VOLTAGE-DIP PROOFING INVERTERS

For DPI 54 Series Models
120V & 220 / 240V 50/60Hz

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Specifications

DPI 54 series 220 / 240V models	220 / 240V MODELS								
	S2N01-011	S2N02-022	S2N02-032	S2N06-049	S2N08-065	L2N06-049	L2N10-083	L2N20-165	L2N25-743
AC INPUT SUPPLY									
Single phase supply voltage:	220 / 240V 50 / 60Hz								
Maximum input voltage:	+10%								
Full load current (A):	1A	2A		6A	8A	6A	10A	20A	25A
STATIC SWITCH									
Nominal off-state voltage:	250Vac RMS								
Peak off-state voltage:	800V								
Nominal current (A):	1A	2A		6A	8A	6A	10A	20A	25A
Short time overload current (<100ms):	65A								
Non-repetitive peak on-state current (10ms):	700A								
INVERTER									
Voltage fluctuations over full operating range:	±10%								
Nominal load current (A)	1A	2A		6A	8A	6A	10A	20A	25A
Overload Current (A)	15A					30A			
Wave shape	Stepped square								
TIMER									
Range:	0.05 to 3.15s								
Setting:	0.05s steps								
Maximum recovery time of capacitors to 95%Vin:	0.7s	1.4s	2.0s	3.0s		1.0s		2.1s	8.0s
INDICATORS									
System OK:	Green LED								
Inverter running:	Red LED								
TEMPERATURE									
Maximum ambient working temperature:	45°C (113°F)								
CUBICLE									
Construction:	Extruded Aluminum								
Height (L3) (mm)	219	219	254	362	362	284	284	284	500
Height (L3) (in)	8.62	8.62	10.00	14.25	14.25	11.18	11.18	11.18	19.69
Width mm (in):	150 (5.90)					350 (13.78)			
Depth mm (in):	110 (4.33)					231 (9.09)			
Mass (kg):	2.2	2.5	2.7	4.4	4.4	8.7	8.7	10.0	25.0
Mass (lbs):	4.8	5.4	5.9	9.6	9.6	19.1	19.1	22.0	55.0

Remark: For other voltage and current rating, please consult factory.

Specifications

DPI 54 series 120V models	120V MODELS								
	S1N02-027	S1N04-055	S1N04-082	S1N06-123	S1N08-164	L1N06-123	L1N10-137	L1N16-273	L1N25-820
AC INPUT SUPPLY									
Single phase supply voltage:	120V 50 / 60Hz								
Maximum input voltage:	+10%								
Full load current (A):	2A	4A		6A	8A	6A	10A	16A	25A
STATIC SWITCH									
Nominal off-state voltage:	150Vac RMS								
Peak off-state voltage:	800V								
Nominal current (A):	2A	4A		6A	8A	6A	10A	16A	25A
Short time overload current (<100ms):	65A								
Non-repetitive peak on-state current (10ms):	700A								
INVERTER									
Voltage fluctuations over full operating range:	±10%								
Nominal load current (A)	2A	4A		6A	8A	6A	10A	16A	25A
Overload Current (A)	15A					30A			
Wave shape	Stepped square								
TIMER									
Range:	0.05 to 3.15s								
Setting:	0.05s steps								
Maximum recovery time of capacitors to 95%Vin:	0.5s	1.1s	1.6s	2.4s		0.6s		1.8s	
INDICATORS									
System OK:	Green LED								
Inverter running:	Red LED								
TEMPERATURE									
Maximum ambient working temperature:	45°C (113°F)								
CUBICLE									
Construction:	Extruded Aluminum								
Height (L3) (mm)	219	219	254	362	362	284	284	284	409
Height (L3) (in)	8.62	8.62	10.00	14.25	14.25	11.18	11.18	11.18	16.10
Width mm (in):	150 (5.90)					350 (13.78)			
Depth mm (in):	110 (4.33)					231 (9.09)			
Mass (kg):	2.2	2.5	2.7	4.4	4.4	8.7	8.7	10.0	19.0
Mass (lbs):	4.8	5.4	5.9	9.6	9.6	19.1	19.1	22.0	41.8

Remark: For other voltage and current rating, please consult factory.

VOLTAGE DIP PROOFING INVERTERS - DPI

Introduction

Although the reliability of power to industry is high, momentary power interruptions and voltage sags still occur. These may be caused by short circuits, lightning strikes on overhead power lines and heavy load switching. As these disturbances are usually less than one second in duration.

DPI are designed to maintain the switchgear control voltage during voltage dips, effectively keeping the plant connected. The stored electrical and magnetic energy is allowed to flow, supporting the mechanical inertia of the machinery. When the power is restored after a short voltage dip, the plant is still running at near synchronous speed, the inrush currents will be small and the stress to the system minimal.

Losses incurred by these power quality problems far outweigh the cost of installing the DPI and investment payback is achieved in a relatively short period of time. It is designed specifically for use in industrial and commercial environments and unlike other equipment, offers a preventative rather than curative solution.

Theory of operation

DPI offers a maintenance-free solution to facilities that suffer from costly and inconvenient disruption of critical production processes. It consists of a static switch in series with, and an inverter parallel to, the load. Energy is stored in a capacitor bank: the inverter block diagram is shown in Fig 1.

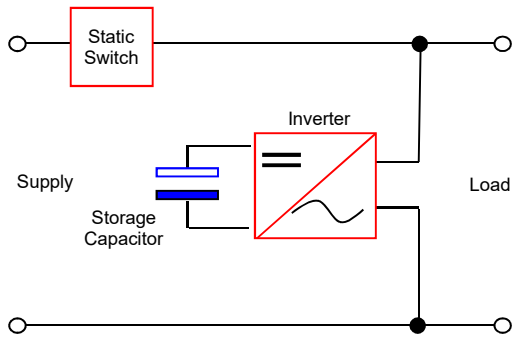

Fig 1
Inverter Block Diagram

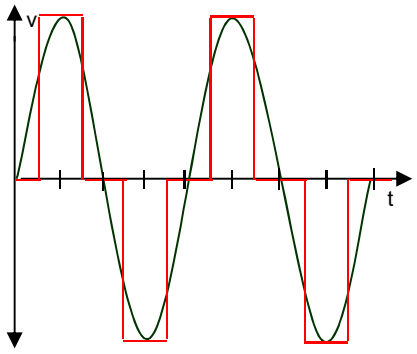

Fig 2
Inverter stepped square wave output waveform

The STATIC SWITCH is robust and can withstand large current surges. It is ideally suited for contactor operation where high peak currents of short duration occur during energizing.The INVERTER is configured as a full bridge with overcurrent and short circuit protection. The output waveform is a square wave where the RMS and the peak voltage are the same as for a sine wave as shown in Fig 2.

This is important for circuits where magnetic devices.The computer grade CAPACITOR BANK operates under ideal conditions, being charged to working voltage but carrying no ripple current most of the time.

During stand-by operaton, the static switch supplies power directly to the load, the inverter is switched off and the capacitors are changed to the full operating voltage. The supply voltage is constantly monitored for deviations; should there be a deviaton from Vnom which is greater than the preset value, the static switch is switched off and the inverter is activated. The switch-over is accomplished in less than 200µs. A 3.15 second timer, adjustable in increments of 50ms, starts timing the inverter out. Should the input voltage recover within the set time, the inverter supply is synchronized to the mains and the load is switched back to the supply, the capacitors are recharged in less than one second and the inverter is ready to compensate for the next voltage dip. If the input voltage does not recover within the set time the load is switched back to the supply regardless of the voltage level.