

EMI FILTERS FOR MACHINERY AND MACHINE TOOL EQUIPMENT

SCHAFFNER FN3297 3-PHASE+N FILTER SERIES

INTRODUCTION

The Schaffner FN3297 3-Phase + neutral filter series are engineered for industrial automation and climate control systems, offering robust electromagnetic interference mitigation.

Designed for 480 VAC nominal operation, they support current ratings from 8 A to 36 A with a 100 kA SCCR and compliance to IEC and UL standards. These filters feature compact construction, front wiring, and withstand surge levels up to 4 kV (L-PE) with high insulation resistance.

APPLICATIONS

- Machine builders
- Climate solution (AC/Heat pump)
- Renewable energy
- Energy storage
- EV charging stations
- HVAC

FEATURES AND BENEFITS

- Compact and effective EMI mitigation
- Choice of performance two performance levels
- Front wiring with easy integration into a cabinet
- SCCR rating of 100kA
- Compliant to Household Standard (IEC60335-1)

APPROVALS

- IEC 60939-3
- UL 60939-3
- CSA C22.2 No. 8
- IEC 60204-1: Insulation resistance: $>> 1 \text{ MOhm}$
- IEC 60335-1: 8.1.4 accessible part, 22.42 protective impedance, 24.1 components comply and 30.2 non-metallic material
- IEC 60225-2-40: 22.116 arcs and sparks from electric components and 22.117 hot surfaces
- RoHS 2011/65/EU, 2015/863/EU
- REACH No. 1907/2006



Technical data of approved types on request

Buyer entirely assumes the risk and all liability relating to (a) assessing the suitability for Buyer's intended use of the Products and of any system design or drawing and (b) determining the compliance of Buyer's use of the Products with applicable laws, regulations, codes and standards. For more info on the exclusive and applicable warranty, please refer to TE standard warranty terms.



8A / 16A



25A



36A

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SPECIFICATIONS

ELECTRICAL CHARACTERISTICS

Current Ratings @ 50°C amb. Temperature	8 A	16 A	25 A	36 A
Overload Current Rating	1.5 x rated current for 1 minute once per hour			
Nominal Operating Voltage	480/275 VAC			
Rated Operating Voltage	530/305 VAC			
Rated Operating Frequency	50/60 Hz			
Max. Operating Frequency	60 Hz			
Production Line Test Voltage	2.8 kVDC* for 2 s (L/N to PE)			
	2.3 kVDC* for 2 s (L to L)			
	1.6 kVDC* for 2 s (L to N)			
Overvoltage Category (IEC 60664-1)	III			
Typical Power Dissipation	5.8W	9.2W	11.3W	15.6W
Max. DC Resistance @ 25 (L - L')	30 mOhm	12 mOhm	6 mOhm	4 mOhm
Surge (IEC 61000-4-5)	2kV L-L / 4kV L-PE (Level 4)			
Operating altitude	Till 2000 m a.s.l without derating. Higher altitudes derating as in IEC60664-1 applies			
SCCR	100 kA **			

* Repetition with max. 80 % of the specified values

** With overcurrent protection of J-Type current limiting fuses. Fuse rating shall not exceed 150% of filter current rating

MECHANICAL CHARACTERISTICS

Weight	0.7 kg	0.7 kg	1.2 kg	1.4 kg
Line	Push-in Terminal 7.5 mm pitch			Push-in Terminal 10 mm pitch
Load	Push-in Terminal 7.5 mm pitch			Push-in Terminal 10 mm pitch
Flex Wire (AWG)	24-8			20-4
Solid Wire (mm ²)	0.2-10			0.75-16
Flex Wire (mm ²)	0.2-6			0.75-16
PE Screw	Thread M5			
PE Screw Torque (Nm)	2.0-2.2			

ENVIRONMENTAL CHARACTERISTICS

Operating Ambient Temp. Range	-40°C to +100°C *			
Storage Temp. Range	-40°C to +85°C			
Cooling	AN			
Pollution Degree	2 acc. to IEC 60664-1			
Climatic Class	40/100/21 acc. to IEC 60068-1			
MTBF (MIL-HDBK-217F) @ rated voltage/current/ambient temperature	800,000 h	700,000 h	800,000 h	800,000 h
Shock & Vibration (IEC 60721-3-3:2002)	3M4			
Shock & Vibration (IEC 60721-3-3:2019)	3M12			

* Current is subjected to derating for temperatures above the rated current temperature point

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PLASTIC MATERIAL

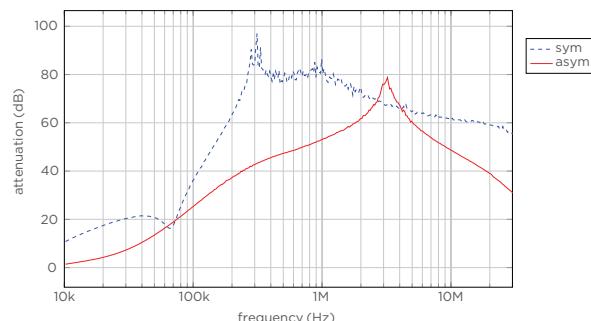
External Plastic Material	Terminal
Flammability (UL 94)	V0
GWFI (IEC 60695-2-12)	960 °C
GWIT (IEC 60695-2-13)	775 °C
CTI (UL 746C)	PLC O
Ball Pressure (IEC 60695-10-2)	165 °C
External Plastic Material	Frame
Flammability (UL 94)	V0
GWFI (IEC 60695-2-12)	960 °C
GWIT (IEC 60695-2-13)	700 °C
CTI (UL 746C)	PLC 3
Ball Pressure (IEC 60695-10-2)	210 °C

