

# A/D Converter Professional 3005

ENGLISH

## Technical description

## HANDBOOK

<u>Product</u>	<u>Version</u>	<u>Characteristics</u>
Terminal / AD converter	3005	

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## 0.1 Update

Date	Update	Version	Editor	Release by
12-09-2009	Draft	0.1	Frohn	
24-08-2009	Version	1.0	Schock	
15-09-2009	Version	1.1	Schock	
21-09-2009	Version	1.2	Schock	
13-10-2009	Version	1.3	Rausch	

## 0.2 Changes against previous version

Date	Changes	Page	Version	Editor	Release by

## 0.3 Text system

The document is created with Microsoft Word 2000.

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## 1 Preface

The AD converter 3005 Professional should allow the experienced user or scale manufacturer the setup of a strain gauge weighing system, which requires no indicator. The measuring data is provided for electronic processing on a variety of optional interfaces.

## 2 Introduction

### 2.1 Short description

The 3005 is an AD Converter for strain gauge load cells with a variety of interfaces to connect to data processing or control systems.

The basic version contains a measuring point for strain gauge load cells and a RS232 interface for connection to EDP.

The housing is a junction box with a size of 80x82x57 mm, the Profibus and I/O version is only available with the size 80x160x57.

The configuration of the system is possible via the service programm 30XX.

### 2.2 Interfaces

#### 2.2.1 Internal RS232 interface

The internal interface RS232 is not separated galvanic from the AD Converter. It is well protected against static and dynamic power supply disturbances within technical possibilities.

#### 2.2.2 RS232 with opto-decoupling

For this interface, the serial interface module of the 30XX product family is used. It is equipped with opto-decouplers and provides a higher protection against power supply disturbances.

See manual 470.561.056E.

#### 2.2.3 USB interface

This interface is a RS232 from the software perspective, which requires a virtual COM interface on the computer. It is used for the USB board without external power supply for the 30XX product family. USB driver software for the PC is enclosed in delivery.

See manual 470.561.055E.

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## 2.2.4 Ethernet interface

This interface is a RS232 from the software perspective, which uses the Ethernet protocol via Telnet for establishing a connection.  
See manual 470.561.053E.

## 2.2.5 I/O card

The I/O card has four inputs and four outputs. All channels are separated galvanic from the AD Converter through opto-decouplers.  
See manual 470.561.054E.

## 2.2.6 Bluetooth™ interface

This interface is a RS232 from the software perspective, which uses the Bluetooth™ protocol for establishing a connection. The Bluetooth™ module is used, which was developed for the 30XX product family.  
See manual 470.561.057E.

## 2.2.7 Profibus DP

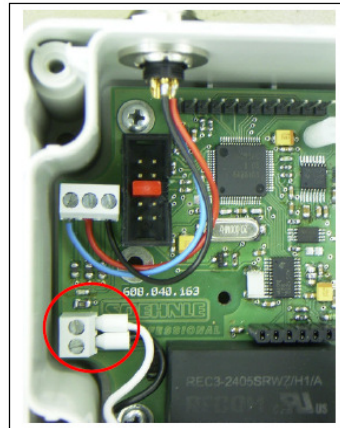
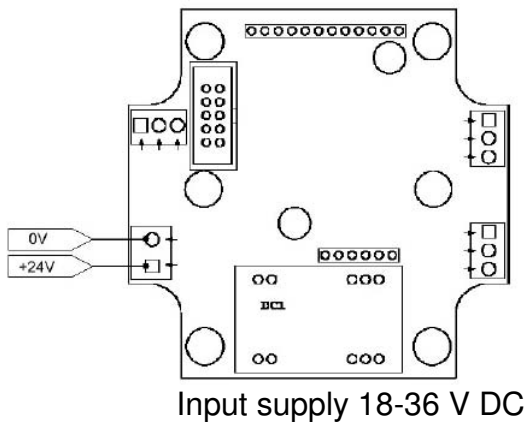
The Profibus module serves for connecting the 3005 to SPS controls. It provides the SPS with measuring values in fix defined telegrams. There is a separate description available.  
See manual 470.508.068E.

