

## Description

The N296X Series and N2972 filters are designed for use on a wide range of circuits including control and alarm systems, fire detectors, electronic monitors and instruments.

The N296X Series comprises of 2-line, very high performance filters for use on 24 Volt DC systems, with the N2972 being the 250 Volt AC/DC equivalent of the N2962. They are ideally suited to situations which require the highest level of EMI, EMP or Tempest protection.

The N296X Series and N2972 have identical attenuation characteristics. They are constructed using a flat-pack design for ease of mounting to a metal shield or partition, with the output taken through the back. The filter networks are sealed in high quality electroplated steel cases.

The N1828, N2976 and the N2992 filters are housed in a brass tube which is mounted through a metal shield or partition. The filters' internal components are fully encapsulated in epoxy resin and plastic end covers are supplied.

The N2976 is a single line 240 VAC/DC, 10 Amp control filter for high current lines.

The N2435 provides 10-line modular filtering for multi-line systems.

If required, versions of these filters are available with transient suppressors fitted. See the Technical Data Table overleaf for these part numbers.

The N2992 filter has been designed for use in low wattage (20 Watts maximum) loud speaker circuits, with impedances in the range of 3-10 Ohms. Please refer to the sales office for filtering of 100V PA lines or circuits with multiple loud speakers.

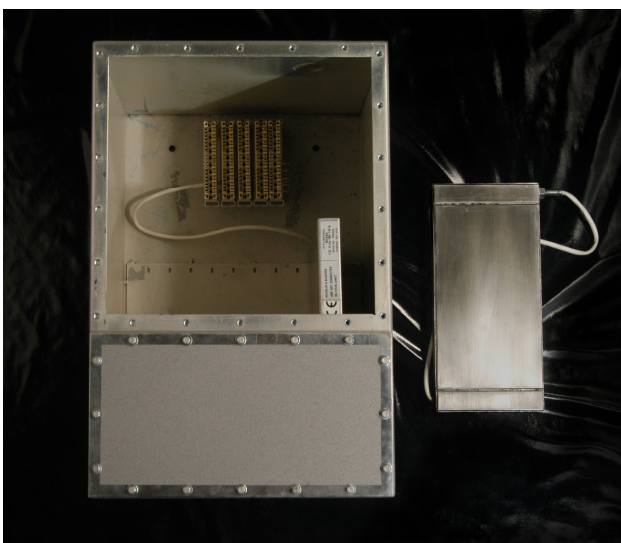
Please note, when selecting control line filters for intelligent alarm supply and similar circuits, attention should be paid to Volt drop and maximum allowable capacitance.

For data over power circuits (addressable fire sounders, a/c controllers etc.) refer to the sales office for advice.

All ETS-Lindgren filters are ROHS Compliant and are CE marked for Compliance with the low voltage Directive.

## Features

- 24V DC and 250V AC/DC options
- Tubular, Flat-Pack or Modular
- Attenuation from 100dB at 10kHz
- Suitable for EMI, EMP and Tempest protection



