

**CASTOMAT® System**

Industrial I/O-Node  
ION ANALOGINPUT T001

6AT8000-1BA00-0XA0

Manual - English  
Release 2008-07

<b>Preface</b>	<b>1</b>
<b>Scope of Delivery</b>	<b>2</b>
<b>Product Characteristics</b>	<b>3</b>
<b>Installation and Maintenance</b>	<b>4</b>
<b>Notes on the CE Mark</b>	<b>5</b>
<b>References</b>	<b>6</b>
<b>Appendix</b>	<b>7</b>
<b>Contact Information</b>	<b>8</b>

## Safety Guidelines

This document contains notices which you should observe to ensure your own personal safety as well as to avoid property damage. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring to property damage only have no safety alert symbol.



### Danger

indicates an **imminently** hazardous situation which, if not avoided, will result in death or serious injury.



### Warning

indicates a **potentially** hazardous situation which, if not avoided, could result in death or serious injury.



### Caution

used with the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

### Caution

used without safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

### Notice

used without the safety alert symbol indicates a potential situation which, if not avoided, may result in an undesirable result or state.

When several danger levels apply, the notices of the highest level (lower number) are always displayed. If a notice refers to personal damages with the safety alert symbol, then another notice may be added warning of property damage.

### Qualified Personnel

The device/system may only be set up and operated in conjunction with this documentation. Only qualified personnel should be allowed to install and work on the equipment. Qualified persons are defined as persons who are authorized to commission, to earth, and to tag circuits, equipment and systems in accordance with established safety practices and standards.

### Intended Use

Please note the following:



### Warning

This device and its components may only be used for the applications described in the catalog or technical description, and only in connection with devices or components from other manufacturers approved or recommended by Siemens.

This product can only function correctly and safely if it is transported, stored, set up and installed correctly, and operated and maintained as recommended.

### Trademarks

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### Disclaimer of Liability

We have checked the contents of this document for agreement with the hardware and software described. Since deviations cannot be precluded entirely, we cannot guarantee full agreement. However, the data in the manual are reviewed regularly, and any necessary corrections will be included in subsequent editions. Suggestions for improvement are welcomed.

## Table of Contents

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1	Preface .....	4
1.1	Purpose of this Document.....	4
1.2	Validity of this Document.....	4
1.3	Audience .....	4
1.4	Standards and Approvals.....	4
2	Scope of Delivery .....	5
2.1	Scope of Delivery .....	5
2.2	Unpacking and Checking .....	5
3	Product Characteristics .....	6
3.1	Introduction .....	6
3.2	Hard- and Software Requirements .....	7
3.2.1	Hardware.....	7
3.2.2	Software .....	7
3.3	Order Numbers .....	7
3.4	Network Topology .....	8
3.5	Interfaces .....	9
3.5.1	Overview of Interfaces .....	9
3.5.2	IEEE1394a Interfaces.....	10
3.5.3	Power Supply Interface.....	11
3.5.4	Analog Interfaces .....	12
3.6	Indicators.....	13
3.7	Technical Data .....	14
3.8	Block Diagram.....	16
4	Installation and Maintenance .....	17
4.1	Types of Installation .....	17
4.2	Installation .....	17
4.3	Disassembly.....	18
4.4	Example of Installation .....	19
4.5	Grounding .....	19
4.6	Maintenance.....	19
5	Notes on the CE Mark .....	20
6	References .....	21
6.1	Other Documentation .....	21
7	Appendix .....	22
7.1	Dimension Drawing .....	22
8	Contact Information .....	23

# 1 Preface

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## 1.1 Purpose of this Document

This document supports you when commissioning and using the device

- ION ANALOGINPUT T001

of the CASTOMAT® System.

## 1.2 Validity of this Document

This document is valid for the following device:

- ION ANALOGINPUT T001

## 1.3 Audience

This document is intended for personnel involved in the commissioning and using of the device:

- ION ANALOGINPUT T001

## 1.4 Standards and Approvals

The device

- ION ANALOGINPUT T001

meets the requirements of the CE mark.

