



Redundant, clean, sine-wave AC power ensures a high availability of mission-critical safety devices, instrumentation, alarms, controls and computers. Robust, StatiVolt UPS Systems are designed and built for decades of industrial duty and field serviceability. Since 1964, time-proven applications to industrial loads are testimony to their reliability.

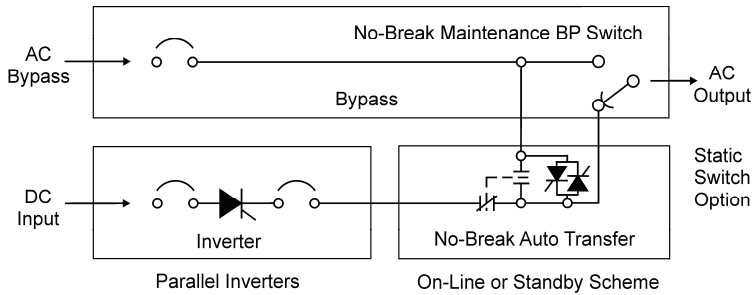


Table with columns: Output kVA (1Ø, 3Ø) and DC Input kW (1Ø) (24 V, 48 V, 125 V, 250 V). Rows list various power ratings from 0.6 to 60.0 kVA.

Features

Reliability by Design

- Pure sine-wave AC power
• Low frequency, soft-switching
• Natural convection cooled
• 30 year design life

Low DC Input Voltage

- 24, 48, 125, 250 V DC nominal
• Battery-only start-up capability

Protection

- In, out, bypass circuit breakers
• Fail-safe output current limiting
• Transformer isolation
• Fail-safe output V control
• Inherent surge rejection
• Inherent AC fault limiting

Versatile Functions & Options

- DC Input Low V Shutdown
• Dual AC Output Voltages
• Static Switch initiated transfer
• Bypass Transformer
• Special Utility Options
• Seismic Anchor L Brackets

Warranty & Service

- 3 year full warranty
• Fully field serviceable
• 20 year parts availability



Contents

Table listing contents: Inverter Specifications (2), Transfer Specifications (3), 1Ø System Cabinets (4), 3Ø System Cabinets (5, 6), Model Numbers, Options (7)





Inverter Specs

Power Conversion Design

- SCR chopper, commutation transformer
- Tuned ferro-resonant output
- Pure sine-wave AC power
- Rated for load Crest Factors ≤ 3.0

Output Control

- Fail-safe, closed-loop control
- High speed electronic V sensing
- Magnetic shunt regulation
- True oscillator output frequency

Steady-State Full Load V & F Regulation

- $\pm 1\%$ (-16% to +15% of nominal DC V)
- ± 0.10 Hz frequency, 1 Hz / s slew rate

Overload Capacity

- 125% 30 min, 150% 10 min, 200% 60 s

Annunciation & Meters

- Standard annunciation (each phase):
V+A AC Meter digital, 1% accuracy
AC On green LED
Normal Reg. green LED
Low V O/L red LED, contacts
High V red LED, contacts
DC Low V red LED, contacts
Inv. Off / Fault red LED, contacts
- Contacts are form 'C' contacts rated:
3 A (120 V_{AC} & 30 V_{DC}), 0.3 A (125 V_{DC})

Full Load Efficiency (%)

kVA		Nominal DC Voltage			
1Ø	3Ø	24	48	125	250
0.6	1.8	62	63	65	68
1.2	3.6	69	70	73	78
2	6	73	76	80	84
3	9	74	78	82	86
4	12	75	79	83	88
5	15	75	80	84	89
6-15	18-45		80	85	90
20-60	60-180			85	90

Protection

- DC breaker rated $I \approx 1.5 \times$ full load I_{DC}
- AC breaker rated $I \approx 1.25 \times$ full load I_{AC}
- Transformer electrical isolation
- $I^2 t$ breaker coordinated SCRs & diodes
- I limiting set to start at 125% of full load

DC Input Reflected Ripple Voltage

- $\leq 1\%$ rms (without battery)
- $\leq 0.5\%$ rms (on typical battery)
- Noise filter option (< 32 dBnC noise)

Startup DC Inrush Current

- $\leq 1.5 \times$ full load input Amps for < 30 ms

Output AC V Range

- $\pm 10\%$ of nominal ($\pm 5\%$ regulator adjust, $\pm 5\%$ transformer tap adjust)

Dynamic AC V Response

- $\pm 5\%$ for 50% resistive step-loads
- $\pm 10\%$ for 100% resistive step-loads
- Recovery < 17 ms (50% step-load)

Parallel Inverter Operation

- Load sharing within 10% of unit I_{AC}

Audible Noise

- 55-65 dBA (at 1 m, rating dependent)

Output Distortion & Noise

- THD is $< 5\%$ (p-n) and $< 3\%$ (p-p)
- 0.1 to 30 MHz wide-band filter
- 120 dB common mode noise rejection
- 60 dB transverse mode attenuation

Surge Tolerance

- Inherent I / O surge protection
- Withstands ANSI / IEEE C62.41 (IEC 6080-4) standard surge V waveforms

Electromagnetic Interference

- Conducted / radiated EMI within CSA C108.8 & FCC Part 15 Class B limits

Wiring

- Stranded 16 AWG control wires
- Plastic sleeve-type wire markers
- Wire (≤ 10 AWG) connection ferrules

Cabinets

- NEMA type 1
- Front accessible, side / top cable entry
- 14 / 10 gage steel panels / mounts
- Powder-coated, baked enamel finishes

Environmental Requirements

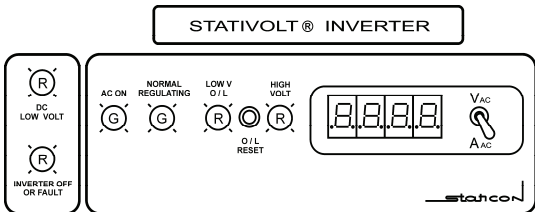
- Natural convection cooled: top, side, rear clearances required for air flow.
- -20°C to $+40^\circ\text{C}$ continuous operation
- RH $< 95\%$ non-condensing

Reliability

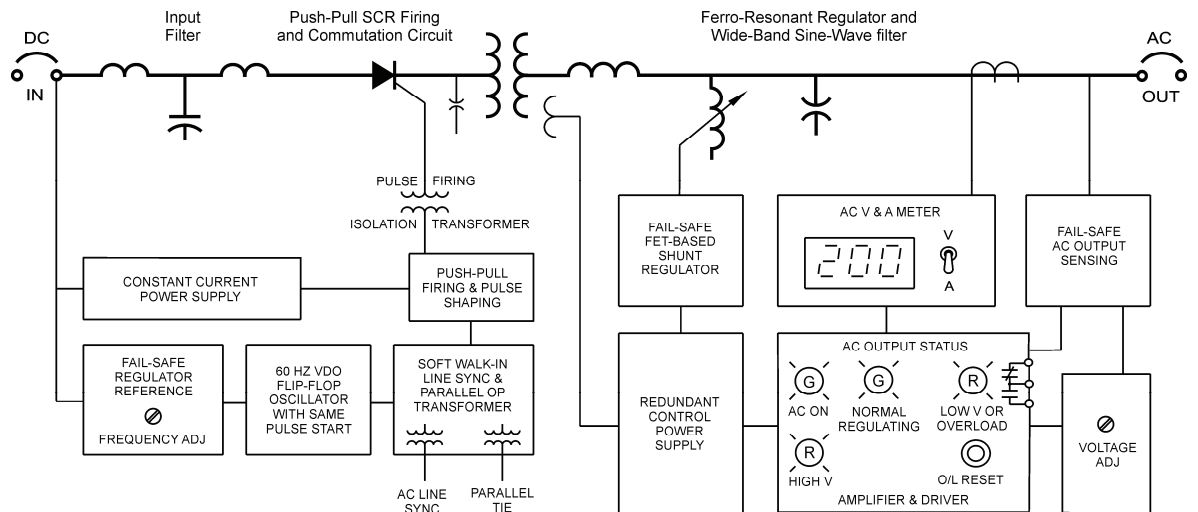
- MTBF is 120 k hrs (1Ø), 40 k hrs (3Ø)
- MTTR is 1 hour (spares on / near site)

