

# Signal filter A11x17

## Features

- EMC filters for analogue and digital signals
- double and triple  $\pi$  circuits
- various impedances
- matched pass-bands
- compact encapsulated casing

A clear signal transmission into a shielded room is only achievable with high-grade filters. Signal filters are used, for example, in medical, scientific and military applications. This filter is also suitable for various other applications including analogue speech transmission over telephone lines, over pilot signal on mains, and digital data transfer via ISDN.

## Description

When choosing a filter, impedance and pass-band relationships are of special importance. Analogue data must be decoupled from digital information. Square-wave signals require an extended bandwidth and a low capacitive load for the pure transmission of the harmonics.

This series is subdivided into filters for analogue and digital signals. Predominantly the **A11x17** is designed as a two line filter. The tin plate casing is high frequency shielded and all joints in the case are soldered. All leads are fed through two shielded glands, one on the front and one on the longitudinal side. The filter casing can be fixed directly on the wall of the shielding enclosure. Input and output lines of the telephone and data filters are screened.

For analogue signals the filter is selected depending on the pass-band. The circuits are without exception designed as a symmetrical double- $\pi$ -circuit. Foil capacitors with large end surfaces offer enhanced high frequency qualities. Their typical self-healing effect ensures rapid isolation on overvoltage peaks. All filters are available with optional EMP protection.



For digital signals ISDN has become a standard. All ISDN filters are designed as triple- $\pi$  circuits. To cover all applications these filters offer various pass-band characteristics. By paralleling equivalent two-line filters the four-wire circuit of an ISDN base terminal with  $S_0$  or  $S_{2M}$  interfaces can be served.

For complex systems we supply configured installations with up to 250 filters per cabinet. Within an installation the filter types can be selected from the filter range. Cases are made of high performance VA steel to ensure complete shielding of high frequency interference. Optional metallic helical conductor leads are recommended for applications that require leads to be routed into a shielded room. Inside a filter rack all leads are laid on easy to assemble LSA+ contact strips.

Other filter requirements that cannot be satisfied by the standard product range will be reviewed by our technical group to establish the feasibility of a custom design solution.



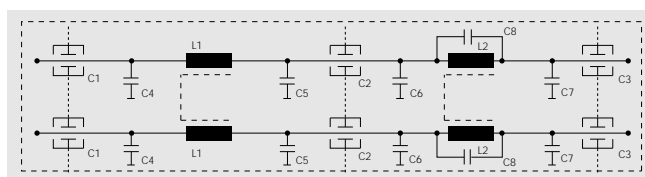
TESCH

EMC Division

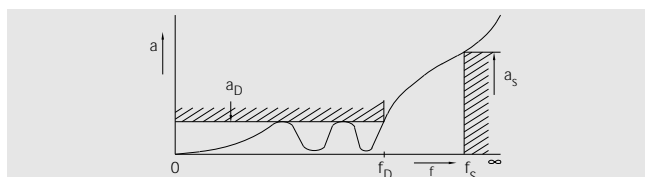
## Models and Ordering Data

Order No.	Type	Rated Current $I_N$ (50/60 Hz, 40 °C)	Rated Voltage	Test Voltage	Test Duration	IEC climate category
011 00101	A11x17-1	2 x 0.1 A	250 V <sub>DC</sub> / 120 V <sub>AC</sub>	1000 V <sub>DC</sub>	2 s	25 / 040 / 21
011 00103	A11x17-13	2 x 1.0 A	250 V <sub>DC</sub> / 250 V <sub>AC</sub>	1500 V <sub>DC</sub>	1 min	25 / 040 / 21
011 00106	A11x17-2	2 x 0.1 A	250 V <sub>DC</sub> / 120 V <sub>AC</sub>	1000 V <sub>DC</sub>	2 s	25 / 040 / 21
011 00113	A11x17-3	2 x 0.1 A	250 V <sub>DC</sub> / 120 V <sub>AC</sub>	1000 V <sub>DC</sub>	2 s	25 / 040 / 21
011 00115	A11x17-4	2 x 0.1 A	250 V <sub>DC</sub> / 120 V <sub>AC</sub>	1000 V <sub>DC</sub>	2 s	25 / 040 / 21
011 00117	A11x17-5	2 x 0.1 A	250 V <sub>DC</sub> / 120 V <sub>AC</sub>	1000 V <sub>DC</sub>	2 s	25 / 040 / 21
011 00119	A11x17-6	2 x 1.0 A	250 V <sub>DC</sub> / 120 V <sub>AC</sub>	1000 V <sub>DC</sub>	2 s	25 / 040 / 21
011 00121	A11x17-7	2 x 0.1 A	250 V <sub>DC</sub> / 120 V <sub>AC</sub>	1000 V <sub>DC</sub>	2 s	25 / 040 / 21
011 00122	A11x17-8	2 x 0.5 A	350 V <sub>DC</sub> / 250 V <sub>AC</sub>	1400 V <sub>DC</sub>	2 s	25 / 040 / 21
011 00127	A11x17-E1	2 x 0.1 A	250 V <sub>DC</sub> / 100 V <sub>AC</sub>	1200 V <sub>DC</sub>	1 min	25 / 040 / 21
011 00128	A11x17-E1.2	2 x 0.5 A	250 V <sub>DC</sub> / 120 V <sub>AC</sub>	1200 V <sub>DC</sub>	1 min	25 / 040 / 21
011 00129	A11x17-12	2 x 0.5 A	250 V <sub>DC</sub> / 220 V <sub>AC</sub>	1200 V <sub>DC</sub>	2 s	25 / 040 / 21
011 00130	A11x17-S12.1	2 x 5.0 A	400 V <sub>DC</sub> / 400 V <sub>AC</sub>	1800 V <sub>DC</sub>	2 s	25 / 040 / 21

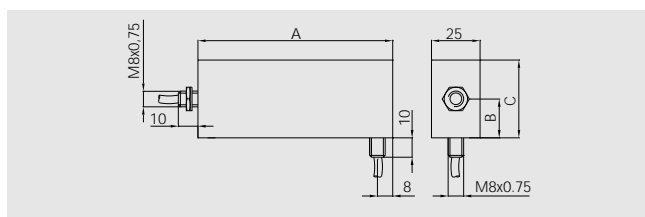
## Circuitry: Telephone-, Signal- and Pilot Line Filters



## Suppression Characteristics



## Dimension Drawing



Order No.	C1	C2	C3	C4	C5	C6	C7	C8	L1 rod core	L1 ring core	L2 rod core	L2 ring core
011 00101	x	x	x						x		x	
011 00103	x	x	x						x			
011 00106	x	x	x						x		x	
011 00113	x	x	x						x		x	
011 00115	x	x	x						x		x	
011 00117	x	x	x						x		x	
011 00119	x	x	x						x		x	
011 00121	x	x	x						x		x	
011 00122	x		x						x		x	
011 00127	x		x						x		x	
011 00128	x	x	x					x	x		x	
011 00129	x	x	x					x	x			
011 00130	x		x	x	x	x	x			x		x

## Mechanical Dimensions

Order No.	dim. A	dim. B	dim. C	connection
011 00101	100 mm	25 mm	50 mm	2 x 0.23 qmm, 2 x 1.0 m
011 00103	100 mm	25 mm	50 mm	2 x 0.50 qmm, 2 x 1.0 m
011 00106	100 mm	25 mm	50 mm	2 x 0.23 qmm, 2 x 1.0 m
011 00113	100 mm	25 mm	50 mm	2 x 0.23 qmm, 2 x 1.0 m
011 00115	100 mm	25 mm	50 mm	2 x 0.23 qmm, 2 x 1.0 m
011 00117	100 mm	25 mm	50 mm	2 x 0.23 qmm, 2 x 1.0 m
011 00119	100 mm	25 mm	50 mm	2 x 0.50 qmm, 2 x 1.0 m
011 00121	100 mm	25 mm	50 mm	2 x 0.23 qmm, 2 x 1.0 m
011 00122	100 mm	25 mm	50 mm	2 x 0.50 qmm, 2 x 1.0 m
011 00127	100 mm	25 mm	50 mm	2 x 0.23 qmm, 2 x 1.0 m
011 00128	130 mm	25 mm	50 mm	2 x 0.23 qmm, 2 x 1.0 m
011 00129	100 mm	25 mm	50 mm	2 x 0.23 qmm, 2 x 1.0 m
011 00130	130 mm	25 mm	50 mm	2 x 0.50 qmm, 2 x 1.0 m