Extended information can be found in the appendix of this manual.

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### Note

The particularized approvals are only valid at the time, when the product is conformity marked.

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## 2 Scope of Delivery

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### 2.1 Scope of Delivery

#### What is shipped?

- Device  
ION ANALOGINPUT T001
- 3-pin plug-in terminal block  
PHOENIX CONTACT, COMBICON, 3 Pin MVSTBW 2.5/3-STF-5.08
- 16-pin plug-in terminal block  
PHOENIX CONTACT, COMBICON, 16 Pin MVSTBW 2.5/16-STF-5.08

### 2.2 Unpacking and Checking

After unpacking, please check

- the packet for completeness and
- all parts for transport damage.



#### **Warning**

Do not use any parts that show evidence of damage!

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## 3 Product Characteristics

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### 3.1 Introduction

This chapter gives you an overview of the function of the component

- ION ANALOGINPUT T001

of the CASTOMAT® System.

The ION ANALOGINPUT T001 captures analog signals and transmits the measured data to a superior industrial-PC via its FireWire (IEEE1394a-standard) link with 400 Mbps.

The usage of an ION ANALOGINPUT T001 allows the recording of 8 analog, separate electrically isolated signals with a level of +/-10 V. The maximum sample rate is up to 40 kHz per channel.

The device is designed for the usage on a DIN rail.



ION ANALOGINPUT T001

## 3.2 Hard- and Software Requirements

### 3.2.1 Hardware

- PC with Windows XP Professional (Service Pack 2 recommended)
  - CPU with  $\geq 2.4$  GHz
  - working memory  $\geq 512$  MByte
  - OpenGL enabled graphic controller (from 1024x768 Pixels, 1280x1024 Pixels or more recommended)
  - IEEE1394, Ethernet and USB interfaces
- power supply units and connecting cables (depending on the used CASTOMAT® System components)

### 3.2.2 Software

- CASTOMAT® X-Tools XP (Standard or Professional Edition)

## 3.3 Order Numbers

Article	Order Number (MLFB)
CASTOMAT® ION ANALOGINPUT T001	6AT8000-1BA00-0XA0
CASTOMAT® System - User Documentation	6AT8000-5AA00-0XA0
CASTOMAT® X-Tools XP - Standard Edition	6AT8000-0AA00-1BA0
CASTOMAT® X-Tools XP - Professional Edition	6AT8000-0AA00-2BA0

Further information is obtained from your local Siemens office and from the homepage

<http://www.siemens.com/castomat>.

## 3.4 Network Topology

### Which network topologies can be realized?

The IEEE1394a technology allows the building of extended networks with up to 63 participants.

With the component ION ANALOGINPUT T001, tree and chain topologies can be built.

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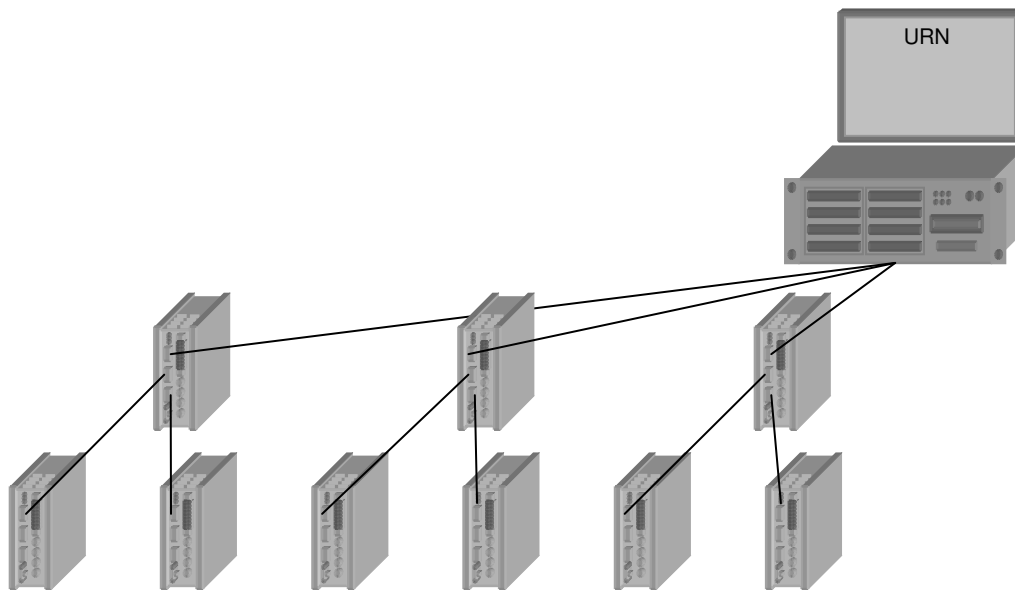
#### Caution