TYPICAL INSERTION LOSS

8A

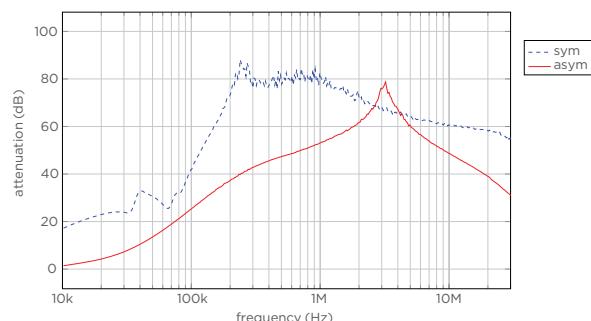
FN3297-8-103-C19-R66 (823748)

Leakage Current (IEC 60939-3): 0.314 mA @ Rated Voltage and 50 Hz
Per CISPR 17 (50 Ω / 50 Ω)



Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-L

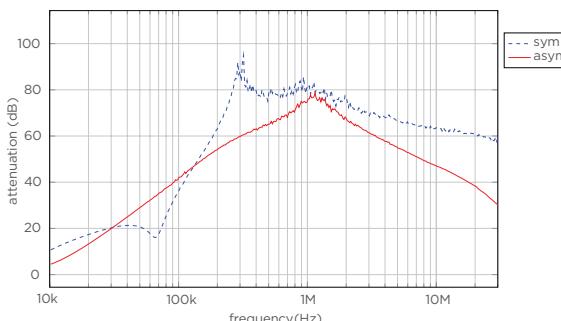
Per CISPR 17 (50 Ω / 50 Ω)



Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-N

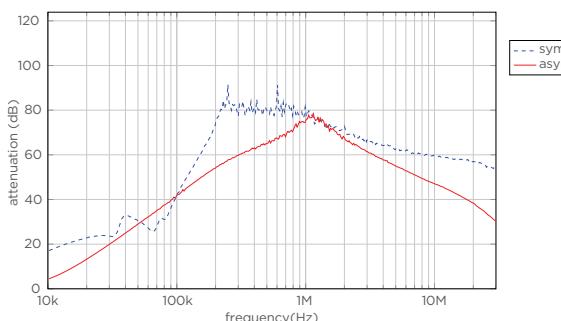
FN3297-8-103-C24-R66 (823747)

Leakage Current (IEC 60939-3): 2.136 mA @ Rated Voltage and 50 Hz
Per CISPR 17 (50 Ω / 50 Ω)



Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-L

Per CISPR 17 (50 Ω / 50 Ω)



Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-N

EMI FILTERS FOR MACHINERY AND MACHINE TOOL EQUIPMENT

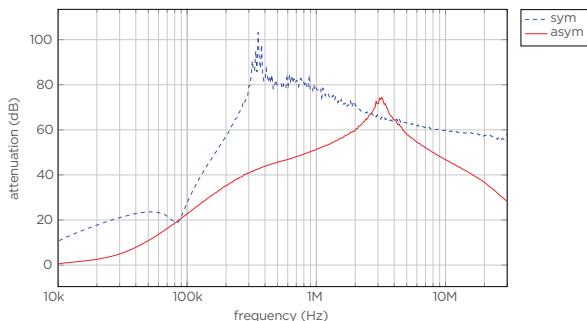
SCHAFFNER FN3297 3-PHASE+N FILTER SERIES

16A

FN3297-16-103-C19-R66 (823750)

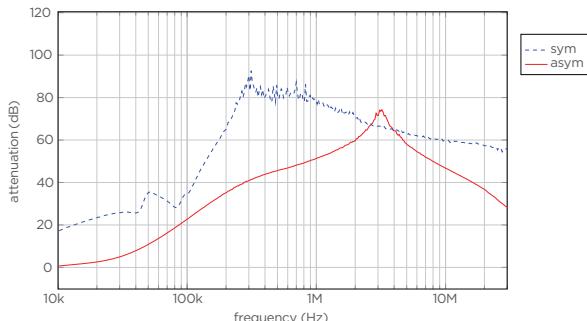
Leakage Current (IEC 60939-3): 0.314 mA @ Rated Voltage and 50 Hz

Per CISPR 17 (50 Ω / 50 Ω)



Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-L

Per CISPR 17 (50 Ω / 50 Ω)

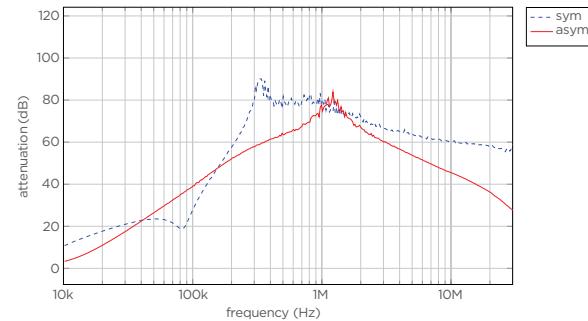


Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-N

FN3297-16-103-C24-R66 (823749)

