STEIEL
ELETTRONICA SRL

GALVANIC SEPARATORS / SIGNAL CONVERTERS

SG18 Series

TECHNICAL MANUAL

CE

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Certified Company, according to UNI EN ISO 9001 standards

WARNINGS

This manual is dedicated to the technical personnel responsible of the installation, management and maintenance of the plants. The manufacturer assumes no responsibility for damages or malfunctions occurring after intervention by non-authorized personnel, or not compliant with the prescribed instructions.

Before performing any maintenance or repair action, ensure that the system is electrically and hydraulically insulated.

Dispose of waste material and consumables accordingly with local regulations.

The manufacturer can modify the instrument or the technical manual without advanced notice.

Warranty

All STEIEL products are warranted for a period of 12 months from the delivery date.

Warranty is not valid if all instructions of installation, maintenance and use, are not strictly followed by the user. Local regulations and applicable standards have also to be followed.

Warning! *In case of tampering with sealed trimmers, the warranty is void.*

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PACKING LIST

The SG18 device is supplied complete with:

1) Mounting brackets (only version with closed casing for wall installation)
2) Technical manual

Wall-mounting casing

Installation on DIN slot

TECHNICAL DATA

Power Supply	230 V~ ±10%, 50/60 Hz, 2VA	
	(110 or 24 V~ ±10%, 50/60 Hz, 2VA ; 12-24 Vdc 2W upon order)	
Environment	Storage Temperature	-20 … +60 ℃
	Working Temperature	-10 … +50 ℃
	RH max	90% no condensing
Casing	Wall version: self-extinguish plastic material, shielded;	
	DIN version: board support with hook for DIN slot (DIN EN50022, EN50035)	
Protection Rate	Wall-mounting version:	IP56
	DIN-mounting version:	IP00 (open housing)
Dimensions	Wall-mounting version:	159 x 118 x 76 mm
	DIN-mounting version:	75 x 120 x 60 mm
Weight	approx. 450 g	

Wall-mounting version only:

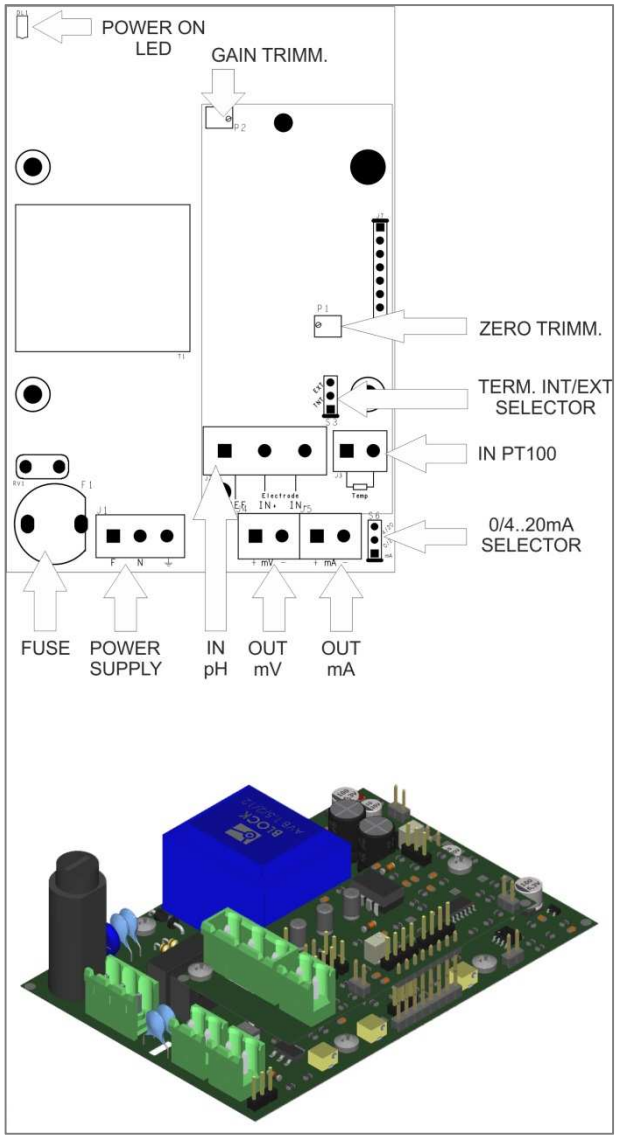
Cable Glands	3 x PG7, for cables with dia. 5 … 8 mm	
Installation Template	Housing directly wall fixed:	100 x 140 mm
	Installation with brackets:	140 x 140 mm (horizontal brackets)
		100 x 180 mm (vertical brackets)

