



SBS[®]

STORAGE BATTERY SYSTEMS, LLC



Much More Than A Stationary Battery Charger

ev3^{EVOLVED}
AT SERIES BATTERY CHARGER




STORAGE BATTERY SYSTEMS, LLC

Storage Battery Systems LLC
N56 W16665 Ridgewood Drive
Menomonee Falls, WI 53051

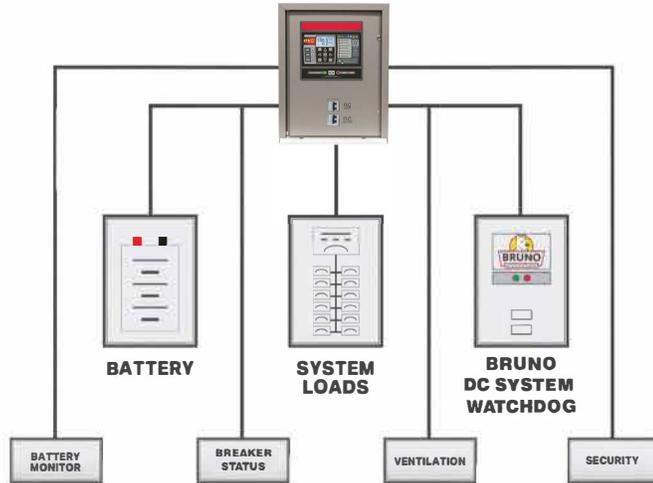
www.sbsbattery.com

800-554-2243

sbs@sbsbattery.com



ATevo... Your premier choice for all stationary battery charger specifications



HindlePower's AT Series Battery Chargers have been the industry standard in stationary utility applications for over 40 years. As demand for full system reliability increases, our products have evolved to include powerful diagnostics to better assess the health of your charging system. ATevo represents the next generation of our AT Series product line. It is designed and manufactured with the same high quality and reliability you've come to expect from HindlePower.

Not only is ATevo equipped with the same standard AT Series Charger features, it is loaded with a host of alarms and diagnostics designed to better identify both potential dc threats and real-time dc issues. ATevo's built-in Hindle Health System acts as both a configuration verification and self-diagnostic tool to ensure your dc system reliability.

Equipped with an easy to use interface with graphical LCD display, ATevo offers a more elegant and intuitive user experience. Packed with a host of powerful features and options, ATevo is the clear choice for utility battery charger applications.

Ensure Your DC System Reliability

HINDLE HEAL+H SYSTEM

You can't put a price on peace of mind.

Simple. Intuitive. Easy.

HindleHealth System (HHS) gives you unparalleled insight into your DC system reliability on all HindlePower Products.



SETUP MADE EASY

With its built in setup wizard, the HindleHealth system will walk you through all the charger settings to ensure they are set to your requirements.



ALARM VERIFICATION

The HindleHealth button will walk users through a "health" check which will simulate alarms, proving the system is operating.



INSIGHT AT A GLANCE

The HindleHealth System status lights let you know your system's condition instantly. Green, you are good to go. Solid Red, some maintenance is required. Blinking Red, immediate action is required.



24/7 SUPERVISION

At any moment, if a DC System or battery charger abnormality occurs, the HHS will identify the issue and alert the operator via the HMI Screen and LED indicator lamps. Every feature of the battery charger will be alarmed by the HHS, plus any third part device connected through the auxiliary board.



SYSTEM COMPATIBILITY

The ATevo HHS was designed to work independently with the battery charger or in tandem with any new HindlePower products. When paired with an EPIC Series Console, EPIC Battery House, Bruno DC System Watchdog, or Intelligent DC Switchboard, the HHS will act as a supervisory device, overseeing the system as a whole.



ATevo



EPIC Console 2.0



Intelligent DC Switchboard

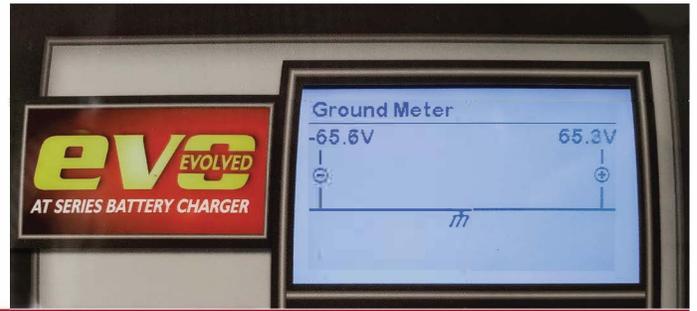


BRUNO DC System Watchdog

Standard Features

WHAT'S IN THE BOX?

