

GENLINK™ Dissimilar Pitch Neutral Limiter



Challenges of Parallel Operations

When paralleling equipment such as generators or other distributed generation sources to each other or the utility supply, it is imperative that voltages produced by the generating equipment are as closely matched as possible. This means not only the RMS voltage values but the actual voltage waveshapes as well. Given the increased usage of this equipment, there are many paralleling applications where the voltage waveshapes can be dissimilar, resulting in high neutral circulating currents. Common reasons for these differences include:

1. Using generators with different pitch configurations made by different manufacturers or by the same manufacturer who has changed its standard pitch designs
2. Solar, wind or other alternative energy sources which use inverters to convert DC power to AC for connection to the Utility

To solve these challenges, Mirus' GENLINK Dissimilar Pitch Neutral Limiter (DPNL) is a multiple winding reactor which is installed in the common neutral of paralleled sources.

Treating Neutral Circulating Current

Generators with different pitch configurations will have slightly different voltage waveshapes. These differences can produce phase-to-neutral instantaneous voltages which can introduce heavy neutral circulating currents which are predominantly triple frequency.

Mirus' GENLINK, once installed in the common neutral of paralleled generators, adds impedance to block the flow of circulating currents while adding only minimal impedance to the flow of fault current. If left untreated, these circulating currents can cause overheating in the generator windings and false tripping of overcurrent protection equipment, especially ground fault detection schemes.

Applications

GENLINK can be used in both 3-wire and 4-wire systems. In both systems, GENLINK is used when two or more generators of dissimilar pitch are paralleled together or a generator is paralleled with an alternate source, such as the Utility. DPNL is then inserted in the neutral between the dissimilar generators or the generator and Utility supply.

For 4-wire applications where there is return neutral current from 1-Ph loads, GENLINK must be sized for this current as well as the circulating current. For 3-wire applications where there is no return neutral current from 1-Ph loads, a smaller size GENLINK can be used.

In addition to dissimilar pitched generator applications, GENLINK can also be applied to various parallel source applications with common neutral and dissimilar voltage waveforms.

Key Features

- Inserts >40% impedance in neutral current circulating path
- Reduces neutral circulating current by >75%
- Adds <1% saturated impedance to 1-Ph fault path
- No impedance to 3-Ph fault path
- Use in 3-wire or 4-wire applications or any parallel source application with a common neutral and dissimilar voltage waveforms
- Eliminates generator overheating and false protection trips caused by triple frequency circulating currents
- Easy to install
- Reliable and proven performance



General Specifications:

Voltage

690V or less, 3-phase, 3 or 4 wire,
60 or 50Hz

Operating Temp. Rise

130°C (Max. Ambient of 40°C)

Insulation Class

220°C

System Connection

Series connected in the common
neutral of generator groups with
dissimilar winding pitches

Equiv. Efficiency at Full Load

> 99%

Through Impedance (%Z)

Y-Z Term: ~ 45%

X-Y or X-Z Term: ~ 1% (saturated)

Winding Material

Copper

Insulating Varnish Impregnation

Polyester Resin

Audible Sound Level

As per NEMA ST-20 & CSA C9
Based on equivalent kVA

Ventilation

Convection air cooled

Enclosure

Type: Nema-3R, ventilated

Paint: Polyester powder coated

Colour: ANSI 61 Grey

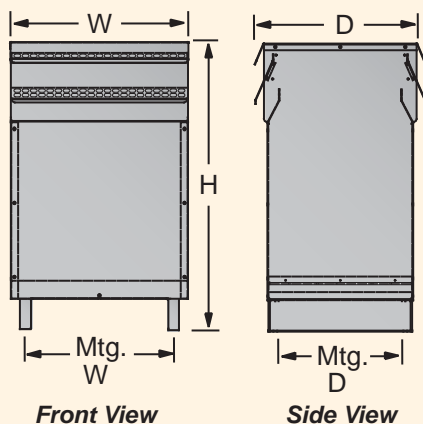
Temperature Switches

170°C and 200°C

Over-Temperature Alarm

ALM2: Over-Temperature Alarm with
horn and flashing light (requires
separate power, supplied by customer)