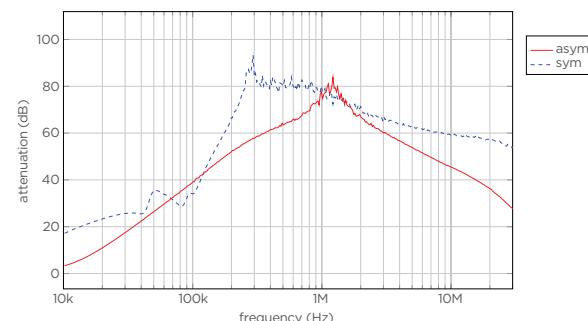
Leakage Current (IEC 60939-3): 2.136 mA @ Rated Voltage and 50 Hz

Per CISPR 17 (50 Ω / 50 Ω)



Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-L

Per CISPR 17 (50 Ω / 50 Ω)



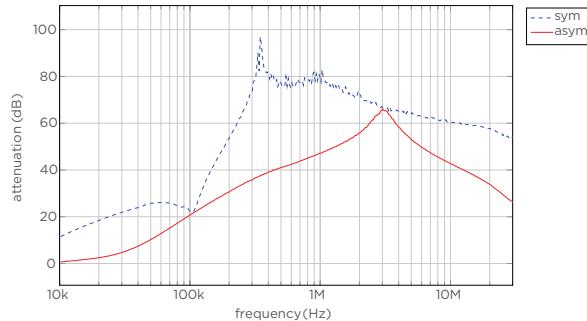
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25A

FN3297-25-105-C19-R66 (823752)

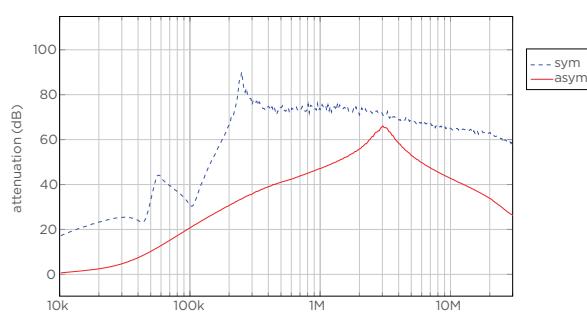
Leakage Current (IEC 60939-3): 0.314 mA @ Rated Voltage and 50 Hz

Per CISPR 17 (50 Ω / 50 Ω)



Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-L

Per CISPR 17 (50 Ω / 50 Ω)

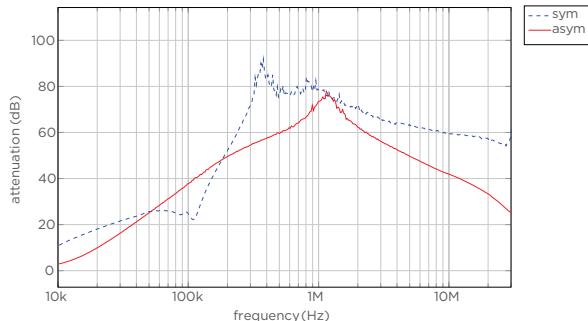


Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-N

FN3297-25-105-C24-R66 (823751)

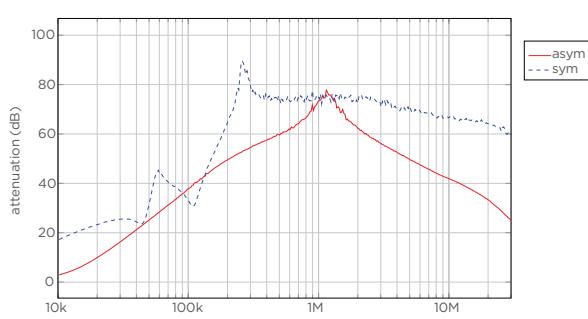
Leakage Current (IEC 60939-3): 2.136 mA @ Rated Voltage and 50 Hz

Per CISPR 17 (50 Ω / 50 Ω)



Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-L

Per CISPR 17 (50 Ω / 50 Ω)



Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-N

EMI FILTERS FOR MACHINERY AND MACHINE TOOL EQUIPMENT

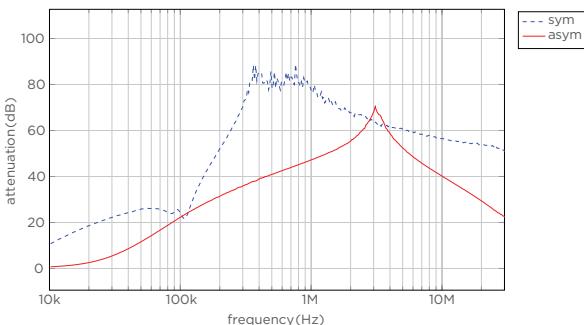
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36A

FN3297-36-105-C19-R66 (823754)