ATevo comes with a host of standard features and software capabilities.



EVENT LOGGING

Don't miss a thing! ATevo can log up to 1024 events such as alarms and/or parameter changes.



GRAPHICAL LED DISPLAY

ATevo's easy to use interface gives you all the information you need with no guess-work.



GROUND FAULT METERING

Standard Zero-Center voltmeter alerts users of any imbalance on the DC bus.



SECURITY

Password protection prevents unauthorized users from changing any settings on the ATevo charger.



DYNAMIC CURRENT LIMIT

Prevents rectifier components from failing in ambient temperatures above 50°C.



BATTERY OPEN ALARM

Ensures battery continuity and alerts you should the charger not be connected to a battery.



UNIVERSAL CONTROL BOARD

No more overstocked boards. Main control board is not voltage specific and can operate in any ATevo charger.



LOCAL AND REMOTE VOLTAGE SENSE

Allows the charger to read the actual battery terminal voltage!

ALARMING/SELF DIAGNOSTIC CAPABILITY

ATevo provides you with advanced alarming capability right out of the box that will meet most utility specifications and requirements. Common LED indicator light comes standard.

- High DC Voltage
- Low DC Voltage
- DC Output Failure
- AC Input Failure
- Ground Fault Alarm
- Summary Alarm
- High Level Detect
- Low Level Detect
- SCR Failure Alarm
- Rectifier Over-temp
- AC Ripple Alarm
- Relay Failure
- Battery Temp
- Open Breaker Alarm
- Open External and Internal Feedback Alarms
- End of Discharge
- Open DC Output
- Current Limit

Standard Filtering

Definitions are consistent with current NEMA PE5 standards. The standard DC output filter reduces the output ripple voltage to:

- less than 30mVrms on batteries through 48 Vdc
- less than 100mVrms for 130Vdc batteries
- less than 200mVrms for 260Vdc batteries

when measured at the battery terminals with a battery connected, and no greater than 2% of the output DC



ELIMINATOR (OPTIONAL)

Eliminator filtering is 30mV for 24Vdc and 48Vdc chargers.
Eliminator filtering is 100mV 130Vdc chargers
Eliminator filtering is 200mV 260Vdc chargers



SUPER FILTERING (OPTIONAL)

is 30mV on battery for 130Vdc chargers. Only available for 130 Vdc applications.
Reduces the mV to 30.

Circuit Breaker Protection



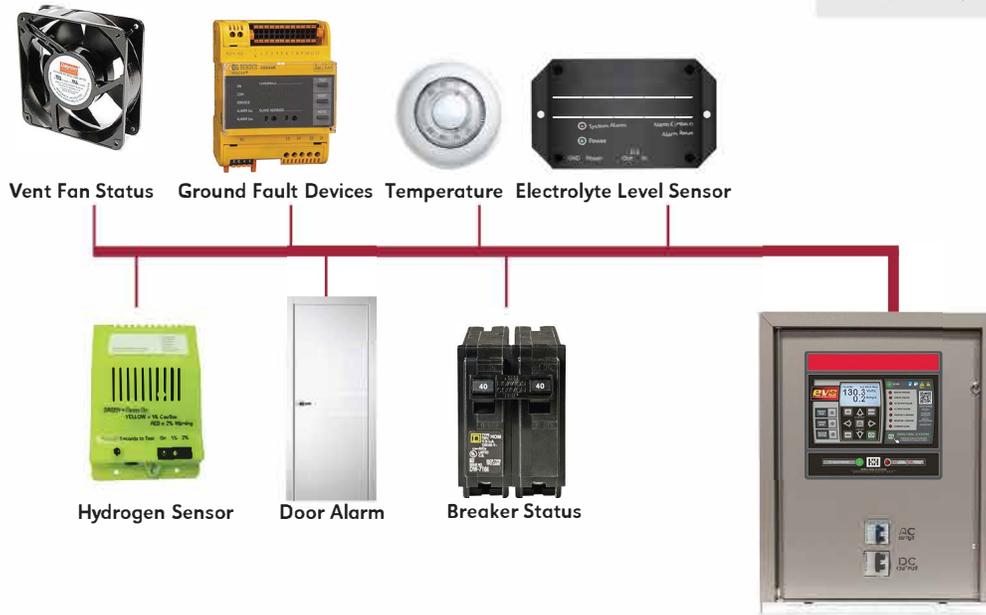
ATEvo comes factory equipped with thermal magnetic breakers for both the AC input and DC output. Optional Ampere Interrupting Capacity (AIC) ratings that are higher than standard are available:

- Medium
- High
- Ultimate

Refer to circuit breaker table document DC5016-XX for a full list of AIC ratings. Please note that certain size chargers do not offer optional AIC ratings.

Advanced Options

Auxiliary Input/Output (I/O) Board



ATevo now becomes the central point of your DC system. The optional Auxiliary I/O Board (A4) gives users the ability to monitor status of third party equipment. It is equipped with (6) assignable relays, four (4) generic binary inputs, and four (4) generic analog inputs. Up to 2 auxiliary input/output boards can be installed in an ATevo charger.

PART #

PROGRAMMABLE ALARM RELAYS

- Relays are rated for .5A @ 125Vac/Vdc
- Change states based on any alarm condition or status point
- Can be latching or non-latching
- Able to switch to activated state after a pre-programmed delay

PROGRAMMABLE GENERIC BINARY INPUTS

- The four (4) binary inputs are optically isolated from ATevo and each other
- Input can be user configured for 24, 48, 130, or 260Vdc thresholds
- Can be configured to be active high or active low, and generate alarms and controls such as charger shut-down
- Typical uses include remote shutdown, electrolyte level, ventilation fan failure, etc.

PROGRAMMABLE GENERIC ANALOG INPUTS

- The four (4) analog inputs are rated for 0-10Vdc and are referenced to ATevo DC (-)
- Analog inputs can be scaled to report and alarm in primary values.
- Uses include: AC voltage, AC current, and temperature transducer inputs

EJ5301-XX

BATTERY TYPE ALARM TERMINAL BLOCK

Features a separate molded phenolic terminal block, wired directly to the Auxiliary Alarm Relay PC Board. It allows the user to connect remote alarm wiring with ring or fork type lugs. The terminals are rated for 20A at 25 Vac/Vdc, and accept wire sizes #16 to #14 AWG. Must be ordered separately.

EJ5130-XX

Communications

ATevo communications options allow users to remotely observe any status or perform any function that is accessible at the charger's front panel display. Multiple communication options are available, the Serial communications, Ethernet Communications, and IEC 61850.

SERIAL COMMUNICATIONS ADAPTER

EN5034-XX

- Allows connections to either RS-232 or RS-485 networks
- ATevo can support up to three (3) Serial Communication Adapters

ETHERNET COMMUNICATIONS ADAPTER

EN5035-XX

- Supports standard RJ45 10/100 Mbps copper Ethernet connections
- ATevo can support one (1) Ethernet Communication Adapter
- Supports DNP3 Level 2 and Modbus Protocols simultaneously

IEC 61850 COMMUNICATIONS ADAPTER

EJ5701-XX

- IEC 61850 communications capability, an international standard defining communication protocols for intelligent devices used in electrical substations



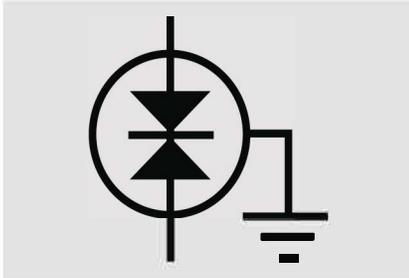
EN5700-XX

Much more than just a battery charger. Hindle Health Plus gives you all the benefits of the Hindle Health System, and now extends it to your battery. This optional features will give you the ability to:

- Measure battery charge / discharge current
- Accurately measure float current
- Measure ripple voltage and current
- Measure Battery and ambient temperature

These features allow for better visibility on the health of your battery ensuring it will respond when needed.