Design & Test Standards

- CSA certified (C22.2 No. 107.1-01)
- Generally per NEMA, ANSI, IEEE, IEC
- Magnetics operate at max. 125°C
- Magnetics designed for Class 220°C



Single-Line Diagram With Controls



Oscillator Module

AC Voltage Regulator & Status Module





On-Line Transfer Specs

System Operation

- Normal power via inverter(s) (on-line)
- DC / inverter failure initiates a no-break (< ¼ cycle) transfer to bypass power
- Transfer is via a line redundant transfer logic (LRTL) and a high speed contactor
- Optional static switch + contactor

Transfer to Bypass

- LRTL senses AC voltage, transfers @ 75% of nominal AC V (60-100% adj.)
- LRTL initiates transfer by energizing contactor coil (bypass powered)
- Stored energy enhances fast transfer
- Inverter and bypass frequencies are synchronized within a 1 Hz range
- Auto (60 s delay) or optional manual no-break retransfer of load to inverter

Protection

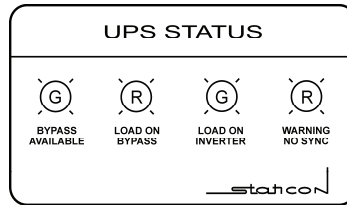
- DC sensing fuse
- Bypass brkr rated $I \approx 1.5 \times \text{full load } I_{AC}$

Reliability

- MTBF is 560 k hrs
- MTTR is 1 hour (spares on / near site)

Annunciation & Meters

- Standard annunciation:



Load on Inverter	NC contacts
Load on Bypass	NO contacts
AC V Meter	digital 1% acc.
AC A Meter (1Ø)	digital 1% acc.

- Contacts are form 'C' contacts rated: 3 A (120 V_{AC} & 30 V_{DC}), 0.3 A (125 V_{DC})
- Optional annunciation & meters
Differential frequency sensor to monitor bypass frequency
AC F Meter analog 2% acc.

Design & Test Standards

- CSA certified (C22.2 No. 107.1-01)
- Generally per NEMA, ANSI, IEEE, IEC

Maintenance Bypass

Maintenance Bypass (BP) Switch

- Make-before-break (< ¼ cycle) manually operated rotary cam switch
- Transfers load to the bypass line
- Isolates inverter system for maintenance / repair purposes

Manual System Isolation

- Open inverter I / O breakers
- Switch load to maintenance bypass via the maintenance bypass switch
- Disconnect DC sensing fuse
- Open AC sensing isolation switch
- Contactor is de-energized

Manual System Return to Inverter

- Post-service no-break retransfer
- Reconnect DC sensing fuse
- Close AC sensing isolation switch
- Close inverter input breaker, then output breaker
- Return maintenance bypass switch to the inverter position
- Inverter power restored (60 s delay)

Standby Transfer Specs

System Operation

- Normal power via AC bypass (BP)
- AC failure initiates a no-break (< ¼ cycle) transfer to inverter power
- Transfer is via a standby transfer logic (SBTL) and a high speed contactor
- Optional static switch + contactor

Transfer to Bypass

- SBTL senses AC voltage, transfers @ 75% of nominal AC V (60-100% adj.)
- SBTL initiates transfer by energizing contactor coil (inverter powered)
- Stored energy enhances fast transfer
- Inverter and bypass frequencies are synchronized within a 1 Hz range
- Auto (60 s delay) or optional manual no-break retransfer of load to AC BP

Protection

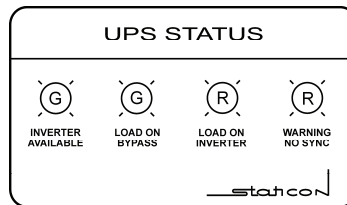
- DC sensing fuse
- Bypass brkr rated $I \approx 1.5 \times \text{full load } I_{AC}$

Reliability

- MTBF is 560 k hrs
- MTTR is 1 hour (spares on / near site)

Annunciation & Meters

- Standard annunciation:



Load on Bypass	NC contacts
Load on Inverter	NO contacts
AC V Meter	digital 1% acc.
AC A Meter (1Ø)	digital 1% acc.

