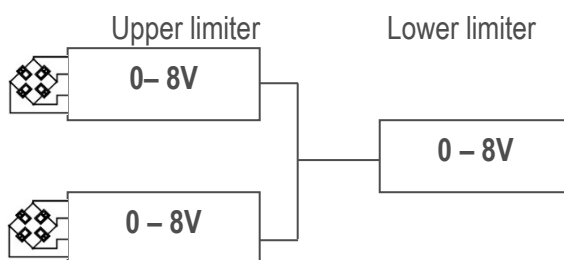


BRIDGE-BOY SUMMATION SYSTEM

CE

PERSONALISED



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1. GENERAL

These instructions describe the procedures to follow for the installation and adjustments of the BRIDGE-BOY overload protection electronic system in the case where it is connected to two other BRIDGE-BOY's and in order to limit the load on the sum of two loads.

The BRIDGE-BOY's connected to the force transducers will be called the "upper" and the "lower" the BRIDGE-BOY which does the summation and for which the adjustments are given below.

- All BRIDGE-BOY can be used as "upper" BRIDGE-BOY
- The "lower" BRIDGE-BOY (E-SUM option) is characterized by a 350 Ω and a 5 Ω resistance on the PCB and a bypass in B7.

If you are familiar with this procedure, you can go straight to chapter 4.

1.1. Introduction

The BRIDGE-BOY limitation systems should absolutely be installed in a metal casing fixed to the ground. If the electric line is very disturbed, the supply to the BRIDGE-BOY should be filtered using a Schaffner filter.

Make sure the adjustments are made keeping the hook at the same height in order to avoid any effects of the weight of the cables.

The zero-point should always be adjusted after a lowering and the sensitivity adjustments, after hoisting to avoid any effects of friction in the pulley-blocks.

The BRIDGE-BOY is an auto-supervised device. In case of a breakage, a cut or short-circuit of the supply-cable, the transducer or the measuring cable, the device immediately commutes to security mode.

1.2. Principle

The BRIDGE-BOY-1R is equipped with one changeover relays. When switched off, the relay is in «rest» position.

The BRIDGE-BOY -3R is equipped with three changeover relays.

When the BRIDGE-BOY-1R is switched on and the load applied is lower than the thresholds, the relays are in «working» mode and contact is made between terminals 14 and 15 (SP 1). The led on the front is green. If the applied load is greater than the threshold, then the relay returns to the "rest" position and the led becomes red.

Once a threshold has been exceeded, the load should be reduced by at least 20% of the nominal capacity of the bridge, so the alarm is deactivated (hysteresis). If specified in the order, the value of the hysteresis can be reduced for example in order to manage a low threshold for the detection of cable-slack.

For the BRIDGE-BOY-3R, the 3^d threshold is in standard configured for the detection of cable-slack.

Each threshold has a time delay, in order to avoid the alarm going on in case of occasional overloads due to dynamic effects

2. INSTALLATION AND ADJUSTMENTS

Do the wiring according to the diagram in the appendix.

Switch the system on at least 15 minutes before doing any adjustments and hoist a load close to the nominal load, several times, in order to stabilize the system mechanically.

The measurements must be done on the terminal and not on the screw heads.

2.1. Transducer supply voltage on the two "upper" and the "lower" BRIDGE-BOY's

Measure the tension at terminals 3 (-) and 4 (+). Using potentiometer I, bring the voltage to 8 V for the "upper" BRIDGE-BOY and 4 V for the "lower" BRIDGE-BOY's.

2.2. Zero-point of the three BRIDGE-BOY's

The zero-point and sensitivity of the BRIDGE-BOY's are adjusted using the output voltage measured on the terminals 6(-) and 8(+)

The test point "common (0 V)" on the front at the left side just above the terminals of the power supply is equivalent to the terminal nr 6 (ground).

Unload the hooks and adjust the output voltage of each "upper" AND "lower" BRIDGE-BOY's to 0 V using the potentiometer Z.

2.3. Adjustment of the set-point(s)

To facilitate the configurations, the overload set-point SP1 is set to 8 V for the "lower" and "upper" BRIDGEBOY's.