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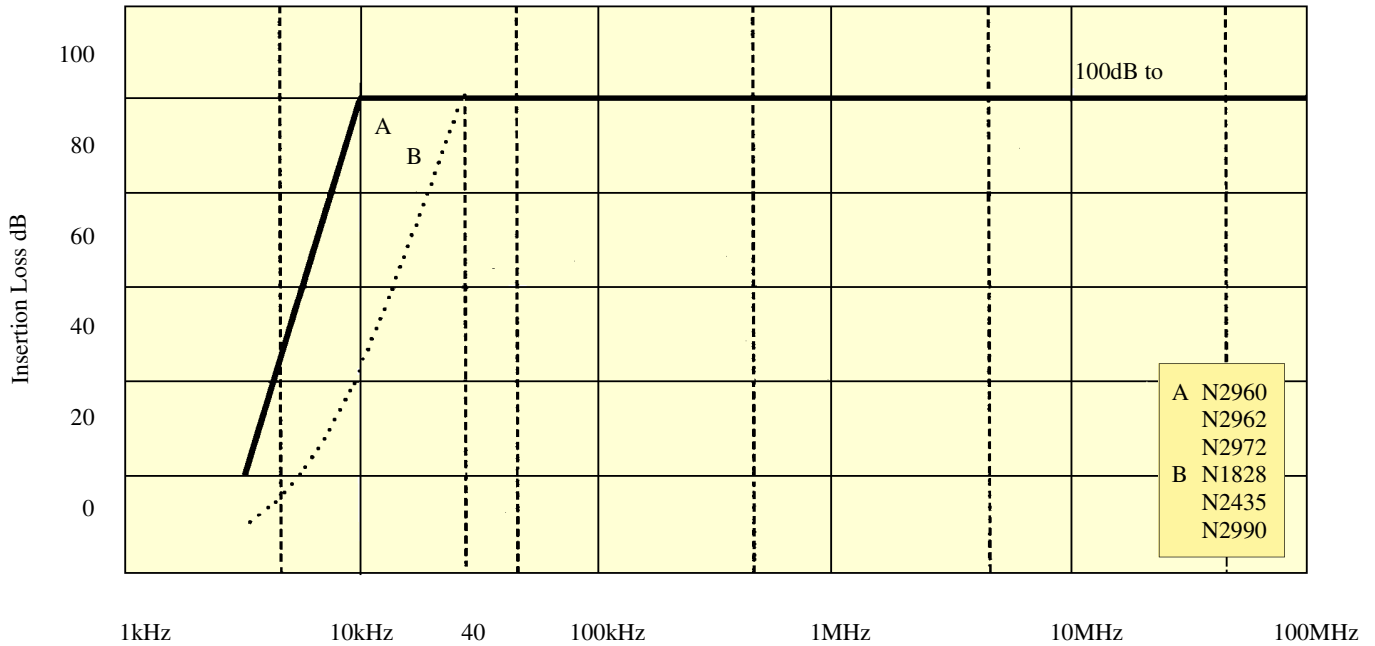
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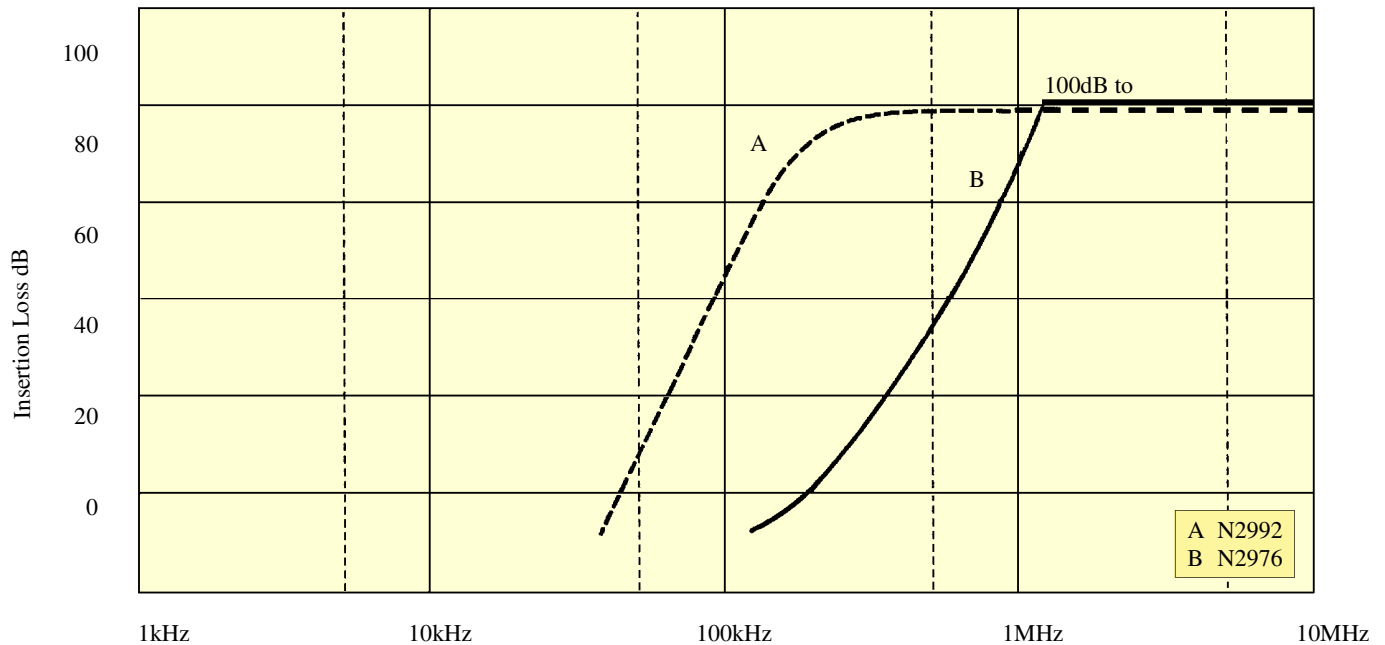
**Performance Graph**