The net topology is equal to the one of a bus with branching - but without loops!

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#### Tree topology

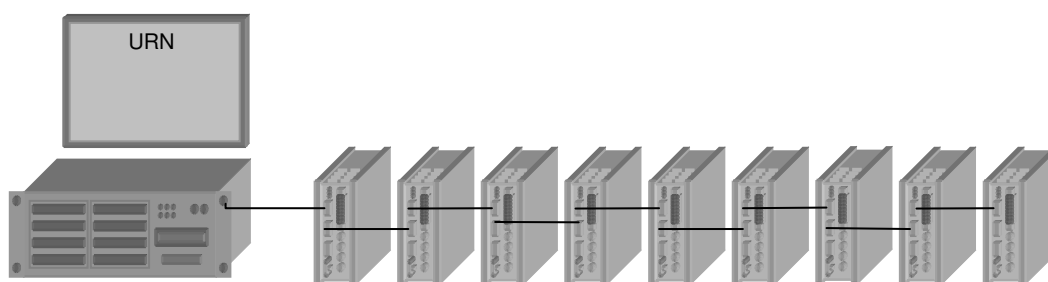
The tree topology facilitates the building of networked systems by connecting two further nodes to each node.



tree topology

#### Chain topology

The chain topology enables the building of networked systems by connecting one further node to each node.



chain topology

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#### Caution

The maximum number of nodes per bus is limited to 63. The maximum number of hops (peer-to-peer-connections) from one node to any other node is limited to 15 - i.e. there may not be more than 16 nodes connected in a row.

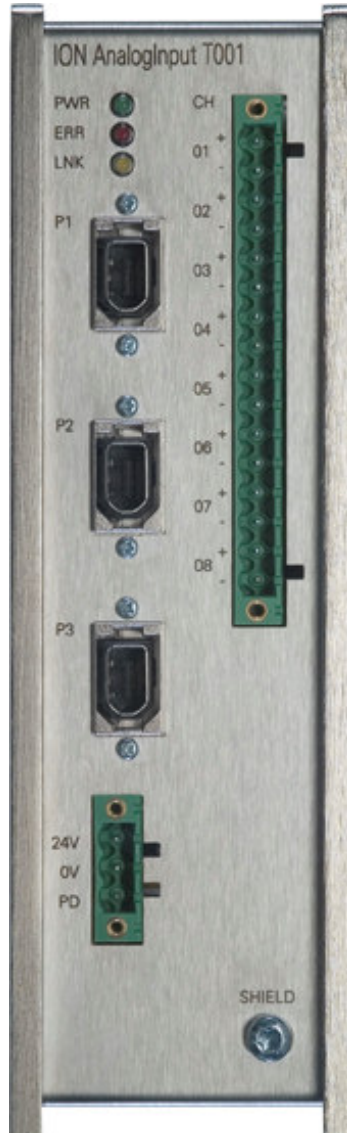
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## 3.5 Interfaces

### 3.5.1 Overview of Interfaces

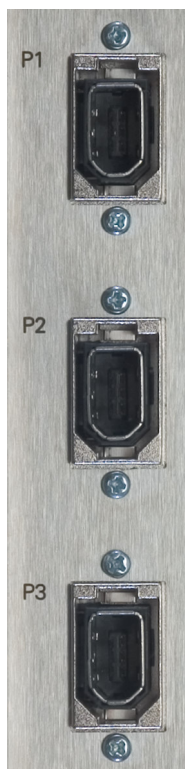
The device ION ANALOGINPUT T001 provides three plugs for further components of the CASTOMAT® System and eight inputs for analog +/-10 V signals.