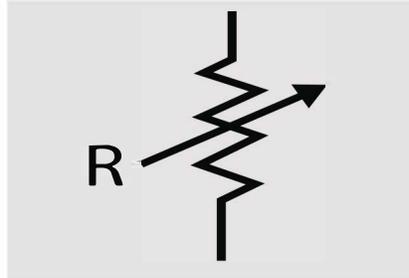
Additional Accessories



AC LIGHTNING ARRESTOR

Recommended for installations with risk of frequent AC surges, such as high elevations or severe weather. Is in accordance with IEEE 472 requirements.

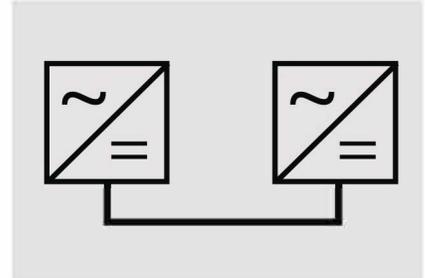
EJ5308-XX



TEMPERATURE COMPENSATION

Adjusts the dc output voltage up or down, in response to battery temperature fluctuations. Consists of an external temperature probe mounted on or near the battery. Useful for lead-acid or nickel-cadmium batteries and available probe lengths of 25, 50, 100 and 200 ft.

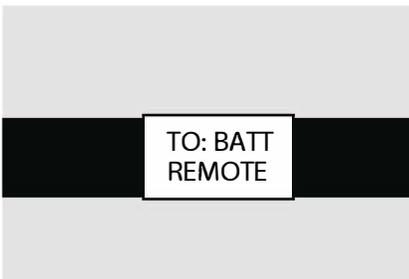
EJ5304-XX



FORCED LOAD SHARE

Provides for load sharing of 2 similar chargers in parallel, allowing for system redundancy.

EJ5306-XX



HEAT SHRINK WIRE MARKERS

Provides additional durability of heat shrink wire markers on the end of each wire. Corresponds to the schematic.

EJ1076-XX

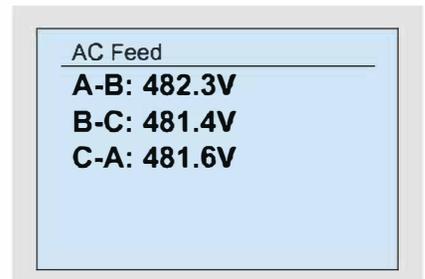


TRANSDUCERS

Capability to transmit analog outputs as selected by you for either 4-20ma, 0-5VDC, 0-10VDC for each of the following characteristics;

• AC Voltage **EJ5316-XX** • DC Voltage **EJ5318-XX**

• AC Current **EJ5317-XX** • DC Current **EJ5319-XX**

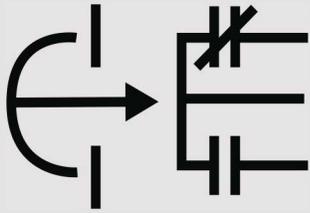


AC METERING

Displays both voltage and/or current on the charger's existing digital LCD display.

AC Voltage **EJ5311-XX**

AC Current **EJ5313-XX**



AC/DC CIRCUIT BREAKER AUXILIARY CONTACTS

Allows for remote indication of
breaker position.

EJ5305-XX



SD MEMORY CARD

32G sim card formatted as FAT32.

PM5020-XX



FAN CONTROL CONTACTOR

Mounted in a separate NEMA 1 enclosure, this option provides a safety device whenever the battery is being equalized or the bus voltage is such that the battery room ventilation fan is required. This device will activate the ventilation.

10A EJ5017-06
20A EJ5017-16



BLOCKING DIODE

Although normally not a requirement for SCR type battery chargers, may be added as an option for any ATevo product.

EJ5149-XX

Enclosure Options



NEMA 2

Provides a drip shield on the standard enclosure to protect it from falling dirt and/or dripping water.

EI0191-XX



NEMA 4/12

All-weather enclosures, will also accommodate NEMA 12 and 13
Available for cabinet styles:

• 5030

EB5030-41

• 5054

• 5070

EB5054-41 EB5070-41

• 163

• 198

EB5039-50 EB5046-50



RELAY RACK MOUNTING

Available for those enclosures small enough to be accommodated by a standard EIA relay rack. These mounting devices are useful for appropriate size racks.

EI0193-XX



FLOOR STANDS

Allow for free standing smaller, typically wall-mounted enclosures. These stands universally allow for the base of the charger to be approximately 44 inches/1.12m from the base or floor.

EI0192-XX



LOCKING PROVISIONS

Provides extra security by physically locking the front door.

- Padlock

EI0215-05

- Keylock

EI0215-16



WALL MOUNTING BRACKETS

Allow for wall mounting of typically floor mounted enclosures. These brackets are limited to 5070 enclosures.

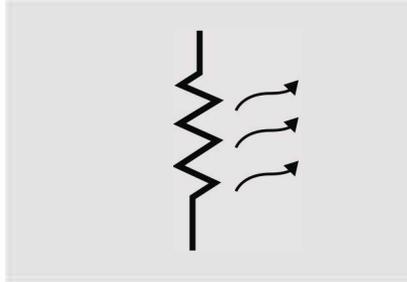
EI5008-XX



CUSTOM COLORS

All ATevo enclosures feature an ANSI 61 gray epoxy powdercoat finish. Custom color options are available upon request: *please provide either ANSI, PMS or RAL color desired.*

**CONSULT
FACTORY**



CABINET HEATERS

Provide for anti-condensation heating of the battery charger cabinet.

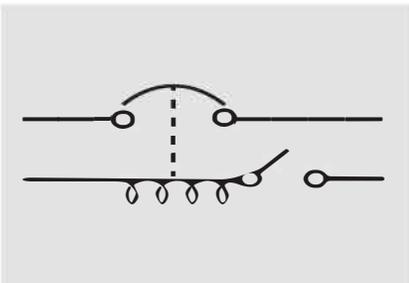
EJ5156-XX



INSECT/RODENT/ SNAKE SCREENING

Provides an added protective screen device that inhibits the entrance of insects, reptiles, and small animals in any NEMA 1 or NEMA 2 enclosure.

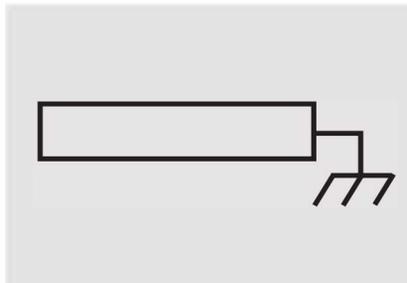
EJ1076-XX



CIRCUIT BREAKER INTERLOCKS

An added measure of protection that inhibits the operator's ability to open the battery charger door when the AC and DC breakers are closed.

EJ5311-XX



COPPER GROUND BUS

Offers a convenient means to tie the ATevo to the building's ground.

EI5098-XX



INTERNAL COATINGS

Offer various forms of protection for electrical components and internal wiring connections:

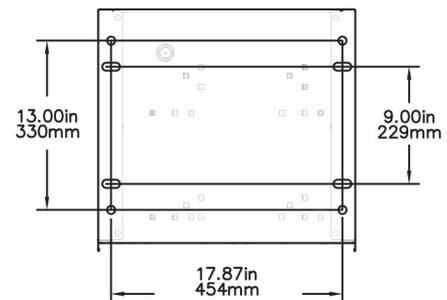
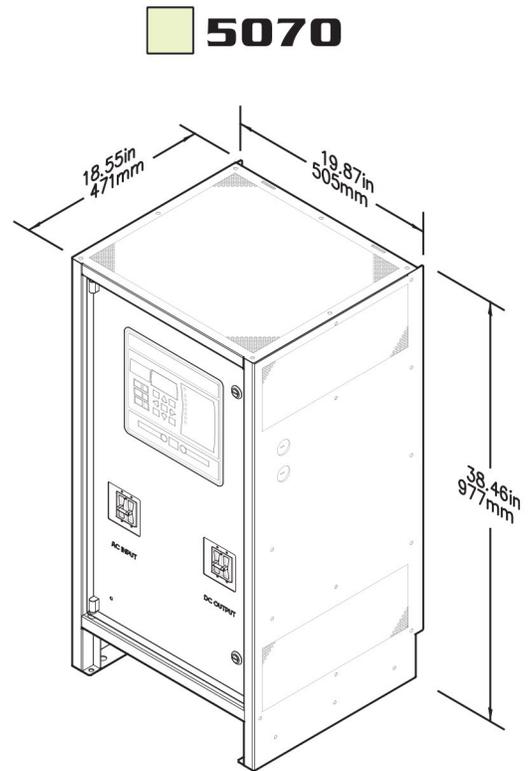
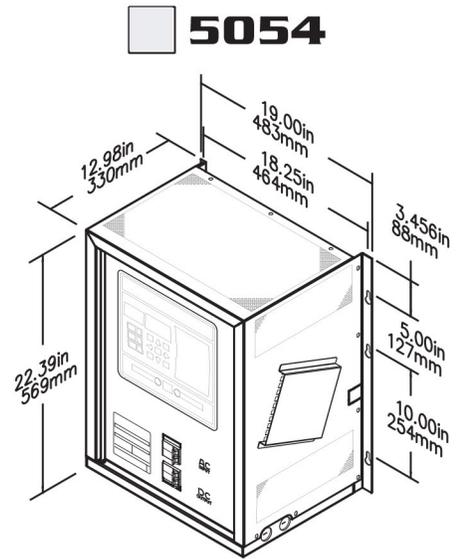
Fungus Proofing
EJ1076-00

Anti-Static
EJ1076-01

Conformal
EJ1076-03

Standard Enclosures (Single Phase Inputs)

DC Output Ratings		Cabinet Style	Approx. Shipping Weights (lbs.(kg))	Heat Loss watts (BTU/hr)
Volts	Amps			
24Vdc	6	5054	121 (55)	33 (111)
	12	5054	121 (55)	60 (204)
	16	5054	132 (60)	78 (265)
	20	5054	138 (62)	96 (327)
	25	5054	138 (62)	118 (404)
	30	5054	147 (66)	141 (481)
	40	5054	149 (67)	186 (635)
	50	5054	177 (80)	231 (789)
	75	5070	282 (128)	344 (1174)
100	5070	317 (143)	457 (1558)	
48Vdc	6	5054	121 (55)	42 (144)
	12	5054	135 (61)	79 (268)
	16	5054	157 (71)	103 (352)
	20	5054	175 (79)	128 (436)
	25	5054	175 (79)	158 (548)
	30	5054	181 (82)	189 (644)
	40	5054	198 (90)	250 (852)
	50	5054	204 (92)	311 (1061)
	75	5070	321 (146)	463 (1582)
100	5070	393 (178)	616 (2103)	
130Vdc	6	5054	146 (67)	71 (243)
	12	5054	186 (84)	137 (467)
	16	5054	211 (96)	181 (617)
	20	5054	235 (107)	224 (766)
	25	5054	235 (107)	279 (953)
	30	5054	241 (109)	334 (1140)
	40	5070	341 (155)	443 (1513)
	50	5070	384 (174)	553 (1887)
260Vdc	6	5054	199 (90)	120 (411)
	12	5054	227 (103)	235 (803)



HOW TO SIZE YOUR BATTERY CHARGER

(Simplified Formula)

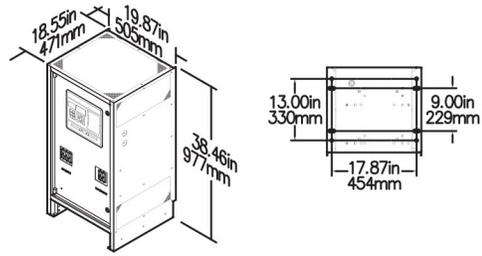
$$\left(\frac{Ah \times 1.R}{t} \right) + L = \text{Continuous Charger Output Rating}$$

Ah=Ampere hours removed
 R= Recharge factor (1 = Pb) or (3 = NiCd)
 L= Additional standing load
 t= Recharge time in hours