- Contacts are form 'C' contacts rated: 3 A (120 V_{AC} & 30 V_{DC}), 0.3 A (125 V_{DC})
- Optional annunciation & meters
Differential frequency sensor to monitor bypass frequency
AC F Meter analog 2% acc.

Design & Test Standards

- CSA certified (C22.2 No. 107.1-01)
- Generally per NEMA, ANSI, IEEE, IEC

Transfer Cabinets

Cabinets

- Integrated with inverter UPS
- NEMA type 1
- Front accessible, side / top cable entry
- 14 / 10 gage steel panels / mounts
- Powder coated, baked enamel finishes

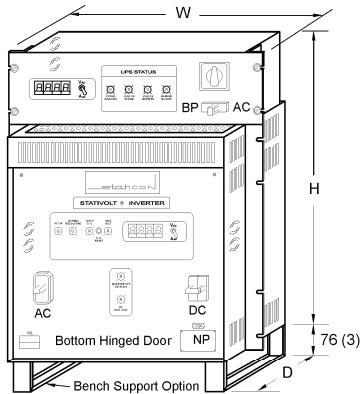
Environmental Requirements

- Natural convection cooled, top, side, rear clearances required for air flow.
- -20°C to +40°C continuous operation
- RH < 95% non-condensing





1Ø System Standard Cabinets



Rack Mount Cabinet (R)

Dual Redundant Systems

Parallel, floor mount, inverter systems (2 parallel inverters combined with one transfer) are 2x the width and weight as shown in the table.

Bypass Transformer

The optional bypass transformer is housed in the transfer section of any inverter UPS.

Construction

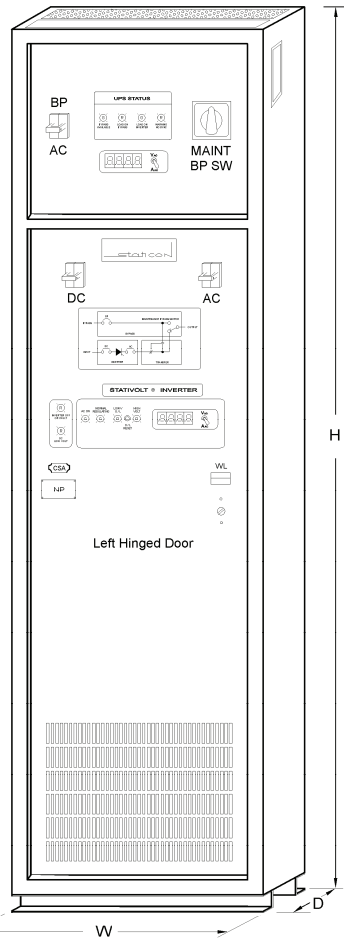
EEMAC / NEMA type 1 cabinets. Front access. 14 / 10 gage steel panels / mounting channels. Standard finish is ASA 61 grey, baked enamel.

Side cable entry for rack mount cabinets.
Top cable entry for floor mount cabinets.

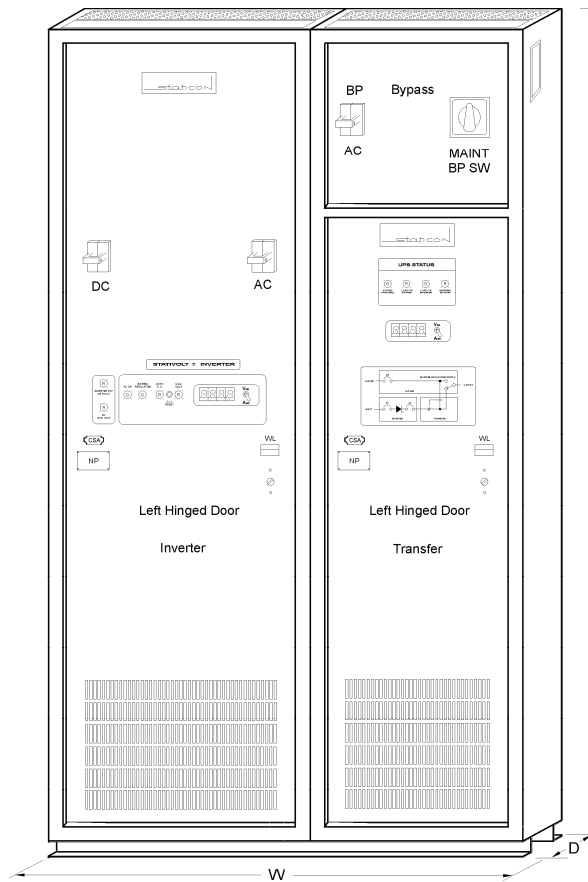
Required Ventilation Clearance:

Rack Cabs: 89 (3.5) space all sides.
Floor Cabs: 305/610 (12/24) rear/top space.

Output kVA	Cabinet Style	Dimensions mm (in)			Weight kg (lb)
		H	W	D	
0.6	R	445 (17.5)	584 (23)	508 (20)	45 (99)
1.2	R	579 (22.8)	584 (23)	508 (20)	65 (143)
2	R	668 (26.3)	584 (23)	508 (20)	80 (176)
3	R	757 (29.8)	584 (23)	508 (20)	105 (231)
4	F1	1905 (75)	610 (24)	610 (24)	200 (441)
5	F1	1905 (75)	610 (24)	610 (24)	240 (529)
6	F1	1905 (75)	610 (24)	610 (24)	280 (617)
7.5	F1	2057 (81)	610 (24)	610 (24)	310 (683)
10	F1	2057 (81)	610 (24)	762 (30)	350 (772)
12.5	F1	2057 (81)	610 (24)	762 (30)	400 (882)
15	F1	2210 (87)	610 (24)	762 (30)	480 (1058)
20	F1	2210 (87)	762 (30)	762 (30)	670 (1477)
25	F1	2210 (87)	762 (30)	762 (30)	840 (1852)
30	F2	2210 (87)	1372 (54)	914 (36)	1150 (2921)
40	F2	2210 (87)	1372 (54)	914 (36)	1280 (2821)
50	F2	2210 (87)	1676 (66)	914 (36)	1550(3937)
60	F2	2210 (87)	1676 (66)	914 (36)	1850 (4079)



Floor Mount Cabinet (F1)



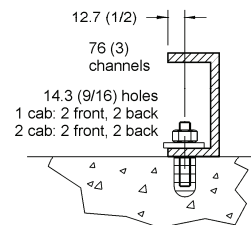
Floor Mount Cabinet (F2)

Notes

Actual systems may vary from these cabinet standards according to job-specific options or custom requirements.

All dimensions in mm (inches).
Drawings are not to scale.

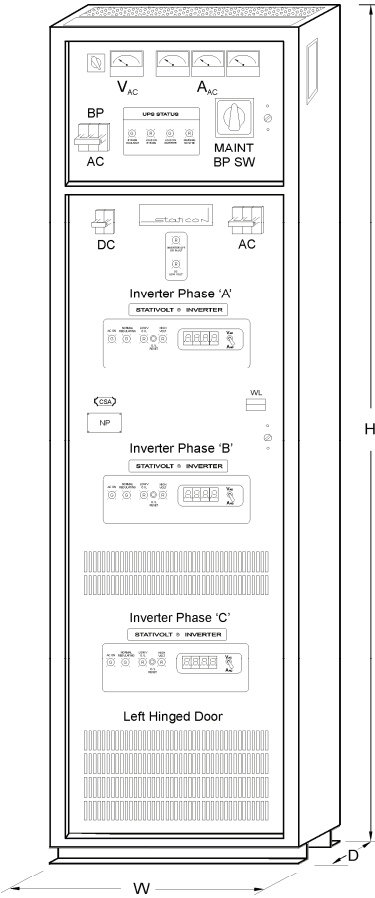
Anchoring Detail





3Ø System Standard Cabinets

Output kVA	Cabinet Style	Dimensions mm (in)			Weight kg (lb)
		H	W	D	
1.8	F1	2057 (81)	610 (24)	610 (24)	225 (496)
3.6	F1	2057 (81)	610 (24)	610 (24)	250 (551)
6	F1	2210 (87)	610 (24)	762 (30)	300 (661)
9	F1	2210 (87)	610 (24)	762 (30)	450 (992)
12	F3	2057 (81)	1829 (72)	610 (24)	650 (1433)
15	F3	2057 (81)	1829 (72)	610 (24)	790 (1742)
18	F3	2057 (81)	1829 (72)	610 (24)	925 (2040)
22.5	F3	2057 (81)	1829 (72)	610 (24)	1030 (2271)
30	F3	2057 (81)	1829 (72)	762 (30)	1150 (2535)
37.5	F3	2057 (81)	1829 (72)	762 (30)	1380 (3043)
45	F3	2210 (87)	1829 (72)	762 (30)	1630 (3594)
60	F3	2210 (87)	2286 (90)	762 (30)	2110 (4652)



Floor Mount Cabinet (F1)

Dual Redundant Systems

Parallel, floor mount, inverter systems (2 parallel inverters combined with one transfer) are 2x the width and weight as shown in the table.

Bypass Transformer

The optional bypass transformer is housed in the transfer section of any inverter UPS.

Construction

EEMAC / NEMA type 1 cabinets. Front access. 14 / 10 gage steel panels / mounting channels. Standard finish is ASA 61 grey, baked enamel.

Top cable entry for floor mount cabinets.

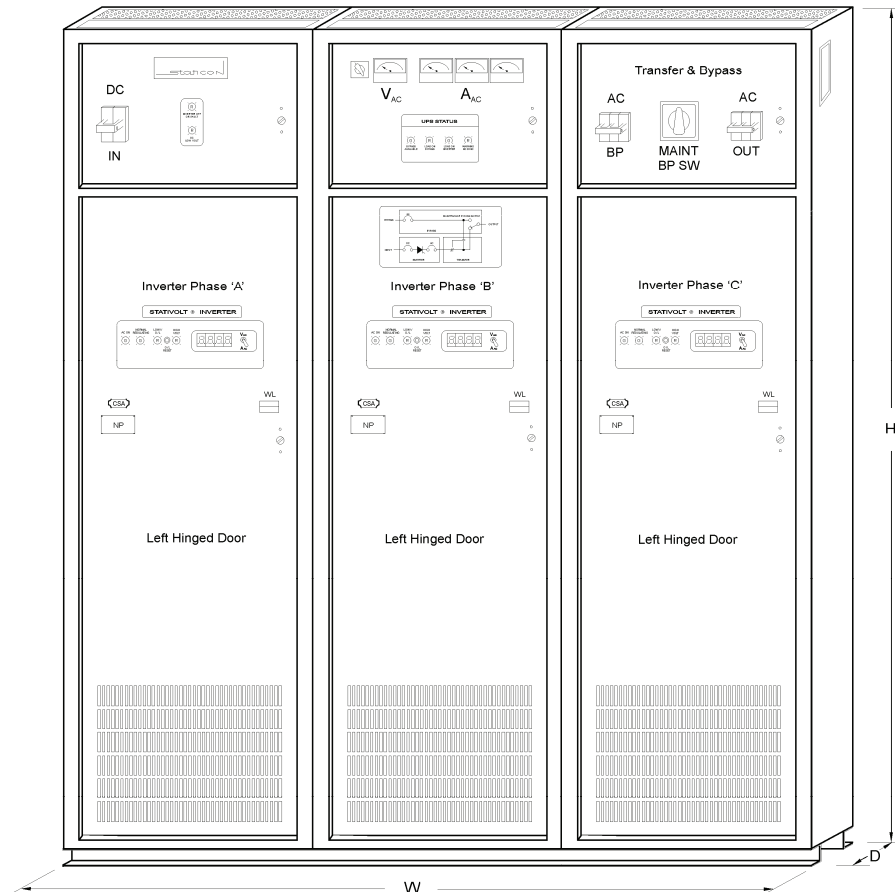
Required Ventilation Clearance:

Floor Cabs: 305/610 (12/24) rear/top space.

Notes

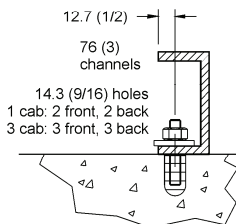
Actual systems may vary from these cabinet standards according to job-specific options or custom requirements.

All dimensions in mm (inches). Drawings are not to scale.



Floor Mount Cabinet (F3)

Anchoring Detail





3Ø System Standard Cabinets

Output kVA	Cabinet Style	Dimensions mm (in)			Weight kg (lb)
		H	W	D	
75	F4	2210 (87)	2896 (114)	762 (30)	2010 (4431)
90	F4	2210 (87)	2896 (114)	762 (30)	2350 (5181)
120	F4	2210 (87)	3048 (120)	762 (30)	2850 (7239)
150	F4	2210 (87)	3505 (138)	914 (36)	3280 (7231)
180	F4	2210 (87)	3962 (156)	914 (36)	3800 (8378)

Dual Redundant Systems

Parallel, floor mount, inverter systems (2 parallel inverters combined with one transfer) are 2x the width and weight as shown in the table.

Bypass Transformer

The optional bypass transformer is housed in the transfer section of any inverter UPS.

Construction

EEMAC / NEMA type 1 cabinets. Front access. 14 / 10 gage steel panels / mounting channels. Standard finish is ASA 61 grey, baked enamel.

Notes

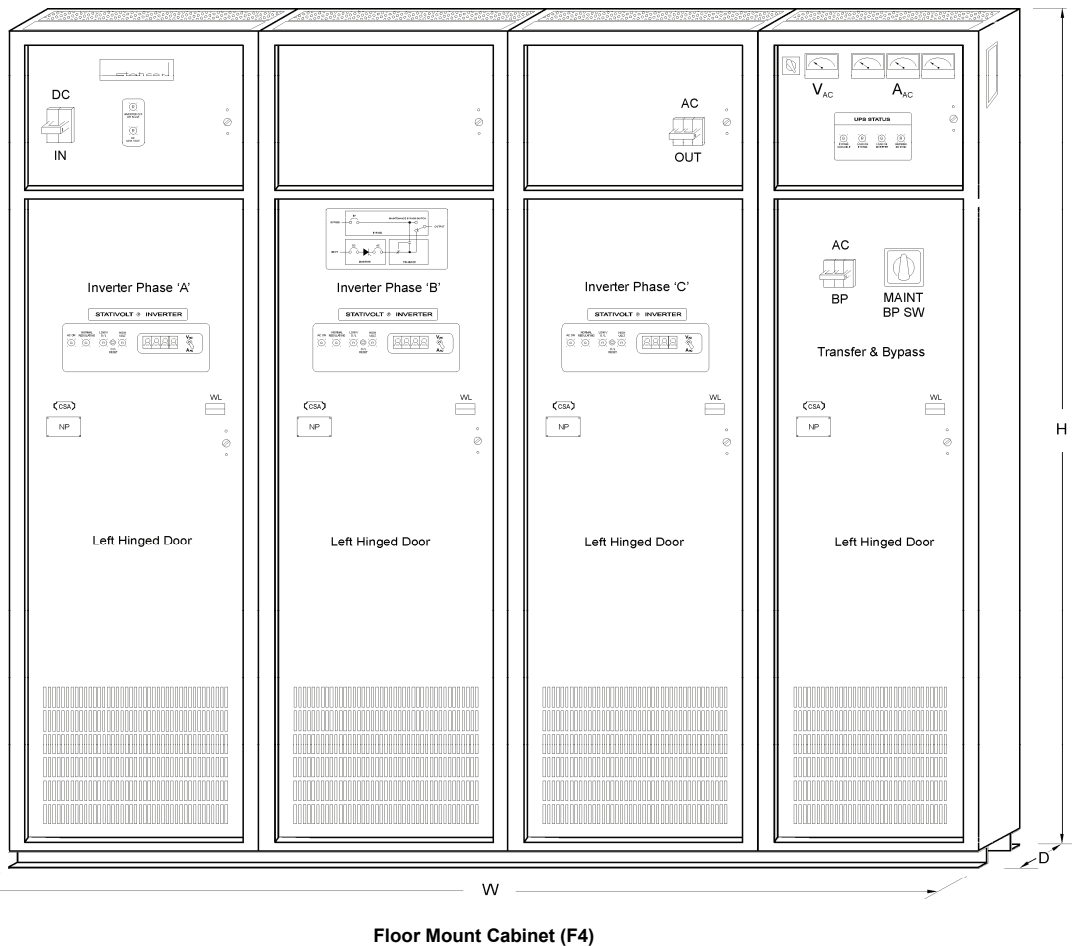
Actual systems may vary from these cabinet standards according to job-specific options or custom requirements.

All dimensions in mm (inches). Drawings are not to scale.

Top cable entry for floor mount cabinets.

Required Ventilation Clearance:

Floor Cabs: 305/610 (12/24) rear / top space.





Model Numbers

_ AC 6 A LA 48 206 F 125 B M _		AC V Code	Ø	60Hz	50Hz					
						Options Codes (see below)	110-120-127	1	A	
						(M)aintenance BP Switch	208-240	1	B	
						(B)attery Ripple Filter	120-208-240	1	T	BX
						DC Nominal Voltage	220-230-240	1	U	UX
						(R)ack or (F)loor mount	480	1	G	
						Height (cm)	600	1	H	
						Width (cm)	208-220 Y	3	EY	EXY
						On-Line (LA)uto or (LM)anual, or Standby (SB) Transfer	380-400-415 Y	3	LY	LXY
						AC Output Voltage Code (see table at right)	480 Y	3	FY	
						Inverter System kVA rating	600 Y	3	KY	
For ≥ 2 parallel inverters add # prefix										

Options

DC Input Options	Code
Input ripple filter, AC ripple ≤ 1% rms (standard)	B
Input telecom noise filter, noise ≤ 32 dBmC (24 & 48 V DC only)	C
DC low V shutdown, nominal to -17% DC input voltage range, adjustable	Ls
DC Ground leakage alarm, 2 red LEDs, 1 set of form 'C' contacts, 1-5 mA adjustable	G
Digital DC V & A meter, 1% accuracy, switch selectable	Dm
AC Output Options	
50 Hz output voltage frequency	see AC V code
Dual AC output voltage, 120 / 240 VAC (120-N-120)	Do
Transfer / Bypass Options	
Staticon no-break, energy storage & contactor based auto transfer	standard
Static switch + contactor based, ≤ ¼ cycle break auto transfer	S
On-line (line redundant) auto return transfer (60 s delay)	LA
On-line (line redundant) manual return transfer	LM
Off-line (standby) auto return transfer (60 s delay)	SA
Off-line (standby) manual return transfer	SM
Maintenance bypass switch, manual make-before-break rotary cam switch (standard)	M
Bypass step-down / isolation transformer	X
Annunciation Options	
Frequency meter, analog, 2% accuracy	F
Differential frequency sensor to monitor bypass power frequency	Fd
Common system failure alarm, 1 extra set of form 'C' contacts	Ca
Audible system failure alarm	A
Utility Options	
Keyed door locks with handles	K
High interrupting-ampere capacity input / output / bypass breakers (consult Staticon)	I
I / O breaker visible contacts and lock attachments	V
Auxiliary contacts for any single input, output, bypass or distribution breaker	Ac
Zinc Rich powder coat paint primer for enhanced corrosion protection	Z
White interior paint	W
Seismic anchor L brackets (4)	Sa
Packaging Options	
Tropical / humidity proofing, acrylic sprayed components and wires	T
Export packaging per international ocean freight requirements	