ION ANALOGINPUT T001

### 3.5.2 IEEE1394a Interfaces

At the ION ANALOGINPUT T001 the IEEE1394a Interfaces (P1 / P2 / P3) are implemented as 6-pin-sockets.



IEEE1394a Interfaces

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**Caution**

Only cables of a maximum length of 4.5 m may be connected to the IEEE1394a Interfaces.

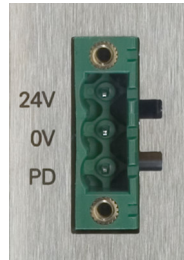
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### 3.5.3 Power Supply Interface

The connection takes place via a 3-pin plug-in terminal block. The power supply is connected to the chassis via a low resistance in order to keep a high interference resistance.

The supply voltage is attached via pin 1 (24V) and pin 2 (0V).

The power feed of 24 V on pin 3 (PD - Power Down) of the terminal block of 90 seconds causes a RESET of the device. After approximately 90 seconds the device starts automatically again.



power supply interface



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#### Caution

The device ION ANALOGINPUT T001 is designed for operation with safety extra-low voltage. This means that only safety extra-low voltages (SELV) complying with IEC950/EN60950/VDE0805 can be connected to the power supply terminals.

The power supply unit for the supply of the ION ANALOGINPUT T001 has to meet NEC Class 2 (range of voltage 18-32 V, maximum load of 1 A).

The ION ANALOGINPUT T001 has to be protected with a fuse element of double maximum load and tripping characteristic „medium time lag“ or „time lag“.

Never operate the ION ANALOGINPUT T001 with AC voltage or DC voltage higher than 32 VDC.

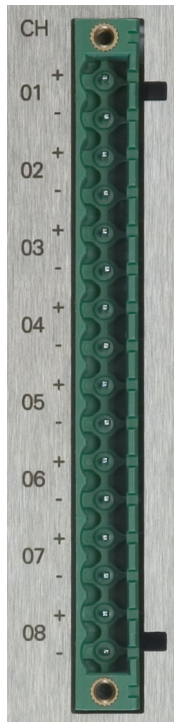
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### 3.5.4 Analog Interfaces

At the ION ANALOGINPUT T001, the interface to the analog +/-10 V signals

- CH 01 +/- ... CH 08 +/-

is implemented as 16-pin-socket (PHOENIX, MVSTBW 2,5/16-GF-5,08).



analog interfaces

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#### Caution

Only cables of a maximum length of 3.0 m may be connected to the analog inputs.