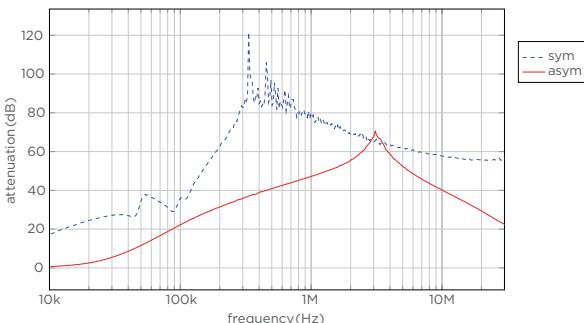
Leakage Current (IEC 60939-3): 0.314 mA @ Rated Voltage and 50 Hz

Per CISPR 17 (50 Ω / 50 Ω)



Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-L

Per CISPR 17 (50 Ω / 50 Ω)

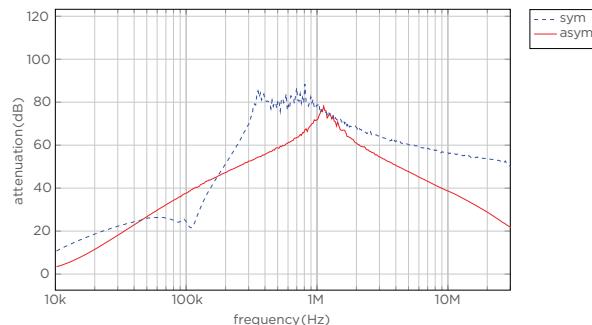


Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-N

FN3297-36-105-C24-R66 (823753)

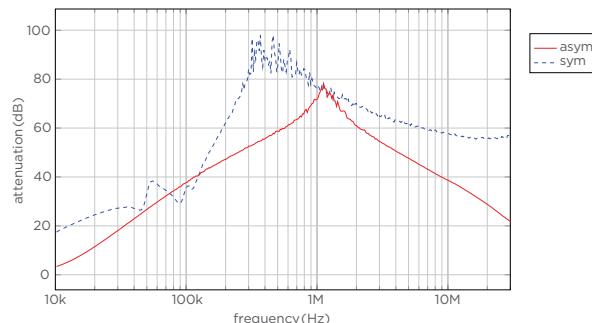
Leakage Current (IEC 60939-3): 2.136 mA @ Rated Voltage and 50 Hz

Per CISPR 17 (50 Ω / 50 Ω)



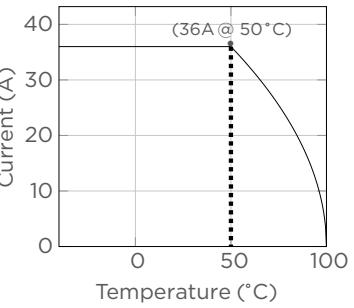
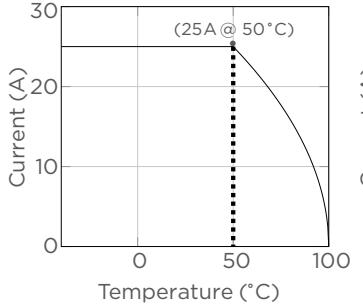
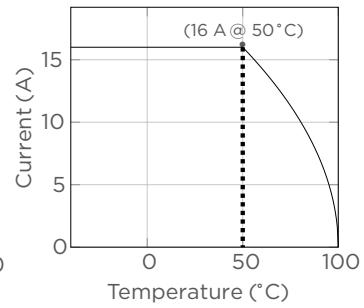
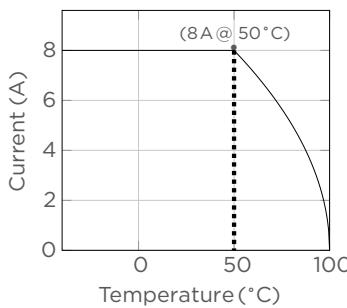
Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-L

Per CISPR 17 (50 Ω / 50 Ω)



Typical Insertion Loss: Asym: 3L/N-GND, Sym:L-N

DERATING CURVE



$$I = I_N \cdot \sqrt{\frac{\Theta_{max} - \Theta_{act}}{\Theta_{max} - \Theta_N}}$$

for $\Theta_{act} > \Theta_N$ and $\Theta_{act} < \Theta_{max}$

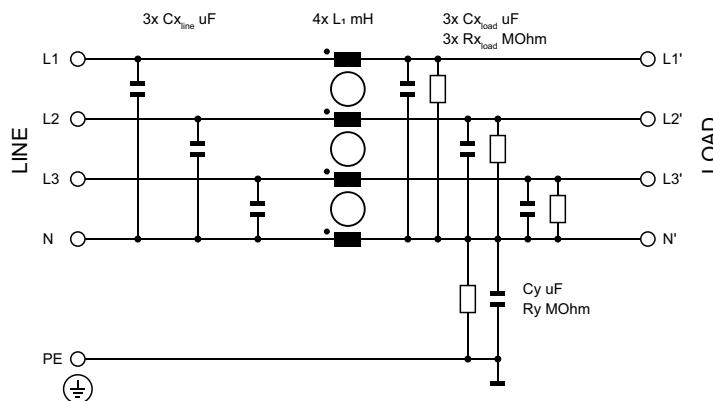
I_N
 Θ_{act}
 Θ_N
 Θ_{max}

Rated current at N
 Actual ambient temperature
 Temperature at which the rated current is defined
 Rated maximum temperature of the component

