



Taking the HARM out of HARMONICS!

Harmonic Mitigating Power Center (HMPC)

The Data Center environment is packed with harmonic generating power electronic equipment. To ensure electromagnetic compatibility with these non-linear loads, the power distribution system must be equipped with transformers that treat harmonics, rather than just tolerate them.

At the heart of the ONICS™ HMPC is MIRUS' proven high efficiency and harmonic mitigating transformer (HMT) technology. The unique secondary winding configuration of the Harmony-2E™ minimizes output voltage distortion and flat-topping by cancelling 3rd, 5th, 7th and 9th harmonic fluxes, preventing these harmonic currents from appearing in the primary winding. Consequently, voltage distortion will be within IEEE Std 519 limits despite the application of substantial harmonic loads.

The new ULLTRA™ ultra high efficiency transformer option meets NEMA Premium (CSL-3) efficiency levels not only at light loads, but over a much wider load range, ensuring energy savings in your 'Green' Data Center regardless of loading. Another trend in 'Green' Data Center design is to use 415/240V distribution. MIRUS offers a unique and patent pending autotransformer configuration for voltage transformation from 480 - 415/240V. This allows for standard 480V distribution to the HMPC. The Harmonic Filter and autotransformer are combined into one magnetic package to save space and significantly reduce losses.

The HMPC integrates harmonic mitigation with noise suppression, electronic grade grounding, non-linear load distribution panels, TVSS, monitoring and alarms for a complete power quality package.

Harmonic Mitigating Remote Panelboards (HMRP)

The ONICS™ Harmonic Mitigating Remote Panelboard (HMRP) integrates MIRUS' patented and proven harmonic mitigating technology with two 42-circuit or 30-circuit distribution panelboards, optional monitoring and TVSS in an attractive, easy to install package. ONICS™ treats all four of the major current harmonics created by single-phase, switch-mode power supplies (SMPS) by diverting the triplen (3rd and 9th) harmonics from the neutral and by canceling the 5th and 7th harmonics through phase-shifting. Overheating of distribution transformers and their neutral conductors is no longer a problem. Voltage distortion is kept well within IEEE Std 519 limits thereby increasing the reliability of the connected equipment. Operating costs are reduced because harmonic induced losses in the power distribution system are lowered by the ONICS™ HMRP.

HMPC Key Features

Isolation Transformer Option:

- Proven Harmony™ or Ulltra™ High Efficiency Transformer reliability
- High transformer efficiencies maintained over a wide load range, not just at light load levels
- Harmonic Mitigating Transformer (HMT) options include patented Harmony-2E which treats all four major current harmonics (3rd, 5th, 7th & 9th) by flux cancellation within secondary windings
- All HMT transformers prevent triplens from circulating in the primary windings
- Dual electrostatic shield for noise suppression
- Harmonic losses lowered both within transformer and in upstream distribution

Autotransformer Option:

- Unique and patent pending autotransformer configuration provides significant energy savings in 415V Data Center applications. Allows for the use of standard 480V UPS systems
- Only autotransformer suitable for 3-wire In / 4-wire Out but requires local electrical authority approval. No special approval required for 4-wire In / 4-wire Out applications.
- Built-in harmonic mitigation treats all four major harmonics (3rd, 5th, 7th & 9th)
- Smaller footprint and significantly lower losses than isolation transformers

HMRP Key Features

- Built-in harmonic mitigation treats all four major harmonics (3rd, 5th, 7th & 9th)
- Eliminates need for double neutrals and reduces neutral-to-ground voltage
- Lowers operating costs by reducing losses and eliminating the need for K-rated transformers
- Diverts up to 90% of the neutral current leaving the panelboards
- Reduces harmonic induced ground currents

General Features

- Meets IEEE Standard 519 harmonic limits
- Genuine 100% non-linear load compatibility
- Improves power quality by minimizing voltage flat-topping
- Reduces input current distortion
- Improves connected equipment reliability by lowering internal I²R losses and restoring power interruption ride-through capability
- Frees up UPS or upstream distribution capacity by improving power factor and phase current balance
- Available comprehensive Monitoring and Alarms with Remote Communications
- Optional TVSS protects the loads against damage caused by transient voltages