**TYPICAL FILTER PERFORMANCE**

Typical performance for these filters as measured in accordance with MIL-STD 220A in a 50 Ohm system with additional testing to 10GHz.

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**Technical Data**

FILTER TYPE	N2960	N2962	N2992	N2972	N1828 N2990	N2976	N2435
Current max (Amps)	0.3	2	0.5	2	0.3	10	0.3
Voltage/frequency max. (Volts/Hertz)	24V DC		100VAC	250V DC 50/60Hz			125VAC
Number of lines	2	2	2	2	2	1	10
Voltage drop on full load (V)	1	0.65	0	2	3	0.5	3
DC resistance per line (Ω)	3.3	0.32	<1	1.1	10	0.014	10
Total shunt capacitance per line (μF)	16.1	20.33	3	3.8	0.2	0.21	0.2
Case temperature rise on full load (°C)	+2	+5	+1	+10	+3	+8	+3
Max. recommended case temperature on full load(°C)	+70						
Full load dissipation (W)	0.6	3	0.5	8	2	5	2
Filter type with 250V transient suppressors	-	-	-	N2972TS	N1828TS N2990TS	-	N2435TS *See Note 1
Filter type with 24V transient suppressors	N2960TS	N2962TS	-	-	-	-	-

\*Note 1 These transient suppressed versions are fitted inside the housings, not to modules.