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### 3.6 Indicators



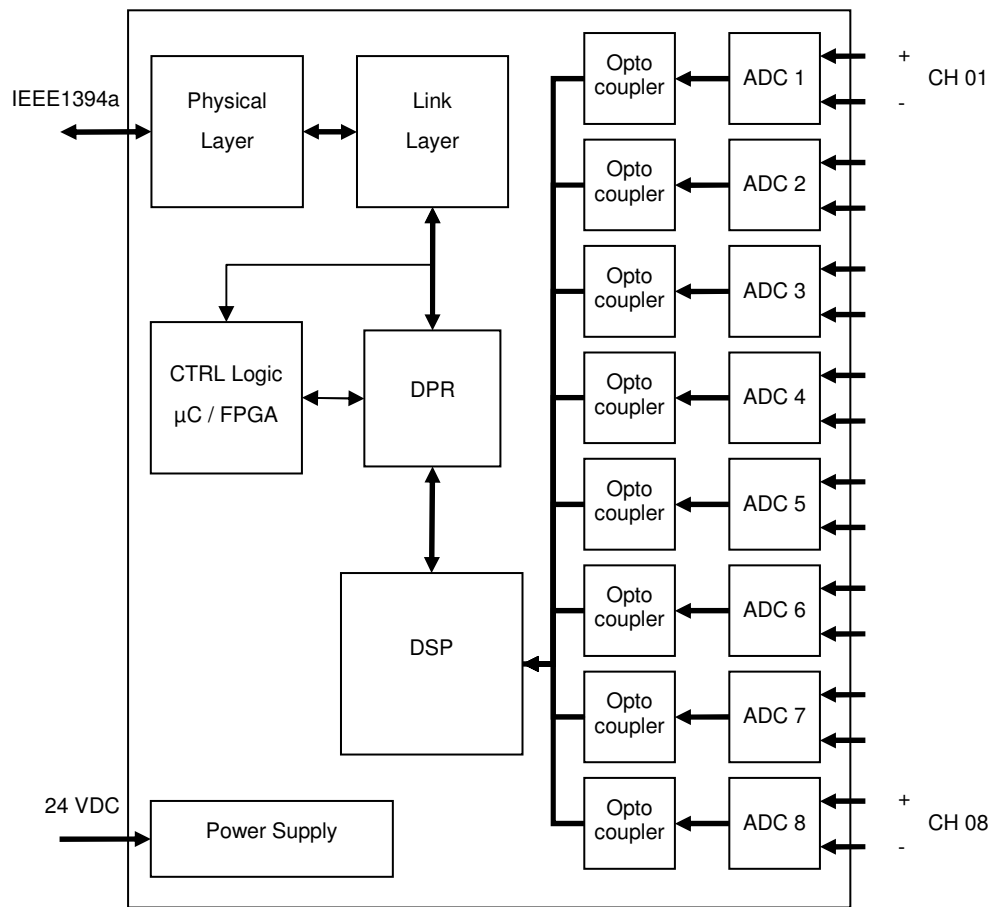
<b>Name</b>		PWR
<b>Description</b>		power indicator
<b>Color</b>		green
<b>Condition</b>	<b>off</b>	no operating voltage
	<b>blinks</b>	firmware operates
<b>Name</b>		ERR
<b>Description</b>		error indicator
<b>Color</b>		red
<b>Condition</b>	<b>off</b>	no error
	<b>on</b>	error fan - if any
<b>Name</b>		LNK
<b>Description</b>		indicator for the connection to the controller
<b>Color</b>		yellow
<b>Condition</b>	<b>off</b>	no connection to the controller
	<b>on</b>	connection to the controller established
	<b>blinks</b>	data exchange with the controller

### 3.7 Technical Data

<b>Connections</b>	
<b>Power Supply Interface</b>	<b>24V / 0V / PD</b>
Number	1
Connector type	3-pin plug-in terminal block, Phoenix Contact
Type	input
Input voltage	18 ... 32 VDC
Power loss at 24 VDC	24 W
Current consumption at 24 VDC	1 A
<b>IEEE1394a Interface</b>	<b>P1 ... P3</b>
Number	3
Connector type	6-pin socket
Type	IEEE1394a interface
Transfer speed	400 Mbps
Standard	IEEE1394a
<b>Analog Interface</b>	<b>CH 01 ... 08</b>
Number	8
Connector type	16-pin plug-in terminal block, Phoenix Contact
Type	differential inputs
Input voltage	+/-10 V
Input protection	+/-60 V
Insulation	+/-0.4 kV
Electrical isolation	channels are electrically isolated separately
Input resistance	$R \geq 1 \text{ M}\Omega$
Input current	$I < 10 \text{ }\mu\text{A}$
Sample frequency	$\leq 40 \text{ kHz}$ / analog input
Resolution	16 bit (15+1)
Coupling	DC
Gain error	0.025 % +/- 1 digit
Offset error	0.017 % +/- 1 digit
Static offset	max. 0.12 %
CMR	100 dB

