



### *Description*

These filter ranges are specifically designed to meet the stringent requirements for telephone circuits. The high electrical symmetry between lines means they are suitable for modem applications and similar digital data links.

As each line is closely matched electrically to all other lines, the need for matched pairs is eliminated - thus easing considerably the complexity of installation in multi-line systems.

Our telephone filters are designed to operate in harmony with Class 'A', Class 'B' and ISDN telephone systems. For filters to function on Class 'A' systems, a complex impedance match is provided by a specifically designed range.

Class A - Digital Circuit

Class B - Analogue (Standard) Circuit

ISDN Circuit

The class B filter ranges offer two levels of insertion loss performance, thus providing the flexibility to meet your requirements. However, it must be appreciated that with 100dB performance at only 14KHz, the very high performance Class B filters meet the full Tempest requirements but do distort speech. They are also very intolerant of poor earth continuity between buildings.

For maximum versatility these filters are available in 2-line units and modular 10-line packages.

The 2-line filters are available in either a flat-pack or tubular design. The tubular designs are manufactured from brass; with nuts, washers and plastic end covers supplied. The ISDN range also has a 4-line flat pack version.

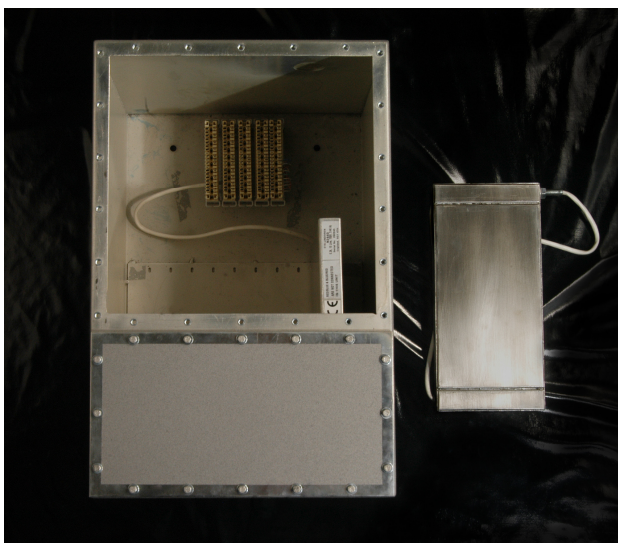
This 10-line package provides filtering of 50, 100 and 200 lines and beyond in multiple of ten. Further to this, the data and control modules are directly interchangeable with this range, enabling the user to mix and match filters in the same housing.

This modular system is ideal for installations where future expansion of the communications network is envisaged. The system is enclosed in high quality corrosion-proof electroplated steel cases for low impedance grounding.

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

### *Features*

- 100dB insertion loss
- Matched to balanced 600 Ohm lines
- Tubular, flat-pack or modular design
- Suitable for EMI, EMP and Tempest protection
- Analogue, Digital and ISDN versions are available



