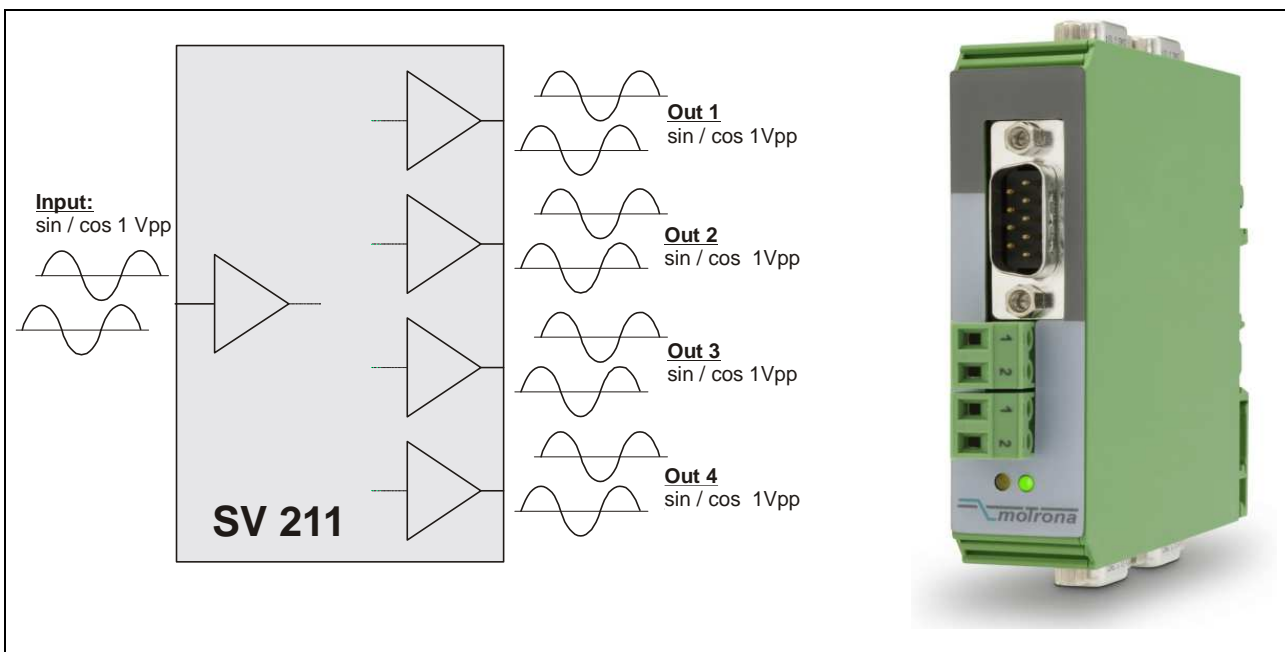


# SV 211

## Signal Splitter for Sine-Cosine Encoders



- Encoder inputs  $\sin+$ ,  $\sin-$ ,  $\cos+$ ,  $\cos-$ ,  $\text{ref}+$ ,  $\text{ref}-$  with 1 Vpp format
- Four sine-cosine output channels with the same signal format
- Suitable for input frequencies up to 500 kHz
- Power supply 17 - 30 VDC (potential separated) and auxiliary output 5V

## 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 –



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

Version:	Description:
SV21101a_Jan. 2013/af/nw	First edition
SV21101a_Feb. 2013/pp	Implementation of new product photo