<b>Permitted Cable / Cable Length</b>	
FireWire	according to IEEE1394a standard
Analog inputs	maximum length: 3 m
<b>Permitted Environmental Conditions / EMC</b>	
Ambient temperature during operation	0 ... +55 °C
Transportation and storage temperature	-25 ... +85 °C
Humidity rating	5 ... 95 %, not condensing
EMC interference emission	EN 55011 (Class A)
EMC interference immunity	EN 61000-6-2:2005
Degree of protection	IP20
<b>Constructive Structure</b>	
Dimensions (H x W x D) in mm	200 x 60.2 x 126.5
Design	aluminum / stainless steel
Color	silver
Weight	1 kg
Mounting	DIN rail profile DIN EN 50022-35x15 (thickness 2.3 mm)
<b>Approvals</b>	
CE	EN 61000-6-4:2001 EN 61000-6-4:2007 EN 61000-6-2:2005 DIN EN 61000-6-2:2006-03 DIN EN 61000-6-4:2002-08 DIN EN 61000-6-4:2007-09

### 3.8 Block Diagram



block diagram



## 4 Installation and Maintenance

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### 4.1 Types of Installation

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#### Note

The device ION ANALOGINPUT T001 may exclusively be operated when installed on a DIN rail.

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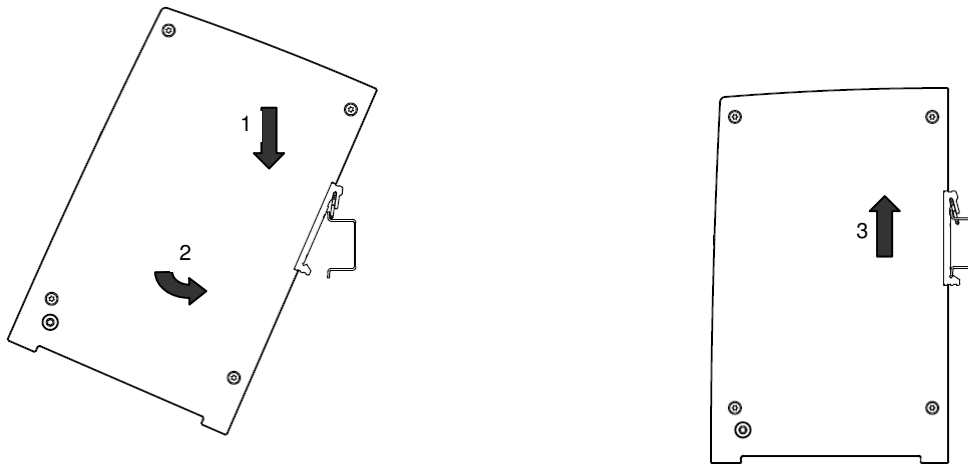
### 4.2 Installation

Installation of the device on a DIN rail:

- Hang the upper table-track of the device on the DIN rail and push it down towards the DIN rail so that it snaps in.

Installation of electric connection cables:

- Install the terminal block of the analog connection cables.
- Install the plugs of the IEEE1394 connection cables.
- Install the terminal block of the power supply connection cable.



installation of the ION ANALOGINPUT T001 on a DIN rail

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#### Caution

The spaces, which are specified in chapter „Appendix“, paragraph „Dimension Drawing“, on top and underneath the device (25 mm) and in front of the device (80 mm) have to be kept.

