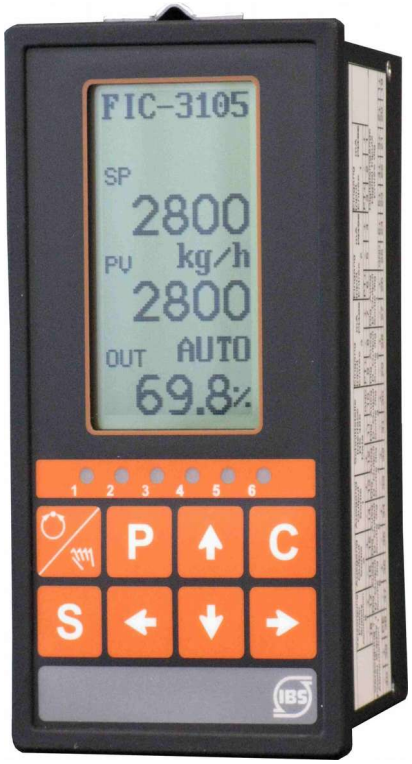
Compact Controller

CTR 210

Installation Instructions



Revision 3

IBS BatchControl GmbH
Im Sträßchen 2–4
53925 Kall
Germany

Tel.: ++49 2441 9199 801
Fax.: ++49 2441 9199 871
Internet: www.ibs-batchcontrol.com

Safety informations

The CTR 210 has to be installed by process electronics engineers or qualified electricians who are authorised by the plant operator to carry out these tasks.

Only staff trained and authorised by the plant operator are allowed for usage.

The CTR 210 is to be connected as specified in the electrical data. Do not open the housing, otherwise maintenance of the electrical data is not ensured and the guarantee expires immediately.

Validity of Installation and Operating Instructions

- These Installation and Operating Instructions apply to all CTR 210 models.
- Your IBS agent will be able to give you information about any improvements or modifications.
- The manufacturer will not be liable for any defects caused by incorrect or unauthorised usage. Modifications / Conversions or changes to the instrument will expire the certification and guarantee.

Operating safety

- The instruments are manufactured in our ISO certified factory. They comply with the requirements laid down in this standard.
- The CTR meets the requirements of protection class IP20.
- It will be dangerous to use the instrument incorrectly or not authorised. All information in this manual has to be adhered strictly.

Technical Developments

- Modifications or changes to the technical data do not require a notice by the manufacturer.

Repairs, dangerous chemicals

Only the **IBS BatchControl GmbH** is allowed to repair the instruments because the intrinsically safe is at risk.
Instruments sent to **IBS BatchControl GmbH** for repair must have an attached fault description.

Warning!

Please adhere to the following procedure before sending an instrument for repair:

- Clean the instrument by removing all residues and deposits. Pay special attention to the gasket grooves and crevices.
- If to health dangerous materials are not completely removed the instrument will not be accept for repair or the owner will have to pay for professional cleaning.

He will also be made responsible for any damage to health (e.g. acid burns, etc.) of our personnel.

Contents

1. System Description

The microprocessor-controlled CTR 210 are a simple to use controller or indicator in hazardous production areas.

1.1. Type Codes

The following types can be supplied:

Compact Controller Type	Type for input 1-3
CTR 210	
.*	1 = mA, 2 = Pt100
.*	1 = mA, 2 = Pt100
.*	1 = mA, 2 = Pt100

1.2. Areas of application

The units can not be operated in hazardous areas.

- **The maximum permissible ambient temperature is +60 °C.**
- **The minimum permissible ambient temperature is -20 °C.**

Two current outputs (4 to 20 mA) and six contacts are controlled depending several functions. Up to six control signals can be fed to the controller.