On the BRIDGE-BOY-3R, is set-point 3 dedicated by default to slack cable detection and only 1 set point is adjusted at 8 V.

2.4. Sensitivity (span) of the BRIDGE-BOY's

2.4.1. Sensitivity (span) of the first "upper" BRIDGE-BOY

Charge the system with a standard mass the nearest possible (75% minimum) of the nominal load of the lifting system and bring the output tension (using the potentiometer S) to the value V_s , calculated using one of the following formulas.

If the standard mass is 110%, the voltage between 6(-) and 8(+) will be 8 V.

By default:

$$V_s = \boxed{8 \text{ V}} \times \frac{\text{Standard mass}}{\text{Nominal load} \times 1,1}$$

$$V_s = \boxed{7,27 \text{ V}} \times \frac{\text{Standard mass}}{\text{Nominal load}}$$

Your particular case:

$$V_s = \boxed{\quad \text{V}} \times \frac{\text{Standard mass}}{\text{Nominal load}}$$

$$V_s = \boxed{\quad \text{V}} \times \frac{\text{Standard mass}}{\text{Nominal load}}$$

- If a pre-programmed indicator is connected to the analog output of the BRIDGE-BOY, it should display the hoisted load.
- Remove the load. If the zero has drifted, resume operations 2.2.

Example: For an overhead crane with a nominal load of 25 tons and a standard mass of 18.6 tons:

$$V_S = 7.2 V * 18.6 t / 25 t = 5.4 V$$

2.4.2. Sensitivity (span) of "lower" BRIDGE-BOY

While the load is raised, you must set, with the potentiometer S, the "lower" BRIDGE-BOY with the same value as the upper BRIDGE-BOY, if the maximum load of the bridge is equal to the load on a hoist. It will be equal to half of the signal, if the bridge can raise the double of the signal on a hoist.

Example1: Crane of 25 tons, 25 tons by hoist and a calibrated mass of 18.6 tons

Setting of the upper BRIDGE-BOY's: $V_S = 7.2 V * 18.6 t / 25 t = 5.4 V$

Setting of the overload relay at 8 V

Setting of the lower BRIDGE-BOY: $V_S = 7.2 V * 18.6 t / 25 t = 5.4 V$

Setting of the overload relay at 8 V

Example2: Crane of 40 tons, 25 tons by hoist and a calibrated mass of 18.6 tons

Setting of the upper BRIDGE-BOY's: $V_S = 7.2 V * 18.6 t / 25 t = 5.4 V$

Setting of the overload relay at 8 V

Setting of the lower BRIDGE-BOY: $V_S = 7.2 V * 18.6 t / 40 t = 3,35 V$

Setting of the overload relay at 8 V

2.4.3. Sensitivity (span) of the second "upper" BRIDGE-BOY

Repeat all the settings operations of sensitivity done for the first upper BRIDGE-BOY to the second upper BRIDGE-BOY.

At this time, check the signal of the lower BRIDGE-BOY to see that the system functions the same way for the two upper BRIDGE-BOY'S.

Setting of the overload relay at 8 V

2.5. Adjustment of the delay for the threshold on each BRIDGE-BOY

Turn the delay potentiometer(s) D1, (D2, D3) situated on the front side 20 turns anti-clockwise ↺ (minimum delay).

Lift a weight equal to the nominal load of the hoisting device (100 %).

In case the BRIDGE-BOY detects a dynamic overload because of movements, turn the delay potentiometer D1 (D2, D3) clockwise ↻, in order to increase the time delay.

This action has to be made carefully because it creates a delay between the detection of the force and the commutation of the relay.

Warning: a too long delay can lead to late detection of overload and thus damage the lifting equipment.

Remark: The led) are green in the safe situation. They become red in case of the corresponding set-point is in fault situation. They are white in the transient period when the set-point is reached but the relay not yet (des)activated. This allows to check the efficiency of the delay.

The BRIDGE-BOY has a test button on the front side that allows you to commute to security mode.