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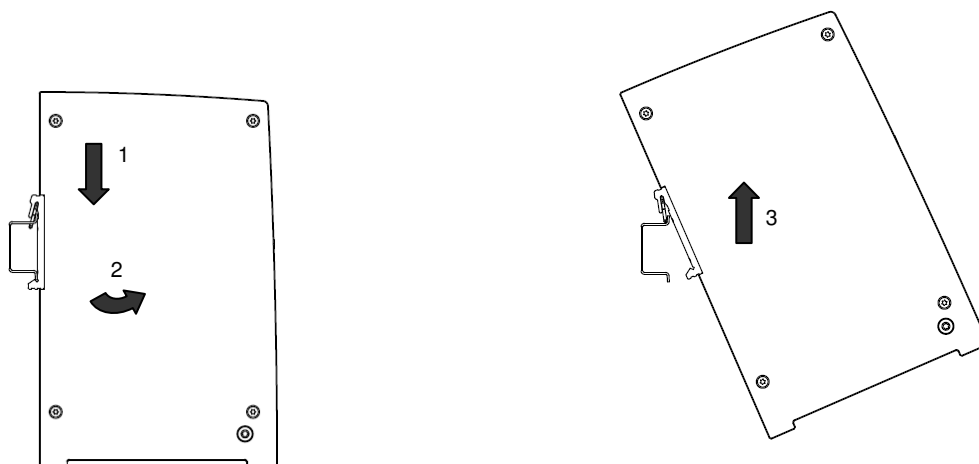
### 4.3 Disassembly

Disassembly of electric connection cables:

- Disassemble the terminal block of the power supply connection cable.
- Disassemble the plugs of the IEEE1394 connection cable.
- Disassemble the terminal block of the analog connection cables.

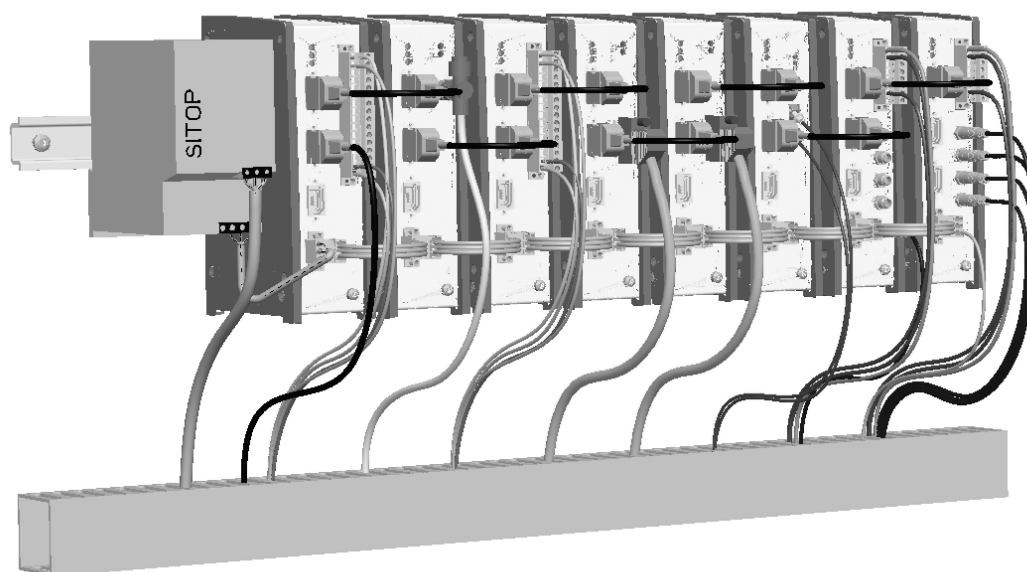
Removal of the device from the DIN rail:

- Push the device down against the DIN rail and hang it out.



disassembly of the ION ANALOGINPUT T001 from the DIN rail

## 4.4 Example of Installation



example of installation

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### Note

This image shows an exemplary installation.

Technical data subject to change.

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## 4.5 Grounding

The screw on the front side of the device is provided as grounding connection.

## 4.6 Maintenance

If a fault develops, please send the device to the Siemens logistics center.

### Address

SIEMENS AG  
I IA RETOUREN-CENTER FUERTH  
SIEMENSSTR. 2  
D-90766 FUERTH  
GERMANY

## 5 Notes on the CE Mark

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### Product Name

<b>Device</b>	ION ANALOGINPUT T001
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### EMC Directive

The product is designed for use in an industrial environment.

Area of Application	Requirements for Emission	Immunity
Industry	EN 55011 (Class A)	EN 61000-6-2:2005

### Installation Guide Lines

The product meets the requirements if you meet the installation instructions and safety-related notices as described in this commissioning manual.