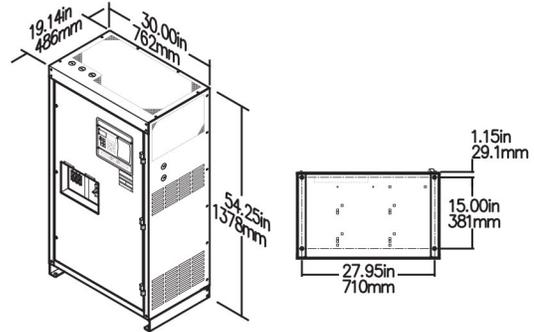
Standard Enclosures (Three Phase Inputs)

DC Output Ratings		Cabinet Style	Approx. Shipping Weights (lbs(kgs))	Heat Loss Watts (BTU/hr)
Volts				
24Vdc	50	5070	232 (105)	231 (789)
	75	5070	251 (114)	344 (1174)
	100	5070	269 (122)	457 (1558)
	125	5030	392 (178)	569 (1943)
	150	5030	413 (187)	682 (2328)
	200	5030	479 (217)	908 (3098)
	250	5030	658 (298)	1133 (3868)
	300	5030	670 (304)	1359 (4638)
	400	163	1150 (522)	1810 (6178)
	500	163	1300 (590)	2261 (7717)
48Vdc	600	163	1530 (694)	2712 (9257)
	800	198	2020 (916)	3614 (12336)
	1000	198	2440 (1107)	4516 (15416)
	50	5070	257 (117)	311 (1061)
	75	5070	305 (138)	463 (1582)
	100	5070	327 (148)	616 (2103)
	125	5030	461 (209)	769 (2624)
	150	5030	471 (214)	921 (3145)
	200	5030	535 (243)	1227 (4187)
	250	5030	750 (340)	1532 (5229)
300	5030	816 (370)	1837 (6272)	
400	163	1100 (499)	2448 (8356)	
500	163	1350 (612)	3058 (10440)	
600	198	1600 (726)	3669 (12524)	
800	198	2020 (916)	4890 (16693)	
1000	198	2400 (1089)	6111 (20861)	
	25	5070	261 (118)	279(953)
	30	5070	261 (118)	334 (1140)
	40	5070	300 (136)	443 (1513)
	50	5070	333 (151)	553 (1887)
	75	5070	407 (184)	826 (2821)
	100	5030	629 (285)	1100 (3755)
	125	5030	661 (300)	1376 (4690)
	150	5030	663 (301)	1647 (5624)
	200	5030	746 (338)	2195 (7492)
	250	163	1130 (513)	2742 (9360)
300	163	1330 (603)	3289 (11229)	
400	163	1580 (717)	4384 (14965)	
500	198	2150 (975)	5478 (18702)	
600	198	2650 (1202)	6573 (22439)	
800	198	3250 (1474)	8762 (29912)	

