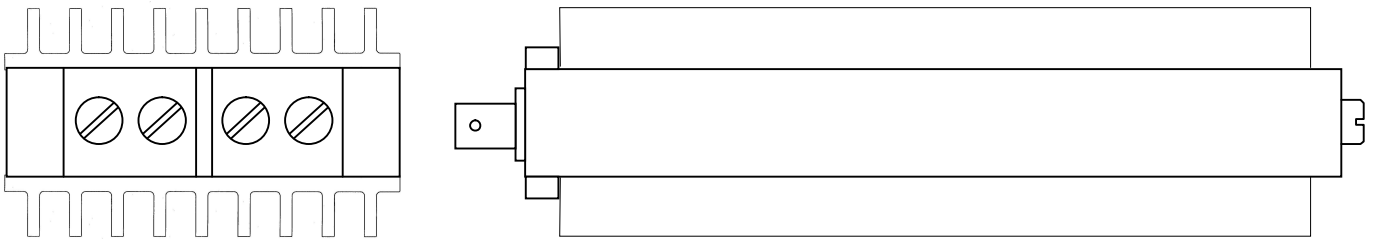
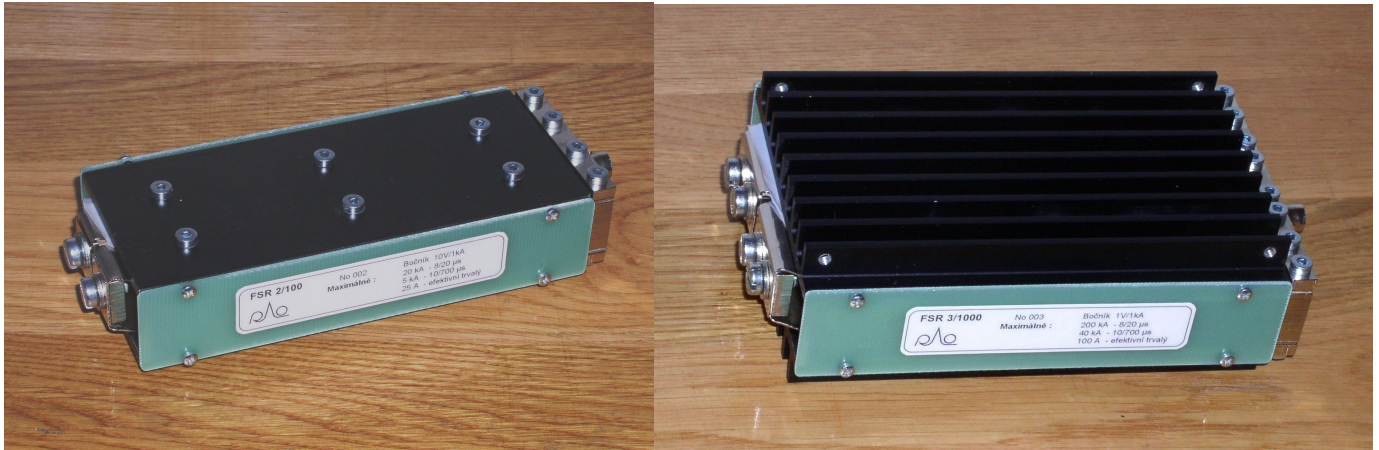


FLAT CURRENT MEASURING RESISTORS FSR



Flat current measuring resistors (shunts) FSR are suitable for accurate sensing of high impulse currents and permanent currents in mediate and high frequency range. These resistors are suitable especially for dc currents, where is not possible to use measuring transformers or Rogowski coils. The frequency bandwidth is limited mainly by ratio of resistance to inductance. The Shunt transfers the higher frequencies gained. This can be compensated by low pass attenuator at the end of measuring cable. Due to low inductance the magnetic field is low and electronic circuits can be near the shunt.

The resistors are made of CuNiMn-alloy, copper and aluminium profiles. The used materials make the thermal EMF low and having no significant influence to accuracy. The design of resistors ensures the good long term stability by keeping operating conditions. There are two design versions – **smooth** and **ribbed**. The smooth version is designed for high impulse load and low dissipated power. In the event of natural circulation cooling, the cooling ribs and surfaces must be in upright position.

The output is led on BNC-connector or alternatively on measuring cable (50 Ω –impedance). The transfer ratio deviation is less than 3 dB on upper limit frequency. We advise providing the measuring cable near oscilloscope with broad band common mode impedance or at least a ferrite sleeve to suppress disturbances and parasitic oscillations. Customer can order the special filtered measuring cable as option.

These resistors are relatively cheap, so therefore are suitable likewise for industrial applications. Accuracy class is 1%, especially 0.5 and 0.2 %.

Type	Transfer ratio [V/kA] Resistance [mΩ]	Maximum current			Maximal integral ** $I^2 \cdot t$ [A ² s]	Power dissipation * [W]	Inductance [nH]	upper frequency [MHz] 3dB	Dimensions [mm] B x L x H (Hb)
		8/20 μs [kA]	10/350 μs [kA]	permanent [A] *					
FSR2/5	200	1,25	0,3	5	30	5		15	45×168×
FSR2/10	100	2,5	0,6	7	100	5		15	32 (54)
FSR2/20	50	5	1,2	10	450	5		12	
FSR2/50	20	5	1,2	18	1 200	7		12	65×168×
FSR2/100	10	20	7,5	25	13 000	7	15	11 25***	32 (54)
FSR2/200	5	30	10	36	25 000	7		7	
FSR3/5	200	2	0,5	6,6 / 8,8	100	9 / 15		8	65×240×
FSR3/10	100	4	1	9,3 / 12,5	400	9 / 15		7	32 (54)
FSR3/20	50	8	2	14,8 / 19	8 000	11 / 18		7	105×168×
FSR3/50	20	16	4	23 / 30	15 000	11 / 18		5	32 (54)
FSR3/100	10	30	10	33 / 42	30 000	11 / 18		5	105×168×
FSR3/200	5	60	15	47 / 60	90 000	11 / 18		4	32 (54)
FSR3/500	2	100	25	74 / 95	250 000	11 / 18		4	105×168×
FSR3/1000	1	200	50	105 / 134	1.10 ⁶	11 / 18	9,5	4,2 3,8***	32 (54)
FSR4/2000	0,5	400	65	220	10.10 ⁶	25		0,5	155×182×
FSR4/10000	0,1	1000	250	500	100.10 ⁶	25	6,4	0,2 0,6***	32 (86)

* smooth / ribbed version

** cool condition; by warming condition (nominal current) the value cut to 65%

*** compensated

We can make another types according to customer's requirements.