ONICS Model Numbers

HMxx - ppp - vv - size - xfmr dd

Onics Series
 HMPC = Power Center
 HMRP = Remote Panelboard

Pole Positions
 000 = No Panelboards
 084 = 2 Panelboards, 84 poles^a
 126 = 3 Panelboards, 126 poles^b
 168 = 4 Panelboards, 168 poles
 252 = 6 Panelboards, 252 poles
a. Not available with Harmony-3 Transformer
 b. Not available with Harmony-2 Transformer

Input Voltage^c
 HMPC: A = 208, B = 480, C = 600
 HMRP: A = 120/208, B = 277/480

Output Voltage
 A = 120/208, I = 240/415, H = 230/400

Displacement Angle^c
 00, 15, 20, 30
c. Not applicable with HF3579 or HF00

Transformer
 H1E, H2E, H3E, ULL, ULLH1E Transformer
 HF3579 = 3rd, 5th, 7th, 9th Harmonic Filter
 HF39 = 3rd, 9th Harmonic Filter
 HF00 = No Filter

KVA (HMPC)
 050 = 50kVA 150 = 150kVA 400 = 400kVA
 075 = 75kVA 200 = 200kVA 500 = 500kVA
 100 = 100kVA 225 = 225kVA 625 = 625kVA
 125 = 125kVA 300 = 300kVA 750 = 750kVA

