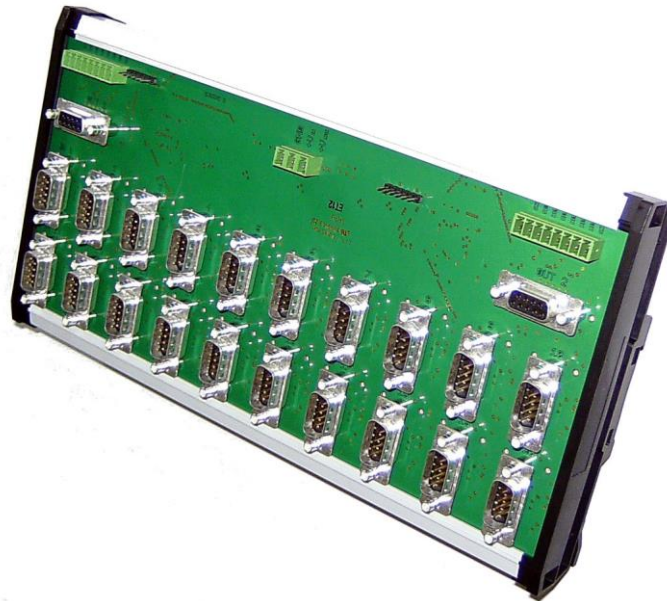


GS202

Encoder Switch



- 20:2 encoder switch
- 20 encoder inputs (TTL / RS422 standard)
- Input signals A, /A, B, /B, Z, /Z on each encoder input
- 2 x 6 control inputs (HTL / PNP)
- 2 encoder outputs (TTL / RS422 standard)
- Input frequency max. 1 MHz
- Latency period < 250 ns
- Channel switching < 1 ms

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 –



By using this device, ESD protection measures must be complied.



General instructions for cabling, screening and grounding can be found in the SUPPORT section of our website <http://www.motrona.com>

Version:	Description:
GS20201a_sn/nw_05/14	First edition
GS20201b_sn/sk_10/14	design adaption, technical additions
Gs202_01c_oi/Oct-15/ag	Notice about ESD measures (see above)

Table of Contents

1. Functional Description	4
2. Electrical Connection	5
2.1. Power Supply	5
2.1.1. Encoder Supply.....	5
2.2. Pulse Inputs IN 1 – 20.....	6
2.3. Control Inputs.....	7
2.3.1. External wiring of the control inputs.....	8
2.4. Pulse Outputs OUT 1 – 2.....	9
3. Status Display.....	10
3.1. Example for status display.....	10
4. Technical Specifications	11
4.1. Dimensions	12

1. Functional Description

The GS202 is an Encoder Switch with 20 encoder inputs, 2 encoder outputs and 2 x 6 control inputs. Depending on the configuration of the control inputs, the device switches through the signal on the input (IN 1 – 20) to the corresponding output (OUT 1 – 2).

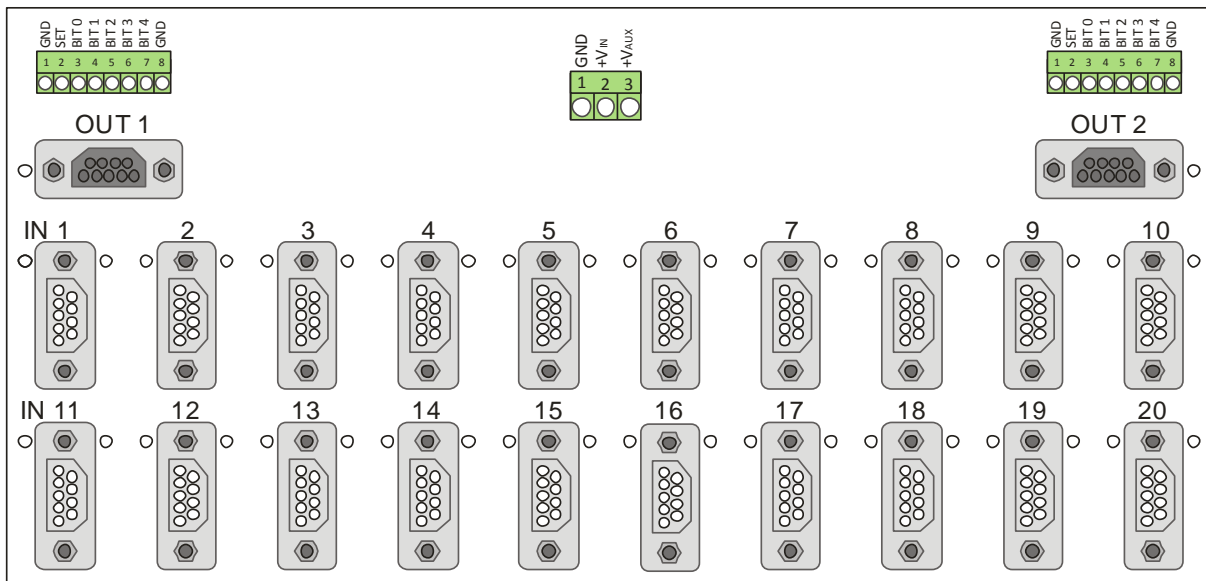
Both outputs operate independently of each other. The output has to be configured via the corresponding control input. To each output only one of the 20 inputs can be allocated.