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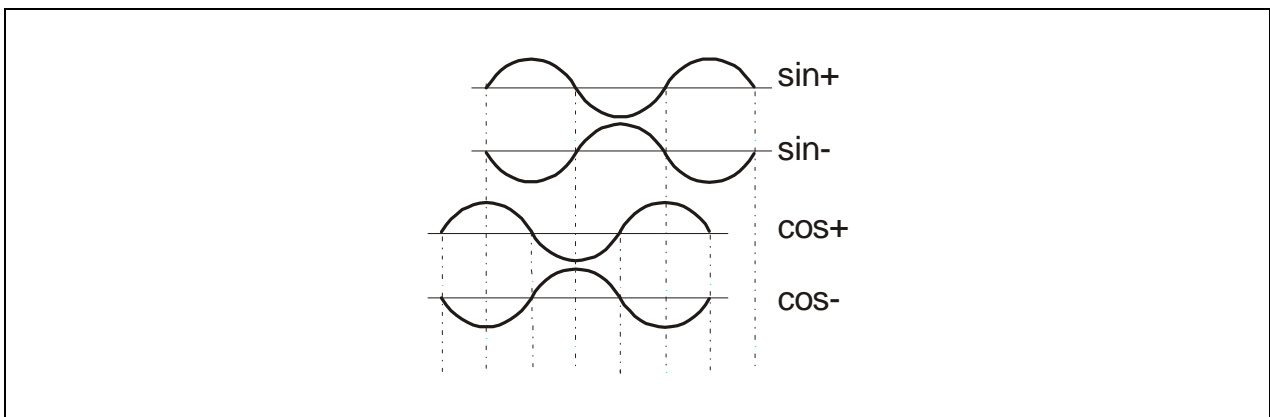
# 1. Application

The SV 211 encoder splitter has been designed for clean and trouble-free distribution of the output signals of sine-cosine type encoders to several target units.

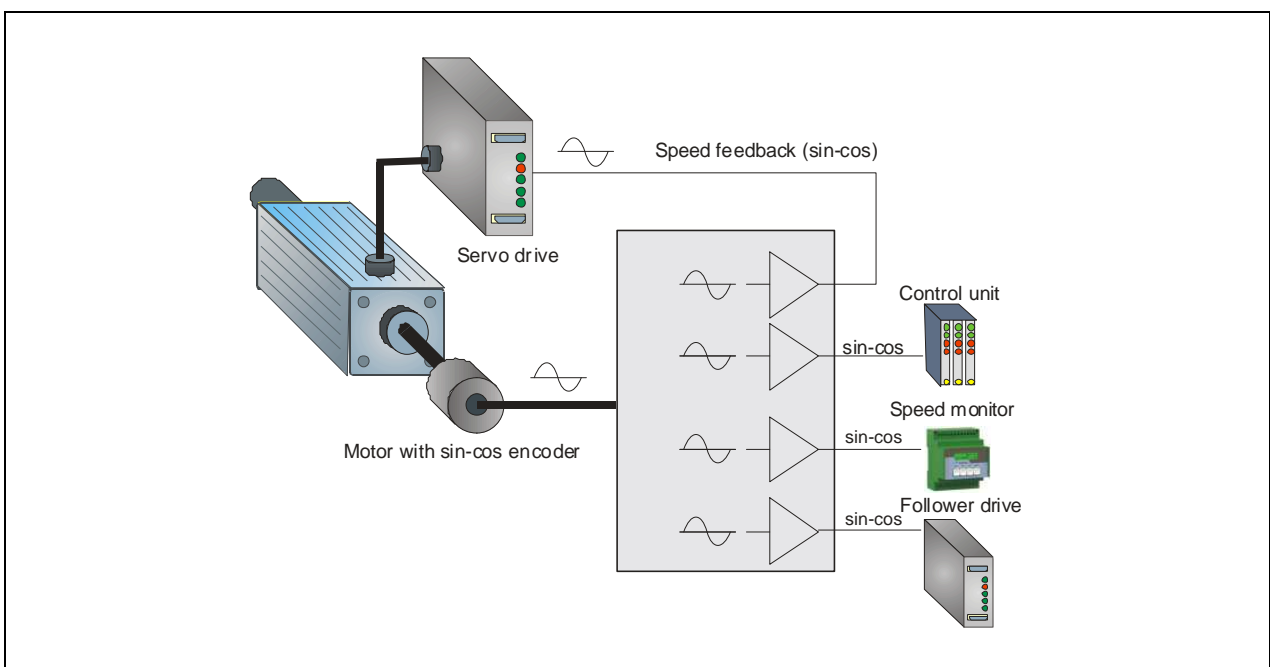
On all sine output channels the same signal format is available as on the input site, including a reference impulse (if available on the input site). All sine-cosine signals use the differential 1 V<sub>pp</sub> format which is most common with industrial sine-cosine encoders.