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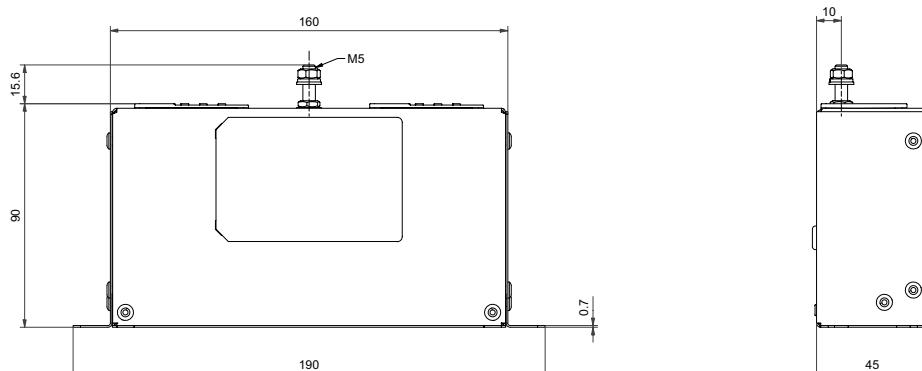
LINE DIAGRAM



Smart Part Description	Cx_{line} [uF]	L_1 [mH]	Cx_{load} [uF]	Rx_{load} [MOhm]	Cy [nF]	Ry [MOhm]
FN3297-8-103-C24-R66	3.3	1.21	3.3	R6- = 1.5	C24 = 680	R-6 = 1.5
FN3297-8-103-C19-R66	3.3	1.21	3.3	R6- = 1.5	C19 = 100	R-6 = 1.5
FN3297-16-103-C24-R66	3.3	0.93	3.3	R6- = 1.5	C24 = 680	R-6 = 1.5
FN3297-16-103-C19-R66	3.3	0.93	3.3	R6- = 1.5	C19 = 100	R-6 = 1.5
FN3297-25-105-C24-R66	3.3	0.8	3.3	R6- = 1.5	C24 = 680	R-6 = 1.5
FN3297-25-105-C19-R66	3.3	0.8	3.3	R6- = 1.5	C19 = 100	R-6 = 1.5
FN3297-36-105-C24-R66	3.3	0.8	3.3	R6- = 1.5	C24 = 680	R-6 = 1.5
FN3297-36-105-C19-R66	3.3	0.8	3.3	R6- = 1.5	C19 = 100	R-6 = 1.5

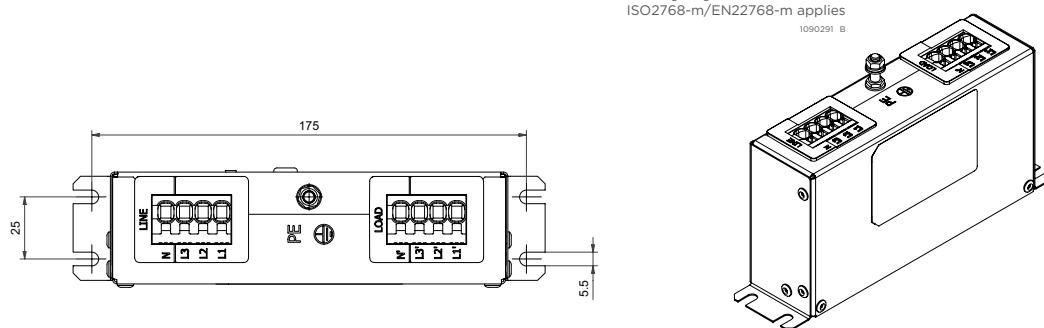
DIMENSIONS (Unit: mm)