10 Line Module Housing

**UK:**

Tel +44-1438-730700  
Fax +44-1438-730751

**USA:**

Tel +1-512-531 6400  
Fax +1-512-531 6500

**FINLAND:**

Tel +358-2-8383 300  
Fax +358-2-8651 233

**FRANCE:**

Tel +33-1-48 65 34 03  
Tel +33-1-48 65 34 69

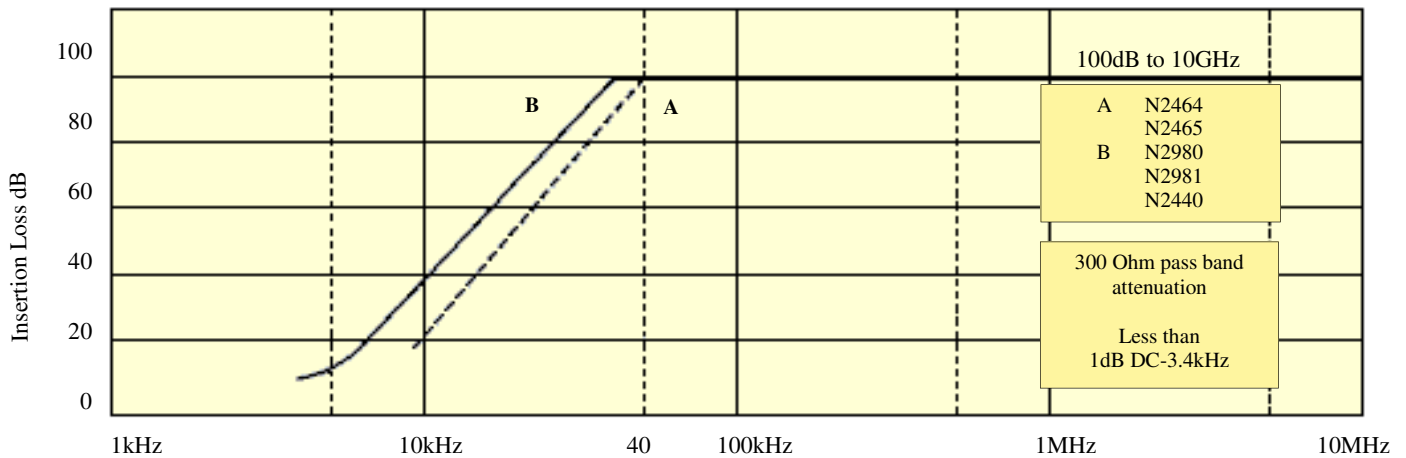
**CHINA:**

Tel +86-10-8275 5086  
Tel +86-10-8275 5537

**JAPAN:**

Tel +81-3-3813 7100  
Tel +81-3-3813 8068

**Performance Graph**



TYPICAL FILTER PERFORMANCE

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

**Technical Guide**

FILTER TYPE		Class A Telephone Circuit	Class B Telephone Circuit
Current max.	(Amps)	0.1	0.3
Voltage/frequency max.	(Volts)	150VDC	
DC resistance per line	(Ohms)	57	10
Max recommended case temperature on full load	(°C)	+70	

**Application Guide**

Application	Class A Telephone Circuit Filters (Digital)	
	Filter Number	With Transient Suppressors
2-line filters	N2464	N2464TS
10-line filters	N2465	N2465TS See Note 2

Application	Class B Telephone Circuit Filters (Analogue)	
	Filter Number	With Transient Suppressors
2-line filters	N2980 N2981	N2980TS N2981TS
10-line filters	N2440	N2440TS See Note 2

Note 1 TS = Fitted with 150V DC transient suppressors.

Note 2 These transient suppressed versions are fitted inside the housings, not to the modules.

**10-Line Module Filter Housing**

Number of Lines	Maximum Number of 10-Line Modules	Housing Number
50 Lines	5 off	N2457
100 Lines	10 off	N2456
200 Lines	20 off	N2455

