MIRUS International Inc.
31 Sun Pac Blvd., Brampton, Ontario, Canada L6S 5P6

TECHNICAL DATA **DPNL™**

MEDIUM VOLTAGE DISSIMILAR PITCH NEUTRAL LIMITING REACTOR

GENERAL SPECIFICATIONS:

VOLTAGE
Up to 13.8kV, 3-ph, 3 or 4-wire, 60 or 50Hz

OPERATING TEMPERATURE RISE
130°C (Max. Ambient of 40 deg 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) [6]
Y-Z Term: ~ 45%
X-Y or X-Z Term: ~ 1% (saturated)

WINDING MATERIAL
Copper

VACUUM PRESSURE IMPREGNATION
Polyester Resin

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

VENTILATION
Convection air cooled

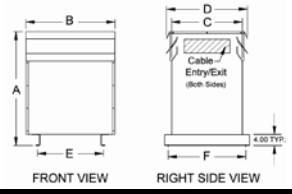
WINDING MATERIAL
Copper

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

TEMPERATURE SWITCHES
170°C and 200°C

OVER-LOAD ALARM
ALM2: Overload Alarm with horn and flashing light (requires separate power, supplied by customer)

'MT3', 'MT4', 'LT' ENCLOSURE



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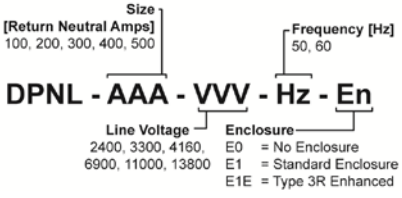
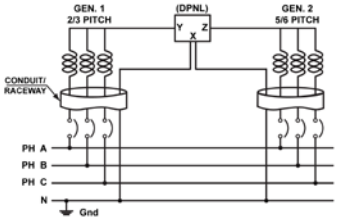


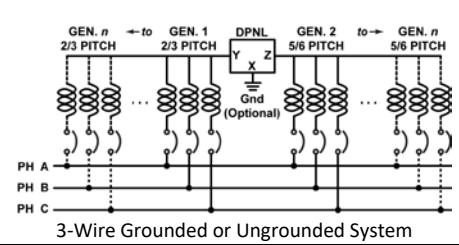
3- or 4-Wire System, 50Hz or 60Hz										Losses
DPNL Rating (Amps) [2] [3] [4]		Total Capacity of all Paralleled Sources MW [MVA] [2] [3]						Case Style [4]	Weight lb [kg][1]	@ Full Load (Watts) [1]
Return Neutral	Circu-lating	2.4kV	3.3kV	4.16kV	6.9kV	10-11kV	12.5-13.8kV			
100	50	1.0 [1.2]	1.4 [1.7]	1.7 [2.1]	2.8 [3.5]	4.2 [5.2]	5.2 [6.5]	MT4	463 [210]	200
200	100	1.8 [2.3]	2.7 [3.4]	3.4 [4.3]	5.7 [7.1]	8.3 [10.4]	10.4 [13.0]	LT1	992 [450]	350
300	150	2.8 [3.5]	4.1 [5.1]	5.1 [6.4]	8.6 [10.7]	12.5 [15.6]	15.6 [19.5]	LT1	1300 [590]	700
400	200	3.8 [4.7]	5.4 [6.8]	6.9 [8.6]	11.4 [14.3]	16.6 [20.7]	20.6 [26.0]	LT2	1653 [750]	1200
500	250	4.8 [6.0]	7.6 [9.5]	8.6 [10.8]	14.3 [17.9]	20.8 [26.0]	26.0 [32.5]	LT2	2205 [1000]	2000