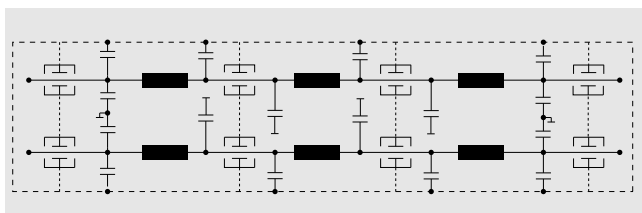
## Technical Data

Order No.	pass band attenuation $a_D$ and - frequency $f_D$	pass band attenuation matched to	stop band attenuation $a_S$ and - frequency $f_S$	stop band attenuation measured at	dc resistance	application
011 00101	1 dB / 3.4 kHz	600 Ω	100 dB / 50 kHz	50 Ω	9.9 Ω	telephone lines
011 00103	6 dB / 50 kHz	600 Ω	50 dB / 1 MHz	50 Ω	1.9 Ω	control lines
011 00106	0.5 dB / 10 kHz	600 Ω	90 dB / 100 kHz	50 Ω	3.2 Ω	communication lines
011 00113	1 dB / 25 kHz	600 Ω	90 dB / 200 kHz	50 Ω	1.2 Ω	communication lines
011 00115	0.5 dB / 50 kHz	600 Ω	90 dB / 500 kHz	50 Ω	0.8 Ω	communication lines
011 00117	0.5 dB / 100 kHz	600 Ω	90 dB / 900 kHz	50 Ω	0.5 Ω	communication lines
011 00119	5 dB / 30 kHz	50 Ω	90 dB / 200 kHz	50 Ω	1.3 Ω	control lines
011 00121	1 dB / 100 kHz	150 Ω	90 dB / 700 kHz	50 Ω	0.3 Ω	communication lines
011 00122	3 dB / 8 kHz	150 Ω	90 dB / 60 kHz	50 Ω	3.0 Ω	control lines
011 00127	0.5 dB / 4.0 kHz	600 Ω	90 dB / 100 kHz	50 Ω	5.6 Ω	telephone lines
011 00128	0.5 dB / 4.0 kHz	600 Ω	90 dB / 100 kHz	50 Ω	2.3 Ω	telephone lines
011 00129	2 dB / 100 kHz	50 Ω	90 dB / 4 MHz	50 Ω	1.0 Ω	communication lines
011 00130	3 dB / 10 kHz	50 Ω	75 dB / 200 kHz	50 Ω	1.0 Ω	control lines

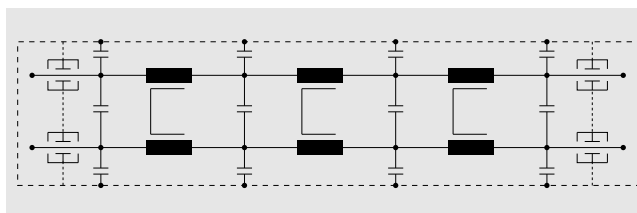
Models and Ordering Data

Order No.	Type	Rated Current I <sub>N</sub> (50/60 Hz, 40 °C)	Rated Voltage	Test Voltage	Test Duration	IEC climate category
011 00031	A11x17-31	2 x 0.1 A	80 V <sub>DC</sub> / 42 V <sub>AC</sub>	250 V <sub>DC</sub>	2 s	25 / 085 / 21
011 00041	A11x17-41	4 x 0.1 A	80 V <sub>DC</sub> / 42 V <sub>AC</sub>	250 V <sub>DC</sub>	2 s	25 / 085 / 21
011 00032	A11x17-32	2 x 0.1 A	80 V <sub>DC</sub> / 42 V <sub>AC</sub>	250 V <sub>DC</sub>	2 s	25 / 085 / 21
011 00042	A11x17-42	4 x 0.1 A	80 V <sub>DC</sub> / 42 V <sub>AC</sub>	250 V <sub>DC</sub>	2 s	25 / 085 / 21
011 00033	A11x17-33	2 x 0.1 A	80 V <sub>DC</sub> / 42 V <sub>AC</sub>	250 V <sub>DC</sub>	2 s	25 / 085 / 21
011 00043	A11x17-43	4 x 0.1 A	80 V <sub>DC</sub> / 42 V <sub>AC</sub>	250 V <sub>DC</sub>	2 s	25 / 085 / 21
011 00034	A11x17-34	2 x 0.1 A	250 V <sub>DC</sub> / 100 V <sub>AC</sub>	500 V <sub>DC</sub>	2 s	25 / 085 / 21
011 00044	A11x17-44	4 x 0.1 A	250 V <sub>DC</sub> / 100 V <sub>AC</sub>	500 V <sub>DC</sub>	2 s	25 / 085 / 21

