

# GV202 / GV 203

## Impulse Splitters for Incremental Encoders



- **GV202:** encoder inputs for RS422 or 5 V TTL signals (A, /A, B, /B, Z, /Z)
- **GV203:** encoder inputs for HTL 10-30 V signals (A, B, Z only or A, /A, B, /B, Z, /Z)
- Two encoder outputs (A, /A, B, /B, Z, /Z each), with individually programmable output levels (TTL 5 V or HTL 10-30 V)
- Max. frequency 400 kHz
- Power supply either 5 V DC or 10-30 V DC
- Aux. voltage output +5V for encoder supply (with 10-30V power supply only)

# Operating Instructions



## Safety Instructions

- This manual is an essential part of the unit and contains important hints about function, correct handling and commissioning. Non-observance can result in damage to the unit or the machine, or even in injury to persons using the equipment !
- The unit must only be installed, connected and activated by a qualified electrician
- It is a must to observe all general and also all country-specific and application-specific safety standards
- When this unit is used with applications where failure or maloperation could cause damage to a machine or hazard to the operating staff, it is indispensable to meet effective precautions in order to avoid such consequences
- Regarding installation, wiring, environmental conditions, screening of cables and earthing, you must follow the general standards of industrial automation industry
- - Errors and omissions excepted –

| Version:             | Description:                                       |
|----------------------|--|
| GV20202b/ TJ/ Sep 03 | Input resistance HTLIN Operating temperature range |
| GV20203a/hk/Aug 06   | Introduction GV203                                 |
|                      |  |

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# 1. Application

GV202 and GV203 have been designed for proper and trouble-free splitting of encoder signals to several target units.

If applicable, the unit can at the same time operate as a level converter between TTL/RS422 levels and HTL (10-30V) levels.

GV202 provides encoder inputs with RS422 line receiver standard (A, /A, B, /B, Z, /Z).

GV203 provides HTL (10-30V) inputs and HTL encoder supply.

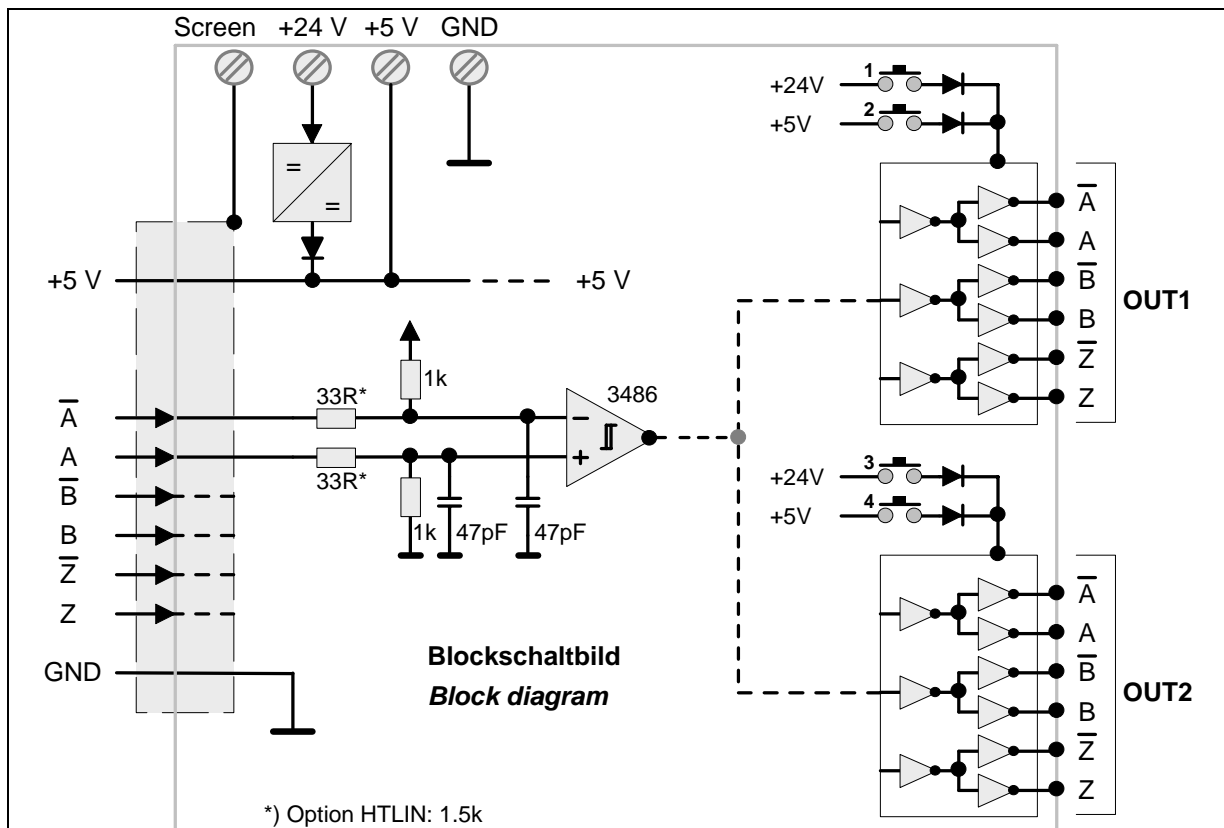
With GV203 you are free to use only HTL inputs A, B, Z and leave /A, /B, /Z unconnected. In this case however, the unit requires a **minimum signal level of 15 volts**.