3. PROBLEMS AND PARTICULARITIES

3.1. The adjustment on potentiometer I has no influence on the 8 Volt transducer power supply

- If this voltage is ± 13 Volts, the supply circuit of the transducer has been cut off.
- Measure the resistance of the transducer between the brown and yellow cables: it should be of $380 \Omega \pm 30 \Omega$.
- Check the connections.
- If you have any further problems, contact your dealer.

3.2. Impossible to bring the zero signal to 0volt on the "upper" BRIDGE-BOY

- Measure the output voltage of the transducer (mV) between the terminals 1 (+) and 2 (-) and check it increases when some load is applied.
- Too big load when empty. Modify the adjustment parameters by default and redo any necessary calculations eventually with your dealer.
- If you have any further problems, contact your dealer.

3.3. Impossible to adjust the signal to 8 V on the "upper" BRIDGE-BOY for a load of 110%

- The voltage remains higher: reduce the transducer supply voltage without bringing it below 6 V and adjust the zero-point.
- The voltage is slightly lower than 8 V but higher than 6 V: increase the transducer supply tension (11.63 V max.) and adjust the zero-point.

- The voltage remains lower than 6 V but higher than 3.5 V: increase the supply voltage (point 3.2), adjust the zero-point and then modify the setting parameters proposed by default and redo the different calculations.
- If you have any further problems, contact your dealer.

3.4. Impossible to bring the zero-point signal on the “lower” BRIDGE-BOY to 0 V

- Make sure the output signal of the “upper” BRIDGE-BOY's is 0 V (terminals 6(-) and 8(+)).
- Make sure the input signal of the “lower” BRIDGE-BOY is 0 mV (terminals 1(+) and 2(-)).
- If you have any further problems, contact your dealer.

3.5. Impossible to adjust the signal of the “lower” BRIDGE-BOY to 8 V for a load of 110%

- Make sure the output signal of the “upper” BRIDGE-BOY's is 8 V (terminals 6(-) and 8(+)).
- Make sure the input signal of the “lower” BRIDGE-BOY is 8 mV (terminals 1(+) and 2(-)).
- If you have any further problems, contact your dealer.

3.6. Other problems

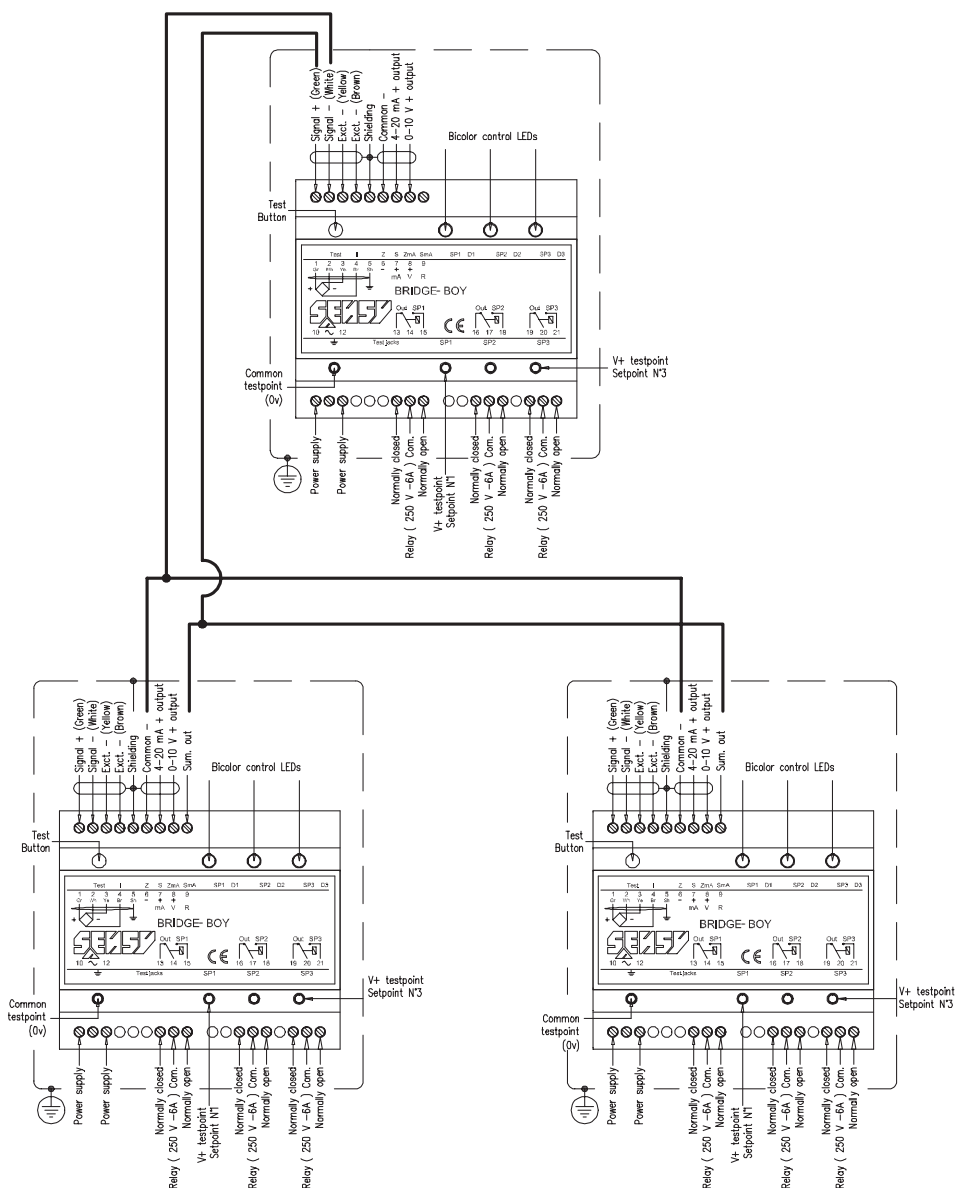
Contact your dealer.

