

HARMONY™ Series

Prevents voltage flat-topping caused by non-linear loads

Reduces upstream harmonic currents

Eliminates transformer overheating and high operating temperatures

Eliminates primary winding circulating current

Saves energy by reducing harmonic losses

Maintains high energy efficiency even under severe non-linear loading conditions

Electrostatic shielding for high frequency noise attenuation

Lowers voltage distortion to prevent premature equipment failure

Restores ride-through capability of computer equipment

Treats power quality harmonic issues which K-rated transformers do not address

Suitable for high K-factor loads without increasing in-rush current

Reduces current distortion at UPS, generator or Utility service

Improves Power Factor

NEMA TP-1 Compliant

Helps meet IEEE Standard 519 harmonic limits

Harmonic Mitigating Transformers

Energy Efficient, Harmonic Mitigating Transformers with zero sequence flux cancellation technology specifically designed to treat the harmonics generated by computer equipment and other non-linear, power electronic loads.



HARMONY-1E™

Superior to K-rated and conventional transformers in reducing voltage distortion (flat-topping) and power losses due to current harmonics created by single-phase, non-linear loads such as computer equipment. Secondary windings arranged to cancel zero sequence fluxes and eliminate primary winding circulating currents. Treats triplen harmonics (3rd, 9th and 15th) within the secondary windings and 5th and 7th harmonics upstream.

HARMONY-2E™ (patented)

Dual output, phase shifting HMT provides extremely low output voltage distortion and input current distortion even under severe non-linear loading conditions (Data Centers, Internet Service Providers, Telecom Sites, Broadcasting Studios, etc.). Combining zero sequence flux cancellation with phase shifting treats 3rd, 5th, 7th, 9th, 15th, 17th and 19th harmonics within its secondary windings.

HARMONY-3E™ and -4E™ (patented)

Three or four output, phase shifting HMT featuring extremely low output voltage distortion and input current distortion by treating 3rd, 5th, 7th, 9th and other higher order harmonics within its secondary windings.



General Specifications:

HARMONY™ Series

by MIRUS

Energy Efficient Harmonic Mitigating Transformer

Primary

3-Phase, 3 wire, 60Hz

Secondary

3-Phase, 4-wire, 60Hz
 H1E (Single): 1 x 100% rated
 H2E (Dual): 2 x 60% rated
 H3E (Three): 3 x 40% rated
 H4E (Four): 4 x 33% rated

Operating Temp. Rise

130°C [150°C][115°C][80°C]

Insulation Class

220°C

Angular Displacement

H1E: Select 0° or 30° lag
 H2E: Select [15] for 15° and 45° lag
 or [00] for 0° and 30° lag
 H3E: 20° between sec. groups
 H4E: 15° between sec. groups

Zero Sequence Impedance

$Z_0 < 0.95\%$, $X_0 < 0.3\%$ (Typical)

Primary Taps

15kVA (and all 208V): $\pm 1 \times 5\%$
 30kVA - 300kVA (H2 to H4): $\pm 2 \times 2.5\%$
 30kVA - 300kVA (H1): $+2 \times 2.5\%$, $-4 \times 2.5\%$
 500kVA (H1) $\pm 2 \times 2.5\%$

K-Factor Capability

20

Crest Factor Capability

4.5

Neutral Bus Ampacity

200% of phase current

Full Load Efficiency

> 97%

Magnetizing Inrush

< 10 times FL RMS

Winding Material

Copper

Insulating Varnish Impregnation

Polyester Resin

Audible Sound Level

As per Nema ST-20

Enclosure

Type: Nema-3R, ventilated
 Paint: Polyester powder coated
 Colour: ANSI 61 Grey

Electrostatic Shield

Single, [double]

Options:

Over-Temp. Sensors

[170°C], [200°C]

Solid Bottom Plate

Available for 'MT' case only

HARMONY-1E™

kVA	Sizes		Losses*	
	Case Style	Weight* lbs [kg]	Iron	Copper
15	MT2	250 [115]	200W	280W
30	MT2	375 [170]	340W	603W
45	MT2	500 [227]	375W	871W
75	MT3	850 [386]	540W	1489W
112.5	MT4	1000 [454]	730W	2052W
150	MT4	1200 [544]	810W	2898W
225	LT1	1800 [820]	1400W	4025W
300	LT2	2500 [1135]	1470W	5500W
500	LT3	3200 [1451]	1600W	9000W

