

### MCR Hardwired Series – Power Line Conditioning with Voltage Regulation

The MCR Hardwired Series provides excellent noise filtering and surge protection to safeguard connected equipment from damage, degradation or misoperation. Combined with the excellent voltage regulation inherent to SolaHD's ferroresonant design, the MCR can increase the actual Mean Time Between Failure (MTBF) of protected equipment. The MCR is a perfect choice where dirty power, caused by impulses, swell, sags, brownouts and waveform distortion can lead to costly downtime because of damaged equipment.



#### Applications

- Industrial automation and control equipment PLCs
- Machine tools
- Computer loads and electronic equipment
- Robotics
- Semiconductor fabrication equipment

#### Features

- $\pm 3\%$  output voltage regulation
- Noise attenuation
  - 120 dB common mode
  - 60 dB transverse mode
- Surge protection tested to ANSI/IEEE C62.41 Class A & B Waveform:
  - <10 V let through typical
- Acts as a step-up or step-down transformer
- Harmonic filtering
- Hardwired
- Galvanic isolation provides exceptional circuit protection
- 25 year typical MTBF
- No maintenance required

#### Selection Tables: Single Phase

##### Group 2 – MCR Series, 60 Hz Only

VA	Catalog Number	Voltage Input	Voltage Output	Height in (mm)	Width in (mm)	Depth in (mm)	Ship Weight lbs (kg)	Design Style	Elec Conn
120	63-23-112-4	120, 208, 240, 480	120	9 (229)	4 (102)	5 (127)	15 (7)	1	D
250	63-23-125-4	120, 208, 240, 480	120	10 (254)	6 (152)	8 (203)	27 (12)	1	D
500	63-23-150-8	120, 208, 240, 480	120, 208, 240	13 (330)	9 (229)	7 (178)	37 (17)	1	E
750	63-23-175-8	120, 208, 240, 480	120, 208, 240	14 (356)	9 (229)	7 (178)	52 (24)	1	E
1000 *	63-23-210-8	120, 208, 240, 480	120, 208, 240	17 (432)	9 (229)	7 (178)	62 (28)	1	E
1500 *	63-23-215-8	120, 208, 240, 480	120, 208, 240	17 (432)	13 (330)	9 (229)	95 (43)	1	E
2000 *	63-23-220-8	120, 208, 240, 480	120, 208, 240	18 (457)	13 (330)	9 (229)	109 (49)	1	E
3000 *	63-23-230-8	120, 208, 240, 480	120, 208, 240	19 (483)	13 (330)	9 (229)	142 (64)	1	E
5000 *	63-23-250-8	120, 208, 240, 480	120, 208, 240	28 (711)	13 (330)	9 (229)	222 (101)	1	E
7500	63-28-275-8	208, 240, 480	120, 208, 240	27 (686)	26 (660)	9 (229)	362 (164)	2	F
10000	63-28-310-8	208, 240, 480	120, 208, 240	28 (711)	26 (660)	9 (229)	446 (202)	2	F
15000	63-28-315-8	208, 240, 480	120, 208, 240	28 (711)	38 (965)	10 (254)	710 (322)	3	F

\* Canadian option: cULus units must be ordered by changing "-8" (UL only) to "-C8". Dimensions are approximate. See user manual for exact dimensions.

#### Certifications and Compliances

##### All Models

- RoHS Compliant

##### Selection Table: Group 2

- cULus Listed (120VA-750VA Units) (1-5kVa ("-C8") Units)
  - UL 1012, CSA C22.2 No. 107.1
- UL Listed (7.5kVA-15kVA Units) (1-5kVa ("-8") Units)
  - UL 1012

##### Selection Table: Group 3

- cULus Listed (500VA-3kVA Units)
  - UL 1012, CSA C22.2 No. 107.1
- SF Certified (5kVA-15kVA Units)
  - CSA C22.2 No. 66

##### Selection Table: Group 4

- cULus Listed
  - UL 1012, CSA C22.2 No. 107.1

#### Related Products

- On-line UPS (S4K Industrial)
- Surge Protection
- Three Phase Power Conditioners
- Active Tracking® Filters

