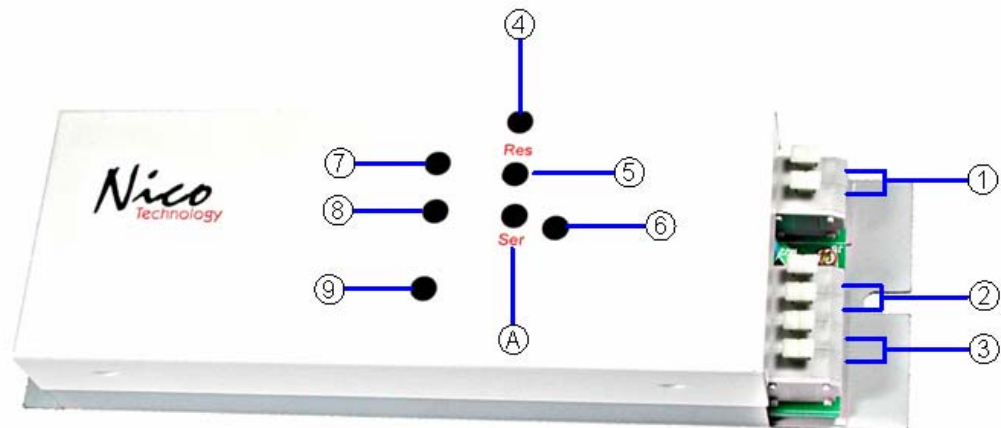


Figure 1.1 4201PL 1-10V Analog Adapter

| No | Description                              |
|----|--|
| 1  | Output channel for 1-10VDC signal output |
| 2  | Output channel for relay output          |
| 3  | 90~260VAC input power                    |
| 4  | Reset LED indicator                      |
| 5  | Reset button                             |
| 6  | Service pin indicator                    |
| 7  | Band In Use indicator                    |
| 8  |  |
| 9  |  |
| A  | Service Pin button                       |

### 2.2 Variants and Identifications

### 2.3 Scope of Delivery

## 3 Installation

This chapter first describes the installation of the device; the installation of the configuration software is described in section 2.4.

### 3.1 Warnings

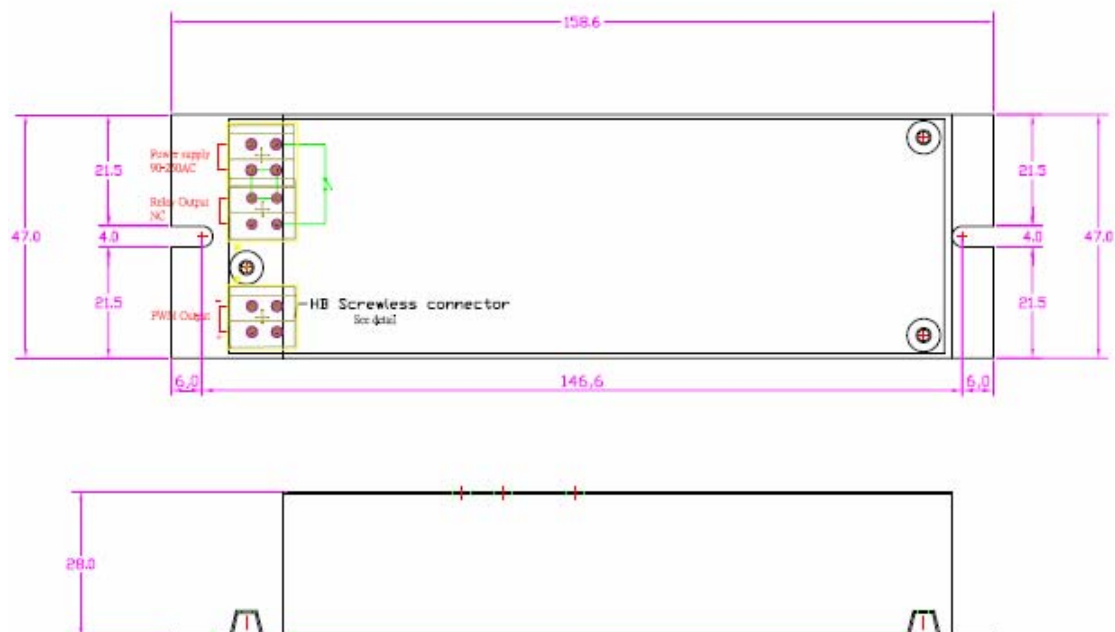
#### Attention

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 standards. Installation should perform by qualified and technical experienced personnel only.

#### CAUTION

At the connections of the output channels 1 – 4 (Fig. 1.1, terminals 7, 8, 9, A) and the power supply (terminals 1, 2) 90~260V 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 the 4201PL 1-10V Analog Adapter has to be connected to a 90~260VAC 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 screw less terminals.

Clamping range of the screw less terminals:

- load connections (5.08mm grid, terminals **0** , **1**): 0.2 – 2.5mm

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

#### Voltage

The 90~260 Volt connections are through connected in order to achieve easy installation.