8A / 16A



For dimensions [mm] without tolerances:
ISO2768-m/EN22768-m applies

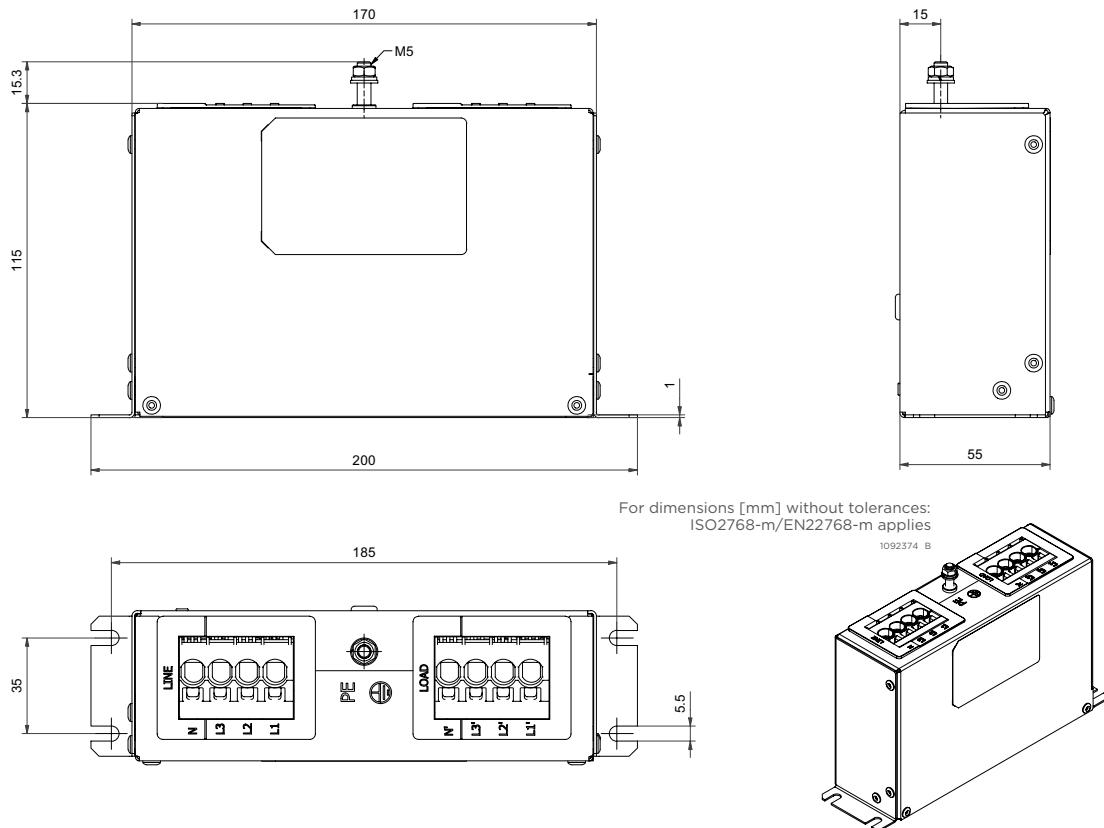
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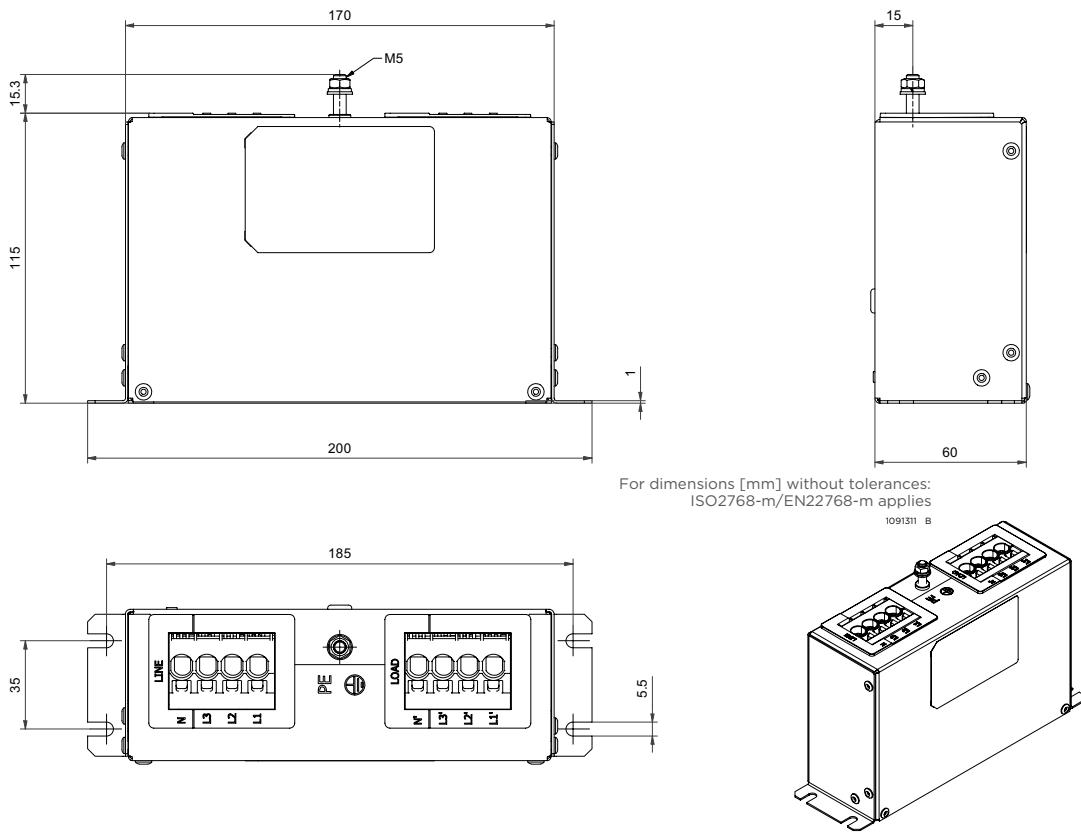
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25A