**Physical Data**

PART NUMBER	Length (mm)	Diameter (mm)	Weight (kg)
N1828/N2992	206	65	0.68

DIA. 52 PANEL MOUNTING HOLE

PART NUMBER	Length (mm)	Diameter (mm)	Weight (kg)
N2976	216	65	0.4

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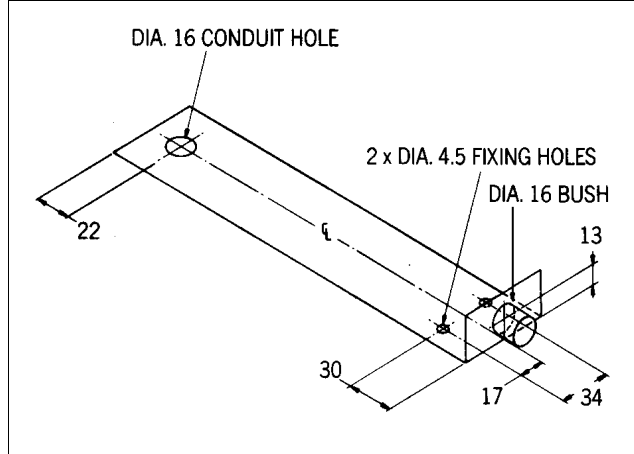
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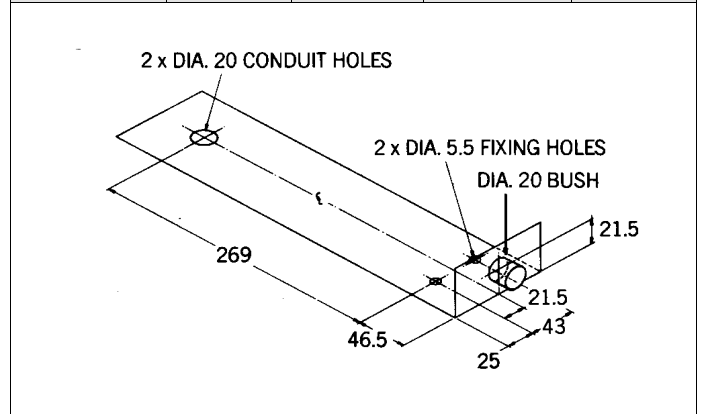
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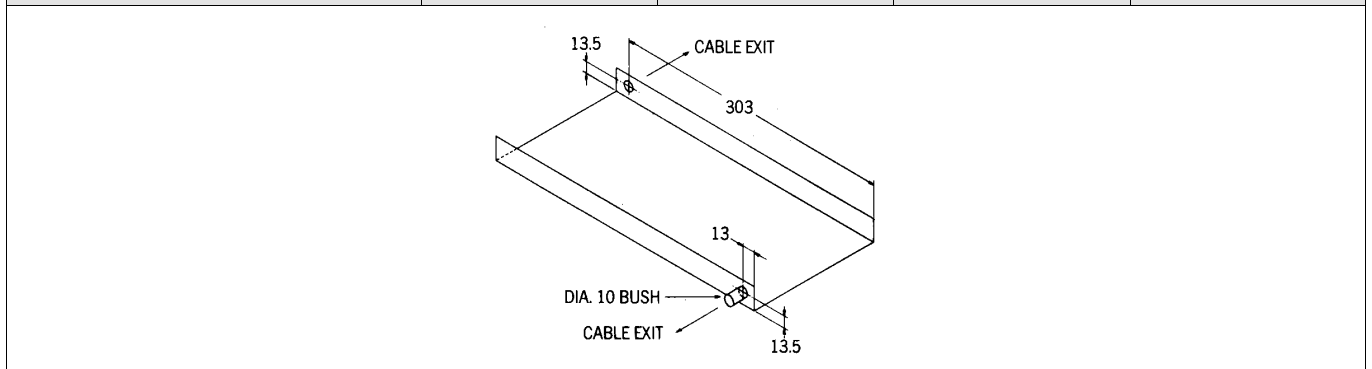
PART NUMBER	Length (mm)	Width (mm)	Height (mm)	Weight (kg)
N2960/N2990	258	58	32	1



PART NUMBER	Length (mm)	Width (mm)	Height (mm)	Weight (kg)
N2962	362	93	52	1
N2972	362	93	52	2

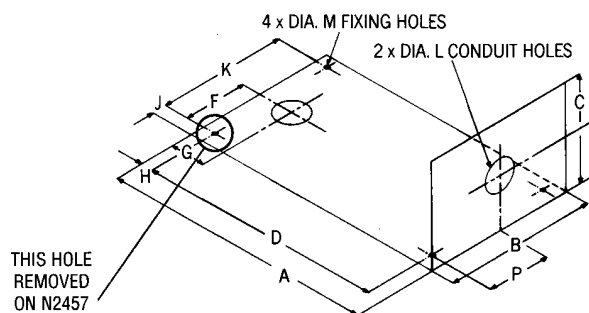


PART NUMBER	Length (mm)	Width (mm)	Height (mm)	Weight (kg)
N2435	320	26	150	2.2



PART NUMBER	A	B	C	D	E	F	G	H	J	K	L	M	P	Weight (kg)
N2457	520	190	360	406	246	10	80	57	35	120	25.4	9	10	15
N2456	520	340	360	416	250	19.5	80	52	67.5	205	38	9	19.5	21
N2455	520	640	360	406	250	230	80	57	90	460	51	9	60.5	40

10 LINE HOUSING	
Housing Number	Number of Lines
N2457	UP TO 50
N2456	UP TO 100
N2455	UP TO 200



**Continuous Development:** ETS-Lindgren Ltd reserves the right to amend any information contained within this datasheet without prior notice to take into account new developments. Please note: All figures are typical unless otherwise specified. All dimensions are approximate. All dimensions are in mm.

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