HARMONY-3E™

kVA	Sizes		Losses*	
	Case Style	Weight* lbs [kg]	Iron	Copper
30	MT2	430 [195]	260W	750W
45	MT2	550 [250]	340W	1260W
75	MT3	820 [375]	550W	1750W
112.5	MT4	1100 [500]	660W	2700W
150	MT4	1400 [635]	750W	3700W
225	LT1	1950 [885]	900W	5800W
300	LT2	2600 [1180]	1200W	6800W

HARMONY-2E™

kVA	Sizes		Losses*	
	Case Style	Weight* lbs [kg]	Iron	Copper
15	MT1	250 [115]	230W	280W
30	MT2	375 [170]	300W	530W
45	MT2	500 [227]	370W	750W
75	MT3	750 [340]	540W	1450W
112.5	MT4	1000 [455]	700W	2300W
150	MT4	1300 [590]	850W	2900W
225	LT1	1800 [820]	1180W	4200W
300	LT2	2500 [1135]	1470W	5500W

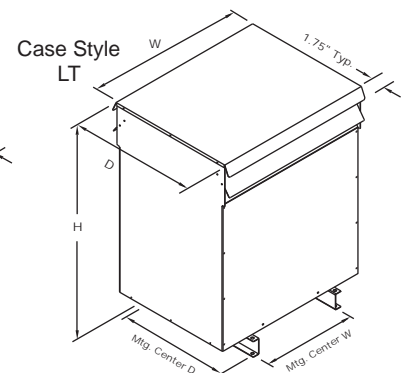
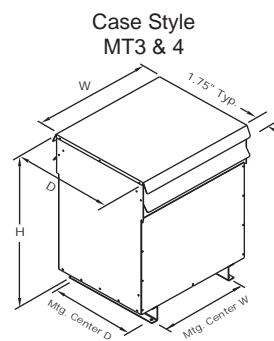
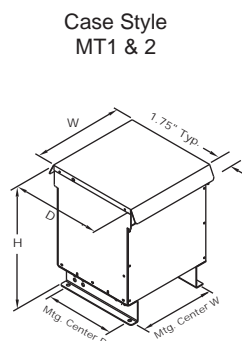
HARMONY-4E™

kVA	Sizes		Losses*	
	Case Style	Weight* lbs [kg]	Iron	Copper
75	MT3	902 [410]	550W	1750W
112.5	MT4	1210 [550]	660W	2700W
150	MT4	1540 [700]	750W	3700W
225	LT1	2145 [974]	900W	5800W
300	LT2	2860 [1299]	1200W	6800W

DIMENSIONS

Case Style	H (Height) inches [mm]	W (Width) inches [mm]	D (Depth) inches [mm]	Mtg. Center W inches [mm]	Mtg. Center D inches [mm]
MT1	29.00 [737]	16.75 [425]	15.00 [381]	13.75 [349]	13.00 [330]
MT2	38.00 [965]	21.50 [546]	19.50 [495]	17.00 [432]	17.50 [445]
MT3	45.00 [1143]	26.00 [661]	21.00 [534]	21.50 [546]	19.00 [483]
MT4	51.50 [1308]	32.00 [813]	25.50 [648]	23.50 [597]	23.50 [597]
LT1	59.00 [1499]	39.50 [1003]	30.00 [762]	24.00 [610]	32.00 [813]
LT2	66.00 [1677]	44.00 [1118]	34.00 [864]	26.00 [660]	36.00 [915]
LT3	75.00 [1905]	48.50 [1232]	39.00 [991]	27.50 [699]	41.00 [1041]

* Approximate Values



Product Code:

Harmony Series (no. of secondaries) 1E, 2E, 3E, 4E
 Angular Displacement 00, 30 (for H1), 15, 00 (for H2), 20 (for H3), 15 (for H4)
 Secondary L-L Voltage 208, 480, 600
 Secondary Rating (% of primary kVA of each secondary) 60 (for H2), 40 (for H3), 33 (for H4) (Leave blank for H1)

Hn t - dd - hhh - xxx - kVA - rr - X

Transformer Type

T (isolation)
 A (autotransformer)

Primary

L-L Voltage
 208, 480, 600

Primary kVA

15, 30, 45, 75, 112.5,
 150, 225, 300, 500
 (500kVA only available in H1 and H2)

Electrostatic Shield:

X (no shield)
 S (single shield)
 SS (double shield)



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