Via a 5-bit parallel signal (BIT 0 – BIT 4) a special input (e. g. IN 16) will be selected. This input will be assigned to the output (e. g. OUT 2) by a pulse on terminal SET.

If the bit pattern is 00000 or in case of an invalid 5-bit-parallel signal, no input will be assigned to the output. During this process all tracks (A, B, Z) of the output are set to LOW and all inverted tracks (/A, /B, /Z) are set to HIGH.

Illuminated LEDs indicate the respective input assignment. Green LEDs signalize output OUT 1, yellow LEDs signalize output OUT 2.

2. Electrical Connection



Voltage and encoder supply:

Pin	Type	Function
01	GND	Minus pole of the power supply, reference potential
02	+V _{IN}	Plus pole of the power supply
03	+V _{AUX}	Input for the encoder supply

2.1. Power Supply

The device can be supplied by GND / +V_{IN} on the 3-pin terminal with a DC voltage of 18 – 35 VDC. The power supply has a reverse polarity protection. The current consumption depends on the level of the input voltage and the internal load condition of the unit. With a voltage supply of 24 VDC and unwired in- and outputs, the current consumption is about 30 mA.

2.1.1. Encoder Supply

Via +V_{AUX} on the 3-pin terminal an encoder supply of 5 – 35 VDC can be fed in. This supply is available on each of the 20 inputs (9-pin Sub-D male connector) of Pin 4.

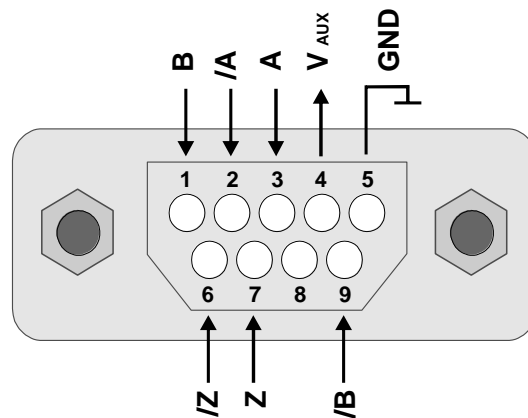
2.2. Pulse Inputs IN 1 – 20

There are 20 incremental inputs for differential / symmetric encoder signals (TTL / RS422 standard). The encoders / sensors can be connected to the desired input with 9-pin Sub-D male connector.

These devices accept single channel symmetrical input signals (A and /A only, no information on the direction of rotation) as well as dual channels (also channel B and /B, recognition of direction of rotation). If necessary, also the zero pulses Z and /Z of the respective encoder can be connected. The maximum input frequency is 1 MHz.



It is imperative to ensure that the inverted signal /A, /B or /Z is also connected.



