

# Single-phase EMC Filter for Control Equipment



- Filter for the control line of complex equipment and machinery
- To ensure interference-free operation of control equipment (PLC, Motion-, Robot Control etc.)
- To improve operational reliability and system stability
- Compact EMC filter design with minimum space requirement

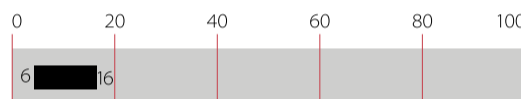


### Performance indicators

Attenuation performance



Rated current [A]



### Approvals & Compliances



### Features and Benefits

- An additional filter for the supply cables of controls of rather large and complex systems, to ensure a reliable operation of the control unit.
- To achieve significant system stability improvement by reducing the risk of internal interference propagation and coupling.
- FN 2415 B version without leakage current (0 mA)
- FN 2415 L version with leakage current of less than 3.5 mA.
- Simple and time-saving installation with good accessibility for automatic and hand tools
- Solid, touch-safe terminal blocks offering sufficient contacting cross section according to the EN 60204-1 installation standard
- By providing a very decent attenuation performance, FN 2415 contributes significantly to the achievement of electromagnetic compliance, e.g. EN50370-1 standards for machine tools.

## Technical Specifications

<b>Maximum continuous operating voltage</b>	250 VAC
<b>Nominal operating voltage</b>	230 VAC
<b>Rated currents</b>	6 to 16 A @ 50°C
<b>Overload capability</b>	4x rated current at switch on, 1.5x rated current for 1 minute, once per hour
<b>Operating frequency</b>	DC to 400 Hz
<b>High potential test voltage</b>	P/N → E 2250 VDC for 2 sec P → N 1100 VDC for 2 sec
<b>Temperature range (operation and storage)</b>	-25°C to +100°C (25/100/21)
<b>Protection category</b>	IP 20
<b>Flammability corresponding to</b>	UL 94 V-0
<b>Design corresponding to</b>	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
<b>MTBF (Mil-HB-217F)</b>	>1,300,000 h @ 50°C/230 V

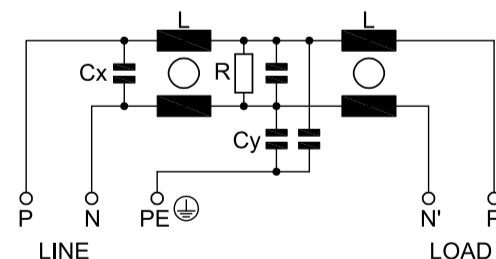
## Typical Applications

Ideal for industrial equipment, machinery and diverse process automation systems, which involve any kind of control units (NC, CNC, Motion- and Robot Controls).











Large and complex machine tools with multiple driving axes and very long motor cables can be subjected to major reliability problems, provoked and by internal coupling of interferences from the drive system to the control wires.

This can cause drop outs and interrupts of the control unit and consequently lead to unnecessary downtimes of the entire machine. FN 2415 can also be used for most diverse single-phase applications, e.g. motor drives and power supplies.

### Typical electrical schematic



### Filter Selection Table

Filter	Buy	Rated current @40°C (25°C)	Leakage current* 250VAC/50Hz (120VAC/60Hz)	Power loss	Inductance** L	Capacitance**		Resistance** R	Input/Output	Weight
						Cx	Cy			
		[A]	[mA]	[W]	[mH]**	[μF]	[nF]	[kΩ]		[kg]
<b>FN2415-6-29</b>		6 (6.6)	7.85 (4.52)	2.2	8	3.3	100	220	-29	0.4
<b>FN2415-10-29</b>		10 (11)	7.85 (4.52)	2.4	4.2	3.3	100	220	-29	0.4
<b>FN2415-16-29</b>		16 (17.5)	7.85 (4.52)	4.3	3	3.3	100	220	-29	0.4
<b>FN2415B-6-29</b>		6 (6.6)	0.00 (0.00)	2.2	8	3.3		220	-29	0.4
<b>FN2415B-10-29</b>		10 (11)	0.00 (0.00)	2.4	4.2	3.3		220	-29	0.4
<b>FN2415B-16-29</b>		16 (17.5)	0.00 (0.00)	4.3	3	3.3		220	-29	0.4
<b>FN2415L-6-29</b>		6 (6.6)	2.59 (1.49)	2.2	8	3.3	33	220	-29	0.4
<b>FN2415L-10-29</b>		10 (11)	2.59 (1.49)	2.4	4.2	3.3	33	220	-29	0.4
<b>FN2415L-16-29</b>		16 (17.5)	2.59 (1.49)	4.3	3	3.3	33	220	-29	0.4

\* Maximum leakage under normal operating conditions (acc. to IEC60939-3). Note: if the neutral line is interrupted, worst case leakage could reach twice this level.

\*\* Tolerances apply: Inductance: -30/+50%, Capacitance: ±20%, Resistance: ±10%

\*\*\* Value of both inductors in the same

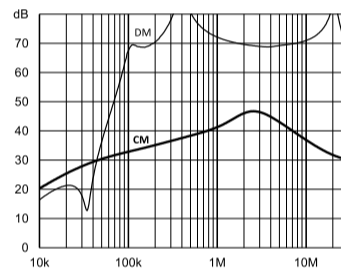
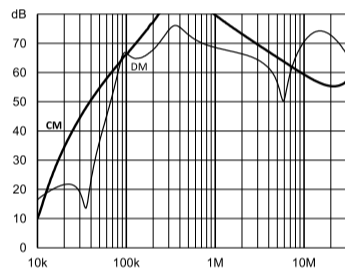
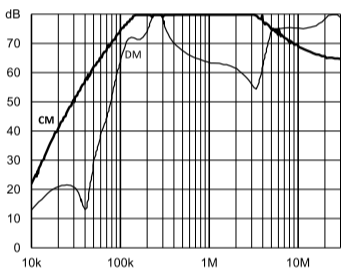
### Typical Filter Attenuation

Per CISPR 17; DM (differential mode) =50 Ω/50 Ω sym; CM (common mode)=50 Ω/50 Ω asym

6 A: Standard type

L type

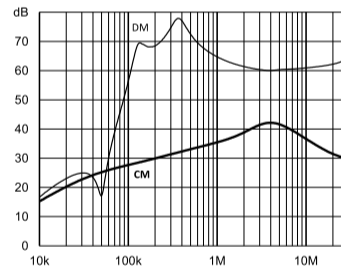
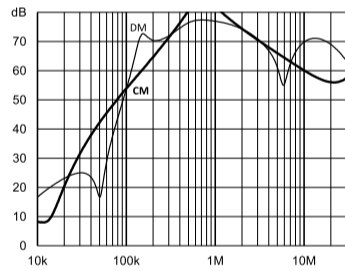
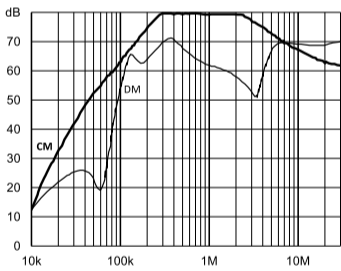
B type



10 A: Standard type

L type

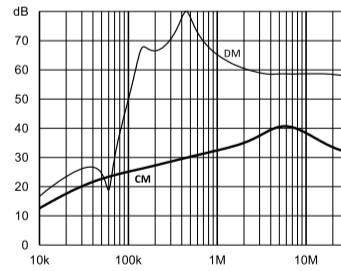
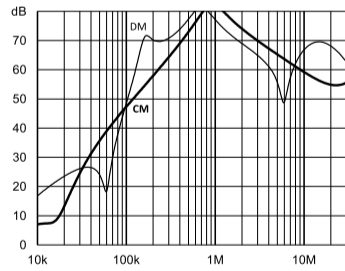
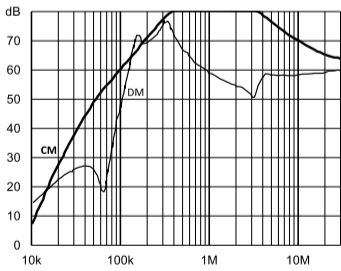
B type



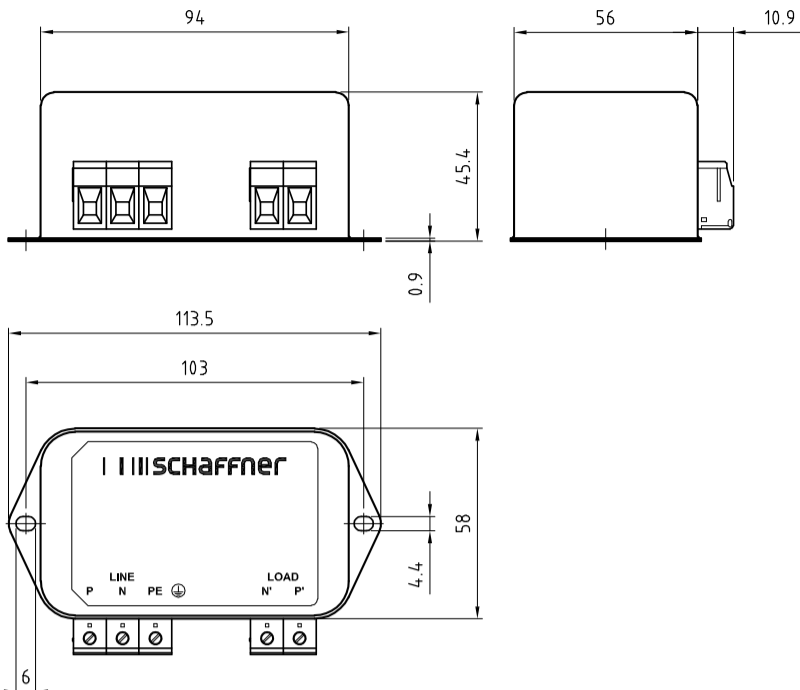
16 A: Standard type

L type

B type



### Mechanical Data



All dimensions in mm; 1 inch = 25.4 mm ; Tolerances according: ISO 2768-m/EN 22768-m

### Filter Input/Output Connector Cross Sections

	<b>-29</b>
<b>Solid wire</b>	6 mm <sup>2</sup>
<b>Flex wire</b>	4 mm <sup>2</sup>
<b>AWG type wire</b>	AWG 10
<b>Recommended torque</b>	0.6-0.8 Nm

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