## Selection Tables: Single Phase

## Group 3 – MCR Series, 60 Hz Only

VA	Catalog Number	Voltage Input	Voltage Output	Height in (mm)	Width in (mm)	Depth in (mm)	Ship Weight lbs (kg)	Design Style	Elec Conn
500	63-31-150-8	600	120, 208, 240	13 (330)	9 (229)	7 (178)	38 (17)	1	B
1000	63-32-210-8	600	120, 208, 240	17 (432)	9 (229)	7 (178)	62 (28)	1	B
2000	63-32-220-8	600	120, 208, 240	18 (457)	13 (330)	10 (254)	109 (49)	1	B
3000	63-32-230-8	600	120, 208, 240	19 (483)	13 (330)	10 (254)	142 (64)	1	B
5000	63-29-250-8	208, 240, 480, 600	120, 208, 240	28 (711)	13 (330)	10 (254)	221 (100)	1	A
7500	63-29-275-8	208, 240, 480, 600	120, 208, 240	27 (686)	25 (635)	10 (254)	360 (163)	2	A
10000	63-29-310-8	208, 240, 480, 600	120, 208, 240	28 (711)	25 (635)	10 (254)	441 (200)	2	A
15000	63-29-315-8	208, 240, 480, 600	120, 208, 240	28 (711)	38 (965)	10 (254)	706 (320)	3	A

Group 4 – MCR Series, 50 Hz Only ( $\pm 5\%$  output voltage regulation)

VA	Catalog Number	Voltage Input	Voltage Output	Height in (mm)	Width in (mm)	Depth in (mm)	Ship Weight lbs (kg)	Design Style	Elec Conn
120	63-23-612-8	110, 120, 220, 240, 380, 415	110, 120, 220, 240	9 (229)	6 (152)	8 (203)	24 (11)	1	C
250	63-23-625-8	110, 120, 220, 240, 380, 415	110, 120, 220, 240	11 (279)	6 (152)	8 (203)	27 (12)	1	C
500	63-23-650-8	110, 120, 220, 240, 380, 415	110, 120, 220, 240	13 (330)	9 (229)	7 (178)	40 (18)	1	C
1000	63-23-710-8	110, 120, 220, 240, 380, 415	110, 120, 220, 240	18 (457)	9 (229)	7 (178)	64 (29)	1	C
2000	63-23-720-8	110, 120, 220, 240, 380, 415	110, 120, 220, 240	18 (457)	13 (330)	10 (254)	113 (51)	1	C
3000	63-23-730-8	110, 120, 220, 240, 380, 415	110, 120, 220, 240	27 (686)	13 (330)	10 (254)	162 (73)	1	C
5000	63-23-750-8	110, 120, 220, 240, 380, 415	110, 120, 220, 240	30 (762)	13 (330)	10 (254)	266 (121)	1	C
7500	63-28-775-8	220, 240, 380, 415	110, 120, 220, 240	28 (711)	26 (660)	10 (254)	393 (178)	2	C1
10000	63-28-810-8	220, 240, 380, 415	110, 120, 220, 240	30 (762)	26 (660)	10 (254)	490 (222)	2	C2
15000	63-28-815-8	220, 240, 380, 415	110, 120, 220, 240	30 (762)	38 (965)	10 (254)	776 (352)	3	C2

## Specifications

Parameter	Condition	Value
<b>Input</b>		
<b>Voltage</b>	Continuous at full load (lower input voltage possible at lighter load)	+10% to -20% of nominal
	For temporary surge or sags	+20% to -35% of nominal
<b>Current</b> <sup>1</sup>	at Full Load & 80% of nominal input voltage	$I_n \cong (VA/.89)/(V_n \times 80\%)$
<b>Frequency</b>	See Operating Characteristics section for details.	50 Hz or 60 Hz depending on model
<b>Output</b> <sup>2</sup>		
<b>Line Regulation</b>	$V_n > 80\%$ and $< 110\%$ of nominal	$\pm 5\%$ for 50 Hz units, $\pm 3\%$ for 60 Hz units
<b>Overload Protection</b>	At Nominal Input Voltage	Current limited at 1.65 times rated current
<b>Output Harmonic Distortion</b>	At full load within input range	3% total RMS content
<b>Noise Attenuation</b>	Common Mode	120 dB
	Transverse Mode	60 dB
<b>General</b>		
<b>Efficiency</b>	At Full Load	Up to 92%
<b>Storage Temperature</b>	Humidity $< 95\%$ non-condensing	$-20^\circ$ to $+85^\circ\text{C}$
<b>Operating Temperature</b>	Humidity $< 95\%$ non-condensing	$-20^\circ$ to $50^\circ\text{C}$
<b>Audible Noise</b>	Full Resistive Noise	35 dBA to 65 dBA
<b>Warranty</b>	10 + 2 year limited warranty	

Notes: 1 - Consult user manual for fuse sizing.