**Input IN 1 - 20
9-pin Sub-D male connector**

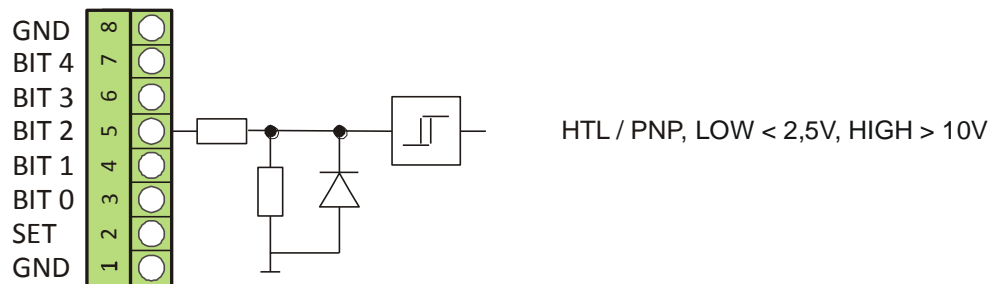
2.3. Control Inputs

Depending on the connection of the control inputs, one input can be assigned to the output. Via BIT 0 – BIT 4 one input is selected (see 2.3.1 External wiring of the control inputs). Only by an impulse on the terminal SET activates the selection. To each output only one of the 20 inputs can be allocated. The minimum pulse duration on the control inputs is 1 ms. The control inputs operate with HTL-level 10 – 30 VDC (PNP, switch to +).

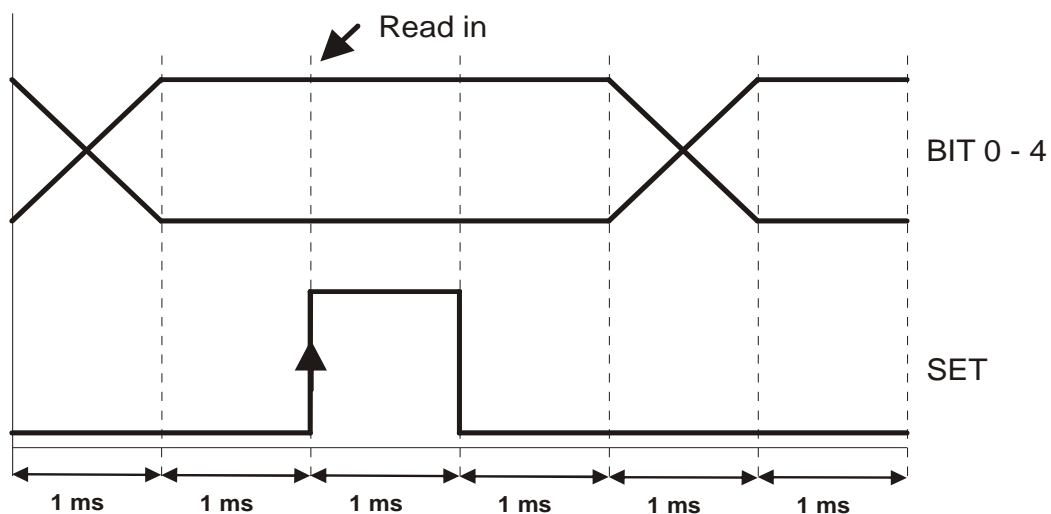
Control Inputs for OUT 1 / OUT 2:

Pin	Type	Function
01	GND	Minus pole of the power supply, reference potential
02	SET	Input for SET impulse
03	BIT 0	Input for BIT 0
04	BIT 1	Input for BIT 1
05	BIT 2	Input for BIT 2
06	BIT 3	Input for BIT 3
07	BIT 4	Input for BIT 4
08	GND	Minus pole of the power supply, reference potential

Input wiring SET and BIT 0 – 4:



Timing diagramm:



2.3.1. External wiring of the control inputs

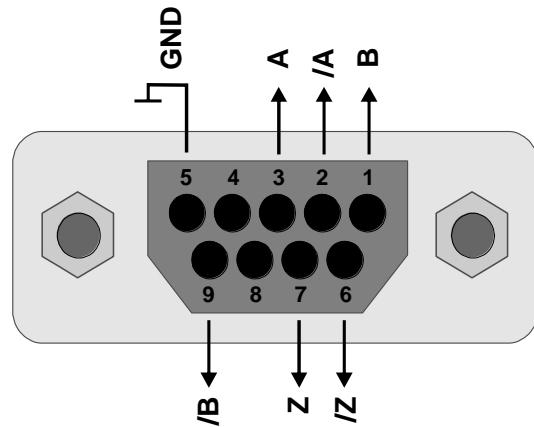
Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Input to Output x
0	0	0	0	0	<i>no allocation</i>
0	0	0	0	1	Input 1 to Output x
0	0	0	1	0	Input 2 to Output x
0	0	0	1	1	Input 3 to Output x
0	0	1	0	0	Input 4 to Output x
0	0	1	0	1	Input 5 to Output x
0	0	1	1	0	Input 6 to Output x
0	0	1	1	1	Input 7 to Output x
0	1	0	0	0	Input 8 to Output x
0	1	0	0	1	Input 9 to Output x
0	1	0	1	0	Input 10 to Output x
0	1	0	1	1	Input 11 to Output x
0	1	1	0	0	Input 12 to Output x
0	1	1	0	1	Input 13 to Output x
0	1	1	1	0	Input 14 to Output x
0	1	1	1	1	Input 15 to Output x
1	0	0	0	0	Input 16 to Output x
1	0	0	0	1	Input 17 to Output x
1	0	0	1	0	Input 18 to Output x
1	0	0	1	1	Input 19 to Output x
1	0	1	0	0	Input 20 to Output x
1	0	1	0	1	<i>no allocation</i>
1	0	1	1	0	<i>no allocation</i>
1	0	1	1	1	<i>no allocation</i>
1	1	0	0	0	<i>no allocation</i>
1	1	0	0	1	<i>no allocation</i>
1	1	0	1	0	<i>no allocation</i>
1	1	0	1	1	<i>no allocation</i>
1	1	1	0	0	<i>no allocation</i>
1	1	1	0	1	<i>no allocation</i>
1	1	1	1	0	<i>no allocation</i>
1	1	1	1	1	<i>no allocation</i>

If the bit pattern is 00000 or in case of an invalid 5-bit-parallel signal, no input will be assigned to the output. During this process all tracks (A, B, Z) of the output are set to LOW and all inverted inputs (/A, /B, /Z) are set to HIGH.

2.4. Pulse Outputs OUT 1 – 2

Two outputs are available (each with 9-pin Sub-D female connector, OUT 1 – 2). Depending on the connection of the control inputs, they switch the signal of one input (IN 1 – 20) to the corresponding output (OUT 1 – 2).

The outputs operate in RS422 standard with differential / symmetric signals.



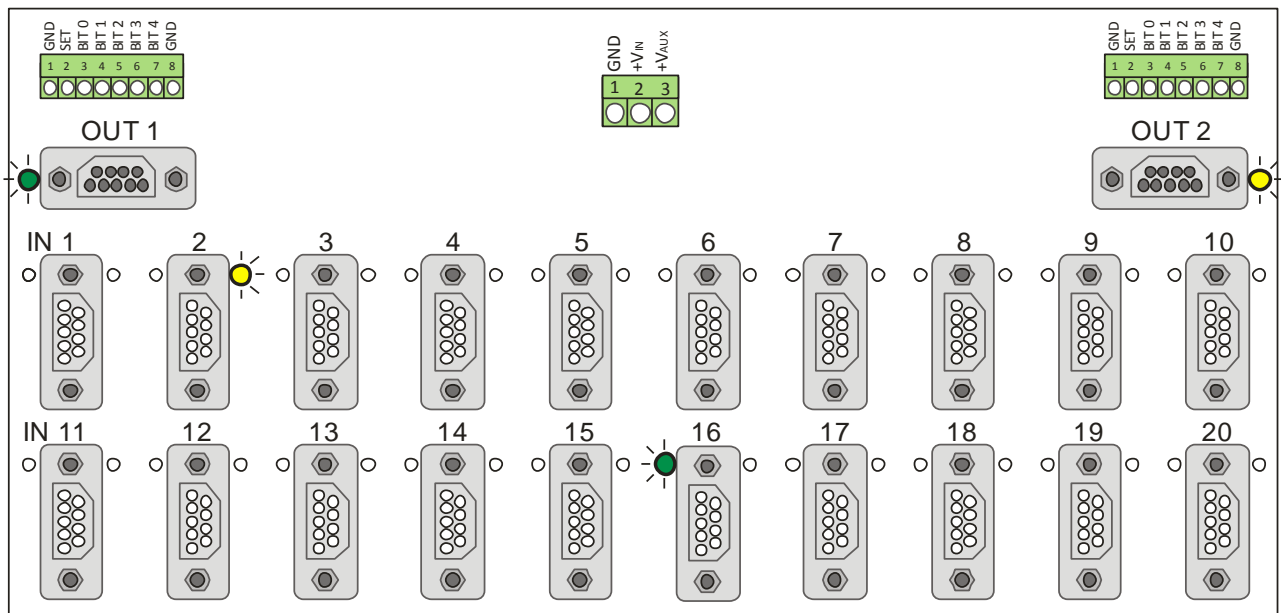
Output OUT 1 - 2
9-pin Sub-D female connector