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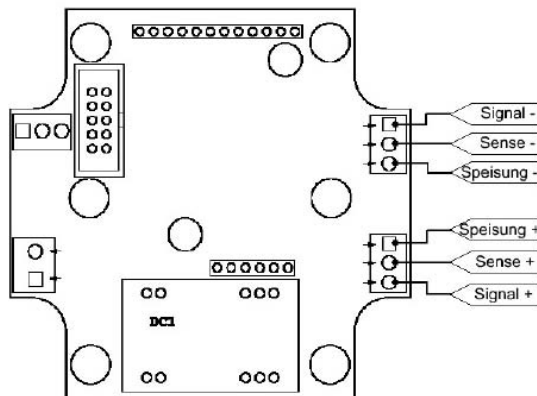
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## 3 Installation

### 3.1 Power supply



### 3.2 Load cell connection



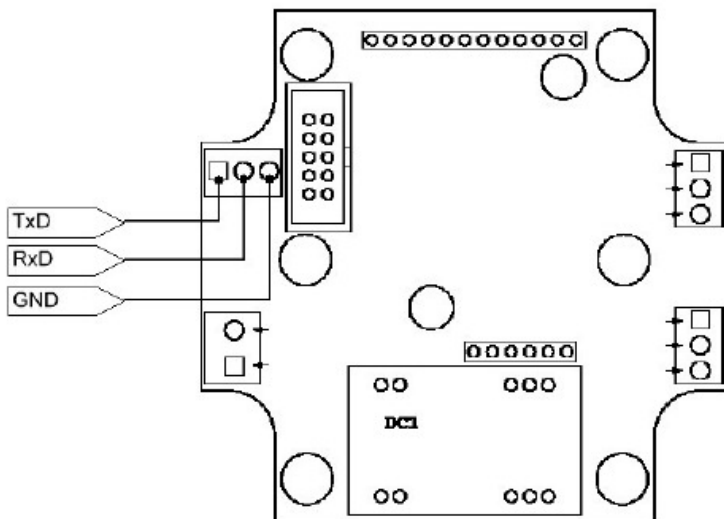
At 4-pin connection, the load cells must bridge sense and supply, or the market soldering bridges have to be connected.

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## 3.3 Interfaces

### 3.3.1 Internal RS232 interface



The AD Converter must be connected with a computer via a serial interface to make the necessary setting with the service software. The operation of the service software is described in the manual 470.051.087.

## 3.4 Configuration

The configuration parameters are described in the document „USER Mode 3005“ (470.702.087E). In particular, the parameters for communication have to be set.

## 3.5 Calibration

Calibration refers to the adaptation of the AD Converter to the load cell / force sensor. Before the calibration, some basic parameters have to be set. In the simplest case the nominal load of the scale and the comma position have to be set. Afterwards, a complete zero calibration (with entry of used calibration weight, support point 1) must be done. The calibration parameters are described in the document “ECAL mode 3005” (470.702.088E). After completing the calibration, the AD Converter can be operated.

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## 4 Operation

### 4.1 Basic functions

Weighing related functions are weighing, taring, switching and dosing, which are possible.

### 4.2 Configuration

#### 4.2.1 Calibration

The calibration and configuration are done via the installed RS232 interface. Process and parameter have been adapted from the terminal 3010.

#### 4.2.2 Interfaces

Two serial interfaces are available (S1 and S2).

S2 consists of a strip on which the different optional modules are pluggable.

The terminal 3005 has the following logical function channels:

- Interface S1 (no galvanic separation): always included in delivery scope. RS232 interface for configuration of the 3005 AD Converter and for data communication with EDP or control system
- Interface S2 (opto-decoupled): optional RS232 interface with high quality protection against disturbances, for data communication with EDP or control system
- USB interface: optional USB interface for data communication with EDP
- Ethernet interface: optional Ethernet interface for communication via a network
- Bluetooth™ interface: optional Bluetooth™ interface for communication via a Bluetooth™ receiver
- I/O module: optional I/O module for connecting the 3005 AD Converter, via input and output signals to a control system
- Profibus DP: individual 3005 AD Converter with Profibus DP module for communication with a control system



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The following configurations are possible:

	S1	S2		S1	S2		S1	S2
Configuration	X	-	Configuration	X	-	Configuration	X	-
EDP RS232	X	-	EDP RS232	-	X	EDP RS232	-	-
EDP USB	-	-	EDP USB	-	-	EDP USB	-	X
EDP Ethernet	-	-	EDP Ethernet	-	-	EDP Ethernet	-	-
Profibus	-	-	Profibus	-	-	Profibus	-	-

	S1	S2		S1	S2		S1	S2
Configuration	X	-	Configuration	-	X	Configuration	-	X
EDP RS232	-	-	EDP RS232	-	-	EDP RS232	-	X
EDP USB	-	-	EDP USB	-	-	EDP USB	-	-
EDP Ethernet	-	X	EDP Ethernet	-	-	EDP Ethernet	-	-
Profibus	-	-	Profibus	X	-	Profibus	-	-

	S1	S2		S1	S2
Configuration	-	X	Configuration	-	X
EDP RS232	-	-	EDP RS232	-	-
EDP USB	-	X	EDP USB	-	-
EDP Ethernet	-	-	EDP Ethernet	-	X
Profibus	-	-	Profibus	-	-

## 4.2.3 Setting parameters

The setting parameters for all areas can only be changed via the configuration channel. Necessary equipment is a computer with a COM interface, the service program software for the product family 30XX and an interface cable.

For Insiders it is also possible to change single parameters via a terminal program. The description of the command structure is described in a separate document.

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## 4.3 Data output

### 4.3.1 EDP mode

The data output is controlled by the settings in the EDP mode. The following modes are available:

- <A> Auto print/data set once immediately
- <B> Auto print/data set once after weight change at standstill
- <C> Auto print/data set after weight change at standstill
- <D> Auto print/data set after weight change at standstill above empty message
- <E> Auto print/data set after weight change at standstill above empty message after release of low empty messages
- <F> Send continuously
- <G> Output of status (4)+ID(2)+ net value (7)+CR with max possible speed; limitation is either the change rate or the transmission bandwidth. Input of ID is done in UCAL, treatment as scale number. See also interface description 470. 508.069E.

### 4.3.2 Data telegrams

The 3005 AD Converter contains already default data sets for the EDP connection. The existing data sets can be switched individually with the 30XX service program. Furthermore, it is possible to design completely new data sets.

The output speed is settable up to min 50 ms time period.

For higher transmission rates, the EDP mode "G" must be selected.

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## 5 Product data

### 5.1 Power supply

The power supply is done via a wide access network DC-DC converter (2:1), the supply is made for 18-36 V. The max performance amounts to 3 W. The change is done on 5 V, the max power amounts to 500 mA.

The performance request of the AD Converter electronics amounts to approx. 0.5 W plus the power supply for the load cells. Six load cells of 350 Ohm have a performance request of the basic electronics of about 1 W.

### 5.2 Interfaces

#### 5.2.1 Internal RS232

The internal RS232 is separated galvanic from the converter part.

#### 5.2.2 RS232 module (Soehnle Professional module)

The pluggable RS232 module is part of the 30XX product family. It is separated galvanic from the Converter electronics. Performance request is approx. 0.3 W.

#### 5.2.3 USB module

The pluggable USB module is plugged on the same plug place as the RS232 module. Performance request is approx. 0.3 W.

#### 5.2.4 Ethernet module

The Ethernet module has a RJ45 plug socket. Via a PG screwing, 10 meter network cable are tared out with a RJ 45 plug. Performance request is approx. 1 W.

#### 5.2.5 Profibus module

It requires the large junction box and the 10-pin programming plus is connected. Performance request is approx. 1 W.

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## 5.3 Technical data

- 30,000 divisions available for the user
- Power input: 1 to 3W, dependent on options and load cells
- Accuracy  $\leq$  N6: according to SP Standard for non-approved scales
- 1 to 6 strain gauge load cells with 350 Ohm input resistance per scale each
- Temperature range:
  - Nominal range (tolerances are hold): -10 .. 40 °C
  - Working range (tolerances can be overwritten: -20 .. 60 °C
  - Storage: -30 .. 70 °C
- Humidity: IP 65