



# DATA SHEET

## TDG-210DG

Insulation amplifiers, DC/DC amplifiers

|                   |             |            |              |          |  |  |    |    |    |    |  |  |
|-------------------|-------------|------------|--------------|----------|--|--|----|----|----|----|--|--|
|                   |             |            |              |          |  | 0,5  |    |    |    |    |  |  |
| TYPE              | TDG-210DG/2 |            | 100190212.10 |          |  |  |    |    |    |    |  |  |
| INPUT             |             | 4...20 mA  | LOAD         | 500hm    |  |  |    |    |    |    |  |  |
| OUTPUT            |             | -10...10 V | LOAD         | >500 Ohm |  |  |    |    |    |    |  |  |
| SUPPLY            | 24VDC       |            | 2.5 W        |          |  |  |    |    |    |    |  |  |
|                   |             |            |              |          |  |  |    |    |    |    |  |  |
|                   |             |            |              |          |  |  |    |    |    |    |  |  |
|                   |             |            |              |          |  |  |    |    |    |    |  |  |
| SIN: 1106582.0001 |             | 2017/06    |              |          |  | DEIF A/S, Friesenborgvej 33, DK - 7800 Skive |    |    |    |    |  |  |
|                   | 5V          |            |              |          |  |  |    |    |    |    |  |  |
| A1                | A2          | B3         |              |          |  |  | B1 | B2 | X1 | X2 |  |  |
| +                 | -           |            |              |          |  |  | +  | -  | +  | -  |  |  |

## 1. Data sheet

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# 1. Data sheet

- Conversion of measuring signal
- Aux. voltage: 24...220 V DC

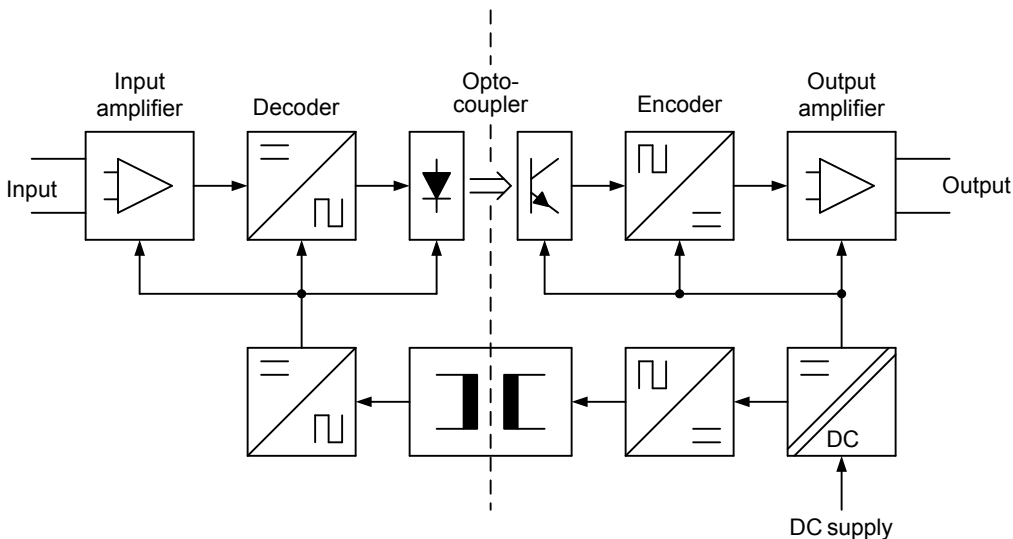
## 1.1 Contents

### 1.1.1 Application

TDG-210DG is a CE-marked DC/DC amplifier with galvanic separation between input and output. It is typically used for:

- **Converting one type of DC signal into another DC signal**  
(E.g. from 4...20 mA to -10...0...10 V)
- **Separating a number of earthing points**  
If a cable is connected to earth at more than one point, a measuring error may develop or noise problems may arise if the earth potentials of these vary.
- **Galvanic separation of current signals**  
As measuring equipment connected to the current output of a transducer is connected in series, simultaneous earthing of more than one input of connected measuring equipment will result in short-circuit of the input of intermediate measuring units.
- **Separation of measuring circuits**  
In case of remote transmission of a DC signal - typically a 4...20 mA signal to a number of measuring points situated well away from each other - separation into galvanically separated measuring circuits is often requested to isolate a possible fault and confine this to the faulty circuit.
- **Adjustment**  
TDG can be ordered as a special product to meet requirement in the application such as wish of slow reaction time, "dead" measuring range or limitation of the output. Two potmeters on the front make it possible to adjust the delay (P302) from 0.5...10 sec. or 0.1...1 sec and output range from 50 % to 150 % (P303).

### 1.1.2 Construction



TDG-210DG requires auxiliary voltage and is fed through a 24/48/110/220 V DC inverter. The secondary voltage is rectified and fed to the encoder and output amplifier shown to the right of the galvanic interface. The input amplifier and the decoder are fed through a DC/DC inverter. The input signal is amplified and is, through optocouplers, transmitted to the output amplifier.

This measuring method combines high accuracy of measurement with long-term stability.

Standard input and output may be set by means of jumpers, whereas special input is factory-calibrated.