**Current signals according to the 11  $\mu$ A standard are not supported by this unit.**

The diagram below explains the sine signals.

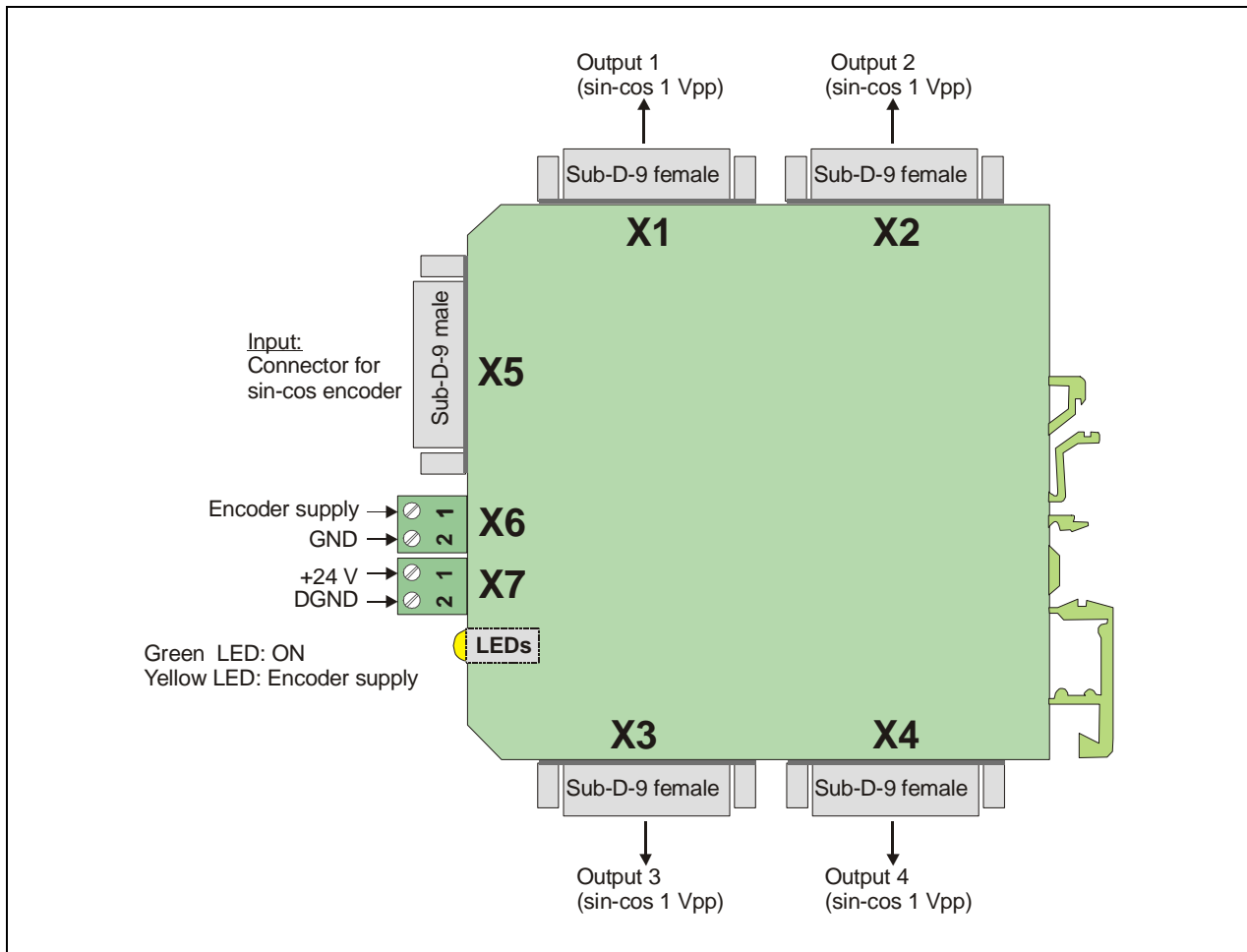


Typical application example of the SV 211 signal splitter:



## 2. Connection Diagram

For wiring of the sinusoidal signals the unit provides 5 Sub-D-9 connectors (X1, X2, X3, X4 and X5). For all other connections 2 screw terminal strips are available (X6 and X7). All Sub-D-9 connector housings are connected with the GND potential.



### 2.1. Power and Encoder Supply (X6/X7)

The unit operates from a DC power from 17 to 30 volts which must be applied to the front terminals X7/1 (+) and X7/2 (-). The +24V supply at the terminal X7(1,2) is a potential separated input.