AMPS (HMRP)
 100, 200, 225, 400, 600

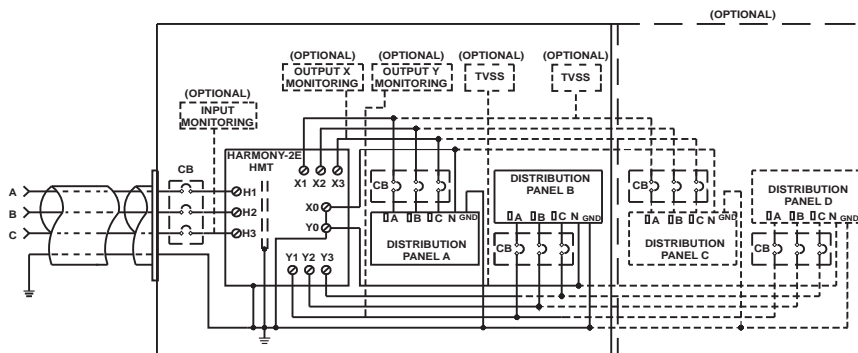


HMPC Rating Table

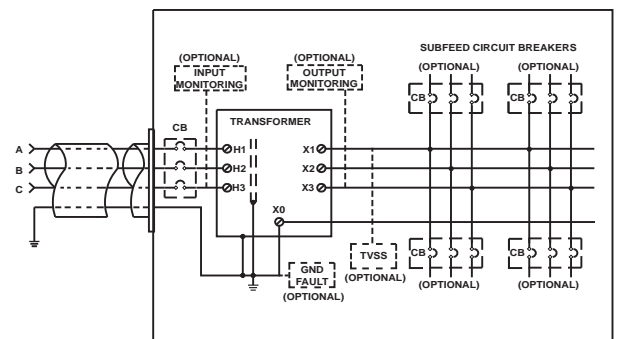
HMPC XFMR Size (kVA)	Input Voltage (V) ^[1]	Input Current (A)	Input CB Size		Heat Rejection (BTU/Hr) ^[2]	84 Pole or Subfeed CB's		126 Pole		168 Pole		252 Pole	
			Frame (A)	Trip (A)		Encl. Type w/xfmr	Weight ^[3] lbs kg	Encl. Type w/xfmr	Weight (lbs) [kg]	Encl. Type w/xfmr	Weight (lbs) [kg]	Encl. Type w/xfmr	Weight (lbs) [kg]
50	208	139	225	175	4400	A	A 1150 522						
	480	60	225	80	4400	A	A 1150 522						
	600	48	225	60	4400	A	A 1150 522						
75	208	208	400	250	6800	B	B 1320 599	B1	B1 1795 814	B1	B1 1820 825		
	480	90	225	125	6800	B	B 1320 599	B1	B1 1795 814	B1	B1 1820 825		
	600	72	225	100	6800	B	B 1320 599	B1	B1 1795 814	B1	B1 1820 825		
100	208	278	400	350	9100	B	B 1550 703	B1	B1 2025 918	B1	B1 2050 930		
	480	120	225	150	9100	B	B 1550 703	B1	B1 2025 918	B1	B1 2050 930		
	600	96	225	125	9100	B	B 1550 703	B1	B1 2025 918	B1	B1 2050 930		
125	208	347	600	450	10900	B	B 1600 726	B1	B1 2075 941	B1	B1 2100 952		
	480	150	225	200	10900	B	B 1600 726	B1	B1 2075 941	B1	B1 2100 952		
	600	120	225	150	10900	B	B 1600 726	B1	B1 2075 941	B1	B1 2100 952		
150	208	416	600	600	10900	B	B 1600 726	B1	B1 2075 941	B1	B1 2100 952		
	480	180	225	225	12800	B	B 1700 771	B1	B1 2175 986	B1	B1 2200 998		
	600	144	225	200	12800	B	B 1700 771	B1	B1 2175 986	B1	B1 2200 998		
200	480	241	400	300	17500	B	C 2100 952	B1	C1 2575 1168	B1	C1 2600 1179	B2	C2 3100 1406
	600	192	400	250	17500	B	C 2100 952	B1	C1 2575 1168	B1	C1 2600 1179	B2	C2 3100 1406
225	480	271	400	350	18400	B	C 2300 1043	B1	C1 2775 1259	B1	C1 2800 1270	B2	C2 3300 1497
	600	241	400	300	18400	B	C 2300 1043	B1	C1 2775 1259	B1	C1 2800 1270	B2	C2 3300 1497
300	480	361	450	450	19500	C	D 2700 1227	C1	C1 3195 1449	C1	C1 3220 1464	C2	C2 3740 1700
	600	289	400	400	19500	C	D 2700 1227	C1	C1 3195 1449	C1	C1 3220 1464	C2	C2 3740 1700
400	480	481	600	600	28600	D	D 3900 1769						
	600	385	600	500	28600	D	D 3900 1769						
500	480	602	800	800	35700	D	D 4600 2087						
	600	482	600	600	35700	D	D 4600 2087						
625	480	752	1200	1000	46300	D	D 5250 2381						
	600	601	800	800	46300	D	D 5250 2381						
750	480	902	1200	1200	55700	D	D 5600 2540						
	600	722	1200	1000	55700	D	D 5600 2540						

[1] Contact sales office for voltages & configurations not shown.
 [2] Heat based on 100% resistive load; actual will increase only slightly with non-linear loading.
 [3] Approximate values.
 [4] HMPC ratings in this table are based on Harmony-1E Transformers. For other transformers consult the factory.

HMPC Typical Schematics

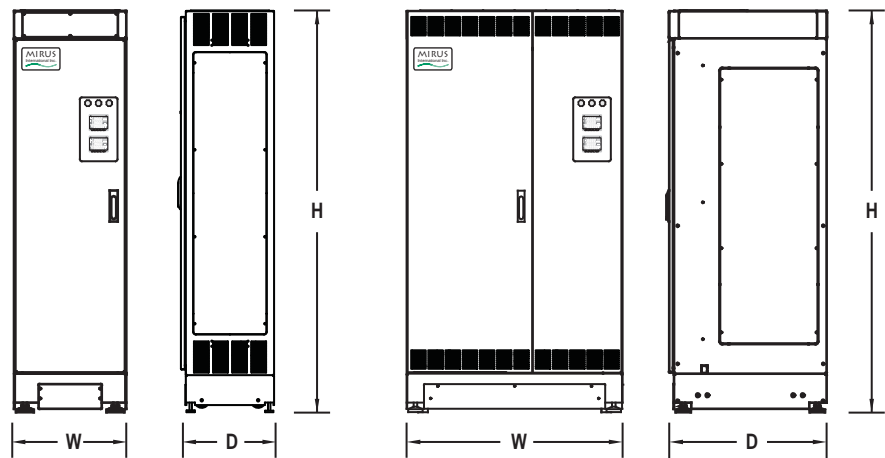


Notes:
 A. Standard 2 Panel or optional 4 Panel configuration shown.
 B. The Harmony-2E™ is an isolation transformer and is considered to be a separately derived source.



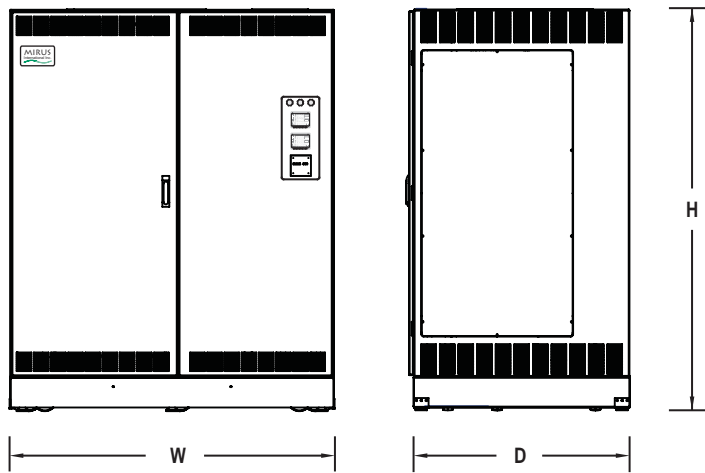
Notes:
 C. Standard Subfeed Breaker configuration shown.

HMPC Dimensions



Type 'A' Enclosure

Type 'B' & 'C' Enclosure



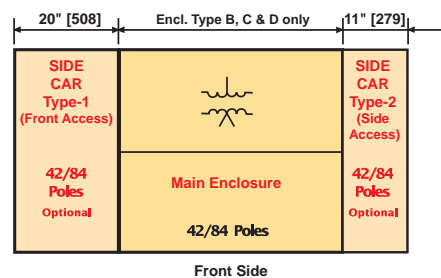
Type 'D' Enclosure

HMPC Enclosure Dimensions

TYPE	42/84 Poles (W x D)	TYPE	126/168 Poles (W x D)	TYPE	252 Poles (W x D)	Height (H)
A	24 [610] x 24 [610]					75 [1905]
B	36 [914] x 32 [813]	B1	56 [1422] x 32 [813]	B1-1	76 [1930] x 32 [813]	78 [1981]
C	41 [1041] x 36 [914]	C1	61 [1549] x 36 [914]	C1-1	81 [2057] x 36 [914]	78 [1981]
D	66 [1676] x 45 [1143]	D1	86 [2184] x 45 [1143]	D1-1	106 [2692] x 45 [1143]	82 [2083]

1. Enclosure Dimensions are in (inches [mm]).
2. Standard configuration uses Sidecar Type-1 with front access.

HMPC Enclosure Configurations



- Notes:
- Sidecar extension cabinet are optional and can be located on either side of main enclosure.
 - Type-1 Sidecar is front accessible with removable side panel.
 - Type-2 Sidecar requires side access.

HMPC Technical Specifications:

Input Rating

208, 480, 600VAC 60Hz
3-Phase, 3 wire + Ground
277/480VAC 60Hz
3-Phase, 4-wire + Ground

Output Rating

208/120VAC 60Hz
3-Phase, 4-wire + Ground
415/240VAC 60Hz
3-Phase, 4-wire + Ground

Efficiency

Nema TP1 Compliant and better

Input Connection

To Input Main CB terminals

Signal & Control Connections

To terminals, input conduit landing

Grounding

Single point computer ground connection for zero sequence reference

Ventilation

Convection cooled

Alarms and Controls

EPO and Overtemperature standard
(Other alarms available with opt. monitoring)
Manual Restart

Noise Isolation

Dual electrostatic shields

Harmonic Mitigating Transformer

Low zero sequence impedance with phase shifted outputs to treat 3rd, 5th, 7th & 9th harmonics simultaneously

Cable Access

Bottom for raised floor or top Access

Enclosure

Type: Nema-1, ventilated
Paint: Texture baked enamel Black
Casters, levelers, removable swing-out dead front

Options:

Sub Feed Breakers

Sub feed CB
Shunt Trip Relay

Monitoring

Power Monitor, Advanced Power Monitor with Comm.
Branch Circuit Monitoring
Ground Fault Monitoring