**UK:**

Tel +44-1438-730700  
Fax +44-1438-730751

**USA:**

Tel +1-512-531 6400  
Fax +1-512-531 6500

**FINLAND:**

Tel +358-2-8383 300  
Fax +358-2-8651 233

**FRANCE:**

Tel +33-1-48 65 34 03  
Tel +33-1-48 65 34 69

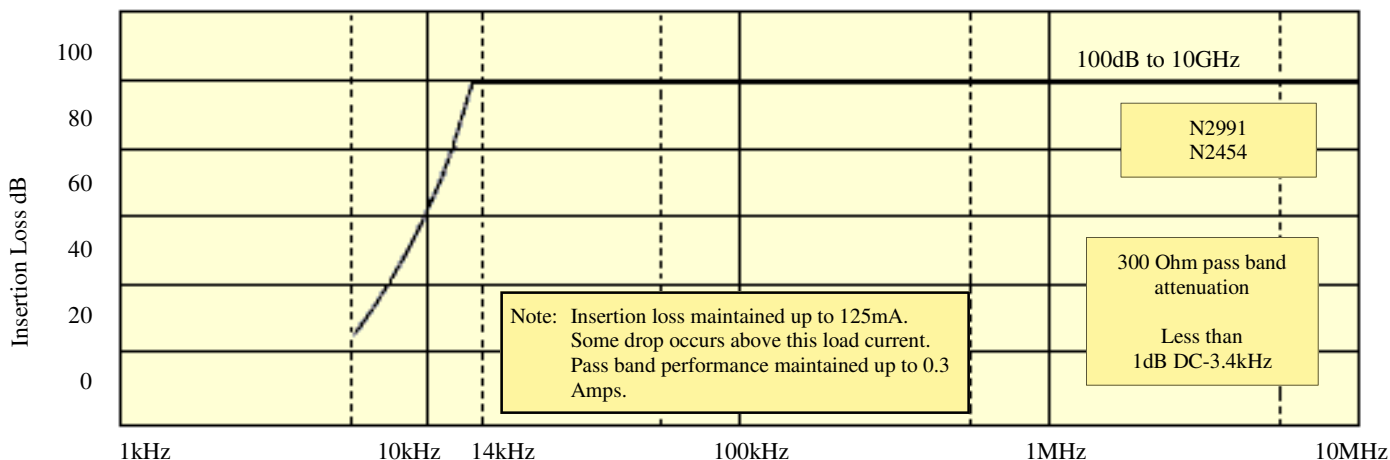
**CHINA:**

Tel +86-10-8275 5086  
Tel +86-10-8275 5537

**JAPAN:**

Tel +81-3-3813 7100  
Tel +81-3-3813 8068

**Performance Graph**



**TYPICAL FILTER PERFORMANCE**

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

**Technical Data**

Current max.	(Amps)	0.3
Voltage/frequency max.	(Volts)	150V-DC
DC resistance per line	(Ohms)	10
Max recommended case temperature on full load	(°C)	+70

**Application Guide**

Application	Class B Telephone Circuit (Analogue)	
	Filter Number	With Transient Suppressors
2-line filters	N2991	N2991TS
10-line filters	N2454	N2454TS See Note 2

Note 1 TS = Fitted with 150V DC transient suppressors.

Note 2 These transient suppressed versions are fitted inside the housings, not to the modules.

Please consult the sales office for very high performance Class A telephone filters.