When all HTL signals A, /A, B, /B, Z, /Z are available, GV203 can operate over the full input range from 10 to 30 volts.

The outputs provide all signals A, /A, B, /B, Z, /Z, even when the inverted signals are not available on the input site. The output signal level is individually selectable to 5 volts or to 10-30 volts, by corresponding DIL switch setting.

# 2. Block Diagram

The subsequent block diagram shows all essential details of the circuit with GV202 units (RS422 input)



\*) Input resistor is 33 Ohms with GV202 and 1.5 kOhms with GV203

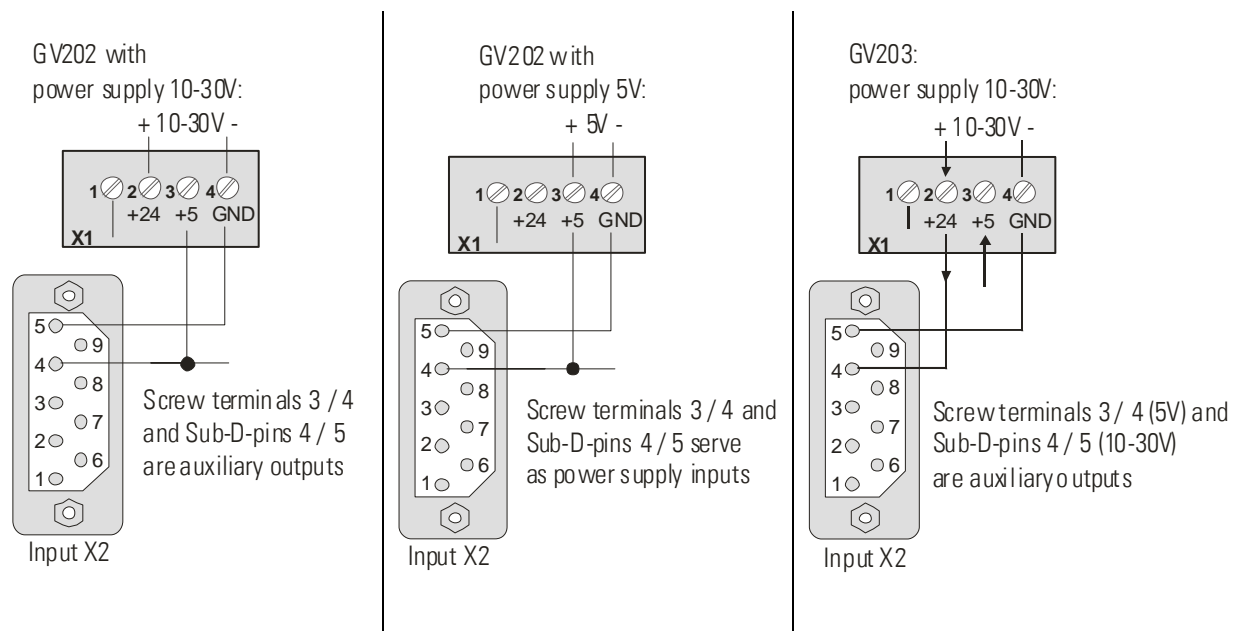
### 3. Power Supply

In general, the unit is supplied with an unbalanced DC voltage of 10-30V, using the screw terminals 2 and 4.

In this case, terminal 3, and with model GV202 also pin 4 of the input Sub-D-connector provide a +5V auxiliary output for encoder supply (max. 150mA).

With model GV203, on pin 4 of the input Sub-D-connector the same voltage appears as used for power supply of the unit.

The unit accepts also stabilized supply from a +5V source (i.e. when the input comes from the encoder simulation of a drive). In this case, screw terminal 3 and also pin 4 of the Sub-D-input connector are suitable to apply power.



Terminal 1 ( $\perp$ ) connects the metallic housings of the Sub-D-connectors only.