3. Status Display

The device features 42 status LEDs:

- a **green** LED directly to the left of OUT 1
(Status: OUT 1 ready for operation)
- a **yellow** LED directly to the right of OUT 2
(Status: OUT 2 ready for operation)
- a green and a yellow LED, directly to the left and the right of each input
(Status **green**: Input connected with OUT 1)
(Status **yellow**: Input connected with OUT 2)

3.1. Example for status display



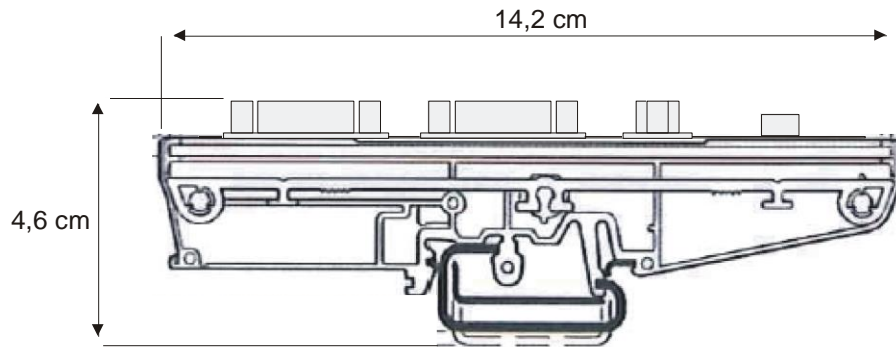
Example: OUT 1 ready for operation and pass through the signals of IN 16
OUT 2 ready for operation and pass through the signals of IN 2

4. Technical Specifications

Power supply:	17 to 30 VDC
Residual ripple:	$\leq 10\%$ @ 24 VDC
Current consumption:	Approx. 30 mA @ 24 VDC (unwired)
Encoder supply:	5 to 35 VDC (connect to +V _{AUX})
Control inputs:	HTL (PNP) LOW < 2,5 V HIGH > 10 V (max. 35 V) Pulse width > 1 ms Ri > 10 kOhm
Pulse input:	Differential / symmetrical pulse inputs (A, /A, B, /B, Z, /Z) RS422, termination resistor 500 Ohm (intern) on each channel
Input frequency:	Max. 1 MHz
Pulse output:	RS422 (A, /A, B, /B, Z, /Z)
Output frequency:	Max. 1 MHz
Latent periode:	< 250 ns
Channel switch-over:	< 1ms
Connection terminals:	Power supply: screw terminal, 3-pin, wire cross section max. 1.5 mm ² Control inputs: screw terminal 2 x 8-pin, wire cross section max. 1 mm ²
Plug / socket:	Pulse inputs: 20 x 9-pin Sub-D male connector Pulse outputs: 2 x 9-pin Sub-D female connector
Display:	2 LEDs (yellow/green) on each input 1 LED (yellow/green) on each output
Housing:	Plastic housing grey/black, for mounting to standard DIN rails (35 mm C-profile)
Weight:	Approx. 530 g
Protection:	IP20
Ambient temperature:	Operation: 0 to +60°C Storage: -25 to +70°C
Conformity and standards:	EN 61326-1:2006 EN 61000-6-2:2006-03 EN 61000-6-3:2007-09

4.1. Dimensions

Side view:



Top view:

