

NVB DUAL-CONVERSION TRIPLE PHASE INVERTER

NVB three-phase inverter with true dual-conversion technology delivers uninterrupted power for emergency lighting. High efficiency, fast response, and rugged reliability ensure critical illumination stays on when it matters most.



FEATURES & SPECIFICATIONS

CIRCUITRY

- Dual-conversion, online topology (AC -> DC -> AC)
- Rectifier converts incoming AC to DC for inverter supply and battery charging
- Inverter delivers regulated, isolated AC output
- Full galvanic isolation providing a fully isolated and referenced output
- Eliminates induced voltages, neutral noise, and common-mode/normal-mode interference
- Wide input voltage range prevents unnecessary battery discharge
- Continuous monitoring and conditioning of incoming power
- Corrects under-voltage, over-voltage, sags, spikes, and power disturbances
- Pure sine wave output with low harmonic distortion at rated voltage
- High efficiency operation enabled by IGBT technology and IPRD control

- High Efficiency Mode automatically switches between online and bypass modes
- Automatic return to online mode in under one second when irregularities are detected
- DSP-based digital control
- CPU-based control with flash memory architecture
- Advanced battery management prevents overcharging and deep discharging
- Automatic battery testing and boost charging for balanced recharge
- Built-in protection against short circuit, over-temperature, over-voltage, overload, and back feed
- SNMP-based remote monitoring and management [included]
- Real-time graphical monitoring, event logging, and statistical reporting
- Remote alerts via SMS, email, network management systems
- Optional 12-pulse rectifier for units under 60 kVA (standard 6-pulse otherwise)

MECHANICAL

- Three-phase UPS designed for centralized power protection and distribution
- Modular, slide-out construction for major components (rectifier, inverter, static switch)
- Mean time to repair under 30 minutes; supports easy field upgrades
- Supports external battery cabinets for extended runtime
- Designed for industrial environments and unstable generator operation
- Front-accessible LCD display and control interface
- All operating parameters viewable without opening the front door
- Inverter power switch mechanically protected behind a locked front door
- Flexible system configuration options to meet site-specific installation requirements

COMPLIANCES

- cUL to CSA 22.2 #141
- Meets requirements of ICES-005

Data is based upon tests performed in a controlled environment. Actual performance can vary depending on operating conditions. All products are subject to change or may be discontinued any time without notice.

ORDERING GUIDE

SERIES	INPUT VOLTAGE [VAC]	CAPACITY RATINGS [KW]	OUTPUT VOLTAGE [VAC]	MONITOR	OUTPUT DISTRIBUTION	# OF BREAKERS	OPTIONS
NVB30	BA- 208/120	8	BA- 208/120	1 - SNMP WITH TCP/IP, BACNET/IP	0 - NO CABINET NORMALLY ON 1 - DISTRIBUTION CABINET 2 - DISTRIBUTION CABINET W/ NORMALLY OFF BUS 3 - NO CABINET NORMALLY OFF	BLANK - NO BREAKER 1 2 3 4 5 6 7 8 9 10 11 ¹	MIP - MODBUS TCP
NVB60	KE- 480/277	12	KE- 480/277				
NVB90	SH- 600/347	16	SH- 600/347				
NVB120		24					
		32					
		40					
		48					

¹Contact supplier for more details.

GENERAL DATA

TOPOLOGY		TRUE ON-LINE, DUAL CONVERSION						
NOMINAL OUTPUT AT PF=0.8 [KW]		8	12	16	24	32	40	48
OVERALL EFFICIENCY (%)	100% LOAD, 0.9 PF	90	90	90	90	90	90	90
	50% LOAD, 0.9 PF	88	88	88	88	88	88	88
TRUE GALVANIC ISOLATION FROM INPUT TO OUTPUT		YES						
HEAT REJECTION AT 100% LOAD, 0.9 PF AND CHARGED BATTERY (BTU/HR [KW])		3 000 (0.89)	4 500 (1.3)	6 100 (1.8)	9 100 (2.7)	12 100 (3.6)	15 200 (4.4)	18 200 (5.3)
AUDIBLE NOISE LEVEL (AT 1M)	DB (A)	< 65 AT 1M						
OPERATING TEMPERATURE RANGE	ELI	0°C TO 40°C (32°F TO 104°F)						
	BATTERY	OPTIMUM 20°C TO 25°C (68°F TO 77°F) HIGHER TEMPERATURES REDUCE BATTERY LIFE EXPECTANCY.						
STORAGE TEMPERATURE RANGE	ELI	-20°C TO 40°C (-4°F TO 104°F)						
	BATTERY	-20°C TO 40°C (-4°F TO 104°F)						
	VLRA STORAGE PERIOD	STORAGE TIME IS 6 MONTHS AT 25°C (77°F). HIGHER TEMPERATURES REDUCE BATTERY STORAGE TIME. REFER TO INSTALLATION MANUAL SECTION 3.3 FOR DETAILS.						
RELATIVE HUMIDITY		0% TO 90%, NON-CONDENSING						
MAXIMUM ALTITUDE	WITHOUT DERATING	<1 500M (5 000FT) NO DERATING						
ENCLOSURE	TYPE	INDOOR (NEMA 1) [DRIP SHIELD STANDARD]						
	SAFETY	INTERNAL DEAD FRONT CONSTRUCTION						
	COOLING	FORCED AIR						
	COLOUR	ELI: RAL7035, BBU: PANTONE 2965U + PANTONE COOL GRAY 5°C						
INSTALLATION	RIGGING	SUITABLE FOR HANDLING BY FORKLIFT						
	MOUNTING	CASTERS AND LEVELING FEET [OPTIONAL SEISMIC RATED MOUNTING AVAILABLE]						
INSTALLATION AND MAINTENANCE ACCESS		FRONT ACCESS REQUIRED FOR NORMAL MAINTENANCE						
	CONDUIT ACCESS	BOTTOM ENTRY STANDARD [OPTIONAL TOP ENTRY]						
ELECTROSTATIC DISCHARGE IMMUNITY		4KV CONTACT / 8KV AIR DISCHARGE						

RECTIFIER

CONFIGURATION		6 PULSE STANDARD, 12 PULSE OPTIONAL						
EFFICIENCY		96%						
INPUT	VOLTAGE	208/120, 480/277, 600/347 VAC 3P4W + GROUND, (± 20% WITHOUT BATTERY DISCHARGE)						
	FREQUENCY	45 - 65 HZ						
	POWER FACTOR	0.8 AT FULL LOAD						
	INRUSH CURRENT	LIMITED BY SOFT-START CIRCUIT						
	POWER WALK-IN	20 SECONDS						
OUTPUT	VOLTAGE	208/120, 480/277, 600/347 VAC 3P4W + GROUND						
	OUTPUT VOLTAGE TOLERANCE	± 1%						
	DC RIPPLE VOLTAGE	± 0.5%						
	DC RIPPLE CURRENT	MAX. 5% OF BATTERY CAPACITY EXPRESSED IN AMPS						
NOMINAL OUTPUT AT PF=0.8 (KW)		8	12	16	24	32	40	48
NOMINAL INPUT CURRENT(A)	VIN = 208/120	36	54	71	107	142	178	213
	VIN = 480/277	16	24	31	47	62	77	93
	VIN = 600/347	13	19	25	37	50	62	74
MAXIMUM CURRENT THD		12 PULSE WITH FILTER: 9%; 6 PULSE: 30%						

BATTERY

NOMINAL OUTPUT AT PF=0.8 (KW)		8	12	16	24	32	40	48
BATTERY COMPATIBILITY		SEALED LEAD-ACID						
NUMBER OF CELLS		174 CELLS						
VOLTAGE RANGE		295 - 406 VDC						
FLOAT VOLTAGE AT 20°C		392 VDC						
LOW VOLTAGE LEVEL		320 VDC						
MINIMUM DISCHARGE VOLTAGE		295 VDC						
BOOST CHARGE VOLTAGE		406 VDC (DISABLED BY DEFAULT)						
MAXIMUM CHARGE CURRENT (ADC)		3	4	5	8	10	13	15
RECHARGE TIME FOR 90-MINUTE BATTERY TO 90% CAPACITY		LESS THAN 10 HOURS						
BATTERY GROUND FAULT DETECTION		OPTIONAL						
AUTOMATIC AND MANUAL BATTERY TEST		STANDARD						