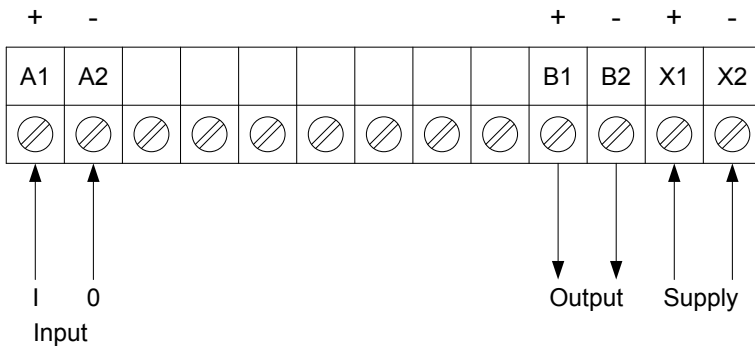
### 1.1.3 Technical specifications

|                          |                   |  |
|--------------------------|-------------------|--|
| <b>Current input</b>     | 4 ... 20 mA       |  |
|                          | Load              | 0...1 V voltage drop for all current inputs  |
| <b>Current output</b>    | Standard          | 0...20 mA<br>4...20 mA   |
|                          | Load              | Max. 15 V/±15 V above output   |
|                          | Overload          | Max. 200 % output current  |
|                          | Protection        | Protected against open output (max. 25 V)  |
| <b>Voltage output</b>    | Standard          | -10...0...10 V   |
|                          | Load              | Max. 20 mA/±20 mA from output  |
|                          | Overload          | Max. 150 % output voltage  |
|                          | Protection        | Protected against short-circuited output (max. 45 mA)                              |
| <b>Output (general)</b>  | Ripple            | Max. 0.5 % P-P to IEC 688  |
|                          | Response time     | Max. <10 ms to IEC 688   |
|                          | Characteristics   | (See back page <sup>1</sup> )  |
| <b>Insulation</b>        | Test voltage      | 2500 V AC – 50 Hz - 1 min.: between input/output/aux. voltage                      |
|                          | Operating voltage | 600 V AC – 50 Hz - 850 V DC: between input/output/aux. voltage                     |
| <b>Auxiliary voltage</b> | V DC -20/+30 %    | 24-48-110-220 V DC (2.5 W) DC/DC inverter built in                                 |
| <b>Environments</b>      | Temperature       | -10...55°C (nominal) -25...70°C (operating), -40...70°C (storage)                  |
|                          | Climate           | Class HSE to DIN 40040   |
|                          | EMC               | To EN 50081-1/2, EN 50082-1/2, SS4361503 (PL4), IEC 255-22-1 (class 3)             |
|                          | Protection        | Front: IP53. Terminals: IP20 to IEC 529  |
| <b>Accuracy</b>          | Input/output      | Class 0.5 % (-10...15...30...55°C) to IEC 688                                      |
| <b>Drift</b>             | Temperature       | Typ. 0.15 % per 10°C, max. 0.2 % per 10°C  |
|                          | Load/output       | Max. 0.1 % for max. variation of output load                                       |
|                          | Auxiliary voltage | Max. 0.1 % per 10 % variation of auxiliary voltage                                 |
| <b>Connection</b>        | Screw terminals   | Multi-stranded: Max. 2.5 mm <sup>2</sup> . Single-stranded: Max. 4 mm <sup>2</sup> |
| <b>Materials</b>         | Flammability      | All plastic materials self-extinguishing to UL94 (V0)                              |

### 1.1.4 Available variants

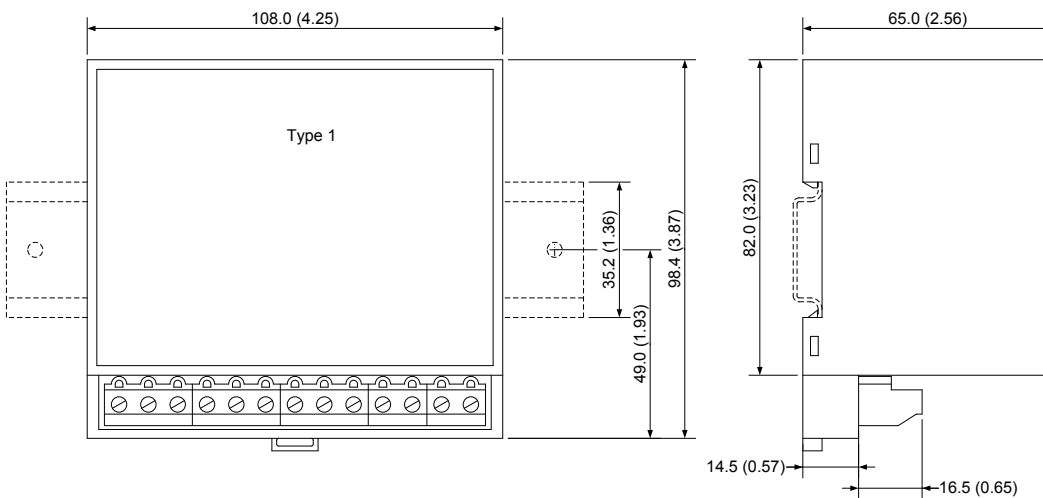
| Type        | Variant no. | Description   | Item no.      | Note |
|-------------|-------------|---|---------------|------|
| TDG-210DG/2 | 02          | Galvanic insulation DC/DC amplifier, fixed input, limited customised output, 24V DC voltage aux. supply | 2962880730-02 | -    |

## 1.1.5 Connections



## 1.1.6 Dimensions

All dimensions in mm (inches)



TDG-210DG: Weight: approx. 0.370 kg

## 1.1.7 Order specifications

### Variants

| Mandatory information |      |             |       |        |              |
|-----------------------|------|-------------|-------|--------|--------------|
| Item no.              | Type | Variant no. | Input | Output | Aux. voltage |
|                       |      |             |       |        |              |

Example:

| Mandatory information |             |             |           |        |                    |
|-----------------------|-------------|-------------|-----------|--------|--------------------|
| Item no.              | Type        | Variant no. | Input     | Output | Aux. voltage       |
| 2962880730-02         | TDG-210DG/2 | 02          | 4...20 mA | ± 10 V | 24 V <sub>dc</sub> |

## 1.1.8 Disclaimer

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