#### LonWorks Network

The connection to the LonWorks network is made by means of power line channels.

#### Relay Outputs

The actors to be controlled are connected to the relay outputs. In each case the connection is effected between terminal 1).

#### Attention

The 4201PL 1-10V Analog Adapter input power supply must be same AC power phase.

### **3.4 Software Installation**

The configuration software of the 4201PL 1-10V Analog Adapter has to be installed by starting the program Setup.exe on the data carrier provided. It runs under Windows 9x/2000 and NT.

Download url: <http://www.nico-tech.com/download>

## 4 Device Description

The 4201PL 1-10V Analog Adapter is a electronic ballast PWM output adapter for LonWorks network in automation. Its peripheral scope has been specially designed for the use as fluorescent light controller for device spreading control of applications such as lighting control.

For the use in lighting the the 4201PL 1-10V Analog Adapter realizes one independent output channel with one relay output to control conventional switch.

The LonMark object available per channel flexible use of the the 4201PL 1-10V Analog Adapter;Furthermore there are several timer functions for the operation by switch function. The configuration of the lighting control application is effected via a plug-In.

Of course, the 4201PL 1-10V Analog Adapter is also freeing programmable in Neuron C. As a flash module is used the application can be load via the LonWorks network, for the detail please direct contact us.

### 4.1 Hardware Survey

The the 4201PL 1-10V Analog Adapter disposes of one output circuit for each. The output circuit can be controlled individually relay output **8A@90~260VAC**.

### 4.2 Operation and Display Elements

The 4201PL 1-10V Analog Adapter is fitted with a service button accessible via a small gap on the front panel (see Figure. 1.1, **A**). 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, **6**), which is on while the service button is activated. By use the network management function Wink the service LED flashes.

Furthermore the 4201PL 1-10V Analog Adapter is fitted with a reset LED (figure. 1.1, **6**), 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 chapter 3.4.

#### LonWorks Network Connection

The LonWorks Power Line can be direct connection to **Power Line**. Without other equipment, but has to be considered by connecting on the same phase of power line channel

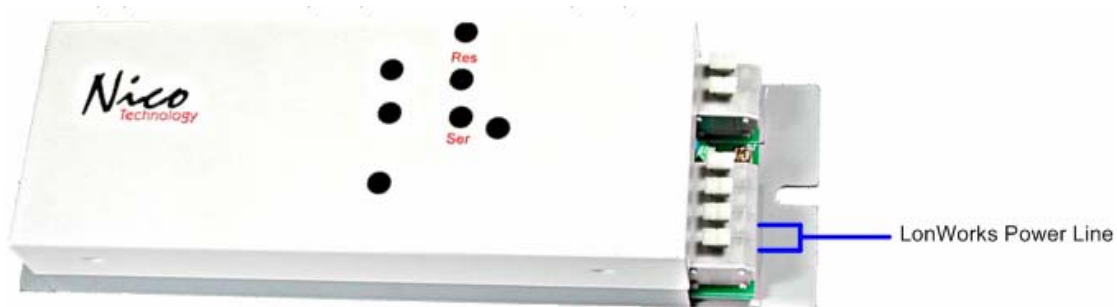


Figure 3.1 Connector pin assignment LonWorks network

#### Relay output circuit

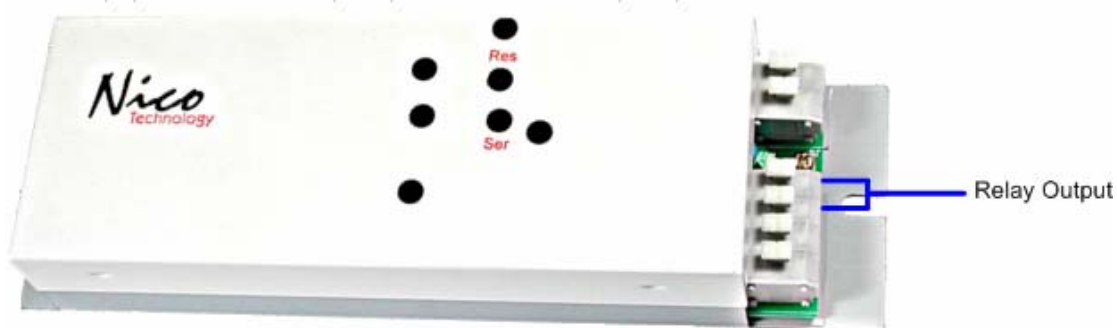


Figure 3.2 Connector pin assignment output circuit.