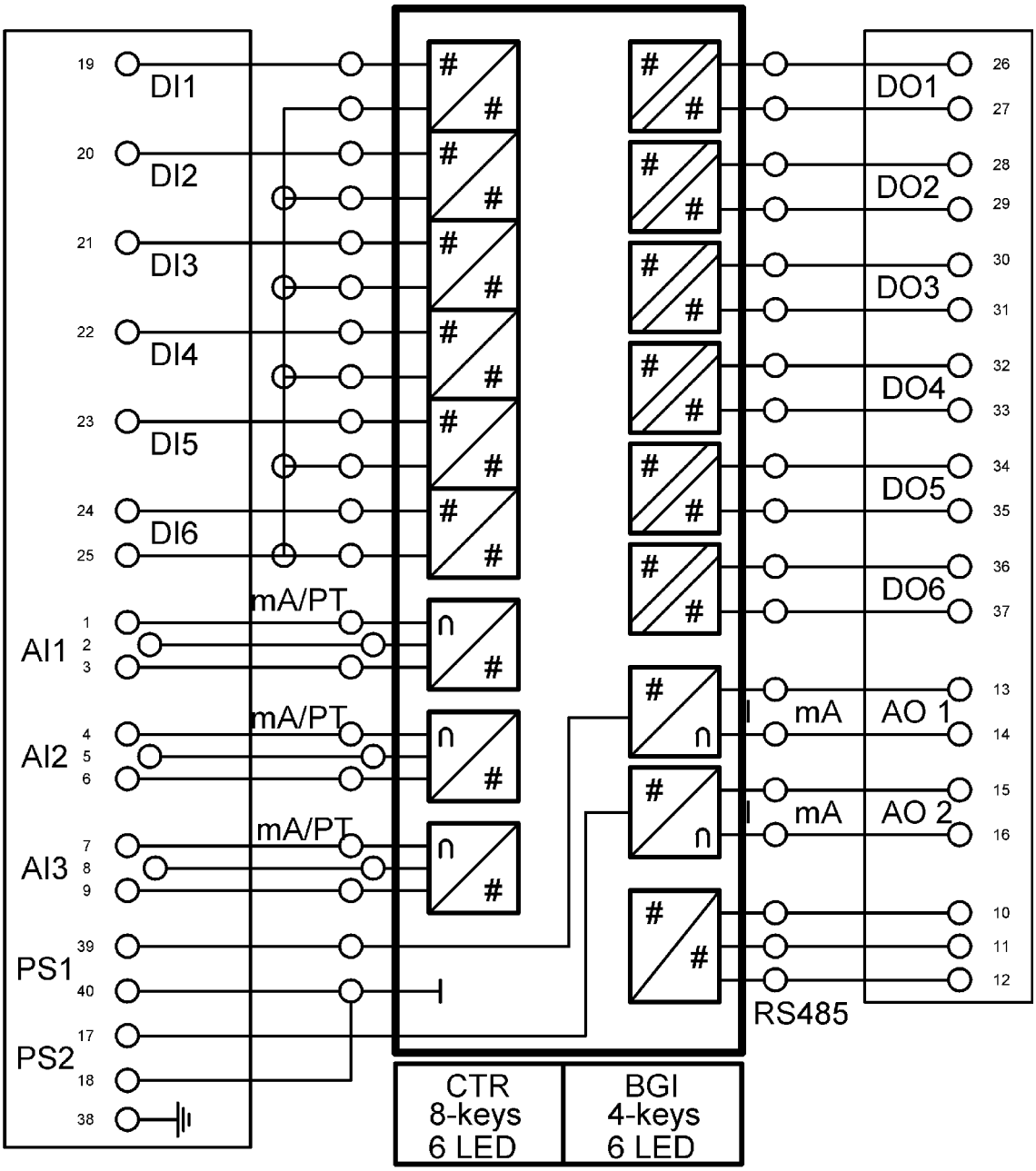
As input variants are current input or Pt 100 input available. The input can be linearised by the software.

The units can be configured and controlled via a serial interface (MODBUS).

Access to the various program levels can be protected by a numerical code.

The units are supplied in a panel mount housing (IP20) with external dimensions of 72 mm x 144 mm.

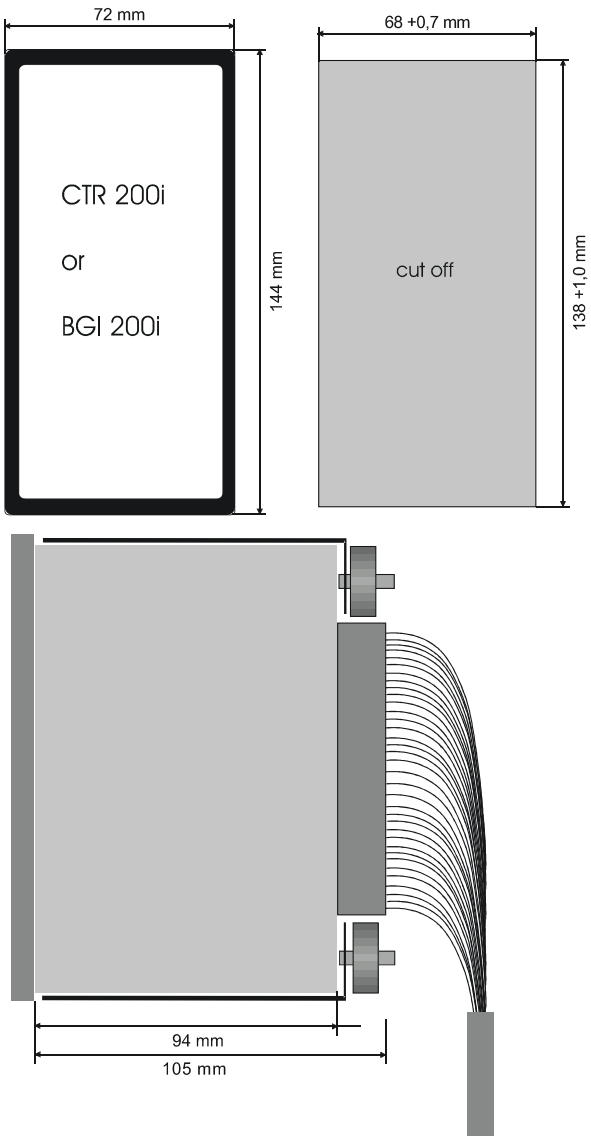
1.3. Block Diagram



2. Fitting and Installation

This information in this section is important and must be observed during fitting and installation. The units must be fitted to use.