With unloaded state the current consumption is about 50 mA (encoder supply line and output channels unconnected).

Terminals X6(1,2) selects the level of the auxiliary encoder supply output (24 V). More details are explained under section 2.2 (Encoder connection).

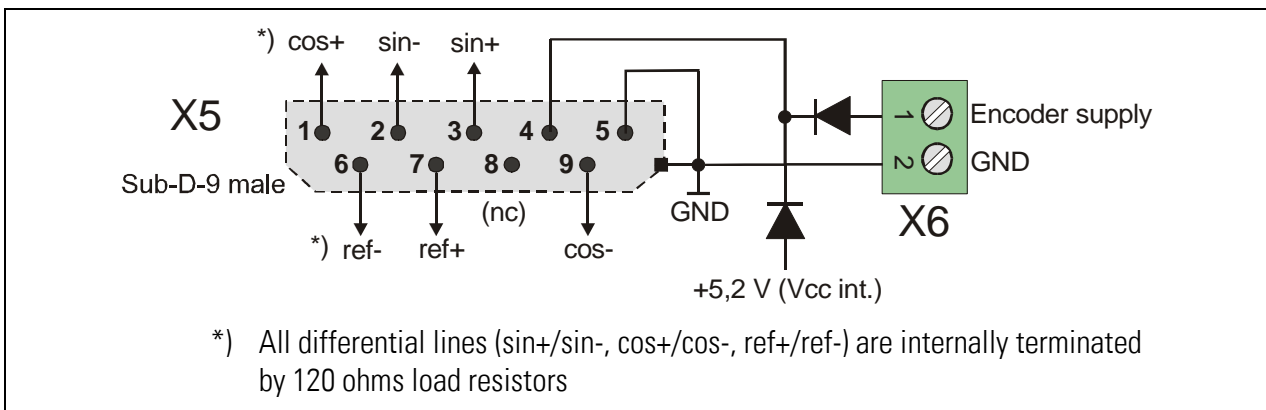
The terminals X6 and X7 are encoded to avoid an inverted connection between both!

## 2.2. Connection of the Sine-Cosine Encoder (X5)

The encoder can be connected via the front Sub-D-9 connector marked X5 (male connector on unit side, female connector on the encoder cable). Only encoders with differential sine-cosine signals of 1 Vpp can be used (0.8 Vpp - 1.2 Vpp). At any time the signals sin+/sin- and cos+/cos- must be available. Where an additional reference marker pulse is used, also the signals ref+/ref- must be applied.