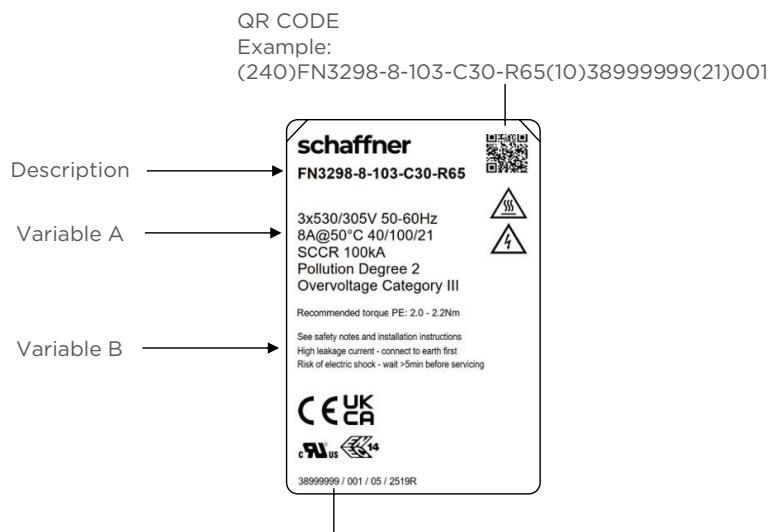
36A



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SCHAFFNER FN3297 3-PHASE+N FILTER SERIES

PRODUCT LABEL



WORK ORDER / SERNR / PRODUCTION PLACE / DATA CODE YYWW ROHS

Schaffner Internal Serial Number

Work order with counter created in SAP 123456780 **001**

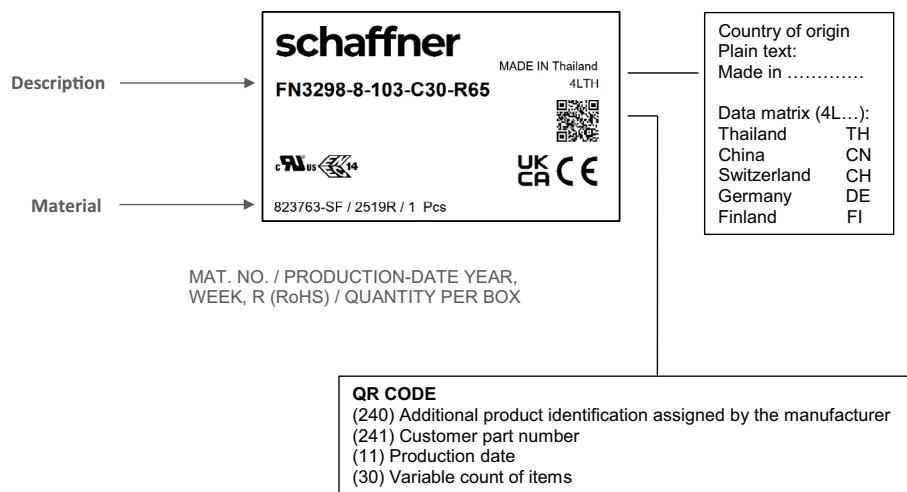
Note: Production place

05 for Thailand

88 for China

Material	Description	Variable A	Variable B
823747-SF	FN3297-8-103-C24-R66	8A@50°C 40/100/21	
823748-SF	FN3297-8-103-C19-R66	8A@50°C 40/100/21	
823749-SF	FN3297-16-103-C24-R66	16A@50°C 40/100/21	
823750-SF	FN3297-16-103-C19-R66	16A@50°C 40/100/21	
823751-SF	FN3297-25-105-C24-R66	25A@50°C 40/100/21	
823752-SF	FN3297-25-105-C19-R66	25A@50°C 40/100/21	
823753-SF	FN3297-36-105-C24-R66	36A@50°C 40/100/21	
823754-SF	FN3297-36-105-C19-R66	36A@50°C 40/100/21	