Depending on individual needs for earthing and screening, it can remain unconnected or tied to earth or to unit GND (terminal 4).



**Warning!**

When you use 10-30VDC supply, screw terminal 3 (“+5 V”) and pin 4 of the input connector are voltage **outputs** and you must never apply external voltage!

Fuse F1 protects the unit from damage with wrong polarity of the power input or overload of the aux. output.

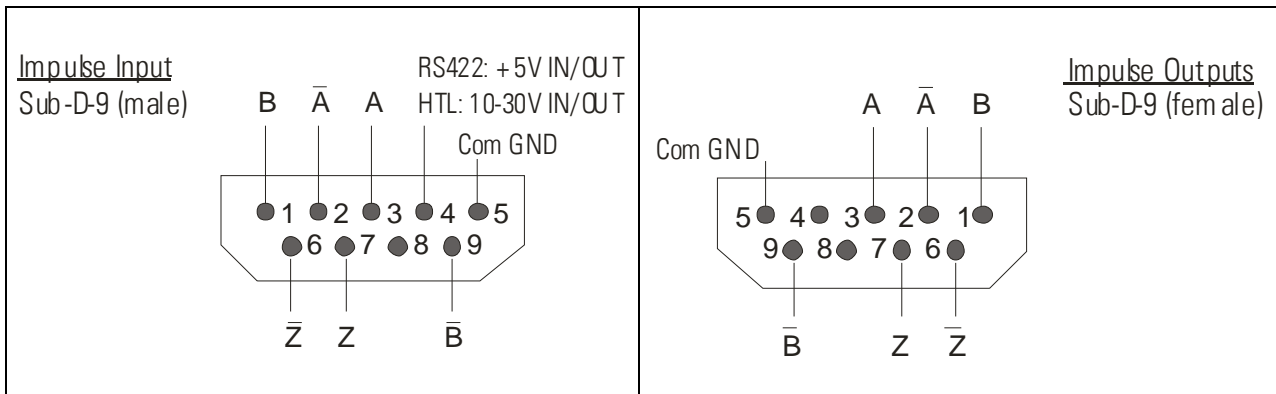
Applying a voltage higher than +7,5 Volts to the +5V input (terminal 3) may cause damage to the unit.

## 4. Impulse Inputs and Outputs

The pulse inputs must be connected to the 9-position Sub-D-connector marked "Input X2" (male on the unit).

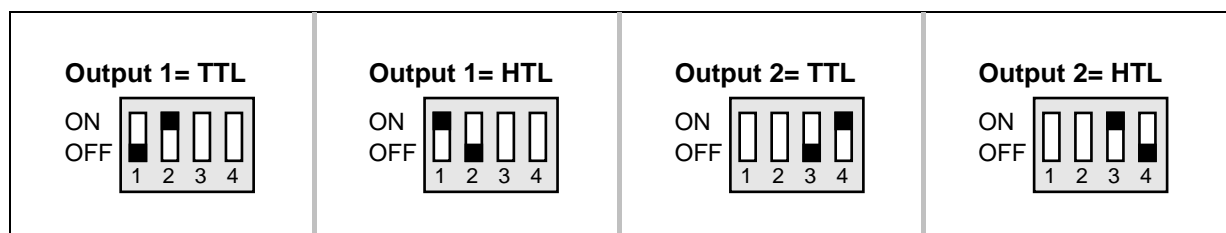
With model GV203, the inverted inputs may also remain unconnected.

The pulse outputs are Sub-D-9 (female) and marked "Out 1" (X3) and "Out 2" (X4).



## 5. Output level

DIL-Switch S1 (4-position) provides individual setting of the output levels for both output channels:

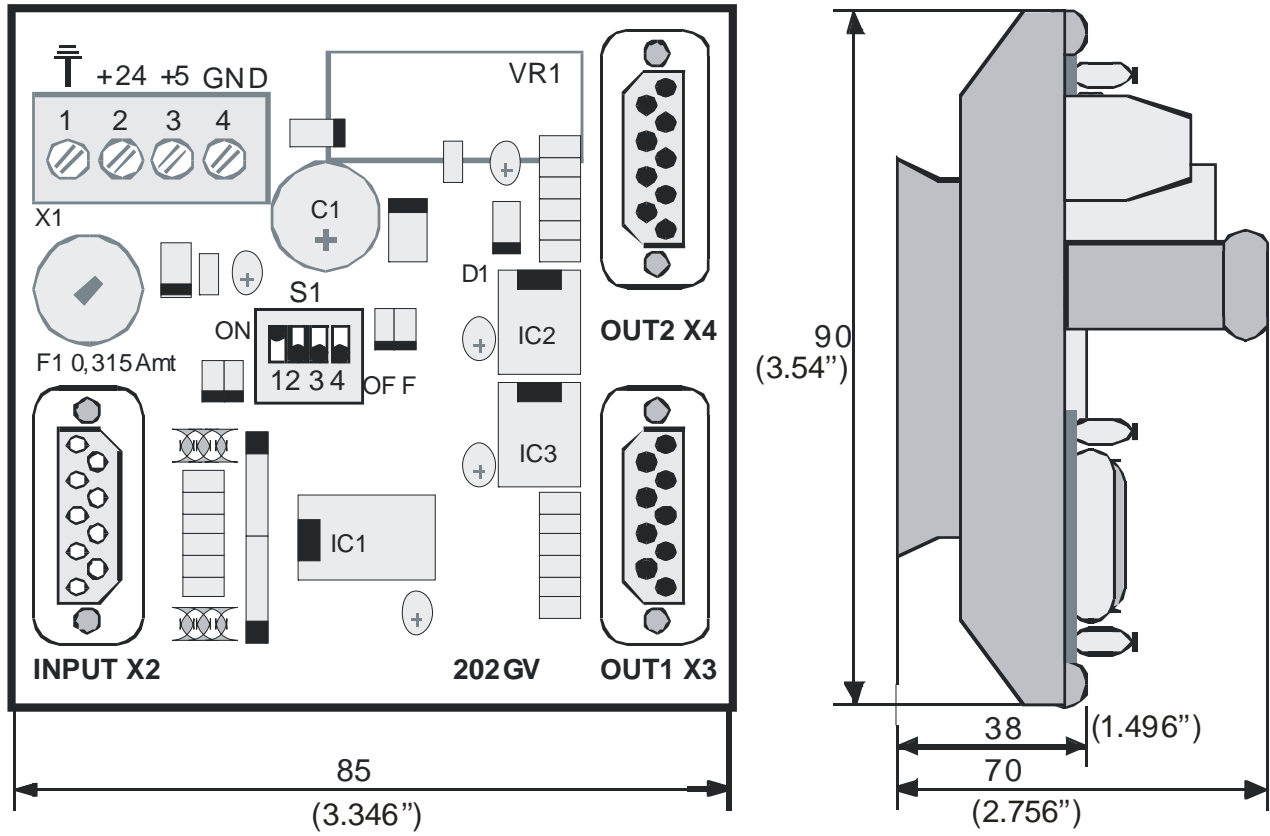


Setting to "TTL" results in an RS422-compatible TTL output signal.

Setting to "HTL" provides an output level corresponding to the level of the supply voltage (10-30V).

**"HTL" setting will work only when the unit is supplied with 10 - 30 volts!**

## 6. General view and dimensions



# 7. Specifications

|                           |   |   |
|---------------------------|---|---|
| Power supply              | : | 10-30 VDC or 5VDC +/- 5%  |
| Current consumption       | : | 10 V: 90 mA*, 24 V: 35 mA*<br>*) +25% of the encoder current taken from +5.3V aux. output   |
| Fuse                      | : | 0.315 A (medium slow)   |
| Aux. output               | : | +5.3 V, max. 150 mA**<br>**) with 10-30V supply only  |
| Max. Frequency            | : | 400kHz (RS422), 200kHz (HTL)  |
| Inputs                    | : | <u>GV202</u> : A, /A, B, /B, Z, /Z, RS422 or TTL level, I <sub>IN</sub> = 5 mA<br><u>GV203</u> :<br>A; B; Z only: Low = 0-4V<br>High = 15-30V I <sub>IN</sub> = 14 mA<br>A, /A, B, /B, Z, /Z: Low = 0-4V<br>High = 10-30V I <sub>IN</sub> = 14 mA |
| Outputs                   | : | 2 x A, /A, B, /B, Z, /Z TTL / HTL, push-pull, max. 30 mA  |
| Propagation delay         | : | 700 ns  |
| Ambient temperature       | : | Operation: 0 - 45°C (32 – 113°F)<br>Storage: -25 - +70°C (-13 – 158°F)  |
| Weight                    | : | Approx. 120 g   |
| Conformity and standards: | : | EMC 89/336/EEC: EN 61000-6-2<br>EN 61000-6-3<br>LV73/23/EEC: EN 61010-1   |
| Ordering information      | : | <u>GV202</u> (Input RS422 A, /A, B, /B, Z, /Z)<br><u>GV203</u> (Input 15-30V A, B, Z or 10-30V A, /A, B, /B, Z, /Z)   |