TVSS

40, 80, 120 kA / phase

Ground Fault

Ground Fault Relay

HMRP Technical Specifications:

Input Rating

208, 480, 600VAC 60Hz
3-Phase, 4 wire + Ground

Output Rating

208/120VAC 60Hz
415/240VAC 60Hz
3-Phase, 4-wire + Ground

Efficiency

Nema TP1 Compliant and better

Input Connection

To Input Main CB terminals

Signal & Control Connections

To terminals, input conduit landing

Grounding

Single point computer ground
connection for zero sequence reference

Cable Access

Bottom for raised floor or top Access

Harmonics Treated

3rd, 5th, 7th, 9th & others

Output Distribution Panelboards

Square-D NQ, NF

Ventilation

Convection air cooled

Enclosure

Type: Nema-1, ventilated
Paint: Texture baked enamel Black
Casters, levelers, removable
swing-out dead front

Options:

Sub Feed Breakers

Sub feed CB in place of panelboards

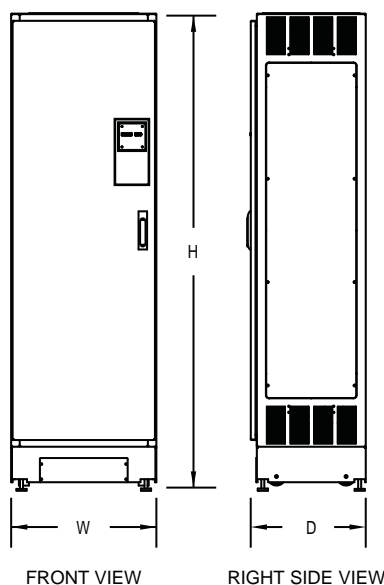
Monitoring

Power Monitor, Advanced Power Monitor
with Comm., Branch Circuit Monitoring

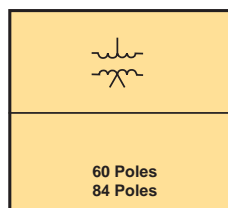
TVSS

40, 80, 120 kA / phase

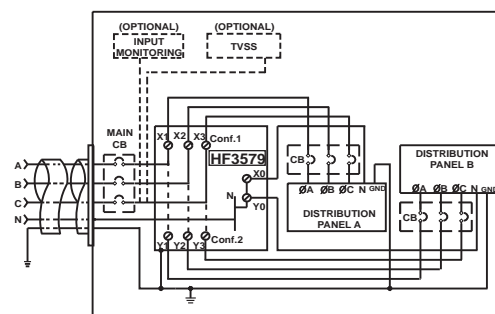
HMRP Dimensions



HMRP Configuration



HMRP Typical Schematic 120/208V



NOTE: 1. Typical schematic for 225A and 400A Model 120/208V.
2. DO NOT GROUND NEUTRAL.

HMRP Rating Table

HMRP SIZE (Model)	Voltage Input - Output (Volts)	Input Current (Amps)	Output Current (Amps)	Main Breaker (Amps)	Efficiency @50% Load (%)	Heat ^[1] Dissipation (BTU/Hr)	Enclosure Dimensions (H x W x D)		Weight (lbs) [kg]	Panelboards (Poles)
							(in)	[mm]		
100	277/480 - 240/415	100	116	125	> 99.2	< 4400	78 x 24 x 24	1981 x 610 x 610	600	272
200	277/480 - 240/415	200	231	250	> 99.2	< 8200	78 x 36 x 32	1981 x 915 x 813	1650	750
400	277/480 - 240/415	400	463	500	> 99.3	< 14300	78 x 36 x 32	1981 x 915 x 813	2500	1134
225	120/208	180	180	225	> 99.3	< 3800	78 x 24 x 19	1981 x 610 x 483	580	263
400	120/208	320	320	400	> 99.4	< 5100	78 x 24 x 24	1981 x 610 x 610	890	404
600	120/208	480	480	600	> 99.5	< 9000	80 x 36 x 32	2032 x 915 x 813	3000	1361
										Subfeed CB

1. Heat based on 100% resistive load; actual will increase only slightly with non-linear loading.

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