BOX LABEL

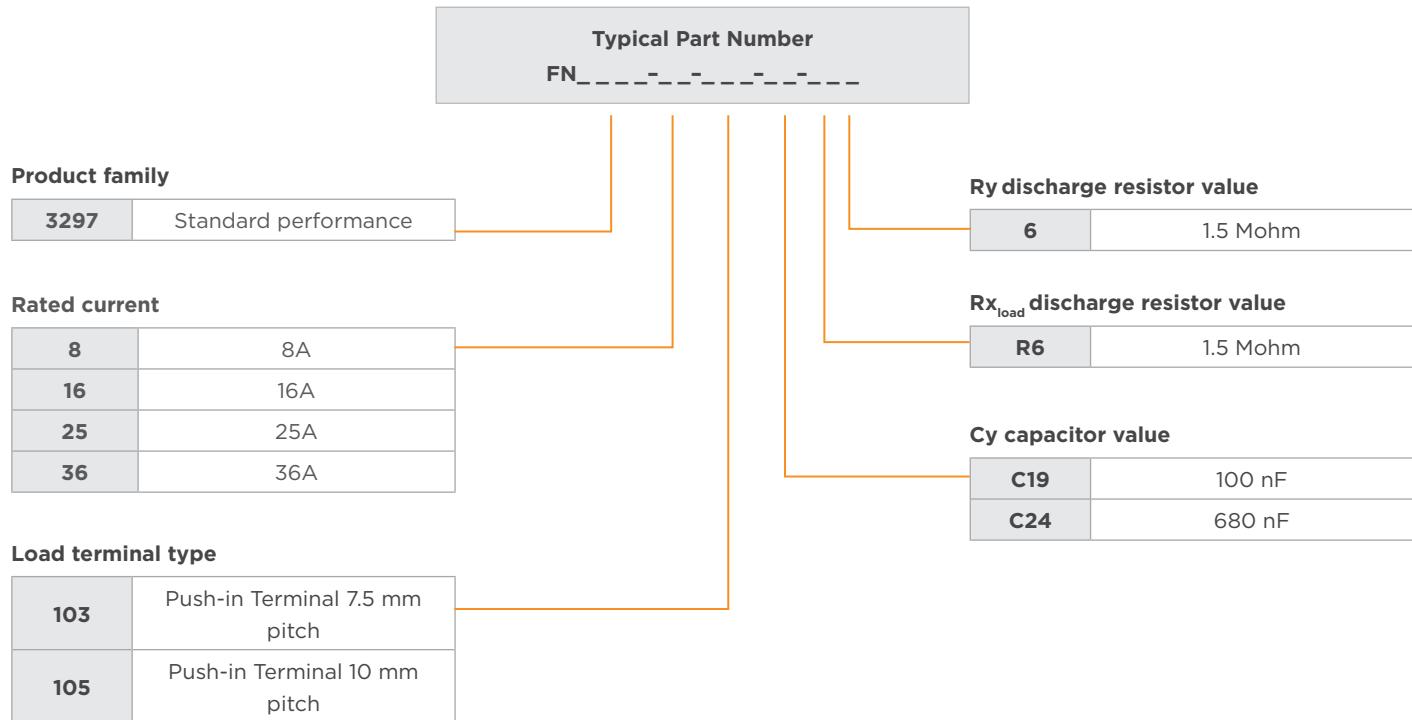


Material	Description
823747-SF	FN3297-8-103-C24-R66
823748-SF	FN3297-8-103-C19-R66
823749-SF	FN3297-16-103-C24-R66
823750-SF	FN3297-16-103-C19-R66
823751-SF	FN3297-25-105-C24-R66
823752-SF	FN3297-25-105-C19-R66
823753-SF	FN3297-36-105-C24-R66
823754-SF	FN3297-36-105-C19-R66

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PRODUCT CODE STRUCTURE



PRODUCT SELECTION INFORMATION

S.No	TE Description	TE Part Number
1	FN3297-8-103-C24-R66	823747-SF
2	FN3297-8-103-C19-R66	823748-SF
3	FN3297-16-103-C24-R66	823749-SF
4	FN3297-16-103-C19-R66	823750-SF
5	FN3297-25-105-C24-R66	823751-SF
6	FN3297-25-105-C19-R66	823752-SF
7	FN3297-36-105-C24-R66	823753-SF
8	FN3297-36-105-C19-R66	823754-SF

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DISCLAIMER

1. Product suitability for a given application must ultimately be determined by the user (the party that is putting the product into operation) on a case by case basis. Product functionality and suitability must be determined with proper verification within the final application. Neither Schaffner nor its subsidiaries will assume liability for any consequential downtimes or damages resulting from use of products outside their specifications or due to incomplete verification in application.

2. Do not attempt to install, operate, maintain or inspect any product until you have read and understood the related safety notes and installation guidelines delivered with the product. If not available, general safety and installation notes are available on Schaffner Website: www.schaffner.com.

Non-qualified persons are not allowed to install or maintain Schaffner products!

3. The user is responsible to observe compliance with all local installation and electrical regulations.

4. All products must have their safety earth connected using properly dimensioned connectors. It is recommended to avoid chaining safety earth of multiple equipment together.

5. Warnings, cautions and notes as displayed on the product label must be observed at all times.

6. Overcurrent or overvoltage applied to products or resulting from an improper setup (i.e. resonances) may cause substantial damages, represent a fire hazards and lead to body injury or death.

7. Unless specifically indicated in datasheet, products do not contain any protection components. Suitable overcurrent and overvoltage protection circuits must be placed upstream of the product to avoid any consequential damage in case of any system malfunction.

8. Products with capacitive elements can have significant amount of stored energy. If misused or mishandled it could lead to body harm, damage and eventually fire hazard.

9. Products have limited lifetime and are subject to ageing effects heavily depending on operating conditions and environment. Schaffner recommends to regularly check any inbuilt capacitance to ensure constant performance and considering replacement after 12 years from initial commissioning unless otherwise indicated. Even when properly operated as in specifications, it is not possible to rule out single malfunctioning or failures of components happening before the usual lifetime.

User is responsible to evaluate the environment in the application and eventually perform preventive maintenance before the above recommendation. User shall also evaluate risk of possible failures and implement proper containment actions to avoid damage or injury.

10. Schaffner reserves the right to change raw materials used in this product during its life cycle on the company's own discretion, mainly for the purpose of managing and maintaining a capable international supplier base and for ensuring prompt product availability at all times. All changes having no impact on form, fit, function and technical specifications according to company internal evaluation will be carried out without notification.

Stricter change management process can be implemented on request.

We are here to help



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10/25 ED

INDUSTRIAL AUTOMATION & ELECTRIFICATION / FN3297 SERIES

schaffner
MORE POWER TO YOU

 **TE**
connectivity

is now part of