4. SPECIFICATIONS

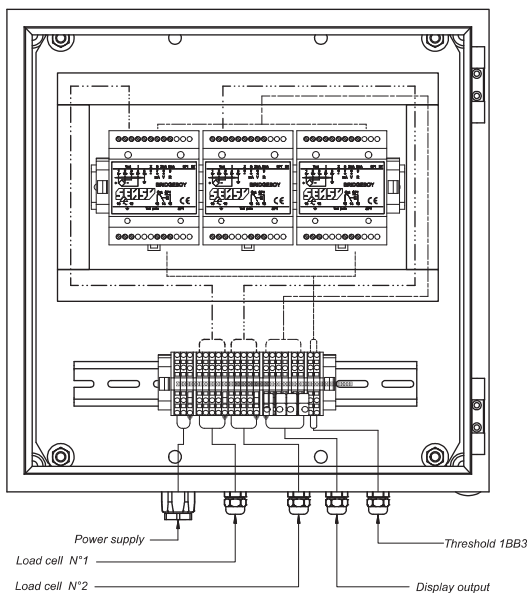
Power supply: (specify on order; see front of the BRIDGE-BOY)	48-115-230 VAC
Adjustable current generator	10...28 mA
Maximum voltage	11 V
Voltage output	0-10V (max load 4 mA)
Current output	4-20mA (max load 10 V)
Isolation	1,5 kV Alternative / 500 V Continuous
Zero input voltage	From -1.2 to 4.5 mV
Full scale	From 9 to 25 mV
Alarms	
Adjustable set-point	From 0 to 100% (0...10 V)
Hysteresis	Definable on order (de 0 à 20%)
Adjustable delay	From 60ms to 1s
Accuracy	
Maximum error	< 0.5%
Supply current	< 0.1% / 10° C
Output signal	< 0.1% / 10° C
Set-point	< 0.2% / 10° C
Influence from supply voltage	< 0.2% / 10%
General	
Relay contact data	Changeover (250VAC/6A)
Temperature range	- 20 à +60 ° C
Sealing	IP55
Weight	0.8 kg
Terminals	BRIDGE-BOY-1R: 14 terminals BRIDGE-BOY-3R: 20 terminals

5. INSTALLATION AND ADJUSTMENT DIAGRAMS

BRIDGE-BOY > STANDARD DIMENSIONS



Other views



Terminals

See drawing