2 - It is recommended that the unit run at a minimum of 40-50% load.

Dimensions are approximate. See user manual for exact dimensions.

Electrical Connections

Primary Voltage	Interconnect	Connect Lines To
208	H1 to H4 H2 to H5	H1 & H5
240	H1 to H4 H3 to H6	H1 & H6
480	H3 to H4	H1 & H6
600	H3 to H4	H1 & H7
Secondary Voltage	Interconnect	Connect Lines To
120		X1 & X2 or X3 & X2
208		X4 & X5
240		X1 & X3

MCR 60 Hz 5000-15000 VA

Primary Voltage	Interconnect	Connect Lines To
600		H1 & H2
Secondary Voltage	Interconnect	Connect Lines To
120		X1 & X2 or X3 & X2
208		X4 & X5
240		X1 & X3

MCR 60 Hz 500-3000 VA

Primary Voltage	Interconnect	Connect Lines To
110-120	H1 to H3 H2 to H4	H1 & H4
220-240	H2 to H3	H1 & H4
380-415	H2 to H3	H1 & H5
Secondary Voltage	Interconnect	Connect Lines To
110		X1 & X2 or X3 & X2
120		X4 & X2 or X5 & X2
220		X1 & X3
240		X4 & X5

MCR 50 Hz 120-5000 VA

Primary Voltage	Interconnect	Connect Lines To
220-240	H1 to H3 H2 to H5	H1 & H5
380-415	H2 to H3	H1 & H4
Secondary Voltage	Interconnect	Connect Lines To
110		X1 & X2 or X2 & X3
120		X4 & X2 or X5 & X2
220		X1 & X3
240		X4 & X5

MCR 50 Hz 7500 VA

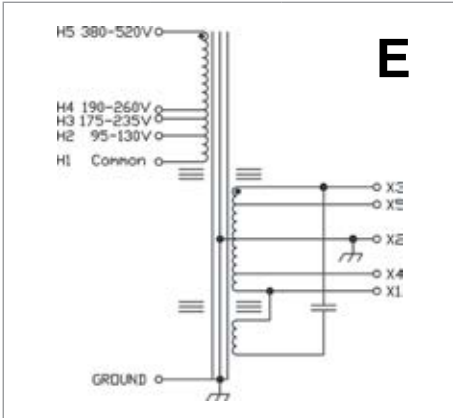
Primary Voltage	Interconnect	Connect Lines To
220-240	H2 to H3	H1 & H4
380-415	H2 to H3	H1 & H5
Secondary Voltage	Interconnect	Connect Lines To
110		X1 & X2 or X3 & X2
120		X4 & X2 or X5 & X2
220		X1 & X3
240		X4 & X5

MCR 50 Hz 10000-15000 VA

Primary Voltage	Interconnect	Connect Lines To
120		H1 & H2
208		H1 & H3
240		H1 & H4
480		H1 & H5
Secondary Voltage	Interconnect	Connect Lines To
120		X1 & X2

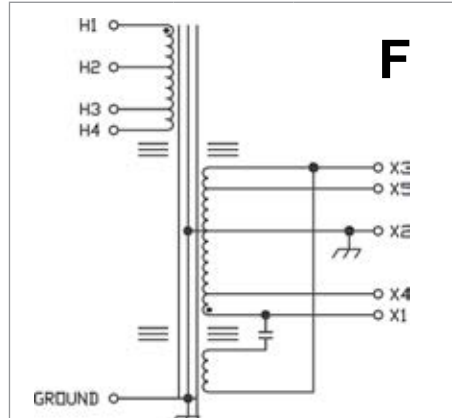
MCR 60 Hz 120-250 VA

### Electrical Connections



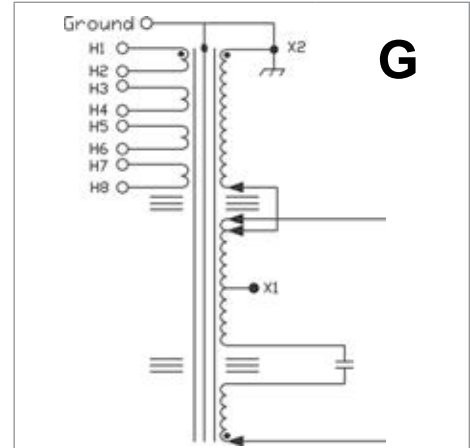
Primary Voltage	Interconnect	Connect Lines To
120		H1 & H2
208		H1 & H3
240		H1 & H4
480		H1 & H5
Secondary Voltage	Interconnect	Connect Lines To
120		X1 & X2 or X3 & X2
208		X4 & X5
240		X1 & X3