Input / Output (depending on model):

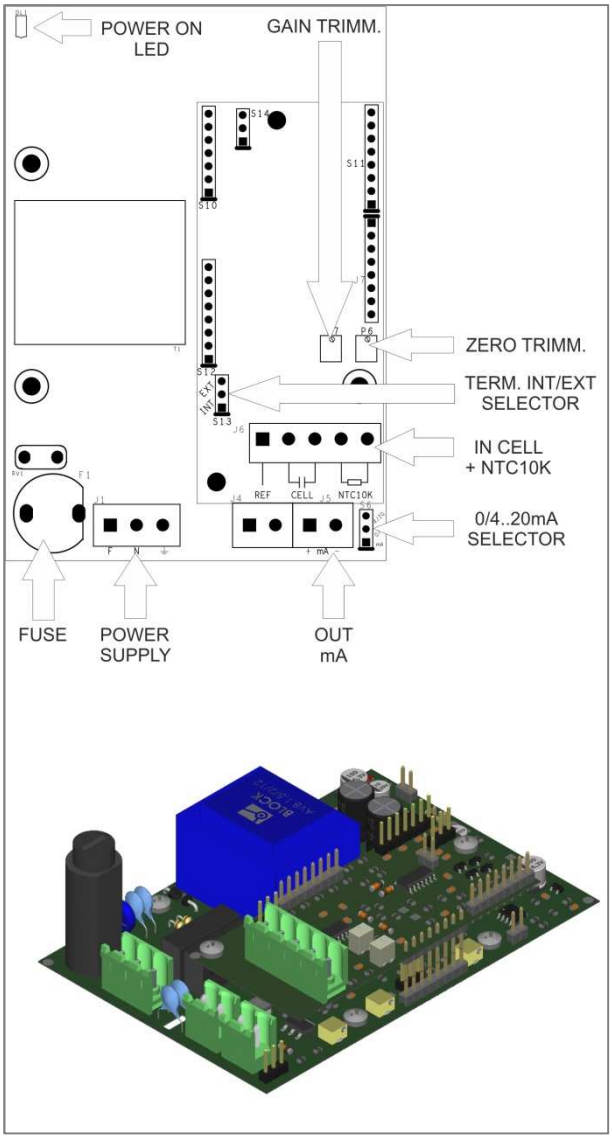
Precision	better than 0.5 % FS
Repeatability	better than 0.2 % FS
pH, RX, mV Inputs	input impedance > 10^13 Ohm
Conductivity Input	(K = 10 cm): 0.2, 2, 20, 200, 2000 µS/cm
	(K = 1 cm): 2, 20, 200, 2000, 20000 µS/cm
	(K = 0.1 cm): 20, 200, 2000, 20000, 200000 µS/cm
	(K = 0.01cm): 0.2, 2, 20, 200, 2000 mS/cm
	(K = 5 cm): 2, 20, 200, 2000 µS/cm
Current (mA) Output	0-20 or 4-20 mA, 500 Ω max load
Voltage (mV) Output	(only mV/mV model) ±1000 mV, 1 kΩ max load

ELECTRONIC BOARD / ELECTRICAL CONNECTIONS

Version pH / RX / mV



Version COND.



POWER SUPPLY (VAC)

Connect the three wires of the power cable (phase, neutral, earth) to the corresponding terminals of the J1 (POWER SUPPLY) block. The supply voltage can be changed through a jumper located below the power transformer; the following configurations are available:

- 115 V (or 12 V) with two vertical jumpers
- 230 V (or 24 V) with one horizontal jumper (external side)

Notes: *Thys type of operation must <u>only</u> be carried out by an authorized technician.*
Replace the varistor RV1and the fuse F1 according to the nominal supply voltage.

POWER SUPPLY (VDC)

Connect the +24V wire to F and the 0V wire to pin N. Connect the grounding wire to the pin “earth”.

Note: *The current output is galvanically isolated from the supply voltage.*

FUSE

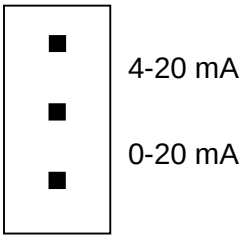
The power supply line of the device is protected by a 100 mA (a 230V~) fuse (F1). If it has to be replaced, use a fuse with the same characteristics. NEVER use fuses with different characteristics. Also check the cause of the fuse blowing.