INVERTER

NOMINAL OUTPUT AT PF=0.8 (KW)		8	12	16	24	32	40	48
DC VOLTAGE INPUT RANGE		295 - 420VDC						
NOMINAL OUTPUT VOLTAGE		208/120VAC OR 480/277 AND 600/347VAC, L-L VAC 3 PHASE, 4 WIRE + GROUND						
MAXIMUM OUTPUT WATTAGE (KW)		8	12	16	24	32	40	48
NOMINAL OUTPUT CURRENT (A) (LINEAR LOAD)	VOUT = 120/208 VAC	28	42	56	84	112	139	167
	VOUT = 277/480 VAC	12	19	25	37	49	61	73
	VOUT = 347/600 VAC	10	15	20	29	39	48	58
INVERTER BRIDGE		IGBT TECHNOLOGY VIA PULSE WIDTH MODULATING						
OUTPUT ISOLATION TRANSFORMER		STANDARD						
OUTPUT POWER FACTOR		0.8						
FREQUENCY LOCK RANGE		50 / 60 HZ ± 7%						
OUTPUT WAVEFORM		TRUE SINE WAVE						
OUTPUT VOLTAGE TOLERANCE	STATIC	± 1%						
	LOAD STEP 0% - 100% - 0%	< ± 20%, RECOVERING TO WITHIN ± 3% IN 3 CYCLES						
	LOAD STEP 0% - 50% - 0%	< ± 10%, RECOVERING TO WITHIN ± 3% IN 3 CYCLES						
	100% UNBALANCED LOAD (PH-N)	± 3%						
OUTPUT VOLTAGE DISTORTION	100% LINEAR LOAD	< 2% THD MAXIMUM						
	100% NON-LINEAR LOAD	< 3% THD MAXIMUM						
CREST FACTOR CAPABILITY		> 3:1						
PHASE DISPLACEMENT	100% BALANCED LOAD	120° ± 1%						
	100% UNBALANCED LOAD	120° ± 5%						
OUTPUT FREQUENCY	FREE RUNNING	50 / 60 HZ ± 0.1 HZ						
OVERLOAD CAPABILITY	< 110%	CONTINUOUS						
	110 - 125%	15 MINUTES						
	125 - 150%	5 MINUTES						
	> 150%	30 SECONDS						
EFFICIENCY (100% LOAD)		94%	94%	94%	94%	94%	94%	94%

STATIC BYPASS

INPUT CONFIGURATION		COMMON TO RECTIFIER (STANDARD) OR DUAL INPUT (OPTIONAL)	
PRIMARY COMPONENTS		FULL LOAD RATED STATIC SWITCH, BACK-FEED PROTECTION AND INTERNAL MAINTENANCE BY-PASS	
VOLTAGE RANGE		± 20% OF INPUT VOLTAGE (LINE TO NEUTRAL)	
FREQUENCY RANGE		45 - 55 HZ / 55 - 65 HZ	
EFFICIENCY		98%	
TRANSFERS TIME	INVERTER TO BYPASS	0 MS	
	BYPASS TO INVERTER	0 MS	
OVERLOAD CAPABILITY	200% OF ELI RATING	10 SECONDS	
	400% OF ELI RATING	1 SECOND	
SHORT CIRCUIT CAPABILITY		1 000% FOR 50 MS (NON-REPETITIVE)	
ISOLATION TRANSFORMER		YES	

EXTERNAL INTERFACE

SERIAL COMMUNICATION	RS-232 & RS-485
ETHERNET COMMUNICATIONS	SNMP, MODBUS TCP/IP INTEGRATED
OTHER	AS400 DRY CONTACTS
INPUT SIGNALS	EMERGENCY POWER OFF CONTACTS PROVIDED (OPTIONAL SWITCH)

FRONT PANEL CONTROLS, SIGNALS & ALARMS

ACTIVE MIMIC DIAGRAM	REPRESENTS THE OPERATIONAL STATUS OF THE SYSTEM, WITH INTEGRATED LEDES AND POWER FLOW INDICATORS.
LED DISPLAY	DISPLAYS OPERATIONAL AND FAULT CONDITIONS
AUDIBLE ALARM	AUDIBLE SIGNAL ACTIVE WHEN ANY ALARM CONDITION IS PRESENT.
LCD DISPLAY	DISPLAY OF METERING FUNCTIONS AND EVENT HISTORY (MULTI-LANGUAGE)
PUSH-BUTTONS	INVERTER ON, INVERTER OFF, INVERTER CONTROL, UP KEY, DOWN KEY, ENTER KEY

PHYSICAL DATA

NOMINAL OUTPUT AT PF=0.8 [KW]			8	12	16	24	32	40	48	
INVERTER CABINET	DIMENSION	W X D X H	635 MM X 889 MM X 1 803 MM (25" X 35" X 71")							
	WEIGHT		380 KG (838 LBS)	415 KG (915 LBS)	450 KG (992 LBS)	580 KG (1 279 LBS)	650 KG (1 433 LBS)	710 KG (1 565 LBS)	780 KG (1 716 LBS)	
BATTERY CABINET	DIMENSION	W X D X H	1 CABINET (8,12, 16, 24, & 32 KW): (52" X 34" X 76")					2 CABINETS (40 & 48 KW): 1 321 MM X 864 MM X 1 930 MM (52" X 34" X 76")		
	WEIGHT		814 KG (1 795 LBS)	1 000 KG (2 205 LBS)	1 204 KG (2 655 LBS)	1 398 KG (3 083 LBS)	1 764 KG (3 890 LBS)	2 CABINETS: 1 398 KG (3 083 LBS)		