DPNL as NGI 3- or 4- Wire Systems, 50 Hz or 60 Hz								Losses
DPNL Rating (Amps) [2] [4] [5]		Phase Current Ampacity of Generator or Transformer [Amps] [2] [5]				Case Style [4]	Weight lb [kg][1]	@ Full Load (Watts) [1]
Return Neutral	Circu-lating	2.3- 3.3kV	4.16kV	6-6.9kV	10-13.8kV			
100	50	150	150	150	150	MT4	463 [210]	200
200	100	300	300	300	300	LT1	992 [450]	350
300	150	450	450	450	450	LT1	1300 [590]	700
400	200	600	600	600	600	LT2	1653 [750]	1200
500	250	750	750	750	750	LT2	2205 [1000]	2000

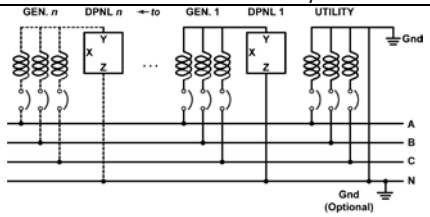
CASE STYLE		ENCLOSURE DIMENSIONS - inches [mm]						
Standard	Enhanced	A	B	C	D	E	F	G
MT4	MT4-E	51.50 [1308]	32.00 [813]	25.50 [648]	29.50 [749]	23.50 [597]	23.50 [597]	
LT1	LT1-E	59.00 [1499]	39.50 [1003]	30.00 [762]	34.00 [864]	24.00 [610]	32.00 [813]	
LT2	LT2-E	66.00 [1677]	44.00 [1118]	34.00 [864]	38.00 [965]	26.00 [660]	36.00 [915]	
LT3	LT3-E	75.00 [1905]	48.50 [1232]	39.00 [991]	43.00 [1092]	27.50 [699]	41.00 [1041]	



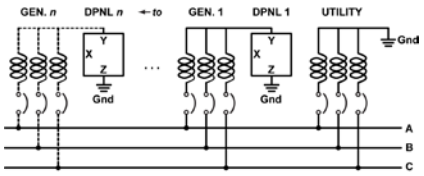
4-Wire Grounded Neutral System



3-Wire Grounded or Ungrounded System



As NGI in 4-Wire Grounded Neutral System



As NGI in 3-Wire Grounded System

Notes:

1. Estimated values.
2. MV DPNL sizing assumes no Ph-to-N loads. If there are Ph-to-N loads, please consult factory for sizing.
3. To size the DPNL for a standard application on a 3- or 4-wire system with no significant Ph-to-N loads, determine the total capacity in MW or MVA of all paralleled generators, transformers or other sources. Select the DPNL that corresponds to this value in the appropriate system voltage column. This will size the unit to at least 33 1/3% of the rated phase current of the system.
4. Case style is for sizes up to 4.16kV. For all other sizes, consult factory.
5. When it is not possible to connect all generator and/or transformer neutrals at the DPNL, it can be connected as a neutral grounding inductor (NGI). To size for a 3- or 4-wire NGI application, determine the phase current ampacity rating of the generator or transformer and select the DPNL that corresponds to this value in the appropriate system voltage column. This will size the unit to at least 33 1/3% of the phase current rating. As per note 4, it is the Users responsibility to ensure that the actual return neutral current will not exceed the rating of the DPNL.
6. High impedance between Y-Z terminals prevents the flow of circulating current (predominantly triplen frequency) between the dissimilarly pitched generator groups. X-Y and X-Z impedances are the values to be used for 1-phase fault level calculations and are with core saturated. The DPNL will have no effect on 3-phase fault level.
7. DPNL is inserted in the common neutral where two or more generators of dissimilar pitch are connected together (see Connection Diagrams) or where generators are paralleled with an alternate source, such as the Utility. The DPNL is inserted in the neutral between the dissimilar groups.
8. The neutral should be grounded in only one location. If grounded at the switchboard or any other location, DPNL terminal X should not be grounded.
9. For additional information refer to: Typical Specifications, Application Notes, Internal Layout, Connection Diagrams and GenLink Technical Guide.
10. End User is responsible for ensuring the DPNL installation and wiring satisfies all applicable electrical and safety code requirements. Relevant sections in NEC for sizing neutral conductors include 250.184(A)(2) and 220.61(A).
11. Specifications are subject to change without notice.