'MT & LT' Style Enclosure



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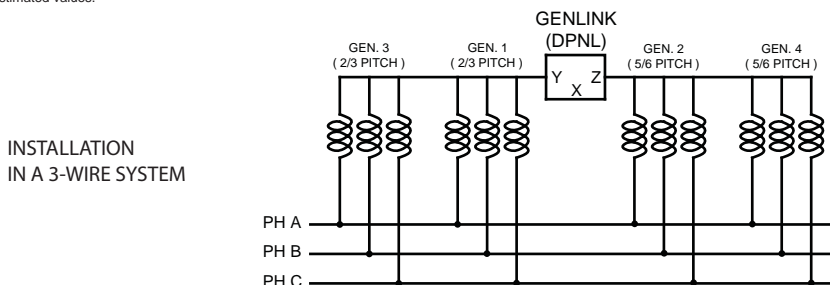
DPNL Rating Table [60Hz]

Return Neutral (Amps)	Circulating (Amps)	Total Capacity of all Paralleled Sources				kW [kVA]	Case Style	Weight* lbs [kg]	Losses @ Full Load (Watts)
		208-240V	460-480V	575-600V	660-690V				
200	100	68 [85]	250 [312]	320 [400]	360 [450]	MT1	150 [68]	150	
500	250	160 [200]	640 [800]	800 [1000]	900 [1120]	MT2	330 [150]	315	
1000	500	335 [420]	1280 [1600]	1600 [2000]	1800 [2250]	MT2	408 [185]	515	
1500	750	500 [625]	2000 [2500]	2400 [3000]	2720 [3400]	MT3	500 [227]	765	
2000	1000	675 [840]	2500 [3126]	3200 [4000]	3600 [4500]	MT3	560 [254]	800	
2500	1250	840 [1050]	3200 [4000]	4000 [5000]	4500 [5625]	MT4	725 [329]	965	
3000	1500	1000 [1250]	3800 [4750]	4800 [6000]	5475 [6843]	MT4	1169 [530]	1120	

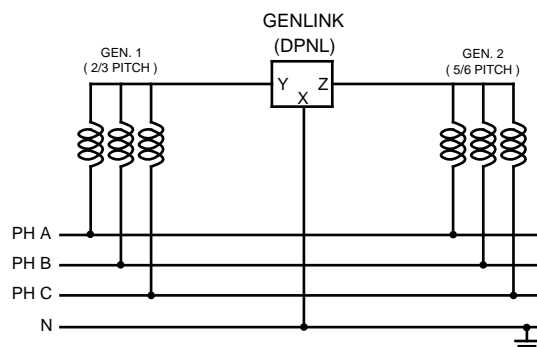
DPNL Rating Table [50Hz]

Return Neutral (Amps)	Circulating (Amps)	Total Capacity of all Paralleled Sources			kW [kVA]	Case Style	Weight* lbs [kg]	Losses @ Full Load (Watts)
		208-240V	380-440V	575-600V	660-690V			
200	100	68 [85]	120 [150]	320 [400]	360 [450]	MT1	160 [73]	210
500	250	160 [200]	300 [375]	800 [1000]	900 [1120]	MT2	262 [119]	360
1000	500	335 [420]	620 [775]	1600 [2000]	1800 [2250]	MT2	527 [239]	630
1500	750	500 [625]	920 [1150]	2400 [3000]	2720 [3400]	MT3	680 [309]	850
2000	1000	675 [840]	1200 [1500]	3200 [4000]	3600 [4500]	MT3	749 [340]	1050
2500	1250	840 [1050]	1540 [1930]	4000 [5000]	4500 [5625]	MT4	863 [392]	1250
3000	1500	1000 [1250]	1840 [2300]	4800 [6000]	5475 [6843]	MT4	1241 [563]	1350

* Estimated values.



INSTALLATION
IN A 3-WIRE SYSTEM



INSTALLATION
IN A 4-WIRE SYSTEM

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]

Product Code:

Size (Return Neutral Amps) Frequency

200, 500, 1000, 1500

50, 60

2000, 2500, 3000

DPNL - aaa - vvv - Hz - En

Dissimilar

Pitch

Neutral

Limiter

Voltage

All standard

voltages up

to 690VAC

Enclosure

E0 = No Enclosure

E1 = Standard Enclosure

E1E = Type 3R Enhanced

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