For example: 1) Wrong supply voltage

2) Voltage fluctuations with peaks than 15% of the nominal value

SETTING THE OUTPUT CURRENT AT 0-20 or 4-20 mA

In order to select the desired current output, connect the S6 jumper as shown in the below figure:



INPUT

Models with pH / RX / mV Input

Connect the shield of the shielded cable (negative) to the "IN–" terminal of block J2, and the positive (hot wire) to the terminal "IN+" of J2. If a reference electrode is used, connect it to REF.

It is advisable to strip the shielded cable as little as possible and not to disperse any copper wires of the shield inside the device.

In the pH version, automatic temperature compensation is also provided, by connecting a Pt100 sensor to the J3 terminal block and moving the jumper S3 to the EXT position. If no temperature sensor is connected, leave the jumper S3 in the INT position.

Place the temperature probe as close as possible to the measurement electrode (or in any case at the same temperature).

Models with Conductivity Input for CCK Cells (2-electrode cells)

Connect the two wires of the cell cable to terminals CELL of the block J6 (no polarity) and the shield (if present) to the terminal REF.

The instrument is also provided with automatic temperature compensation through an NTC10K sensor. Connect the sensor to the J6 terminal block and move the jumper S3 to the EXT position. If no temperature sensor is connected, leave the jumper S3 in the INT position.

Place the temperature probe as close as possible to the conductivity cell (or in any case at the same temperature).

mA OUTPUT

Connect the shield of the shielded cable (negative) to the "mA –" terminal of block J5, and the positive to the terminal "+ mA" of J5.

We recommend using a 2-wire (0.5 mm^2) shielded cable. Connect the shield on the receiver side only.

mV OUTPUT (*only mV/mV model*)

Connect the shield of the shielded cable (negative) to the "mV-" terminal of block J4, and the positive (hot wire) to the terminal "mV+" of J4.

We recommend using a 2-wire (0.5 mm^2) shielded cable. Connect the shield on the receiver side only.

***Note**: If the path between the separator and the receiver instrument is long or disturbed, we recommend lowering the impedance of the receiver with a resistance of 10…100 kOhm.*

ELECTROCHEMICAL CALIBRATION

We recommend using STEIEL calibration solutions.

pH VERSION

The calibration is a two-point procedure, ZERO and GAIN. Before starting, calibrate the receiver instrument, then proceed as follows:

1) Connect the electrode to the input and the receiver to the output.
2) Rinse the electrode with distilled water and immerse it into the pH 7 buffer solution.
3) Adjust the ZERO (P1) trimmer to read “7.00 pH” on the receiver display.
4) Rinse the electrode with distilled water and immerse it into the pH 4 (or pH 9) buffer.
5) Adjust the GAIN (P2) trimmer to read “4.00 pH” (or “9.00 pH”) on the receiver.

If no receiver instrument is available, you can calibrate the device with a tester of 20 mA capacity, by following the below table:

VERSION	GAIN	7 pH	4 pH	9 pH
0-14 pH / 0-20 mA	1.43 mA/pH	10.00 mA	5.72 mA	12.87 mA
0-14 pH / 4-20 mA	1.14 mA/pH	12.00 mA	8.56 mA	14.26 mA

REDOX VERSION

The calibration is a single-point procedure, ZERO. Before starting, calibrate the receiver instrument, then proceed as follows:

1) Connect the electrode to the input and the receiver to the output.
2) Rinse the electrode with distilled water and immerse it into a solution at known redox value (e.g. 230 mV).
3) Adjust the ZERO (P1) trimmer to read the calibration solution value on the receiver.

If no receiver instrument is available, you can calibrate the device with a tester of 20 mA capacity, by following the below table:

VERSION	GAIN	230 mV	475 mV
±500 mV / 0-20 mA	0.020 mA/mV	14.60 mA	19.50 mA
±500 mV / 4-20 mA	0.016 mA/mV	15.68 mA	19.60 mA
0-1000 mV / 0-20 mA	0.020 mA/mV	4.60 mA	9.50 mA
0-1000 mV / 4-20 mA	0.016 mA/mV	7.68 mA	11.60 mA