MCR 60 Hz 500-5000 VA



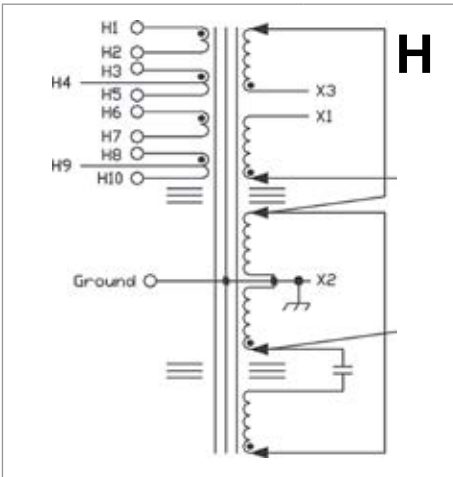
Primary Voltage	Interconnect	Connect Lines To
208		H2 & H3
240		H2 & H4
480		H1 & H4
Secondary Voltage	Interconnect	Connect Lines To
120		X1 & X2 or X3 & X2
208		X4 & X5
240		X1 & X3

MCR 60 Hz 7500, 10000 and 15000 VA



Primary Voltage	Interconnect	Connect Lines To
120	H1 to H3 to H5 to H7 H2 to H4 to H6 to H8	H1 & H2
240	H2 to H3 H6 to H7 H1 to H5 H4 to H8	H1 & H4
480	H2 to H3 H4 to H5 H6 to H7	H1 & H8
Secondary Voltage	Interconnect	Connect Lines To
120		X1 & X2

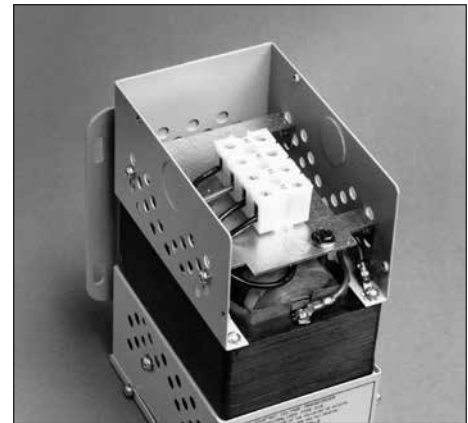
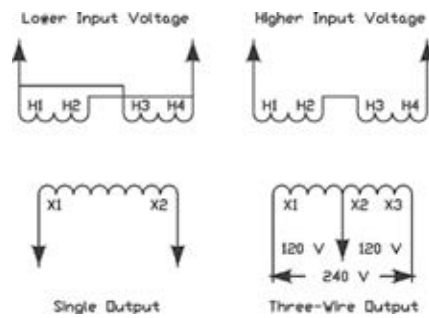
CVS 60 Hz 250 VA only



Primary Voltage	Interconnect	Connect Lines To
120	H1 to H3 to H6 to H8 H2 to H5 to H7 to H10	H1 & H2
208	H2 to H3 H7 to H8 H1 to H6 H4 to H9	H1 & H4
240	H2 to H3 H7 to H8 H1 to H6 H5 to H10	H1 & H5
480	H2 to H3 H5 to H6 H7 to H8	H1 & H10
Secondary Voltage	Interconnect	Connect Lines To
120		X1 & X2 or X3 & X2
240		X1 & X3

CVS 60 Hz 500-5000 VA

### Series-Multiple Primary with Tap for two input voltages J



Open MCR/CVS terminal

30 & 60 VA Primary Voltage	120 VA Primary Voltage	7500 VA Primary Voltage	Interconnect	Connect Lines To
120	N/A	N/A	Note: H3 & H4 are not used	H1 & H2
N/A	120	240	H1 to H3 H2 to H4	H1 & H4
N/A	240	480	H2 to H3	H1 & H4
30 & 60 VA Secondary Voltage	120 VA Secondary Voltage	7500 VA Secondary Voltage	Interconnect	Connect Lines To
120	120	N/A		X1 & X2
N/A	N/A	120		X1 & X2 or X3 & X2
N/A	N/A	240		X1 & X3

Note: Secondaries are not grounded. Ground X<sub>2</sub> per Code.

CVS 60 Hz 30-120 VA & 7500 VA