2.1. Fitting the CTR 210



The CTR 210 has external dimensions of 144 mm x 72 mm.

You need a cut off in the panel mount with the dimensions of 138 $^{+1,0}$ mm x 68 $^{+0,7}$ mm (DIN43700). The depth is 105mm.

Release the two screws from the mounting profile. You move the CTR 210 from the front through the panel mount.

Hold the unit horizontal and move the mounting profile to the intent screws where are they removed before.

Please track the nut from the mounting profile consistently good tight.

2.2. Protection Class IP20

The CTR 210 conforms to protection class IP20. The front conforms IP54.

2.3. Temperature ranges

The CTR 210 can be operated in the range –20°C to +60°C.

2.4. Cable and PE

Only shielded cable may be used. The shield must be connected in the casing or the EMC clamps. The PE must be connected to the PE terminal and the PE screw at the CTR 210 housing.

2.5. Terminal assignment

The technical data must be observed at all times. A CTR 210 may only be operated with the maximum values are observed.

2.5.1. Power Supply 1

The power supply provides power for all the electronics, the first analogue output and the digital inputs and outputs. The second power supply provides power for the second analogue output.

Terminal 39 (+) Terminal 40 (-)	
Voltage U	DC 24 V ±20 %
Current I_{max}	40 mA

2.5.2. Power Supply 2

The second power supply is necessary, if the second current output is used.

Terminal 17 (+) Terminal 18 (-)	
Voltage U	DC 24 V ±20 %
Current I_{max}	40 mA

2.5.3. Analogue inputs

The CTR 210 has 3 analogue inputs (4-20 mA).
As standard, the analogue inputs are not voltage-free, i.e. the minus is at instrument ground potential.

Terminal 1 (+) Terminal 2 (-) Terminal 4 (+) Terminal 5 (-) Terminal 7 (+) Terminal 8 (-)	
Values for each circuit:	
Current I_{max}	25 mA
Load	approx. 25 Ω
Failure	< 0.05 % from end value

2.5.4. Analogue input Pt100

Each input can be provided with a Pt100 input module as an option. Pt100-inputs are not voltage-free, i.e. the minus is at instrument ground potential.

Terminal 1 (+ Measuring input) Terminal 2 (- Measuring input) Terminal 3 (+ Current output) Terminal 4 (+ Measuring input) Terminal 5 (- Measuring input) Terminal 6 (+ Current output) Terminal 7 (+ Measuring input) Terminal 8 (- Measuring input) Terminal 9 (+ Current output)	
Values for each circuit:	
Current I_{max}	2 mA
Voltage U_{max}	5.3 V
Max. measuring range	-200 °C bis +800 °C
Failure	< 0.1 % from the end value

2.5.5. Interface RS485

Terminal 10 (GND) Terminal 11 (B +) Terminal 12 (A -)
RS 485

2.5.6. Analogue output 1

The analogue output is not electrically isolated. The minus is at ground potential.

Terminal 13 (+) Terminal 14 (-)	
Voltage U_{max}	DC 24 V ±20 %
Current I	4-20 mA

2.5.7. Analogue output 2

The analogue output is not electrically isolated. The minus is at ground potential.

Terminal 15 (+) Terminal 16 (-)	
Voltage U_{max}	DC 24 V ±20 %
Current I	4-20 mA

2.5.8. Digital inputs

The CTR 210 has six digital inputs.

The digital inputs are active. Passive switches or optical couplers can be connected.

Digital input 1: Digital input 2: Digital input 3: Digital input 4: Digital input 5: Digital input 6:	terminal 19 (+) terminal 25 (GND) terminal 20 (+) terminal 25 (GND) terminal 21 (+) terminal 25 (GND) terminal 22 (+) terminal 25 (GND) terminal 23 (+) terminal 25 (GND) terminal 24 (+) terminal 25 (GND)
Output voltage U_{max}	DC 5,3 V
Current I_{max}	0,2 mA
Max. input voltage for active outputs U_{max}	DC 30 V

The inputs can be connect with up to 30 VDC active. Please note that the off state is registered only if the plus input is switched to 0V. To open the contact is not enough.

2.5.9. Digital outputs

The CTR210 / BGI210 has six digital outputs.

Digital output 1: Digital output 2: Digital output 3: Digital output 4: Digital output 5: Digital output 6:	terminal 26 (+) terminal 27 (-) terminal 28 (+) terminal 29 (-) terminal 30 (+) terminal 31 (-) terminal 32 (+) terminal 33 (-) terminal 34 (+) terminal 35 (-) terminal 36 (+) terminal 37 (GND)
Voltage U_{max}	DC 36 V
Current I_{max}	500 mA

The control outputs are electrically isolated and passive. Please note the potential direction of the outputs.

2.5.10. Potential equalisation

The PE must be connected to the PE terminal 38 and simultaneously on the PE-screw.