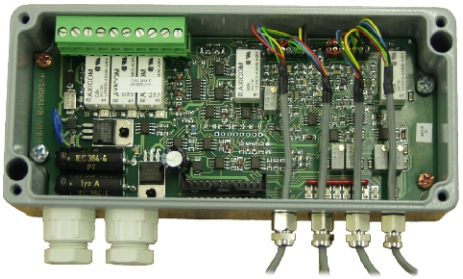
redundant load monitoring
VMV-0050

VELOMAT MESSELEKTRONIK GmbH

functional description

The redundant load monitoring VMV-0050 is special designed for measuring and evaluation of chancing forces at sensors.

The device makes available a switch output relevant for safety as well as two additional outputs.



The requirements on the safety circuit is realized by the following activities:

- doubling of the metered values by use of redundant sensors
- check of the sensor feed cables
- check of the operating voltage
- tolerance evaluation of the metered values
- tolerance check of the threshold value potentiometer
- threshold value adjusting by separate adjustment controllers
- external overload triggering and with that control of the disabling chain

technical specifications

power supply	12 V DC ±10 % or 24 V DC ±10 %
current consumption	max. 250 mA
sensor inputs:	two or four (each with current or bridge signal)
current signal	1...9 mA or 4...20 mA
sensor power supply	12 V DC or 15 V DC
bridge resistance	strain gauge sensor 350...1,000 Ω
sensitivity	1.5 mV / V
bridge voltage	5 V DC
overload triggering	add-on resistance directly at the measuring bridge
switch outputs:	
circuitry	safety output contact - 2 relay as make contact (closed below the threshold)
additional output	function selectable
switch power	1,25 A / 100 V DC 1,25 A / 125 V AC
case	BOPLA, IP 65, aluminium die-cast
external dimensions	175 mm x 80 mm x 57 mm
contacting	2 screw terminals, 4 cable inlets
operating temperature	-20 °C to +60°C

conform to European Standard EN954-1 **safety category 3**
(safety of machinery - safety-related parts of control systems)

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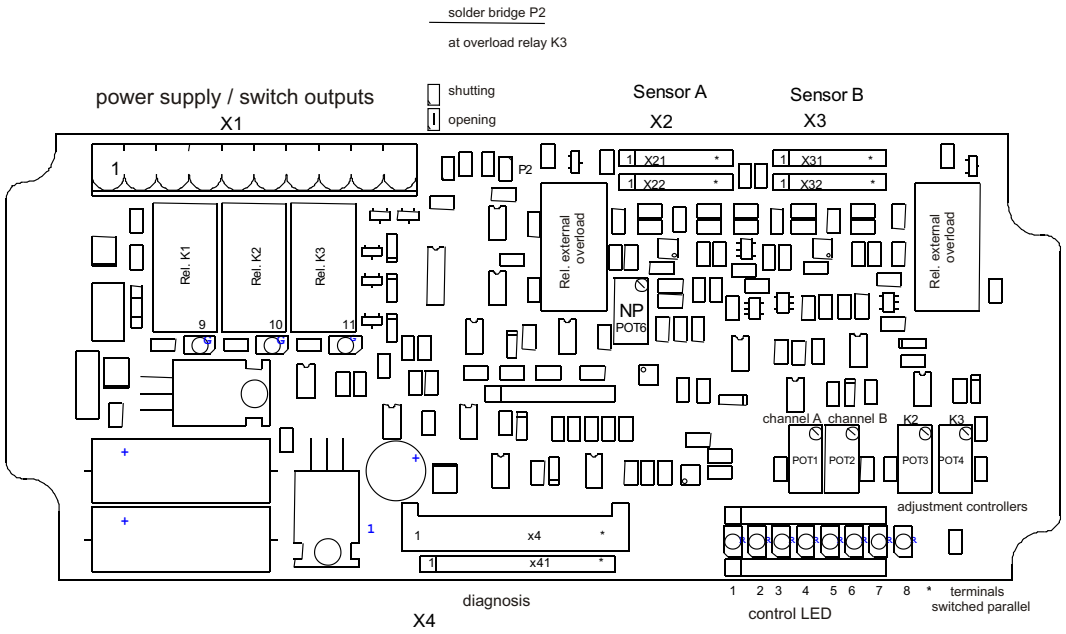
terminal lay-out



plug connector assignment:

X1 power supply / switch outputs:

contact	function
1	operating voltage 12 V DC or 24 V DC (dependent on version)
2	chassis ground to operating voltage (GND)
3	working contact A of the relay K1
4	working contact B of the relay K1
5	working contact A of the relay K2
6	working contact B of the relay K2
7	working contact A of the relay K3
8	working contact B of the relay K3
9	control input to the full load simulation sensor A (active at circuit to GND)
10	control input to the full load simulation sensor B (active at circuit to GND)

X4 additional outputs / diagnosis:

contact	function
1	test port current consumption sensor channel A
2	measurement channel A
3	disabling threshold channel A
4	test port current consumption sensor channel B
5	measurement channel B
6	disabling threshold channel B
7	tolerance of the measurements channel A / B
8	disabling threshold add-on comparator 1
9	disabling threshold add-on comparator 2
10	2.5 V DC
11	5 V DC
12	GND

X2 / X3 sensor connection channel A / B:

contact	function	VELOMAT standard
1	bridge voltage B+	brown
2	contact 1 of the resistance to the full load simulation	
3	contact 2 of the resistance to the full load simulation	
4	signal output S+	yellow
5	signal output S-	white
6	bridge voltage B-	green
7	protection contact (GND)	blue

It you can connect in parallel up to two 350 Ω of sensors per channel. The resistance to the full load simulation is per execution in the device or in the sensor. Please take documentation of the sensor into account!

control - LED:

LED	function
1	tolerance error measurements
2	error sensor contact channel A
3	overload sensor channel A
4	overload output channel A unequal channel B
5	overload sensor channel B
6	error sensor contact channel B
7	error power supply
8	tolerance error threshold adjusting

block circuit diagram: