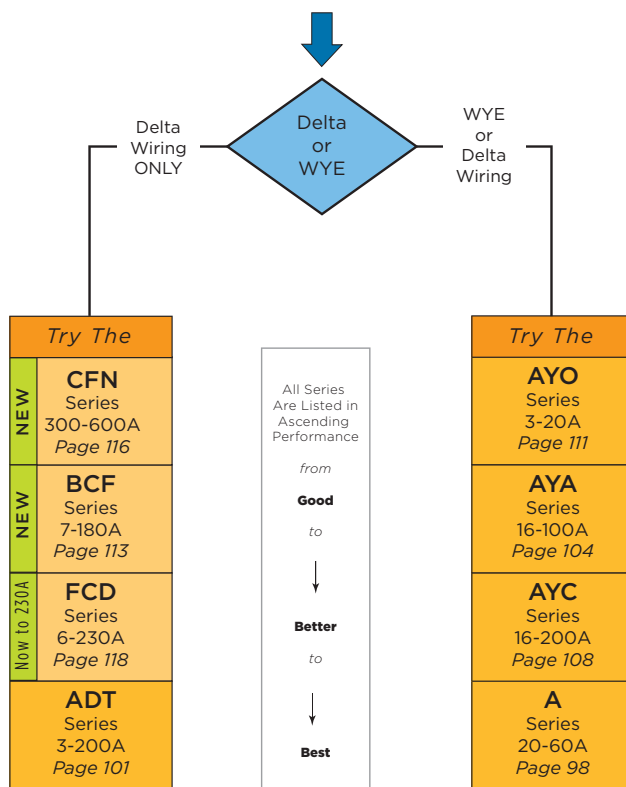


2. Three Phase Filters — Table of Contents

Three Phase Selector Chart	97
A Series	98
ADT Series	101
AYA Series	104
AYC Series	108
AYO Series	111
BCF Series	113
CFN Series	116
FCD Series	118

Three Phase Selector Chart

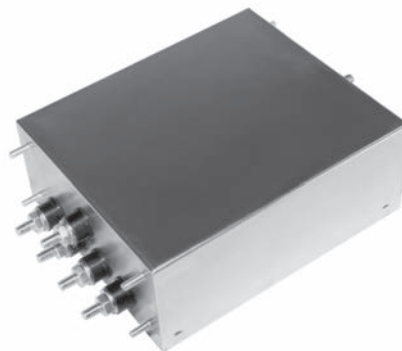


High Performance 3-phase RFI Filters for WYE Applications

A Series



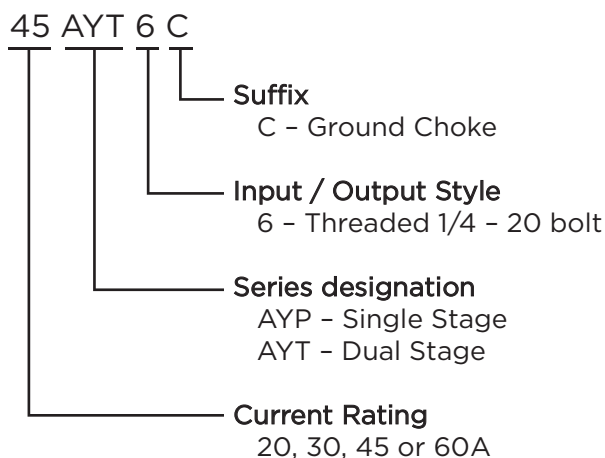
UL Recognized
CSA Certified
VDE Approved



A Series

- For 3-phase, four wire, WYE Applications
- Filters each of the three lines plus the neutral and ground line
- Both common mode and differential mode suppression from 50kHz to 30MHz
- Effective for both balanced and unbalanced loads
- Ground choke included
- Optional end bell kits available to shield input and output terminals
- AYP single stage for lower noise environments
- AYT dual stage provides highest performance

Ordering Information



Specifications

Maximum leakage current, each Line to Ground:

@ 120 VAC 60 Hz:	1.4 mA
@ 250 VAC 50 Hz:	3.4 mA

Hipot rating (one minute):

Line to Ground:	1500 VAC
Neutral to Ground:	1500 VAC
Line to Neutral:	1450 VDC

Rated Voltage (max):

Phase to Phase:	440 VAC
Phase to Neutral / Ground:	250 VAC

Operating Frequency:

50/60 Hz

Rated Current:

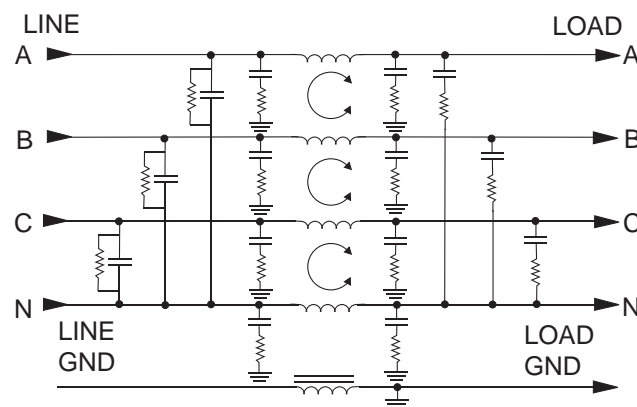
20 to 60A

Operating Ambient Temperature Range

(at rated current I_r): -10°C to +40°C
In an ambient temperature (T_a) higher than +40°C the maximum operating current (I_o) is calculated as follows: $I_o = I_r \sqrt{(85-T_a)/45}$

Electrical Schematics

AYP6C Models

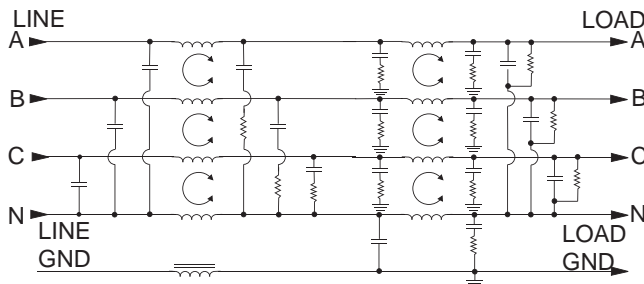


High Performance 3-phase RFI Filters for WYE Applications *(continued)*

A Series

Electrical Schematics *(continued)*

AYT6C Models



Available Part Numbers

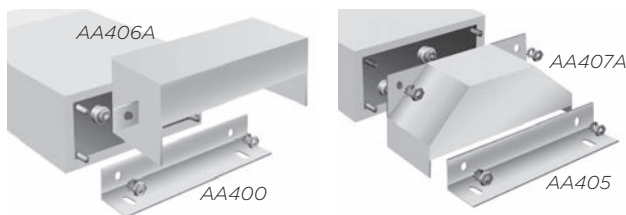
20AYP6C	20AYT6C
30AYP6C	30AYT6C
45AYP6C	45AYT6C
60AYP6C	60AYT6C

Accessories

Mounting bracket kit with captive nuts:

AA400: 20A & 30A versions

AA405: 45A & 60A versions



Protective cover for use with mounting bracket:
(For Europe only. Limited availability in other regions)

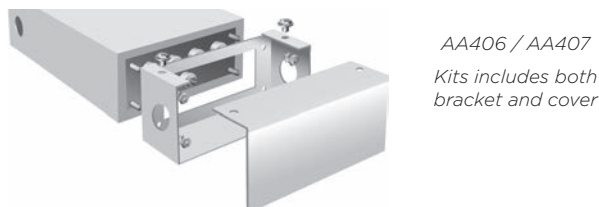
AA406A: 20A & 30A versions

AA407A: 45A & 60A versions

End bell kit (bracket and cover) with captive nuts:

AA406: 20A & 30A versions

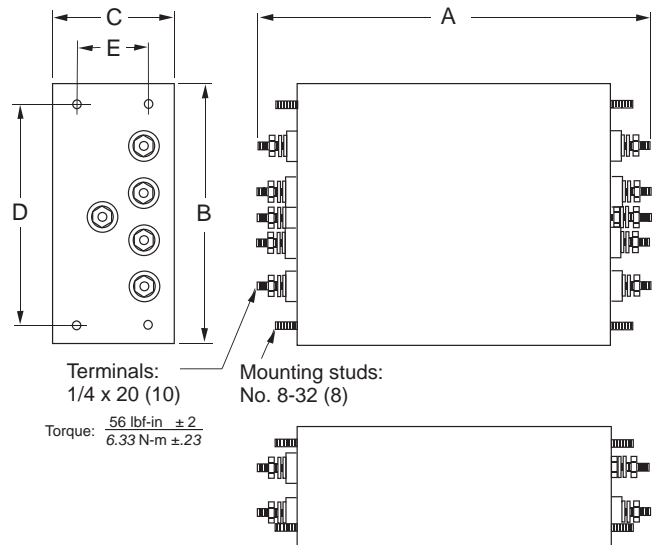
AA407: 45A & 60A versions



Additional captive nuts:

AA401: 10 nuts

Case Style



Case Dimensions

Part No.	A* (max.)	B (max.)	C (max.)	D $\pm .030$ $\pm .76$	E $\pm .015$ $\pm .38$
20AYP6C	8.82 224.0	5.57 141.5	2.56 65.0	4.616 117.2	1.50 38.1
30AYP6C	8.82 224.0	5.57 141.5	2.56 65.0	4.616 117.2	1.50 38.1
45AYP6C	9.43 239.5	6.92 175.8	4.82 122.4	5.95 151.1	3.75 95.3
60AYP6C	9.43 239.5	6.92 175.8	4.82 122.4	5.95 151.1	3.75 95.3
20AYT6C	13.82 351.0	5.57 141.5	2.56 65.0	4.616 117.2	1.50 38.1
30AYT6C	13.82 351.0	5.57 141.5	2.56 65.0	4.616 117.2	1.50 38.1
45AYT6C	13.83 351.3	6.92 175.8	4.82 122.4	5.95 151.1	3.75 95.3
60AYT6C	13.83 351.3	6.92 175.8	4.82 122.4	5.95 151.1	3.75 95.3

*For end bell covering terminals and connections, add:
20 & 30A: 5.57 [141.48]
45 & 60A: 6.45 [163.83]

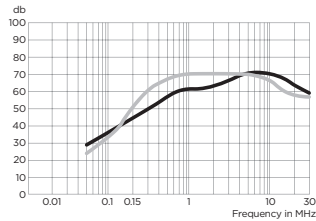
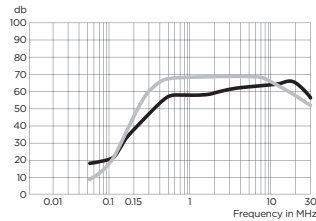
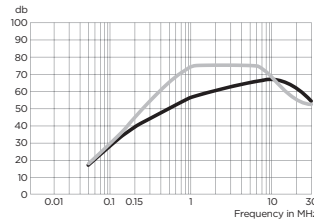
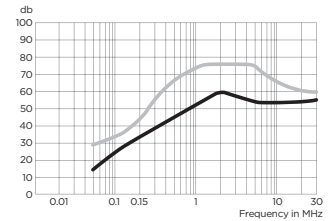
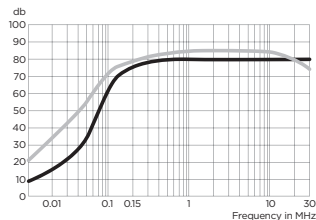
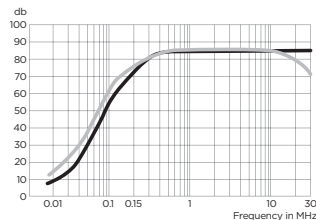
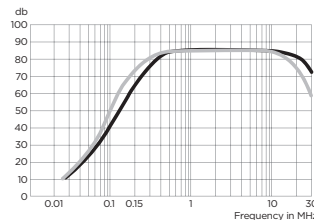
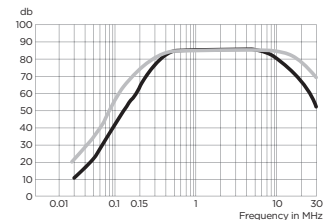
High Performance 3-phase RFI Filters for WYE Applications *(continued)*

A Series

Performance Data

Typical Insertion Loss

Measured in closed 50 Ohm system

20AYP6C

30AYP6C

45AYP6C

60AYP6C

20AYT6C

30AYT6C

45AYT6C

60AYT6C


— Common Mode / Asymmetrical (L-G)
— Differential Mode / Symmetrical (L-L)

Minimum Insertion Loss

Measured in closed 50 Ohm system

AYP6C

Common Mode / Asymmetrical (Line to Ground)

Current Rating	Frequency –MHz							
	.05	.1	.15	.5	1	5	10	30
20A	22	32	39	55	56	65	65	54
30A	15	24	30	55	55	61	63	50
45A	8	19	25	49	49	56	58	45
60A	5	16	22	50	50	54	54	47

Differential Mode / Symmetrical (Line to Line)

Current Rating	Frequency –MHz							
	.05	.1	.15	.5	1	5	10	30
20A	20	38	50	65	65	65	60	52
30A	18	28	43	65	65	65	59	48
45A	8	20	27	60	65	65	56	43
60A	20	24	27	60	65	65	56	50

AYT6C

Common Mode / Asymmetrical (Line to Ground)

Current Rating	Frequency –MHz							
	.05	.1	.15	.5	1	5	10	30
20A	45	63	70	75	75	75	75	65
30A	29	53	61	75	75	75	75	60
45A	15	36	43	75	75	75	75	50
60A	12	37	46	75	75	75	70	45

Differential Mode / Symmetrical (Line to Line)

Current Rating	Frequency –MHz							
	.05	.1	.15	.5	1	5	10	30
20A	27	56	65	70	70	70	70	70
30A	17	46	55	75	75	75	75	70
45A	14	41	50	75	75	75	75	65
60A	26	50	58	75	75	75	75	60

High Performance High Current 3-phase Delta RFI Filters

ADT Series



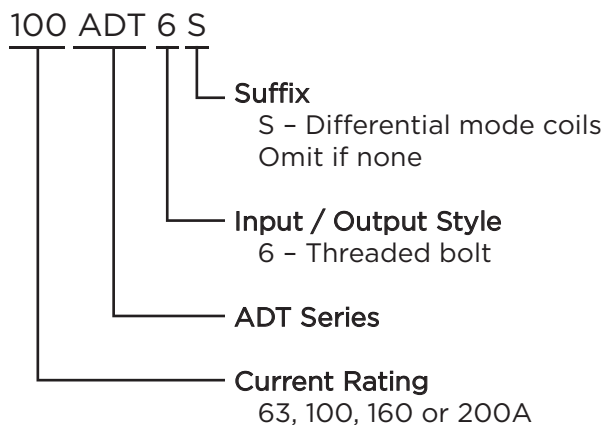
UL Recognized



ADT Series

- Designed for very high insertion loss for Delta three phase, three wire applications
- Available with common or differential mode coils

Ordering Information



Available Part Numbers

63ADT6	63ADT6S
100ADT6	100ADT6S
160ADT6	160ADT6S
200ADT6	200ADT6S

Specifications

Maximum leakage current at 277 VAC 60 Hz, each Line to Ground:

ADT6:	1.3 A
63ADT6S:	2.6 A
100, 160, 200ADT6S	4.6 A

Hipot rating (one minute):

Line to Ground:	2210 VDC
Line to Line:	2158 VDC

Rated Voltage (max):

Phase to Phase:	480 VAC
Phase to Ground:	277 VAC

Operating Frequency:

50/60 Hz

Rated Current:

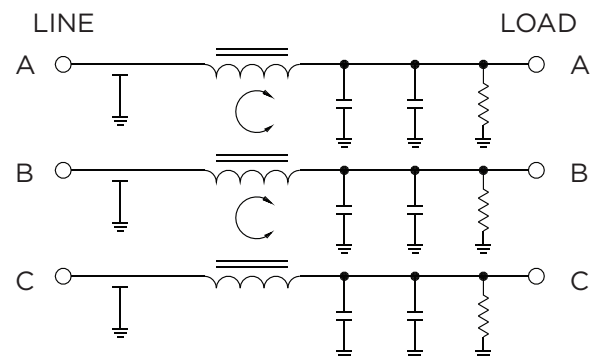
63 to 200A

Operating Ambient Temperature Range

(at rated current I_r): -10°C to +40°C
In an ambient temperature (T_a) higher than +40°C the maximum operating current (I_o) is calculated as follows: $I_o = I_r \sqrt{(85 - T_a)/45}$

Electrical Schematics

63ADT6



2

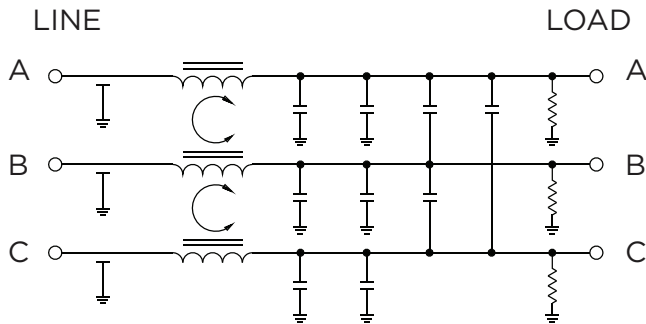
Three Phase Filters

High Performance High Current 3-phase Delta RFI Filters *(continued)*

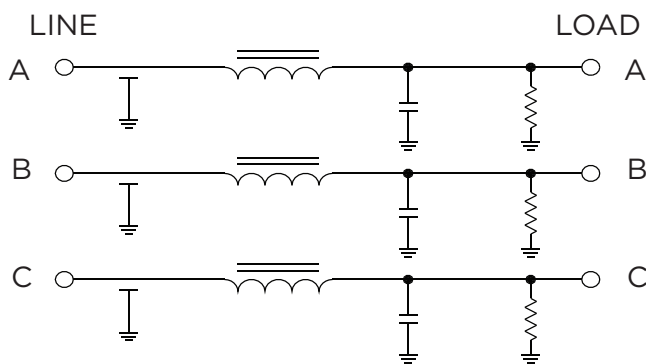
ADT Series

Electrical Schematics *(continued)*

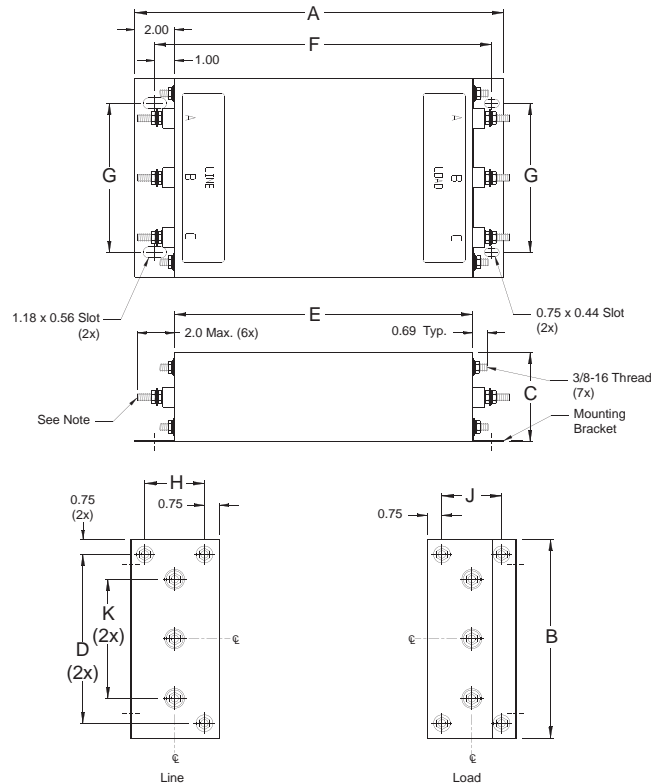
100, 160 & 200 ADT6



ADT6S



Case Style



Terminals (6) :

63ADT6, 63ADT6S, 100ADT6S: 3/8-16, Torque (max.) 70 lbf-in [7.91 N-m]

100ADT6, 160 & 200 ADT6/S: 7/16-20, Torque (max.) 125 lbf-in [14.12 N-m]

Case Dimensions

Part No.	A (max.)	B (max.)	C (max.)	D $\pm .030$ $\pm .76$	E (max.)	F $\pm .030$ $\pm .76$	G $\pm .030$ $\pm .76$	H $\pm .030$ $\pm .76$	J $\pm .030$ $\pm .76$	K (max.)
63ADT6	14.00 355.6	10.00 254.0	3.5 89.0	8.5 216.0	10.00 254.0	11.97 304.0	7.5 190.35	1.75 44.4	2.00 50.8	6.00 152.4
63ADT6S	19.00 482.6	10.00 254.0	4.5 114.3	8.5 216.0	15.00 381.0	16.97 431.0	7.5 190.5	3.00 76.2	3.00 76.2	6.00 152.4
100ADT6	19.00 482.6	10.00 254.0	4.5 114.3	8.5 216.0	15.00 381.0	16.97 431.0	7.5 190.5	3.00 76.2	3.00 76.2	6.00 152.4
100ADT6S	19.00 482.6	11.00 279.4	4.5 114.3	8.5 216.0	15.00 381.0	16.97 431.0	8.5 215.9	3.00 76.2	3.00 76.2	6.00 152.4
160/200ADT6	19.00 482.6	10.00 254.0	4.5 114.3	8.5 216.0	15.00 381.0	16.97 431.0	7.5 190.5	3.00 76.2	3.00 76.2	6.00 152.4
160/200ADT6S	22.00 558.8	13.00 330.2	4.5 114.3	11.5 292.2	18.00 457.2	19.97 507.2	10.5 266.7	2.75 69.8	3.00 76.2	7.00 177.8

High Performance High Current 3-phase Delta RFI Filters *(continued)*

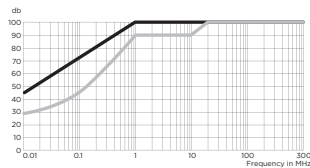
ADT Series

Performance Data

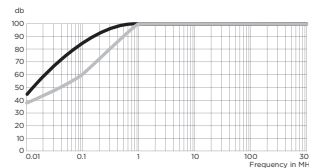
Typical Insertion Loss

Measured in closed 50 Ohm system

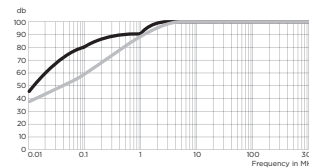
63ADT6



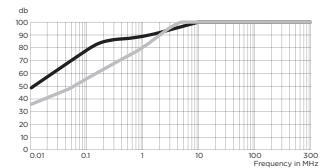
100ADT6



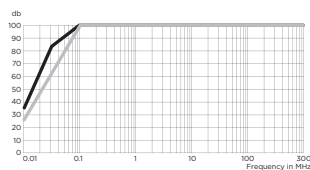
160ADT6



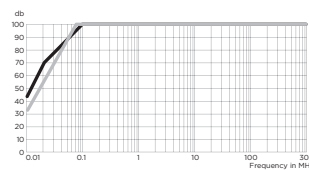
200ADT6



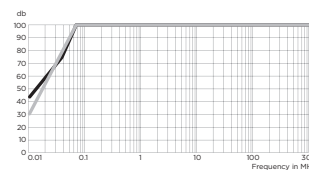
63ADT6S



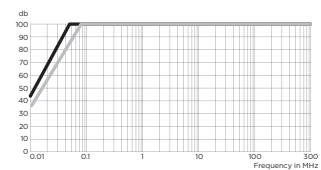
100ADT6S



160ADT6S



200ADT6S



— Common Mode / Asymmetrical (L-G)
— Differential Mode / Symmetrical (L-L)

Minimum Insertion Loss

Measured in closed 50 Ohm system

Common Mode / Asymmetrical (Line to Ground)

Part No.	Frequency –MHz						
	.01	.1	1	10	30	100	300
63ADT6	45	85	95	100	100	100	100
100ADT6	45	85	90	100	100	100	100
160ADT6	45	80	90	100	100	100	100
200ADT6	45	77	88	100	100	100	100
63ADT6S	28	45	90	90	90	90	90
100ADT6S	38	60	95	100	100	100	100
160ADT6S	37	58	85	100	100	100	100
200ADT6S	35	54	80	100	100	100	100

Differential Mode / Symmetrical (Line to Line)

Part No.	Frequency –MHz						
	.01	.1	1	10	30	100	300
63ADT6	35	100	100	100	100	100	100
100ADT6	43	100	100	100	100	100	100
160ADT6	44	100	100	100	100	100	100
200ADT6	43	100	100	100	100	100	100
63ADT6S	35	100	100	100	100	100	100
100ADT6S	43	100	100	100	100	100	100
160ADT6S	44	100	100	100	100	100	100
200ADT6S	43	100	100	100	100	100	100

3-phase WYE RFI Power Line Filters

AYA Series



UL Recognized*



25AYA6A

AYA Series

- For 3-phase, four wire, WYE applications
- Cost-effective, universal 3-phase filters
- Good attenuation over the complete frequency range of 10kHz to 30MHz
- Two different mounting styles available

Specifications

Maximum leakage current each Line to Ground:

@ 120 VAC 60 Hz:	1.62 mA
@ 250 VAC 50 Hz:	2.82 mA

Hipot rating (one minute):

Line to Ground:	1500 VAC
Line to Line:	1450 VDC

Rated Voltage (max):

Phase to Phase:	440 VAC
Phase to Ground:	250 VAC

Operating Frequency:

50/60 Hz

Rated Current:

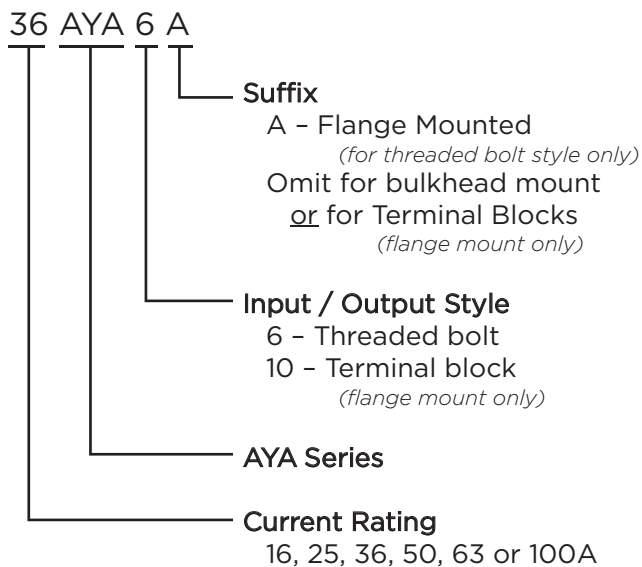
16 to 100A*

Operating Ambient Temperature Range

(at rated current I_r): -10°C to +40°C

In an ambient temperature (T_a) higher than +40°C the maximum operating current (I_O) is calculated as follows: $I_O = I_r \sqrt{(85-T_a)/45}$

Ordering Information



Available Part Numbers

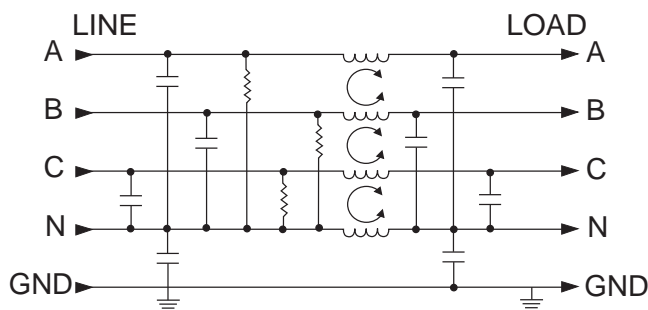
Flange Mount	Bulkhead Mount
16AYA6A	16AYA6
16AYA10	25AYA6
25AYA6A	36AYA6
36AYA6A	50AYA6
36AYA10	
50AYA6A	
63AYA6A	
63AYA10	
100AYA6A	

*UL Approvals for all models except:
16AYA10, 36AYA10, 63AYA10, 63AYA6, 63AYA6A and 100AYA6A

3-phase WYE RFI Power Line Filters (continued)

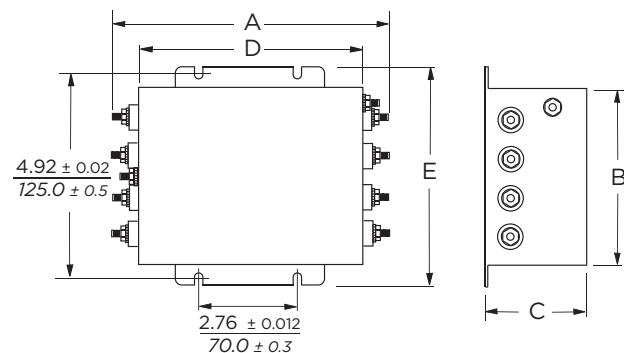
AYA Series

Electrical Schematic



Case Style

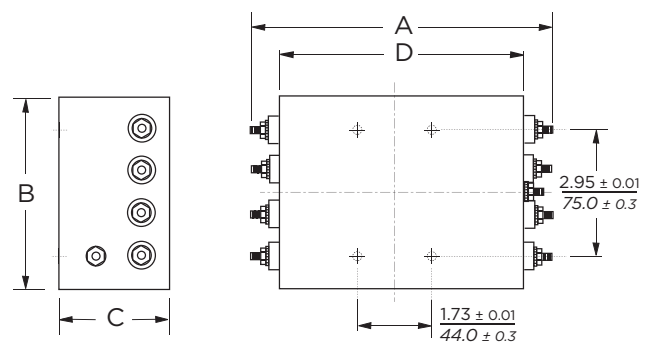
AYA6A (Flange mount with screw terminals)



Typical Dimensions:

Mounting slots (4):	.425 x .254 [10.8 x 6.6]
16 & 25A Terminals(8):	8-32, Torque (max.) 26 lbf-in [2.94 N-m]
36A Terminals(8):	10-32, Torque (max.) 27 lbf-in [3.05 N-m]
50, 63 & 100A Terminals(8):	1/4-20, Torque (max.) 56 lbf-in [6.33 N-m]

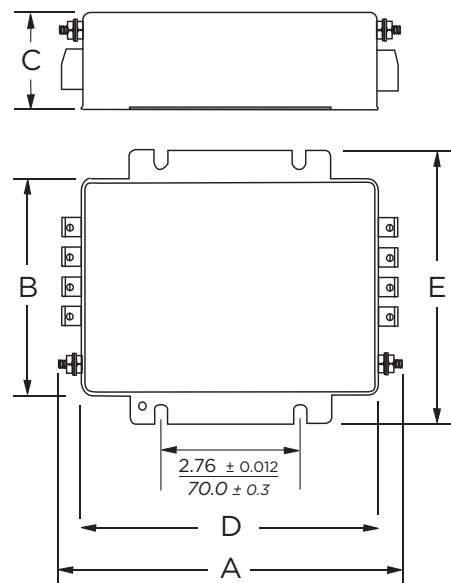
AYA6 (Bulkhead mount with screw terminals)



Typical Dimensions:

Threaded mounting holes(4):	M5 x 8
16 & 25A Terminals(8):	8-32, Torque (max.) 26 lbf-in [2.94 N-m]
36A Terminals(8):	10-32, Torque (max.) 27 lbf-in [3.05 N-m]
50A Terminals(8):	1/4-20, Torque (max.) 56 lbf-in [6.33 N-m]

16AYA10



Typical Dimensions:

Mounting slots (4):	.425 x .254 [10.8 x 6.6]
Terminal blocks(8):	4 mm ² Torque (max.) 7.08 lbf-in [0.8 N-m]
Ground terminal(1):	M5, Torque (max.) 26.58 lbf-in [3.0 N-m]

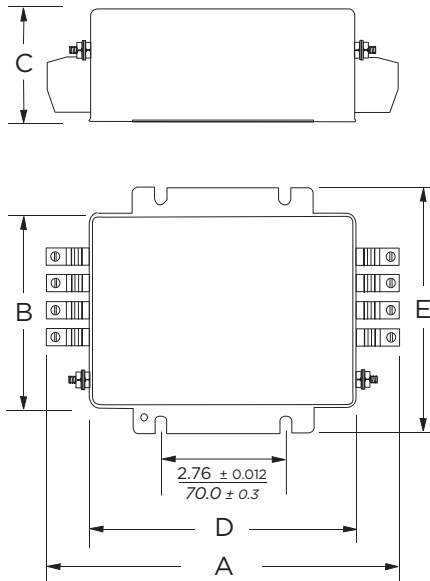
2

Three Phase Filters

3-phase WYE RFI Power Line Filters *(continued)*

AYA Series

36AYA10



Typical Dimensions:

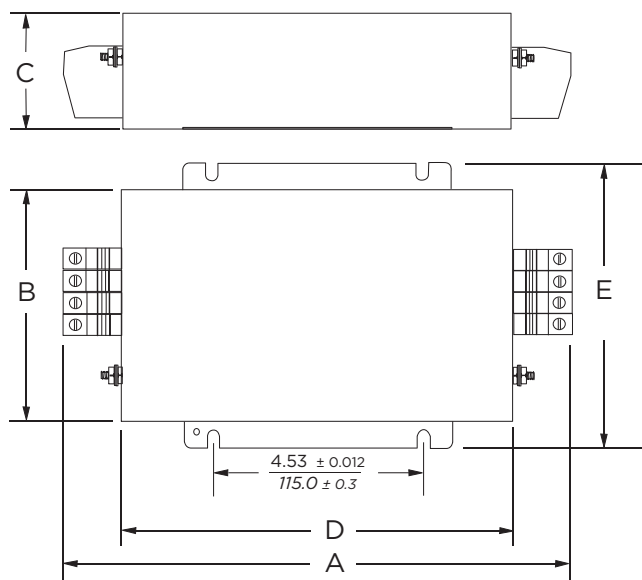
Mounting slots (4): .425 x .254 [10.8 x 6.6]
Terminal blocks (8): 10 mm² Torque (max.) 15.93 lbf-in [1.8 N-m]
Ground terminal (1): M5, Torque (max.) 26.58 lbf-in [3.0 N-m]

Case Dimensions

Part No.	A (max.)	B (max.)	C (max.)	D (max.)	E* (max.)
16AYA6 /A	7.91	4.37	1.97	5.94	5.51
25AYA6 /A	201.0	111.0	50.0	151.0	140.0
36AYA6 /A	7.91	4.37	2.56	5.94	5.51
50AYA6 /A	201.0	111.0	65.0	151.0	140.0
63AYA6 /A	7.91	4.37	2.56	5.94	5.51
100AYA6A	201.0	111.0	65.0	151.0	140.0
16AYA10	6.97	4.37	1.97	5.94	5.51
	177.0	111.0	50.0	151.0	140.0
36AYA10	7.88	4.37	2.56	5.94	5.51
	200.0	111.0	65.0	151.0	140.0
63AYA10	10.98	5.08	2.95	8.43	6.26
	279.0	129.0	75.0	214.0	159.0

*Does not apply for bulkhead models

63AYA10



Typical Dimensions:

Mounting slots (4): .425 x .254 [10.8 x 6.6]
Terminal blocks (8): 16 mm² Torque (max.) 20.35 lbf-in [2.3 N-m]
Ground terminal (1): M6, Torque (max.) 53.1 lbf-in [6.0 N-m]

3-phase WYE RFI Power Line Filters *(continued)*

AYA Series

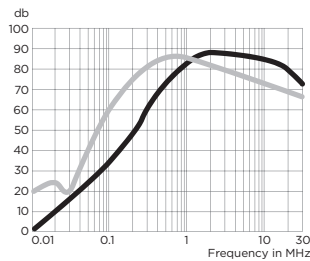
Performance Data

Typical Insertion Loss

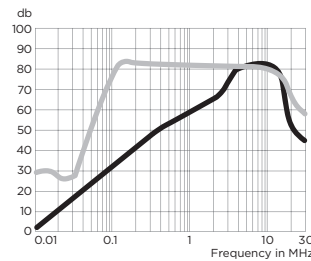
Measured in closed 50 Ohm system

— Common Mode / Asymmetrical (L-G)
— Differential Mode / Symmetrical (L-L)

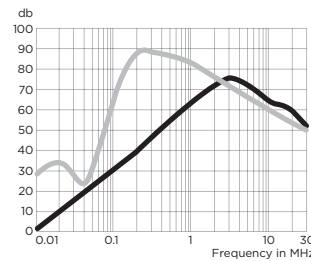
16AYA



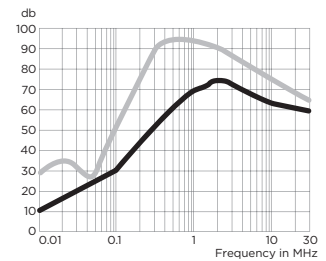
25AYA



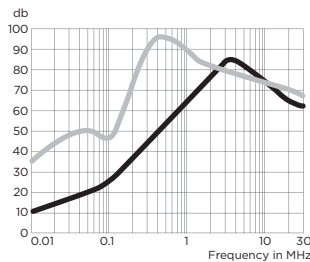
36AYA



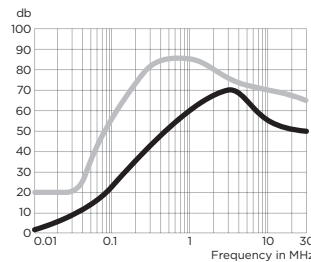
50AYA



63AYA



100AYA



Minimum Insertion Loss

Measured in closed 50 Ohm system

Common Mode / Asymmetrical (Line to Ground)

Current Rating	Frequency –MHz							
	.01	.05	.1	.5	1	5	10	30
16A	2	11	19	52	53	70	61	30
25A	2	12	19	46	49	64	54	27
36A	1	10	18	49	54	63	57	32
50A	1	8	14	43	47	63	53	29
63A	2	10	22	50	60	75	70	55
100A	1	15	22	55	60	65	55	50

Differential Mode / Symmetrical (Line to Line)

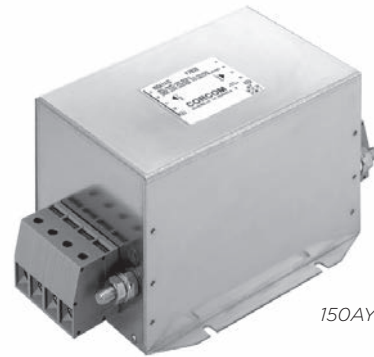
Current Rating	Frequency –MHz							
	.01	.05	.1	.5	1	5	10	30
16A	14	31	30	82	87	76	77	47
25A	20	36	38	85	81	68	69	33
36A	20	39	36	86	78	65	62	35
50A	20	30	38	85	82	67	66	38
63A	30	40	45	90	85	70	70	60
100A	20	35	45	80	80	65	60	55

3-phase WYE RFI Power Line Filters for High Noise Applications

AYC Series



UL Recognized*



150AYC10B

AYC Series

- For 3-phase, four wire, WYE applications
- Very high attenuation
- Low leakage current
- Ideal for EMC troubleshooting and refurbishing in the field
- Touch safe terminals provide easy connections and prevent inadvertent contact for safety in the most demanding applications

Ordering Information

150	AYC	10	B	-95
				Terminal Block Option
				-95 – 95mm terminal block
				<i>available on 150A only</i>
				Omit for standard terminals
				Filter Type
				B – Single stage
				Input / Output Style
				10 – Terminal block
				AYC Series
				Current Rating
				16, 25, 36, 63, 80, 110,
				150, 180 or 200A

Available Part Numbers

16AYC10B	110AYC10B
25AYC10B	150AYC10B
36AYC10B	150AYC10B-95
63AYC10B	180AYC10B
80AYC10B	200AYC10B

Specifications

Maximum leakage current each Line to Ground:

	120 VAC 60Hz	277 VAC 50Hz
16A	62 mA	106 mA
25 & 36A	68 mA	118 mA
63A	74 mA	128 mA
80, 100 & 150A	74 mA	129 mA
180, 200A	111 mA	192 mA

Hipot rating (one minute):

Line to Ground:	1850 VDC
Line to Line:	1850 VDC
Line to Neutral:	1450 VDC

Rated Voltage (max):

Phase to Phase:	480 VAC
Phase to Ground:	277 VAC

Operating Frequency:

50/60 Hz

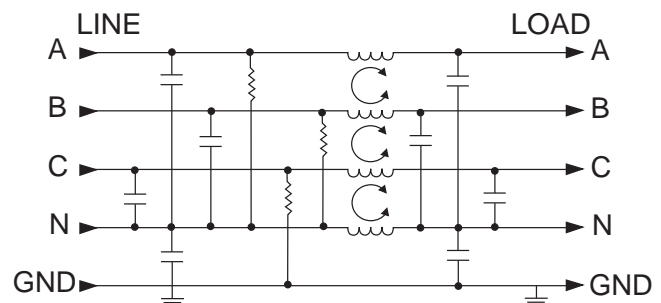
Rated Current:

16 to 200A

Operating Ambient Temperature Range

(at rated current I_r): -10°C to +40°C
In an ambient temperature (T_a) higher than +40°C the maximum operating current (I_o) is calculated as follows: $I_o = I_r \sqrt{(85-T_a)/45}$

Electrical Schematic



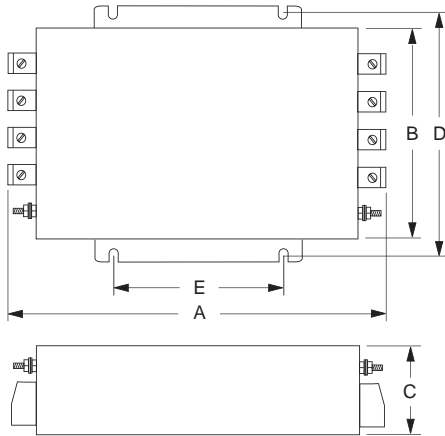
*All except 200AYC10B

3-phase WYE RFI Filters for High Noise Applications *(continued)*

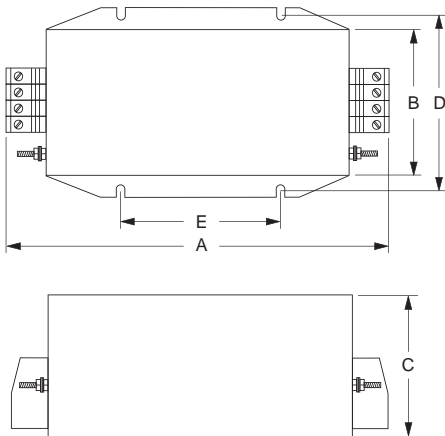
AYC Series

Case Styles

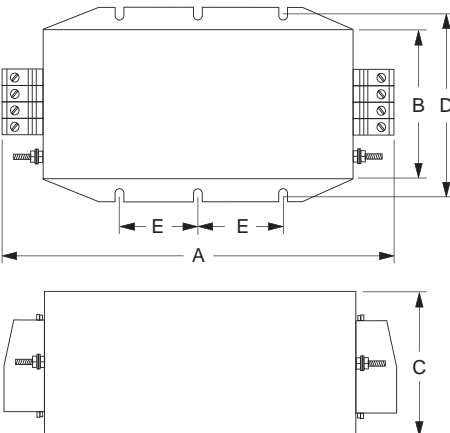
16, 25, 36, 63AYC10B



80, 110, 150AYC10B / -95



180, 200AYC10B



Case Dimensions

Part No.	A (max.)	B (max.)	C (max.)	D (max.)	E ± 0.078 $\pm .2$
16AYC10B	6.69 170.0	4.37 111.0	2.56 65.0	4.92 125.0	2.76 70.0
25AYC10B	9.96 246.0	5.08 129.0	2.52 64.0	5.71 145.0	4.53 115.0
36AYC10B	10.35 263.0	5.08 129.0	2.52 64.0	5.71 145.0	4.53 115.0
63AYC10B	10.98 279.0	5.08 129.0	2.95 75.0	5.71 145.0	4.53 115.0
80, 110 & 150AYC10B	12.09 307.0	5.55 141.0	5.55 141.0	6.10 155.0	4.53 115.0
150AYC10B-95	12.59 320.0	5.55 141.0	5.55 141.0	6.10 155.0	4.53 115.0
180AYC10B	15.71	5.55	5.55	6.10	3.25
200AYC10B	399.0	141.0	141.0	155.0	82.5

Terminals

Part No.	Terminal	Size	Torque max. lbf-in [N·m]
16AYC10B	Ground	M5	26.58 [3.0]
	Line / Load	4mm ² terminal block	7.08 [0.8]
25AYC10B	Ground	M5	26.58 [3.0]
	Line / Load	6mm ² terminal block	15.93 [7.8]
36AYC10B	Ground	M5	26.58 [3.0]
	Line / Load	10mm ² terminal block	15.93 [7.8]
63AYC10B	Ground	M6	53.1 [6.0]
	Line / Load	16mm ² terminal block	20.35 [2.3]
80, 110, 150AYC10B	Ground	M10	177.0 [20.0]
	Line / Load	50mm ² terminal block	70.80 [8.0]
150AYC10B-95 180AYC10B 200AYC10B	Ground	M10	177.0 [20.0]
	Line / Load	95mm ² terminal block	177.0 [20.0]

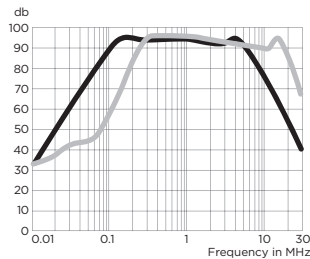
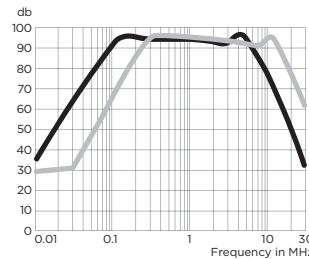
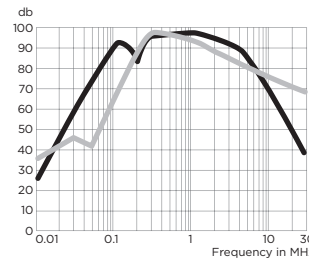
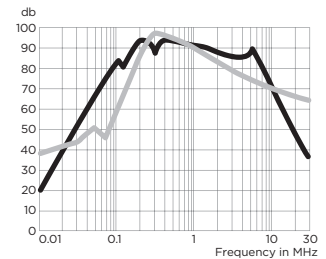
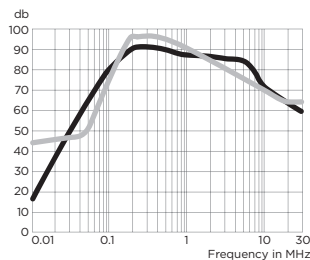
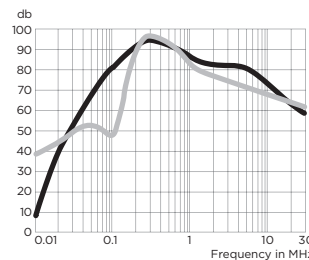
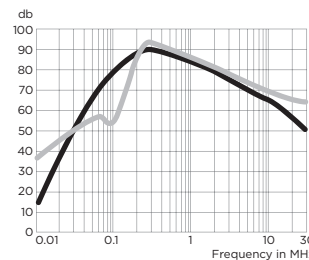
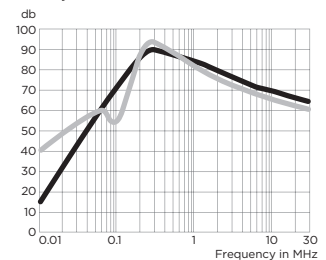
3-phase WYE RFI Filters for High Noise Applications *(continued)*

AYC Series

Performance Data

Typical Insertion Loss

Measured in closed 50 Ohm system

16AYC10B

25AYC10B

36AYC10B

63AYC10B

80AYC10B

110AYC10B

150AYC10B

180, 200AYC10B


— Common Mode / Asymmetrical (L-G)
— Differential Mode / Symmetrical (L-L)

Minimum Insertion Loss

Measured in closed 50 Ohm system

Common Mode / Asymmetrical (Line to Ground)

Part No.	Frequency –MHz							
	.01	.05	.1	.5	1	5	10	30
16AYC10B	23	66	82	88	82	79	55	21
25AYC10B	26	68	83	93	88	68	45	4
36AYC10B	18	61	78	96	91	71	49	7
63AYC10B	11	57	72	90	86	68	44	4
80AYC10B	10	57	75	84	77	75	62	45
110AYC10B	10	51	60	88	84	74	50	12
150AYC10B	-	50	57	82	79	75	51	7
150AYC10B-95	1	51	55	85	82	84	51	11
180, 200AYC10B	3	53	55	97	89	81	56	20

Differential Mode / Symmetrical (Line to Line)

Part No.	Frequency –MHz							
	.01	.05	.1	.5	1	5	10	30
16AYC10B	21	32	54	90	86	73	72	47
25AYC10B	23	33	60	100	95	87	70	38
36AYC10B	25	37	51	94	87	69	58	17
63AYC10B	27	45	41	84	77	63	61	43
80AYC10B	37	42	67	87	80	66	60	50
110AYC10B	27	35	39	75	72	51	44	31
150AYC10B	28	37	42	74	67	52	45	30
150AYC10B-95	28	40	42	73	66	51	44	31
180, 200AYC10B	30	41	50	70	64	49	42	26

Compact Low Current 3-phase WYE RFI Filters

AYO Series



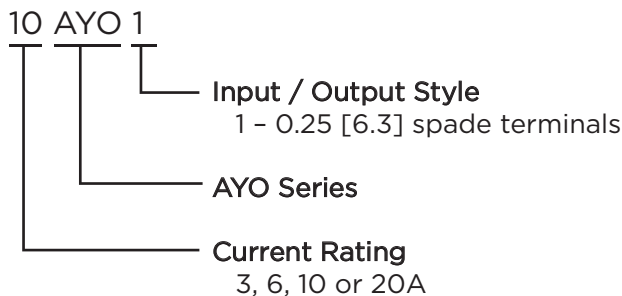
UL Recognized
CSA Certified
VDE Approved



AYO Series

- For 3-phase, four wire, WYE applications
- Filters each of the three lines plus neutral
- Good for attenuation beginning at 100kHz
- Space saving design
- Low leakage current
- Easy to connect terminals

Ordering Information



Available Part Numbers

3AYO1	6AYO1
10AYO1	20AYO1

Specifications

Maximum leakage current each Line to Ground:

	<u>3, 6, 10A</u>	<u>20A</u>
@ 120 VAC 60 Hz:	2.0 mA	3.5 mA
@ 250 VAC 50 Hz:	3.0 mA	5.5 mA

Hipot rating (one minute):

Line to Ground:	1500 VAC
Line to Line:	1450 VDC

Rated Voltage (max):

Phase to Phase:	440 VAC
Phase to Neutral / Ground:	250 VAC

Operating Frequency:

50/60 Hz

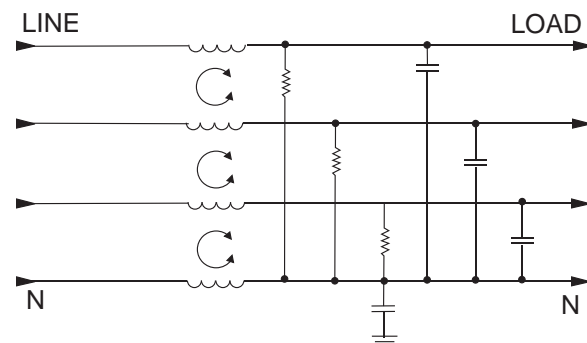
Rated Current:

3 to 20A

Operating Ambient Temperature Range

(at rated current I_r): -10°C to +40°C
In an ambient temperature (T_a) higher than +40°C the maximum operating current (I_o) is calculated as follows: $I_o = I_r \sqrt{(85 - T_a)/45}$

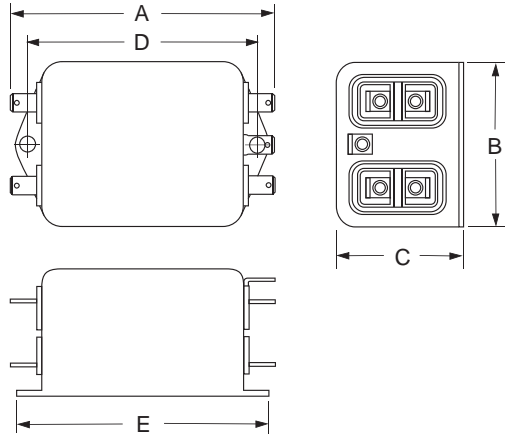
Electrical Schematic



Compact Low Current 3-phase WYE RFI Filters *(continued)*

AYO Series

Case Style



Typical Dimensions:

Line/Load Terminals (8): .250 [6.3] with .07 [1.8] Dia. hole
Ground Terminal (1): .250 [6.3] with .07 x .16 [1.8 x 3.8] slot
Mounting Holes (2): .188 [4.78] Dia.

Case Dimensions

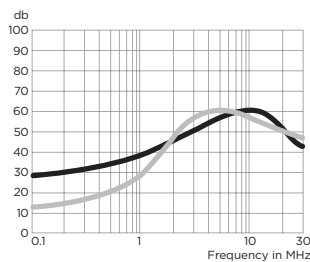
Part No.	A (max.)	B (max.)	C (max.)	D $\pm .015$ $\pm .38$	E (max.)
AYO Series	3.37 85.6	2.07 52.5	1.53 38.7	2.938 74.63	3.35 85.1

Performance Data

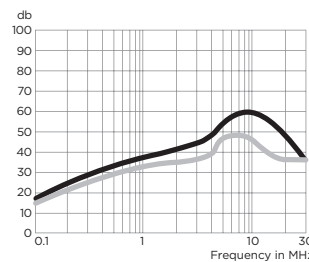
Typical Insertion Loss

Measured in closed 50 Ohm system

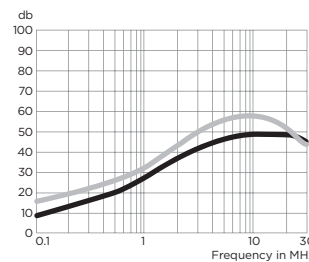
3AYO1



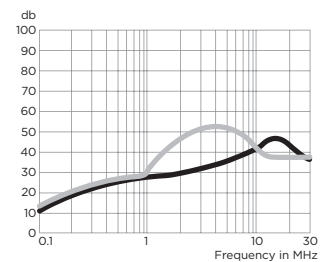
6AYO1



10AYO1



20AYO1



— Common Mode / Asymmetrical (L-G)
— Differential Mode / Symmetrical (L-L)

Minimum Insertion Loss

Measured in closed 50 Ohm system

Common Mode / Asymmetrical (Line to Ground)

Current Rating	Frequency –MHz					
	.15	.5	1	5	10	30
3A	12	23	29	33	38	35
6A	7	23	30	40	50	30
10A	-	-	5	16	28	15
20A	-	7	11	32	23	12

Differential Mode / Symmetrical (Line to Line)

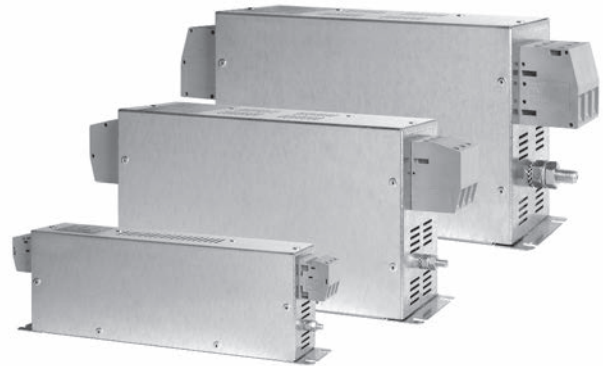
Current Rating	Frequency –MHz					
	.15	.5	1	5	10	30
3A	-	12	20	50	35	30
6A	10	18	24	31	28	28
10A	10	18	24	42	28	22
20A	10	18	24	42	38	23

Compact 3-phase Delta RFI Filters for Universal Applications

BCF Series



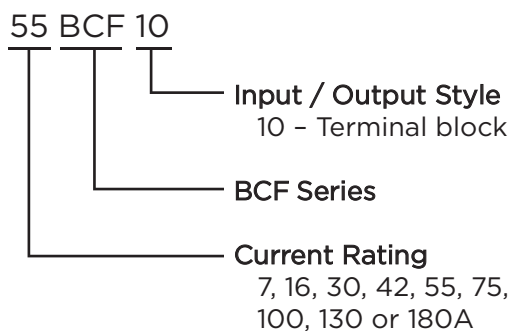
UL Recognized
VDE Approved



BCF Series

- Designed for universal applications
- Compact book-form design
- Low weight
- Insulated, high quality safety terminals for input and output
- Cost-effective design
- Good common and differential mode performance below 100kHz
- Applications include; 3-phase inverters, converters, variable speed motor drives and process automation equipment
- Touch safe terminals provide easy connections and prevent inadvertent contact for safety in the most demanding applications

Ordering Information



Available Part Numbers

7BCF10	16BCF10
30BCF10	42BCF10
55BCF10	75BCF10
100BCF10	130BCF10
180BCF10	

Specifications

Maximum leakage current each Line to Ground*:

@ 277 VAC 50 Hz: 30 mA

**If 2 phases are interrupted, this leakage current may rise to a significantly higher level*

Hipot rating (one minute):

Line to Ground: 1850 VAC

Line to Line: 1850 VDC

Rated Voltage (max):

Phase to Phase: 480 VAC

Phase to Ground: 277 VAC

Operating Frequency:

50/60 Hz

Rated Current:

7 to 180A

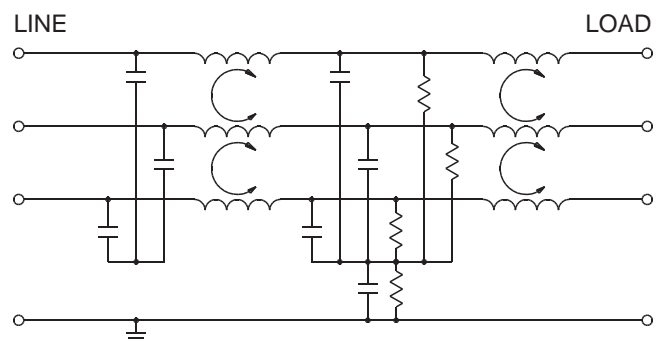
Operating Ambient Temperature Range

(at rated current I_r): -10°C to +50°C

In an ambient temperature (T_a) higher than +50°C the maximum operating current (I_o) is calculated as follows:

$$I_o = I_r \sqrt{(85 - T_a) / 35}$$

Electrical Schematic



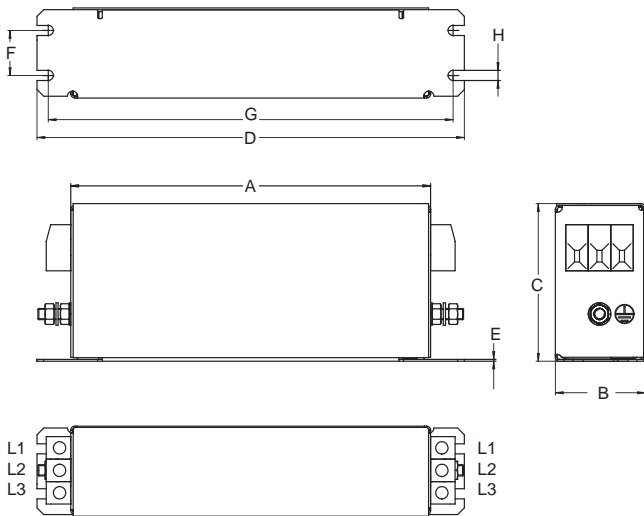
2

Three Phase Filters

Compact 3-phase Delta Filters for Universal Applications *(continued)*

BCF Series

Case Style



Terminals

Part No.	Ground Terminals	Line/Load Terminals
7BCF10, 16BCF10	M5	4mm ²
30BCF10	M5	10mm ²
42BCF10	M6	10mm ²
55BCF10	M6	16mm ²
75BCF10	M6	25mm ²
100BCF10, 130BCF10	M10	50mm ²
180BCF10	M10	95mm ²

Case Dimensions

Part No.	A (max.)	B (max.)	C (max.)	D (max.)	E (max.)	F (max.)	G (max.)	H (max.)
7BCF10	6.30 160.0	1.57 40.0	2.76 70.0	7.48 190.0	.03 .8	.79 20.0	7.09 180.0	.18 4.5
16BCF10	8.66 220.0	1.77 45.0	2.76 70.0	9.84 250.0	.03 .8	.98 25.0	9.25 235.0	.21 5.4
30BCF10	9.45 240.0	1.97 50.0	3.35 85.0	10.63 270.0	.03 .8	1.18 30.0	10.04 255.0	.21 5.4
42BCF10	11.02 280.0	1.97 50.0	3.35 85.0	12.20 310.0	.03 .8	1.18 30.0	11.61 295.0	.21 5.4
55BCF10	8.66 220.0	3.35 85.0	3.54 90.0	9.84 250.0	.04 1.0	2.36 60.0	9.25 235.0	.21 5.4
75BCF10	9.45 240.0	3.15 80.0	5.31 135.0	10.63 270.0	.04 1.0	2.36 60.0	10.04 255.0	.26 6.5
100BCF10	9.45 240.0	3.54 90.0	5.91 150.0	10.63 270.0	.04 1.0	2.56 65.0	10.04 255.0	.26 6.5
130BCF10	9.45 240.0	3.54 90.0	5.91 150.0	10.63 270.0	.04 1.0	2.56 65.0	10.04 255.0	.26 6.5
180BCF10	13.78 350.0	4.72 120.0	6.69 170.0	14.96 380.0	.04 1.0	4.2 102.0	14.37 365.0	.26 6.5

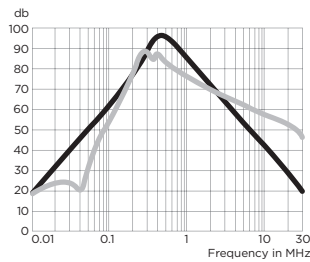
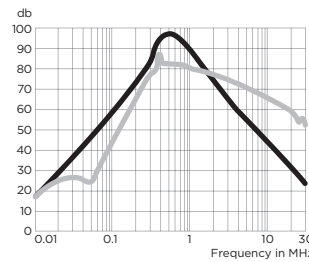
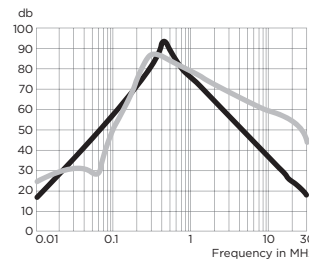
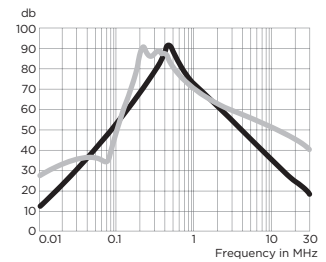
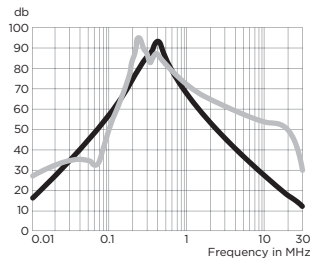
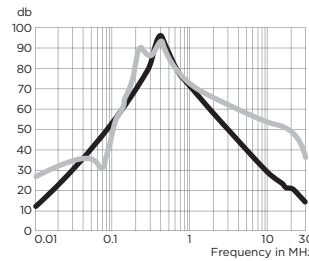
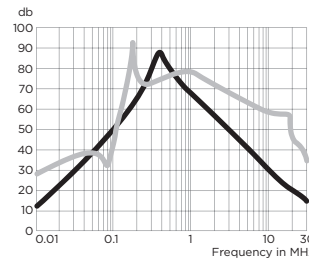
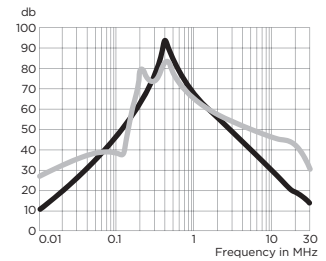
Compact 3-phase Delta Filters for Universal Applications *(continued)*

BCF Series

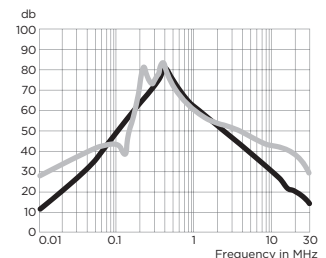
Performance Data

Typical Insertion Loss

Measured in closed 50 Ohm system

7BCF10

16BCF10

30BCF10

42BCF10

55BCF10

75BCF10

100BCF10

130BCF10


— Common Mode / Asymmetrical (L-G)
— Differential Mode / Symmetrical (L-L)

180BCF10


Minimum Insertion Loss

Measured in closed 50 Ohm system

Common Mode / Asymmetrical (Line to Ground)

Current Rating	Frequency –MHz											
	.01	.03	.05	.1	.15	.3	.5	1	3	5	10	30
7A	18	39	48	62	68	89	96	83	62	53	41	20
16A	17	37	45	58	65	85	96	88	65	56	43	23
30A	16	36	44	58	64	82	90	74	56	48	36	18
42A	12	30	40	52	61	79	90	72	54	47	35	18
55A	16	35	44	58	66	87	87	67	47	38	26	12
75A	12	30	40	53	60	84	90	70	50	42	30	15
100A	12	29	38	50	59	79	80	67	49	40	29	15
130A	11	26	35	48	55	78	83	67	49	40	29	15
180A	11	27	36	49	57	72	77	61	47	40	29	15

Differential Mode / Symmetrical (Line to Line)

Current Rating	Frequency –MHz											
	.01	.03	.05	.1	.15	.3	.5	1	3	5	10	30
7A	16	23	28	54	67	89	85	76	67	62	57	46
16A	18	26	24	48	58	78	82	80	74	71	65	51
30A	23	31	29	49	62	87	84	78	68	64	59	46
42A	13	35	36	50	67	88	82	69	59	55	50	40
55A	27	35	35	51	68	87	83	71	61	58	54	31
75A	27	35	35	50	66	87	86	72	62	58	53	35
100A	28	37	38	47	70	73	76	78	68	64	58	34
130A	27	37	40	38	53	75	80	64	54	50	47	30
180A	27	37	40	42	50	73	73	60	50	47	42	30

3-phase Delta Power Line Filter for High Voltage Applications

CFN Series



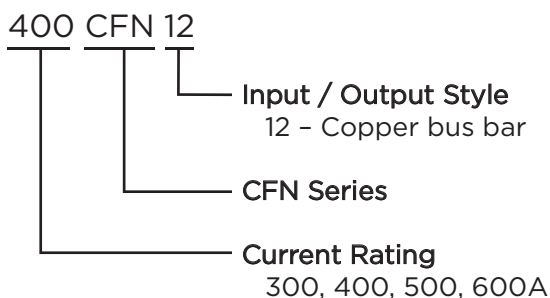
UL Recognized*



CFN Series

- Universal high current filter
- Suitable for industrial applications including; motor drives, inverters, converters, uninterruptible power supplies and mining equipment

Ordering Information



Available Part Numbers

300CFN12	400CFN12
500CFN12	600CFN12

*400CFN12 only

Specifications

Maximum leakage current at 10% unsymmetrical mains
Line to Ground (3 Phase WYE Center tapped)*:

@ 120 VAC 60 Hz:	5.0 mA
@ 277 VAC 50 Hz:	9.6 mA

**If 2 phases are interrupted, this leakage current may rise to a significantly higher level*

Hipot rating (one minute):

Line to Ground:	2210 VDC
Line to Line:	2158 VDC

Rated Voltage (max):

Phase to Phase:	480 VAC
Phase to Ground:	277 VAC

Operating Frequency:

50/60 Hz

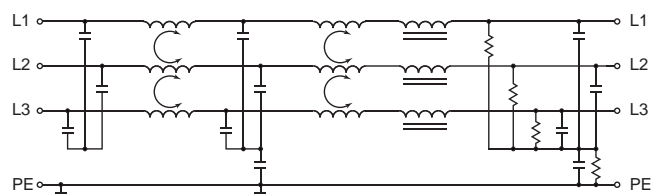
Rated Current:

300 to 600A

Operating Ambient Temperature Range

(at rated current I_r): -10°C to +40°C
In an ambient temperature (T_a) higher than +40°C the maximum operating current (I_O) is calculated as follows: $I_O = I_r \sqrt{(85 - T_a)/45}$

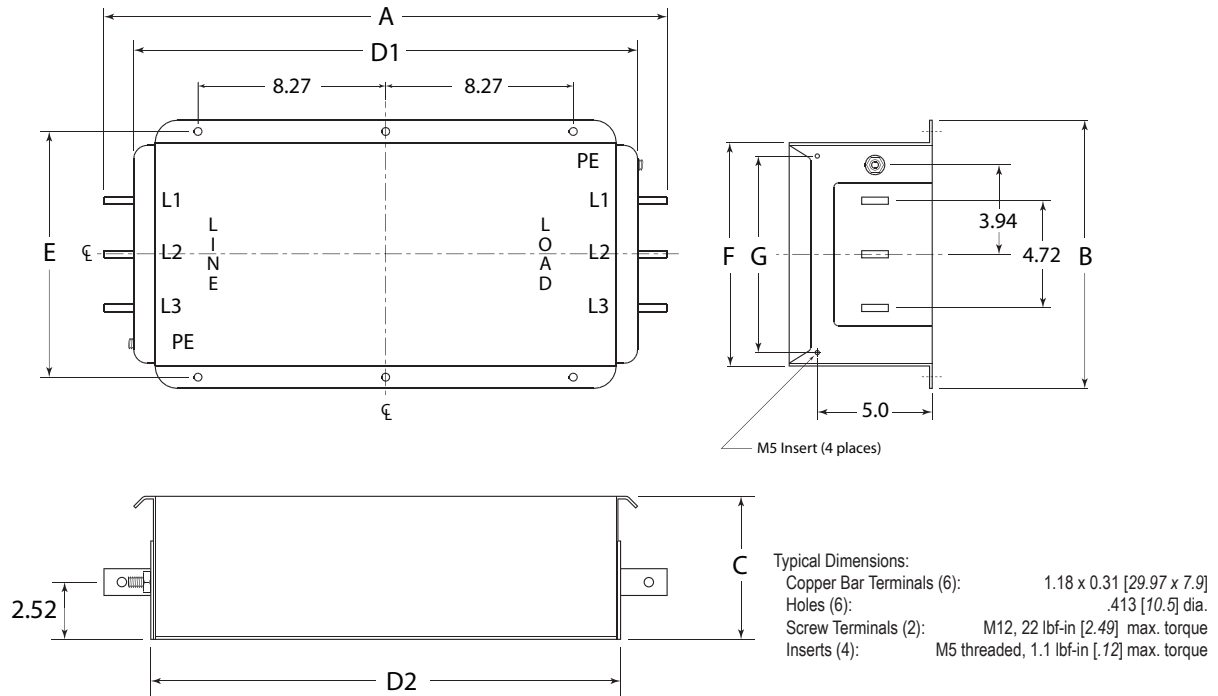
Electrical Schematic



3-phase Delta Power Filter for High Voltage Applications *(continued)*

CFN Series

Case Style



Case Dimensions

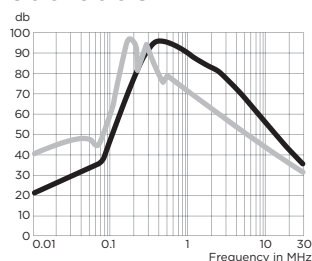
Part No.	A (max.)	B (max.)	C (max.)	D1 (ref.)	D2 (max.)	E $\pm .02$ $\pm .50$	F (max)	G $\pm .02$ $\pm .50$	H (max.)
300-600CFN12	24.8 630.0	11.81 300.0	6.30 160.0	22.20 564.0	20.31 516.0	10.83 275.0	9.84 250.0	8.66 220.0	5.0 127.0

Performance Data

Typical Insertion Loss

Measured in closed 50 Ohm system

300-600CFN12



— Common Mode / Asymmetrical (L-G)
— Differential Mode / Symmetrical (L-L)

Minimum Insertion Loss

Measured in closed 50 Ohm system

Common Mode / Asymmetrical (Line to Ground)

Current Rating	Frequency –MHz								
	.01	.03	.07	.1	.15	.5	1	5	10 30
300-600A	10	19	26	40	55	82	76	51	37 20

Differential Mode / Symmetrical (Line to Line)

Current Rating	Frequency –MHz								
	.01	.03	.07	.1	.15	.5	1	5	10 30
300-600A	32	40	27	55	70	66	57	40	34 20

3-phase Delta External Power Line Filter for Frequency Converters

FCD Series



UL Recognized

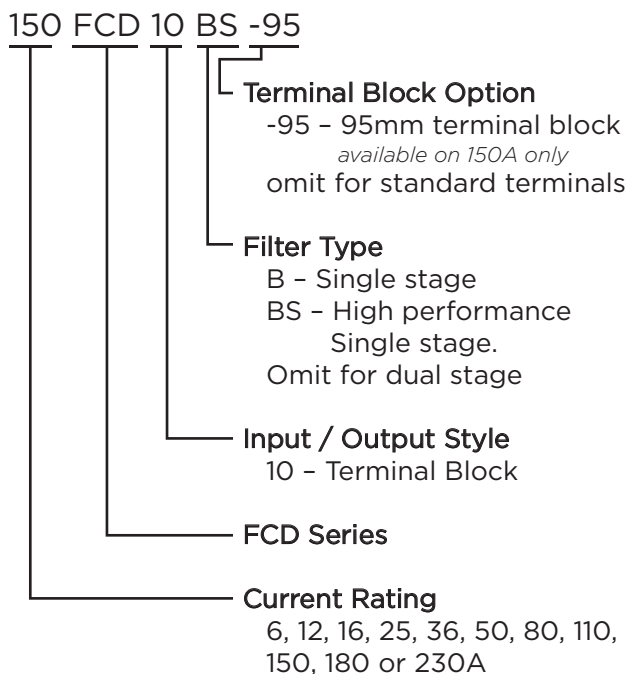


6FCD10

FCD Series

- Suitable to meet the latest EMC standards
- Insulated safety terminals
- Suitable for EMC troubleshooting in the field
- Very high attenuation
- High insertion loss
- BS models optimized for very high insertion loss
- BS models suitable for infeed/regenerative (ER) applications
- Touch safe terminals provide easy connections and prevent inadvertent contact for safety in the most demanding applications

Ordering Information



Specifications

**Maximum leakage current
voltage drop to virtual N to PE/V:**

6FCD10:	.26 mA/V
12 & 16FCD10:	.45 mA/V
25, 36 & 50FCD10:	.52 mA/V
12 & 16FCD10B:	.46 mA/V
25 & 36FCD10B:	.52 mA/V
50FCD10B:	.57 mA/V
80 & 110FCD10B:	.62 mA/V
150FCD10B:	.63 mA/V
180 & 230FCD10B:	.92 mA/V
FCD10BS:	3.25 mA/V

Hipot rating (one minute):

Line to Ground:	2250 VDC
Line to Line:	1450 VDC

Rated Voltage (max):

Phase to Phase:	480 VAC
Phase to Neutral / Ground:	277 VAC

Operating Frequency:

50/60 Hz

Rated Current:

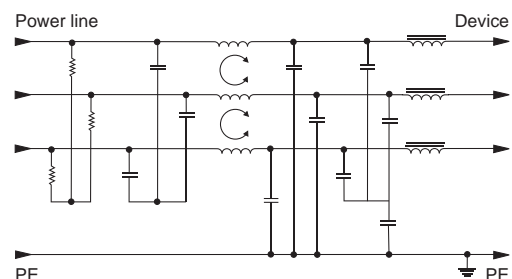
6 to 230A

Operating Ambient Temperature Range

(at rated current I_r): -10°C to +40°C
In an ambient temperature (T_a) higher than +40°C
the maximum operating current (I_o) is calculated as
follows: $I_o = I_r \sqrt{(85 - T_a)/45}$

Electrical Schematics

6FCD10

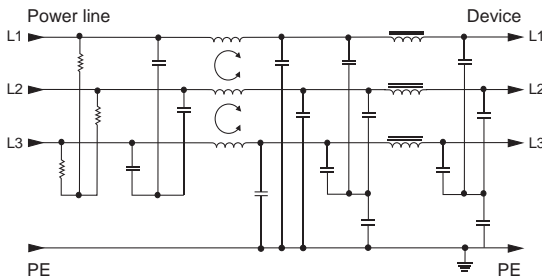


3-phase Delta External Filter for Frequency Converters *(continued)*

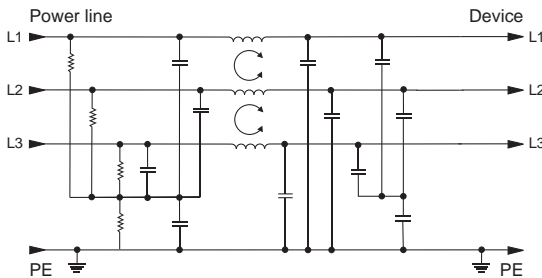
FCD Series

Electrical Schematics *(continued)*

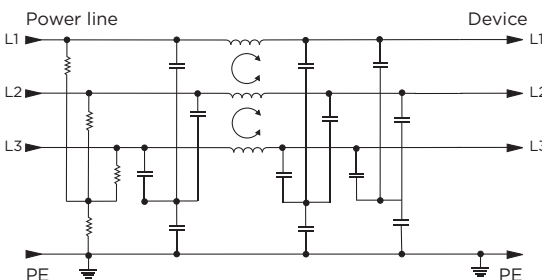
12 to 50A FCD10



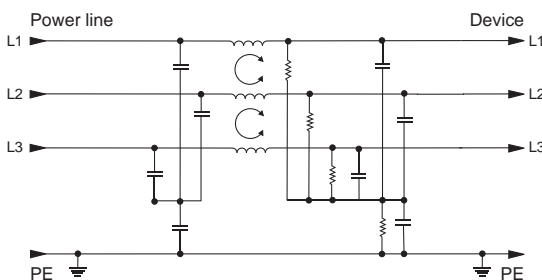
12 to 50A FCD10B



80 to 230A FCD10B



FCD10BS

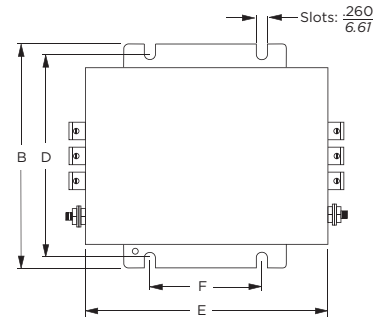


Available Part Numbers

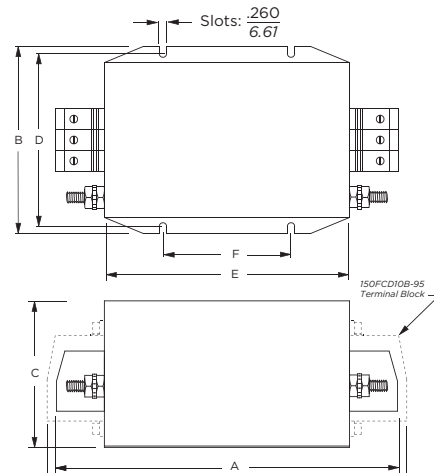
6FCD10	12FCD10B	50FCD10BS
12FCD10	16FCD10B	80FCD10BS
16FCD10	25FCD10B	110FCD10BS
25FCD10	36FCD10B	150FCD10BS
36FCD10	50FCD10B	150FCD10BS-95
50FCD10	80FCD10B	180FCD10BS
	110FCD10B	230FCD10BS
	150FCD10B	
	150FCD10B-95	
	180FCD10B	
	230FCD10B	

Case Styles

6 to 50A FCD10 & FCD10B



80 to 150A FCD10B 50 to 150A FCD10BS



2

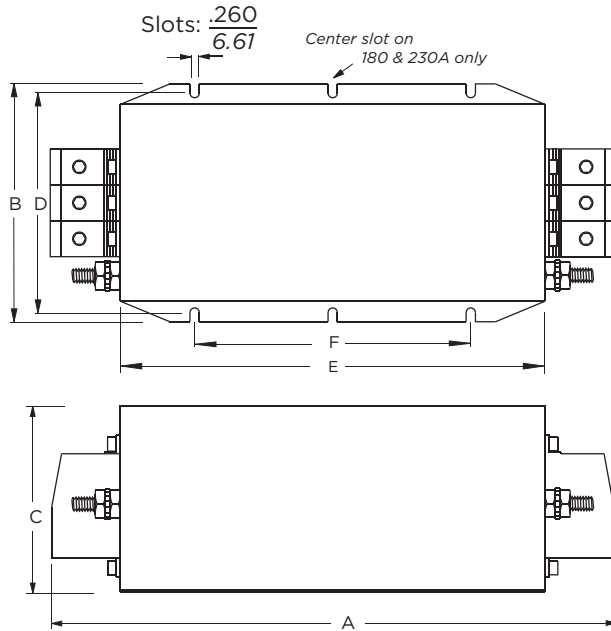
Three Phase Filters

3-phase Delta External Filter for Frequency Converters *(continued)*

FCD Series

Case Styles *(continued)*

180 to 230FCD10B\BS



Terminals

Part No.	Terminal	Size	Torque max. lbf-in [N-m]
6FCD10	Ground	8-32	20.7 [2.34]
	Line/Load	4mm ² terminal block	7.08 [0.8]
12FCD10/10B 16FCD10/10B	Ground	M5	26.58 [3.0]
	Line/Load	4mm ² terminal block	7.08 [0.8]
25FCD10/10B 36FCD10/10B	Ground	M5	26.58 [3.0]
	Line/Load	6mm ² terminal block	15.93 [1.8]
50FCD10/10B	Ground	M5	26.58 [3.0]
	Line/Load	10mm ² terminal block	15.93 [1.8]
50FCD10BS	Ground	M10	88.5 [10.0]
	Line/Load	16mm ² terminal block	20.36 [2.3]
80 to 150FCD10B 80 to 150FCD10BS	Ground	M10	88.5 [10.0]
	Line/Load	50mm ² terminal block	70.80 [8.0]
150FCD10B/BS-95 180FCD10B/BS 230FCD10B/BS	Ground	M10	88.5 [10.0]
	Line/Load	95mm ² terminal block	177.0 [20.0]

Case Dimensions

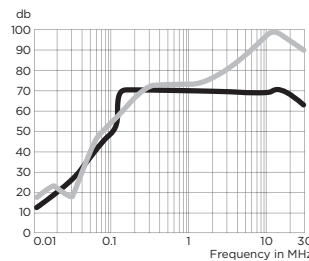
Part No.	A (max.)	B (max.)	C (max.)	D $\pm .02$ $\pm .5$	E (max.)	F $\pm .02$ $\pm .5$
6FCD10	6.18	4.33	2.32	3.74	5.16	2.76
	157.0	110.0	59.0	95.0	131.0	70.0
12FCD10/10B 16FCD10/10B	6.97	5.51	2.56	4.92	5.94	2.76
	177.0	140.0	65.0	125.0	151.0	70.0
25FCD10/10B 36FCD10/10B 50FCD10/10B	9.69	6.26	2.52	5.71	8.43	4.53
	246.0	159.0	64.0	145.0	214.0	115.0
50FCD10BS	11.41	6.61	3.54	6.10	8.70	4.53
	290.0	168.0	90.0	155.0	221.0	115.0
80FCD10B/BS 110FCD10B/BS 150FCD10B/BS	12.09	6.61	5.55	6.10	8.70	4.53
	307.0	168.0	141.0	155.0	221.0	115.0
150FCD10B-95 150FCD10BS-95	12.6	6.61	5.55	6.10	8.70	4.53
	320.0	168.0	141.0	155.0	221.0	115.0
180FCD10B/BS 230FCD10B/BS	15.71	6.61	5.55	6.10	11.81	6.50
	399.0	168.0	141.0	155.0	300.0	165.0

Performance Data

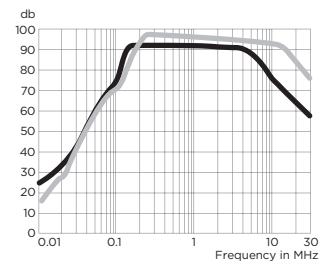
Typical Insertion Loss

Measured in closed 50 Ohm system

6FCD10



12FCD10



— Common Mode / Asymmetrical (L-G)
 — Differential Mode / Symmetrical (L-L)

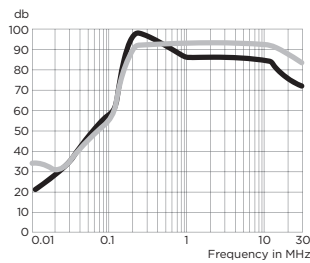
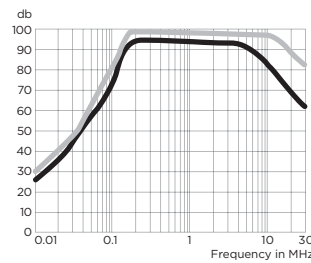
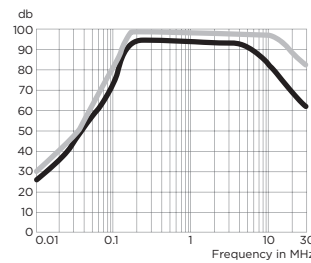
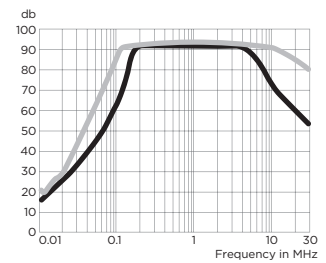
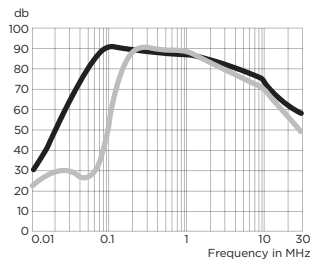
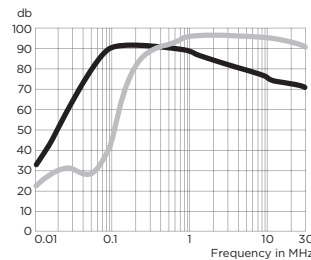
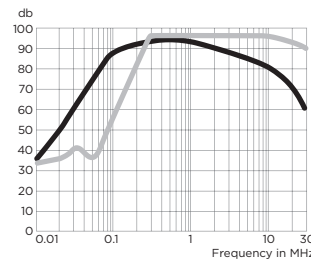
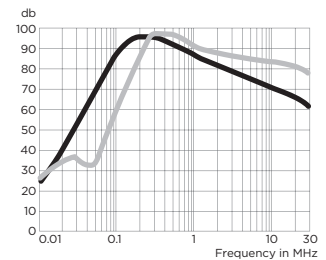
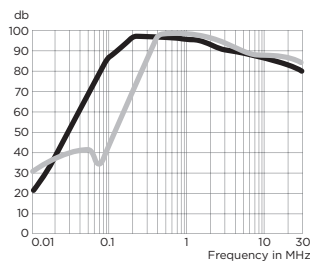
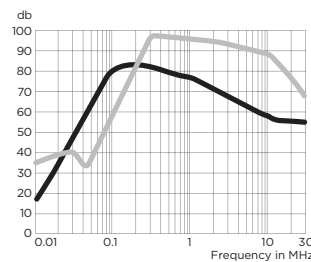
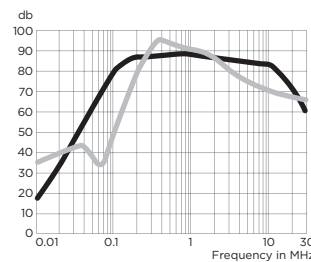
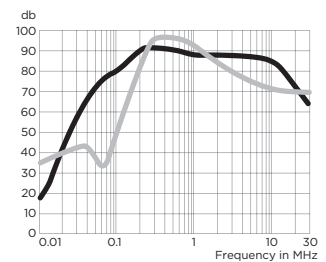
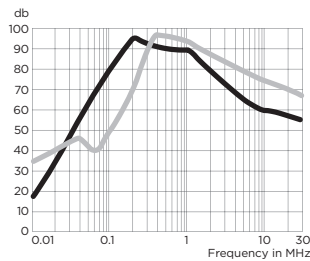
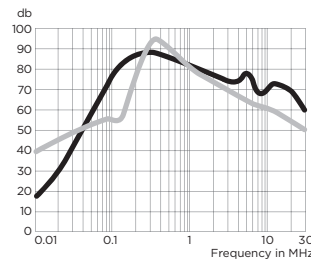
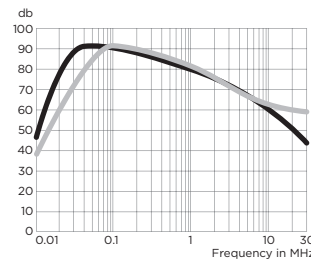
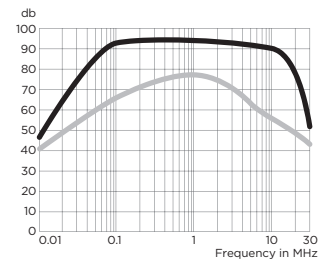
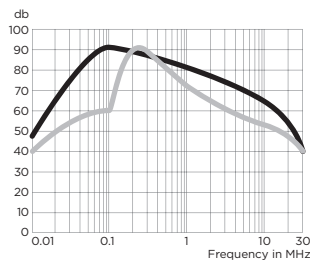
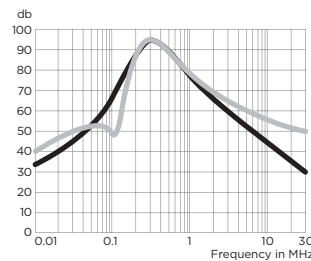
3-phase Delta External Filter for Frequency Converters *(continued)*

FCD Series

Performance Data *(continued)*

Typical Insertion Loss *(continued)*

Measured in closed 50 Ohm system

16FCD10

25FCD10

36FCD10

50FCD10

12FCD10B

16FCD10B

25FCD10B

36FCD10B

50FCD10B

80FCD10B

110FCD10B

150FCD10B

180FCD10B

230FCD10B

50/80/110FCD10BS

150FCD10BS

180FCD10BS

230FCD10BS


— Common Mode / Asymmetrical (L-G)
— Differential Mode / Symmetrical (L-L)

3-phase Delta External Filter for Frequency Converters *(continued)*

FCD Series

Performance Data *(continued)*

Minimum Insertion Loss

Measured in closed 50 Ohm system

Common Mode / Asymmetrical (Line to Ground)

Part No.	Frequency –MHz								
	.01	.03	.05	.1	.5	1	5	10	30
6FCD10	2	14	23	39	56	52	48	45	33
12 & 16FCD10	13	30	36	45	75	75	52	45	35
25FCD10	13	30	36	45	75	75	52	45	35
36FCD10	9	26	32	40	75	75	52	45	35
50FCD10	9	26	32	40	75	75	52	45	35
12FCD10B	18	45	59	75	73	65	49	47	26
16FCD10B	18	45	59	75	73	65	49	47	26
25FCD10B	18	45	60	49	83	75	58	56	28
36FCD10B	8	38	52	70	77	70	54	50	47
50FCD10B	3	34	49	67	76	70	59	58	37
80FCD10B	2	35	49	67	74	67	59	58	27
110FCD10B	2	35	49	66	72	65	59	58	18
150FCD10B	1	36	50	66	69	63	59	58	9
180FCD10B	-	36	50	66	67	60	59	58	-
230FCD10B	-	25	40	58	73	66	58	52	21
50FCD10BS	40	66	70	69	65	60	53	51	24
80FCD10BS	35	63	67	66	63	58	52	49	23
110FCD10BS	30	61	69	69	66	60	53	53	25
150FCD10BS	32	61	67	67	62	56	48	46	16
180FCD10BS	30	60	65	65	61	55	47	46	16
230FCD10BS	27	58	62	63	59	54	46	45	15

Differential Mode / Symmetrical (Line to Line)

Part No.	Frequency –MHz								
	.01	.03	.05	.1	.5	1	5	10	30
6FCD10	9	8	24	40	62	57	50	48	38
12 & 16FCD10	9	13	24	55	75	75	75	65	60
25FCD10	9	13	26	55	75	75	75	65	60
36FCD10	9	13	26	46	75	75	75	65	60
50FCD10	9	13	26	46	75	75	75	65	60
12FCD10B	6	13	9	37	90	86	74	78	34
16FCD10B	6	13	9	37	60	86	74	78	34
25FCD10B	10	16	12	41	89	87	69	86	43
36FCD10B	17	24	24	38	87	81	63	66	24
50FCD10B	15	24	27	21	88	74	51	69	52
80FCD10B	17	25	28	23	87	71	50	62	45
110FCD10B	18	27	30	25	86	69	49	56	39
150FCD10B	19	28	31	28	85	66	49	49	32
180FCD10B	21	29	33	30	84	63	48	43	26
230FCD10B	22	31	35	36	78	60	46	41	26
50FCD10BS	25	31	26	59	73	64	50	45	19
80FCD10BS	25	31	26	59	73	64	50	45	19
110FCD10BS	24	31	24	55	72	65	51	46	26
150FCD10BS	25	33	32	51	71	61	47	42	22
180FCD10BS	25	33	32	51	71	61	47	42	22
230FCD10BS	25	33	32	51	71	61	47	42	22