### Conformity Certificates

The EC Declaration of Conformity is available for the responsible authorities according to the abovementioned EC Directive at the following address:

SIEMENS AG  
 I IA SE DE  
 WUERZBURGER STR. 121  
 90766 FUERTH  
 GERMANY

### Notes for the Manufacturers of Machines

This product is not a machine in the sense of the EC Machinery Directive. There is therefore no declaration of conformity relating to the EC Machinery Directive 89/392/ECC for this product.

If the product is part of the equipment of a machine, it must be included in the procedure for the declaration of conformity by the manufacturer of the machine.

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## 6 References

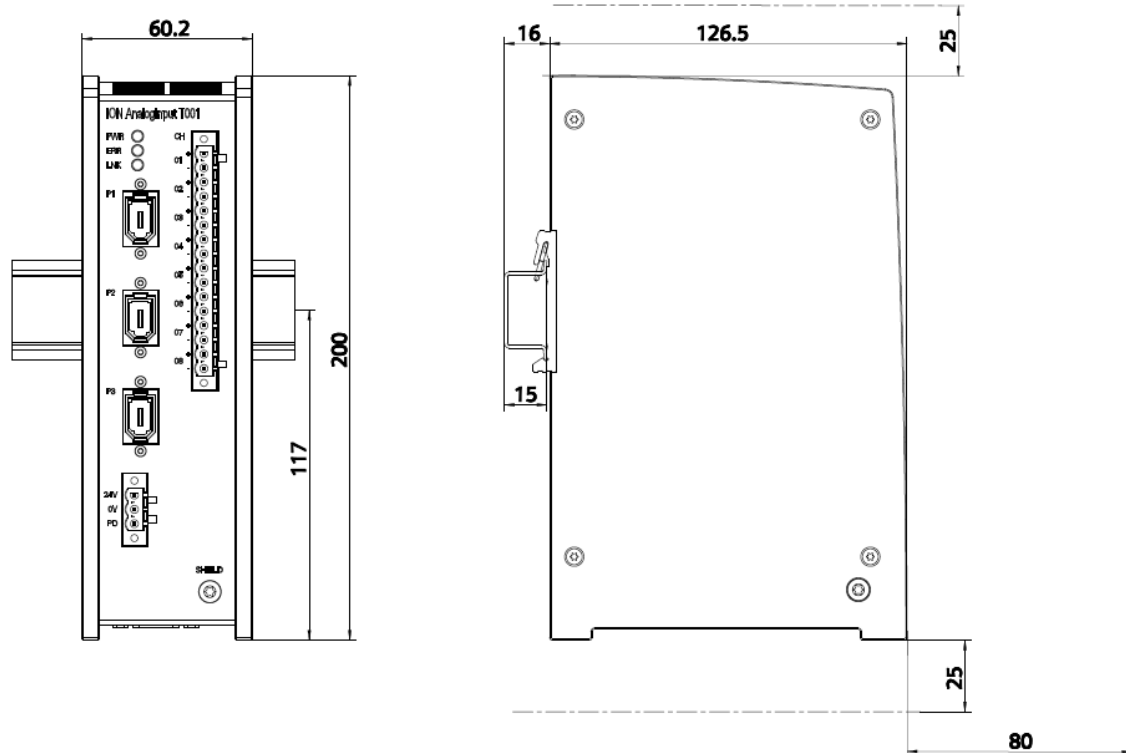
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### 6.1 Other Documentation

- CASTOMAT® System - User Documentation (CD)

## 7 Appendix

### 7.1 Dimension Drawing



dimension drawing

#### Note

This document does not contain complete detail information to the product due to reasons of clarity and can therefore exclude each thinkable case of assembly, usage or the maintenance.

Further information is obtained from your local Siemens office and from the homepage <http://www.siemens.com/castomat>.

Technical data subject to change.

In cases of doubt the German document is valid.

## 8 Contact Information

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### Address

SIEMENS AG  
I IA SE DE  
WUERZBURGER STR. 121  
90766 FUERTH  
GERMANY