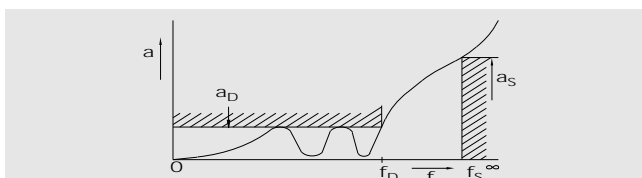
Circuitry: ISDN Filter 011 00031



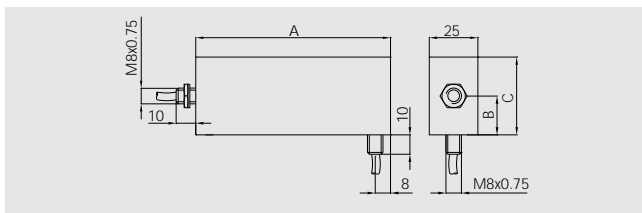
Circuitry: ISDN Filter 011 00034



Suppression Characteristics



Dimension Drawing



Mechanical Dimensions

Order No.	dim. A	dim. B	dim. C	connection
011 00031	100 mm	25 mm	50 mm	2 x 0.28 qmm, 2 x 1.0 m
011 00041	100 mm	25 mm	50 mm	4 x 0.28 qmm, 2 x 1.0 m
011 00032	100 mm	25 mm	50 mm	2 x 0.28 qmm, 2 x 1.0 m
011 00042	100 mm	25 mm	50 mm	4 x 0.28 qmm, 2 x 1.0 m
011 00033	100 mm	25 mm	50 mm	2 x 0.28 qmm, 2 x 1.0 m
011 00043	100 mm	25 mm	50 mm	4 x 0.28 qmm, 2 x 1.0 m
011 00034	100 mm	25 mm	50 mm	2 x 0.28 qmm, 2 x 1.0 m
011 00044	100 mm	25 mm	50 mm	4 x 0.28 qmm, 2 x 1.0 m

Technical Data

Order No.	pass band attenuation $a_D$ and -frequency $f_D$	pass band attenuation matched to	stop band attenuation $a_S$ and -frequency $f_S$	stop band attenuation measured at	dc resistance	application
011 00031	1 dB / 10 MHz	100 - 120 $\Omega$	90 dB / 80 MHz	50 $\Omega$	< 1 $\Omega$	ISDN-Filter
011 00041	1 dB / 10 MHz	100 - 120 $\Omega$	90 dB / 80 MHz	50 $\Omega$	< 1 $\Omega$	ISDN-Filter
011 00032	3 dB / 4 MHz	80 - 160 $\Omega$	85 dB / 60 MHz	50 $\Omega$	< 1 $\Omega$	ISDN-Filter
011 00042	3 dB / 4 MHz	80 - 160 $\Omega$	85 dB / 60 MHz	50 $\Omega$	< 1 $\Omega$	ISDN-Filter
011 00033	1 dB / 4 MHz	100 - 130 $\Omega$	90 dB / 40 MHz	50 $\Omega$	< 5 $\Omega$	ISDN-Filter
011 00043	1 dB / 4 MHz	100 - 130 $\Omega$	90 dB / 40 MHz	50 $\Omega$	< 5 $\Omega$	ISDN-Filter
011 00034	1 dB / 300 kHz	135 - 150 $\Omega$	50 dB / 1 MHz	50 $\Omega$	< 1 $\Omega$	ISDN-Filter
011 00044	1 dB / 300 kHz	135 - 150 $\Omega$	50 dB / 1 MHz	50 $\Omega$	< 1 $\Omega$	ISDN-Filter

Selected filter projects



Feedthrough Filter:

Feedthrough capacitors and filters are mounted in a shielding wall and provide a direct filtered route for connections into an enclosed room. Applications in telecommunications, measurement systems, medical systems and industrial highfrequency application.



High Performance Mains Filter:

Mains filters with high attenuation for shielded rooms. Rod cores ensure full attenuation even under unsymmetrical load.



Radar signal filter:

Special filters based on the principle of a feedthrough for the pure signal transmission between a radar antenna and a monitor.



Filter cabinet:

Establishment of a communication centre as a shielded room. Leading in of telephone lines via 650 filters A11x17-1 in three cabinets.

Further product ranges

- Mains filters for industrial applications
- Safety relays
- Monitoring relays
- Digital meters for three phase systems
- Time relays