#### 1-10V signal output circuit

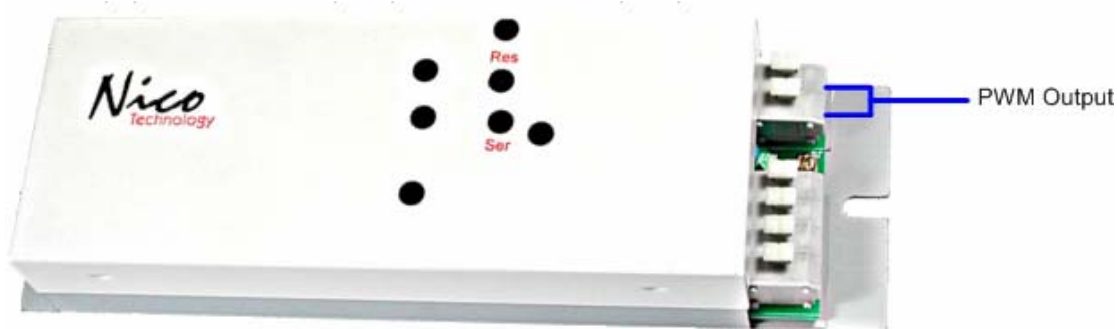


Figure 3.3 Connector pin assignment 1-10V output circuit.

4.4 EMC

The 4201PL 1-10V Analog Adapter 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.

4.5 Technical Specifications

|                            |  |           |
|----------------------------|--|-----------|
| CPU                        | Echelon Neuron 3120,10MHz                      |           |
| Memory                     | 4Kbytes flash EPROM,4Kbytes RAM                |           |
| LonWorks Transceiver       | PL-3120  |           |
| Power supply               | 90~260VAC                                      |           |
| Power consumption          |  |           |
| Connection                 | Screw less 2.5mm                               |           |
| Temperature                | Operation                                      | 0 ~ +50   |
|                            | Storage  | -20 ~ +70 |
| Admitted relative humidity | 10 ~ 90%, non condensing                       |           |
| Dimensions                 | 159 x 27 x 47 mm,                              |           |
| Mounting                   | Wall mounting                                  |           |
| Display & Operation        | Service-pin and Reset LED indicator and button |           |
| I/O Channels               | 1 for Relay output channel (max. 8Amp)         |           |
|                            | 1 for 1-10V output channel                     |           |

Table 3.1 Technical Specification

4.6 Dimensions



Figure 3.5 Device dimensions without plug-screw clamps

## 5 Application Software for Energy Saving

On the 4201PL 1-10V Analog Adapter an application for energy saving control is implemented, making output functionality as well as switch 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, no customized network variables are used. 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 Lamp Actuator              | V 1.0           | 0340           |

Table 4.1 Referring document about LonMark profiles

### 5.1 System Scope

The 4201PL 1-10V Analog Adapter is equipped with one 1-10V output channel and one channel for Relay Output.

The relay outputs of the 4201PL 1-10V Analog Adapter allow the connection of actuator. A Lamp Actuator object according to LonMark Standard can be assigned to these output and configured.

Furthermore the 4201PL 1-10V Analog Adapter can act as constant switch controller and sensor controller.

The 4201PL 1-10V Analog Adapter is equipped with one relay outputs circuit to connect e.g. Fluorescent Light power supply.

Other one 1-10V output circuit to connect e.g. dimmable electronic ballast for fluorescent lighting.

## 5.2 Interoperable Interface

The **LonMark profile 004** is realized in the 4201PL 1-10V Analog Adapter. As some customized NVs are used, the network interface remains standardized, clear and especially it is interoperable. That means, the 4201PL 1-10V Analog Adapter can be used in connection with network components by other manufactures. The following table contains a survey of the network variables defining the 4201PL 1-10V Analog Adapter network interface and their assignment.

| NV Name        | Type        | Allocated Object |
|----------------|-------------|------------------|
| nvoLampValue   | SNVT_switch | LampActator      |
| nvoLampValueFb | SNVT_switch | LampActator      |

Table 4.4 Allocation of NVs and LonMark objects

Under the order code 4201PL 1-10V Analog Adapter a data carrier containing the interface describing files **Nico\_Dimmer-4201PL\_r1.XIF** and the applications **Nico\_Dimmer-4201PL\_r1.APB** is provided free of charge at simultaneous purchase of Nico system. 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 4201PL 1-10V Analog Adapter. For each it states the network variable les 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 Lamp Actuator Object

#### Network Variables

| NV Name     | NV Type     | Comment                              |
|-------------|-------------|--------------------------------------|
| LampValue   | SNVT_switch | Input value of lamp value            |
| LampValueFb | SNVT_switch | Feedback value of current lamp value |

#### Configuration Properties

| CP Name        | CP Type        | CP Index | Comment                   |
|----------------|----------------|----------|---------------------------|
| Location       | SCPT_location  | 17       | Additional free comment   |
| SCPTrampDownTm | SCPTrampDownTm |          | Dimming down delay time   |
| SCPTrampUpTm   | SCPTrampUpTm   |          | Dimming up delay time     |
| SCPTobjMajVer  | SCPTobjMajVer  |          | Major version of firmware |
| SCPTobjMinVer  | SCPTobjMinVer  |          | Min version of firmware   |
| SCPTmaxRcvTime | SCPTmaxRcvTime |          | Heartbeat                 |
| SCPTdefOutput  | SNVT_switch    |          | Default output value      |