**UK:**

Tel +44-1438-730700  
Fax +44-1438-730751

**USA:**

Tel +1-512-531 6400  
Fax +1-512-531 6500

**FINLAND:**

Tel +358-2-8383 300  
Fax +358-2-8651 233

**FRANCE:**

Tel +33-1-48 65 34 03  
Tel +33-1-48 65 34 69

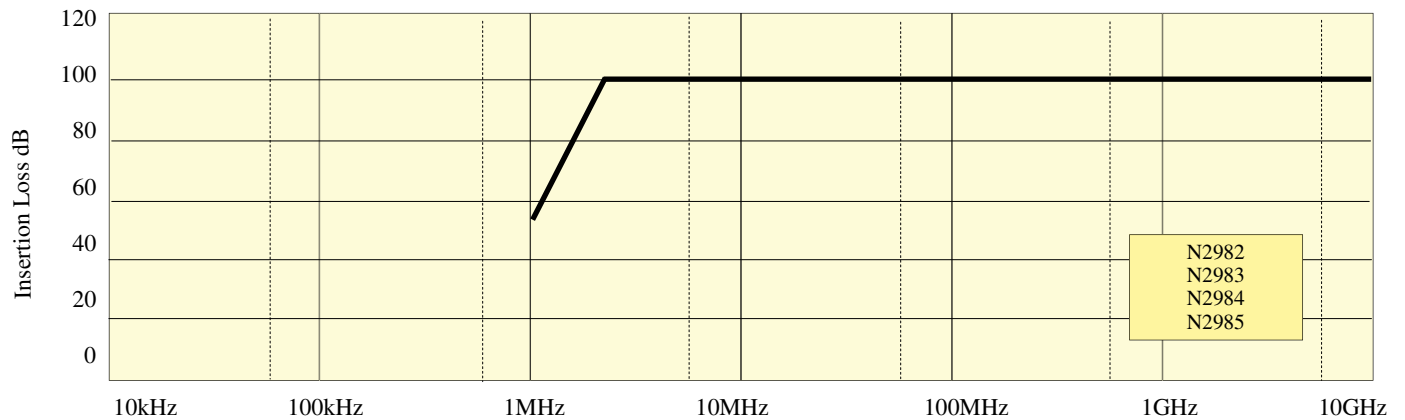
**CHINA:**

Tel +86-10-8275 5086  
Tel +86-10-8275 5537

**JAPAN:**

Tel +81-3-3813 7100  
Tel +81-3-3813 8068

**Performance Graph**



**TYPICAL FILTER PERFORMANCE**

Typical performance as measured in accordance with MIL-STD 220A with additional testing to 10GHz.

**Technical Data**

Current max.	(Amps)	0.3
Voltage/frequency max.	(Volts)	150V-DC
Max case temperature on full load	(°C)	+70

**Application Guide**

PART NUMBER	N2982	N2983	N2984	N2985
Application	2-line flat pack	2-line tubular	4-line flat pack	10-line module

**UK:**

Tel +44-1438-730700  
Fax +44-1438-730751

**USA:**

Tel +1-512-531 6400  
Fax +1-512-531 6500

**FINLAND:**

Tel +358-2-8383 300  
Fax +358-2-8651 233

**FRANCE:**

Tel +33-1-48 65 34 03  
Tel +33-1-48 65 34 69

**CHINA:**

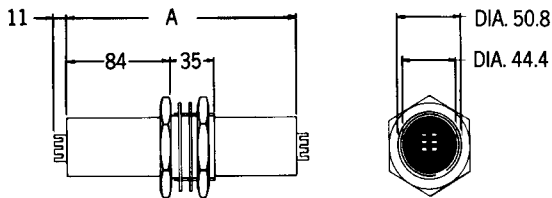
Tel +86-10-8275 5086  
Tel +86-10-8275 5537

**JAPAN:**

Tel +81-3-3813 7100  
Tel +81-3-3813 8068

**Physical Data**

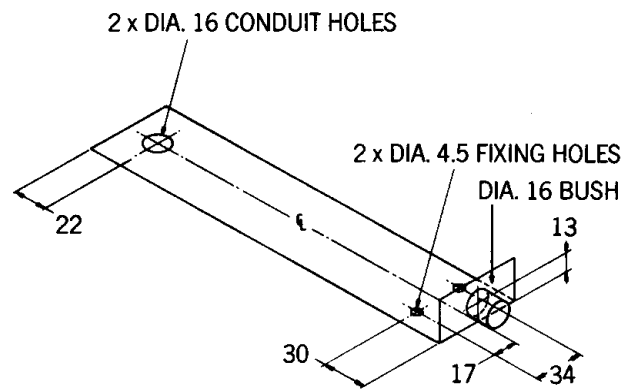
PART NUMBER	Length (mm)	Diameter (mm)	Weight (mm)
N2464/N2981 N2991/N2983	206	65	0.68



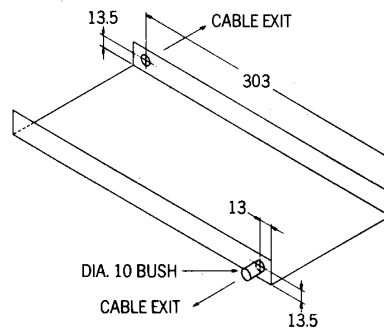
FILTER PART NO.	Dim A
N2464/N2981/ N2983	184
N2991	233

DIA. 52 PANEL MOUNTING HOLE

PART NUMBER	Length (mm)	Width (mm)	Height (mm)	Weight (kg)
N2980/N2982/N2984	268	58	32	1



PART NUMBER	Length (mm)	Width (mm)	Height (mm)	Weight (kg)
N2454/N2440/N2465/N2985	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