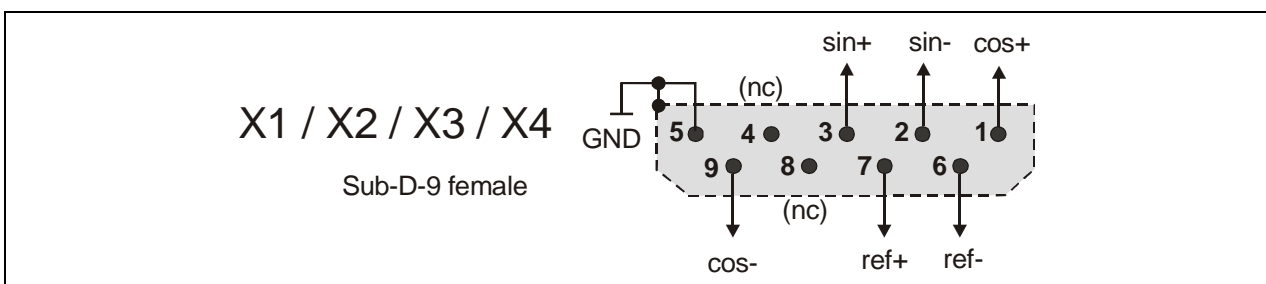
Pins 4 (+) and 5(-) of the Sub-D-connector provide an auxiliary power output for the encoder supply. When terminals 1,2 of the front X6 connector is unconnected, the aux. output voltage is automatically about 5.2 volts (max. 150 mA). Where the encoder requires another supply voltage (e.g. 24 volts), an appropriate voltage can be applied remotely to terminal X6(1,2).

Please note that the metallic housing of the Sub-D input connector is internally connected to the common GND potential of the unit.



## 2.3. The Sine-Cosine Outputs (X1, X2, X3 und X4)

All Sub-D-outputs provide an image of the sine-cosine input signals, however with a fixed offset voltage of 2.5 volts with respect to GND. This allows a clean and trouble-free distribution of the input signal to four target units.



- It is mandatory to use cables with pairwise twisted wires for all sinusoidal signals sin+/sin-, cos+/cos- and ref+/ref-.
- For trouble-free signal transmission the target unit must provide terminating resistors at the end of the signal line (in each case 120 ohms between signal+ and signal-)
- Since on the inputs the unit already uses in-built termination resistors, no further measures must be taken on the encoder side.



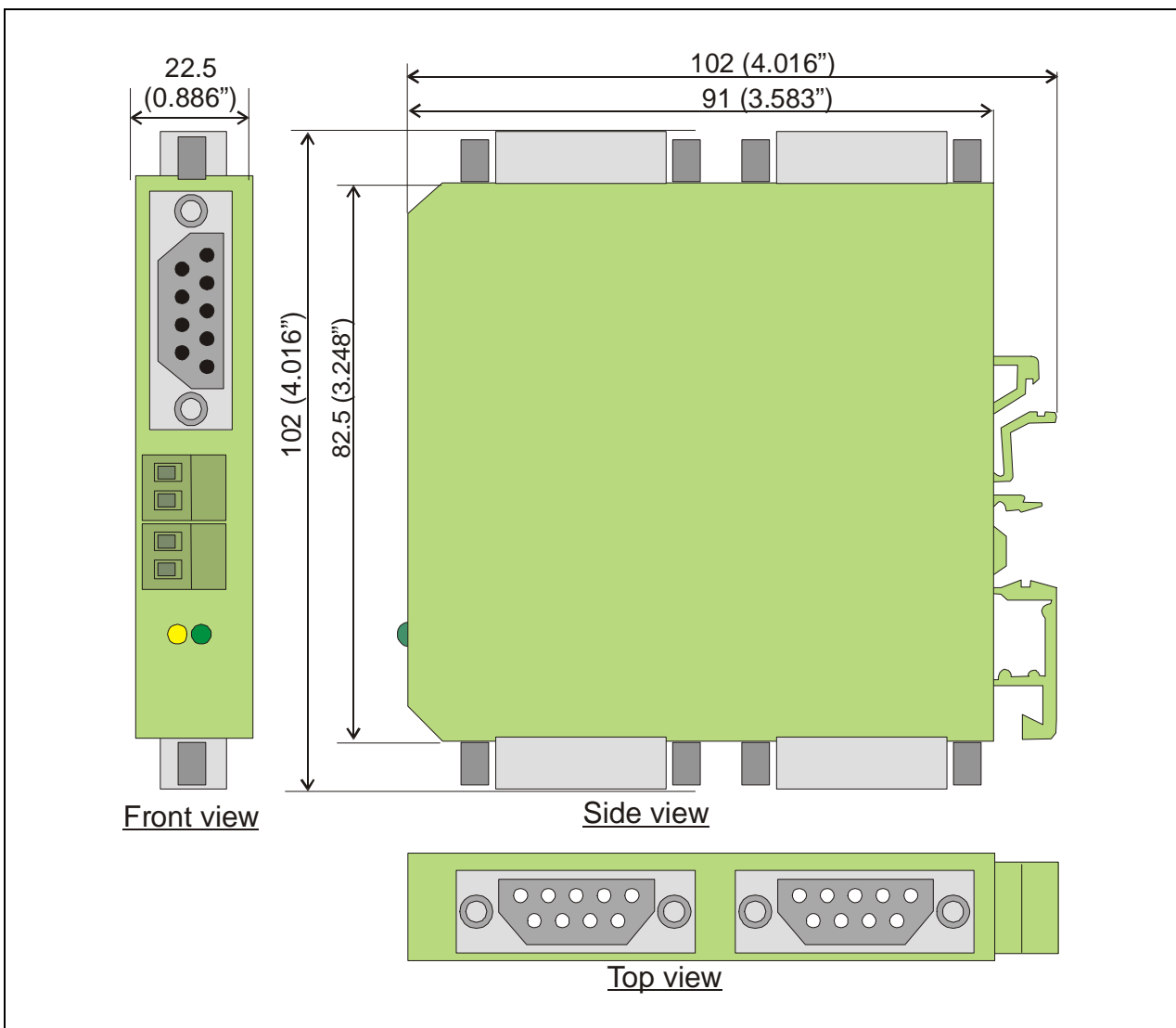
It is recommendable to connect the cable shield directly to the metal housing of the associated counterpart connector. This ensures that the cable is connected with the GND potential in any case via SV211.

### 3. The Front LEDs

The green LED is lit whenever the power supply of the unit is on.

The yellow LED indicates the availability of the encoder supply +5V. The yellow LED is lit whenever the supply is available.

### 4. Dimensions



## 5. Technical Specifications

Power supply $V_{in}$	:	17 V - 30 VDC
Supply current	:	approx. 50 mA (unloaded)
Aux. encoder power output	:	5,2V / 150 mA (or according to remote feed-in)
Max. frequency	:	500 kHz
Signal inputs (Terminating resistors 3 x 120 ohms inbuilt)	:	6 symmetric differential sin/cos - inputs (sin+, sin-, cos+, cos-, ref+, ref-), Signal level 0,8 Vpp - 1,2 Vpp, Signal offset approx. 2 - 3 V to GND
Signal outputs sin-cos (Termination resistors must be available on the target unit side)	:	4 x 6 symmetric differential outputs (each time sin+, sin-, cos+, cos-, ref+, ref-), Signal level 0,8 Vpp - 1,2 Vpp, Signal offset 2,5 V to GND
Propagation delay time	:	approx. 200 nsec.
Ambient temperature	:	Operation: 0° - +45° C (+32° - +113° F) Storage: -25° - +70° C (-13° - +158° F)
Weight	:	approx. 100 g
Conformity and standards	:	EMC 2004/108/EC: EN 61000-6-2 EN 61000-6-3