



## **EMP Protection Units**

Analog Communication and Control Lines

**Series/Type: B84320Z0010H033/B84320Z0010H035**

Date: January 2004

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### General

The EMP protection unit is sequenced, i.e. to use simultaneously the benefits of inert-gas-filled surge arresters (extremely high surge capability) and of varistors (fast response). They are isolated by a series inductor.

The arrester is housed in a plug-in socket, so it can be removed and tested without detaching the lines.

#### Note on voltage figures:

The maximum voltage on the filter output depends primarily on the rise time until the arrester responds. For this reason the maximum voltage on the filter output is stated in the following table as a function of the rising edge  $dv/dt$  of the pulse.

### Technical data

Ordering code	B84320Z0010H033		B84320Z0010H035		
Rated voltage $V_R$	60	V	140	V	
Rated frequency $f_R$	0 ... 10	kHz	0 ... 10	kHz	Pass bandwidth at $Z_L$
Rated current $I_R$	1	A	1	A	$T_A = 40\text{ °C}$
Number of lines	10		10		Pairs
Line impedance $Z_L$	600	$\Omega$	600	$\Omega$	
Max. DC resistance $R_{\text{max}}$	<2	$\Omega$	<2	$\Omega$	Per line
Permissible ambient temperature $T_A$	-25/+40	$^{\circ}\text{C}$	-25/+40	$^{\circ}\text{C}$	
Climatic category (EN 60068-1)	25/085/56		25/085/56		-25 $^{\circ}\text{C}$ /+85 $^{\circ}\text{C}$ /56 days damp heat test
Approx. weight	300	g	300	g	
Nominal DC spark-over voltage $V_{\text{sdcN}}$	<800	V	<800	V	
Nominal surge current (8/20 $\mu\text{s}$ )	5	kA	5	kA	Line/line
	10	kA	10	kA	Pair/case
Suppression condition	$I < I_R$		$I < I_R$		

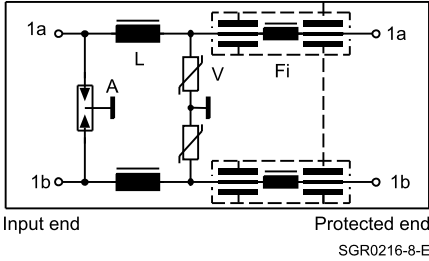
### Maximum voltage on filter output:

At rising edge	Unsymmetrical	Unsymmetrical	Symmetrical
$dv/dt = 0.1\text{ kV}/\mu\text{s}$	$\hat{v} \leq 190\text{ V}$	$\hat{v} \leq 200\text{ V}$	$\hat{v} \leq 17\text{ V}$
$dv/dt = 1\text{ kV}/\mu\text{s}$	$\hat{v} \leq 260\text{ V}$	$\hat{v} \leq 180\text{ V}$	$\hat{v} \leq 15\text{ V}$
$dv/dt = 1\text{ kV}/\text{ns}^1)$	$\hat{v} \leq 16\text{ V}$	$\hat{v} \leq 20\text{ V}$	$\hat{v} \leq 8\text{ V}$

1) Typical test pulse: rise time 10 ns, time to half value 1500 ns, charge voltage min. 50 kV, source impedance 90  $\Omega$

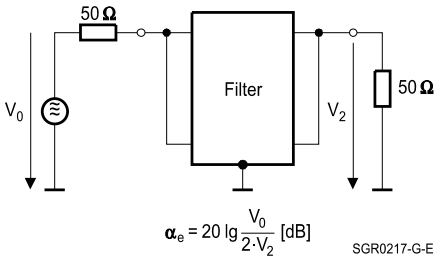
**Circuit diagram**

(only one of 10 pairs shown)

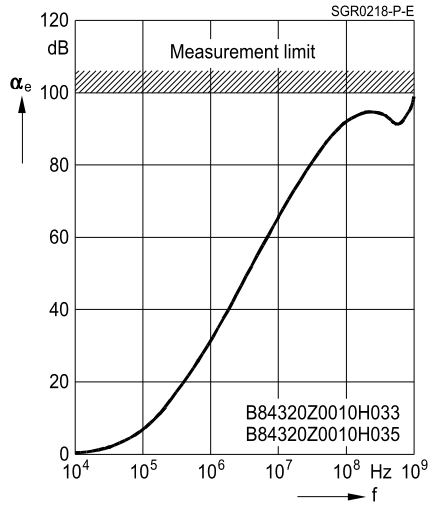


**Insertion loss  $\alpha_e$  per pair (typical values at  $Z = 50 \Omega$ )**

Measurement circuit

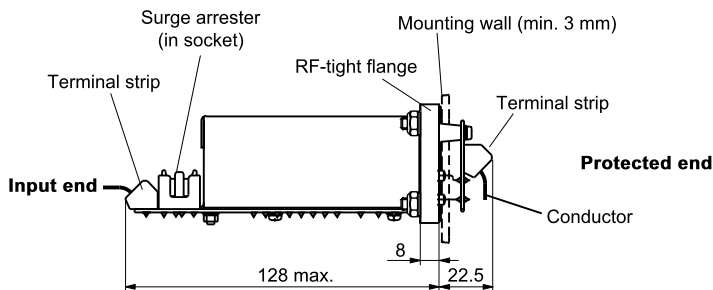


Asymmetrical measurement circuit to MIL-STD-220A



### Dimensional drawing

#### Side view

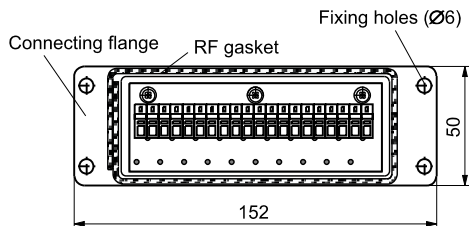


SGR0219-X-E

Terminal strip:

Terminals with cage strain system, suitable for conductors 0.08 ... 2.5 mm<sup>2</sup>

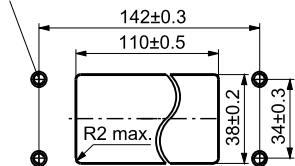
#### Front view of protected end



SGR0220-1-E

#### Installation section and attachment

Welded bolt M5x16 min. (recommended)



SGR0221-9-E