mV / mV VERSION

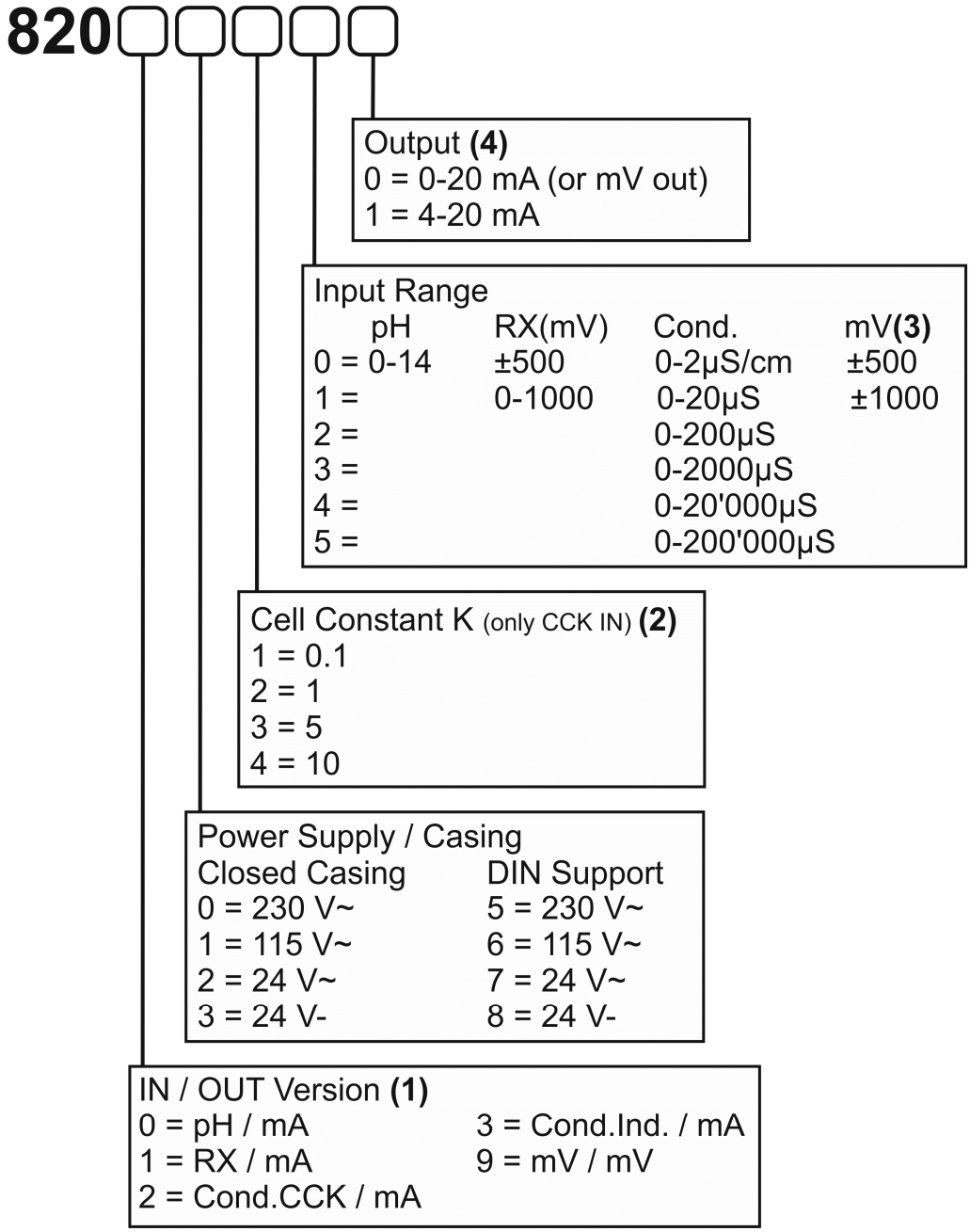
The device does not need any intervention by the customer.

CONDUCTIVITY VERSION

In general the device does not need any intervention by the customer. However, should an adjustment be necessary, before starting, calibrate the receiver instrument, then proceed as follows:

1) Connect the conductivity cell to the INPUT terminal and the receiver to the OUT.
2) Leave the cell dry in the air and adjust the ZERO (P6) trimmer to read “0” on the receiver.
3) Immerse the cell into a calibration solution (for example, 1413 µS/cm) and adjust the GAIN (P7) trimmer to read the solution conductivity value on the receiver display.

CODES FOR ORDER



Notes:

(1) Model with pH input is also equipped with an input for PT100 sensor.
Models with conductivity inputs (both for CCK and inductive cells) are also equipped with an input for NTC10K sensor

(2) For all remaining versions this field is zero (0)

(3) The ±500mV input is used for pH range

(4) The mV output is available for the SG18-mV/mV model only