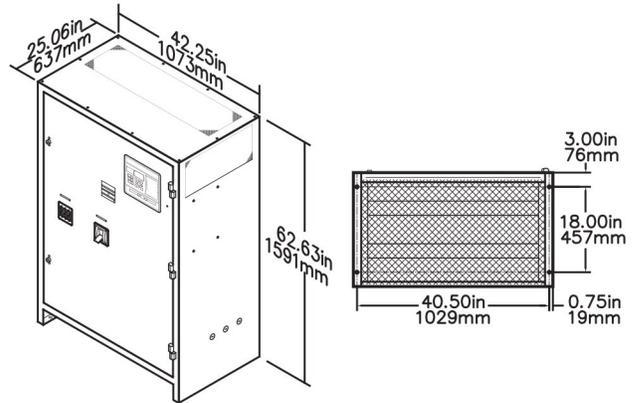
5070



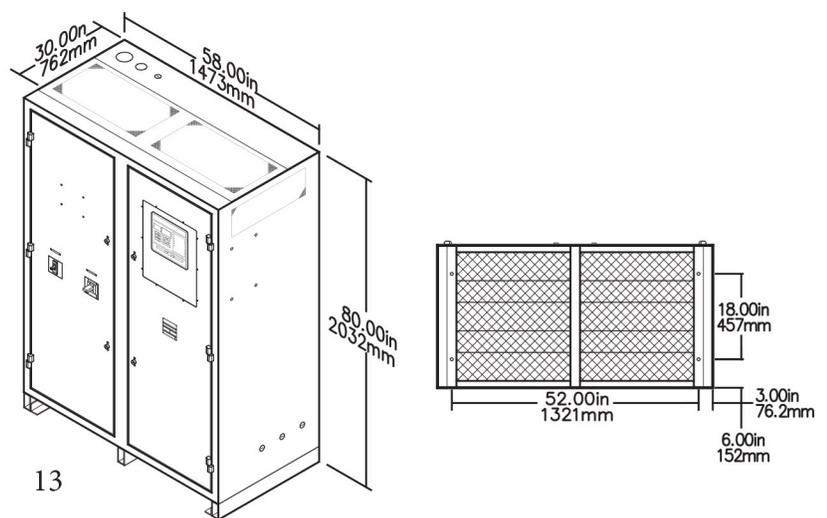
5030



163



198



ATEvo Ordering Code

SAMPLE CODE															
ATEVO	1	130	025	E	240	S	S	I	I	X	X	X	X	G	I
	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R

Description		Code		Feature	
A		ATEV			
B	Number of input phases	1	Single Phase		
		3	Three Phase		
C	Nominal DC Output Voltage	024	24 Vdc		
		048	48 Vdc		
		130	130 Vdc		
		260	260 Vdc *		
D	Nominal DC Output Current **	006	6 Adc	125	125 Adc
		012	12 Adc	150	150 Adc
		016	16 Adc	200	200 Adc
		020	20 Adc	250	250 Adc
		025	25 Adc	300	300 Adc
		030	30 Adc	400	400 Adc
		040	40 Adc	500	500 Adc
		050	50 Adc	600	600 Adc
		075	75 Adc	800	800 Adc
		100	100 Adc	1k	1000 Adc
E	DC Output Filtering	F	Standard Filter		
		E	Eliminator Filter		
		S	Super Eliminator		
F	AC Input Supply Voltage	120	120 V 60 Hz***		
		208	208V 60 Hz		
		240	240 60 Hz		
		480	480 60 Hz		
		600	600 60 Hz		
		220	220V 50/60 Hz		
		380	380V 50/60 Hz		
		416	416V 50/60 Hz		
		MT1	120/208/240 60Hz ****		
		MT2	120/208/240 50/60Hz ****		

* 260V output only available in single-phase up to 12A DC

** Refer to pages 12-13 for available charger output ratings

***120Vac not available on 130Vdc, 50A and 75A units

**** Multi-tap input only available on single-phase units 25A or less.

ATevo Ordering Code

Description		Code	Feature
G	AC Input Protection **	S	Standard AIC
		M	Medium AIC
		H	High AIC
		U	Ultimate AIC
		F	High AIC Fuses w/ Standard Breaker *
H	DC Output Protection **	S	Standard AIC
		M	Medium AIC
		H	High AIC
		U	Ultimate AIC
J	Auxiliary I/O PC Boards	X	No Aux I/O Board Supplied
		1	One Aux I/O Board
		2	Two Aux I/O Board
		3	Three Aux I/O Board
		4	Four Aux I/O Board
		A	One Aux I/O Board w/ Barrier Terminal Blocks
		B	Two Aux I/O Board w Barrier Terminal Blocks
		C	Three Aux I/O Board w/ Barrier Terminal Blocks
		D	Four Aux I/O Board w/ Barrier Terminal Blocks
K	Remote Communications	X	No Remote Communications Supplied
		1	Serial Communications Module
		2	Ethernet Communication Module
		3	Both Serial And Ethernet Communications Module
		4	IEC 61850 Communications Module
		5	Custom Communications
L, M, N	For Future Use		
P	Hindle Health Plus	X	No Hindle Health Plus Supplied
		***	Hindle Health Plus Supplied
Q	Site Wiring Protection	X	Standard Internal CU-AL Compression Box Lug Supplied
		G	Copper Ground Bus Bar Supplied
		L	AC Input Lightning Arrestor Supplied
		B	Both Ground Bus (G) and Lightning Arrestor (L) Supplied
R	Enclosure Type	1	NEMA Type 1 (Standard)
		2	NEMA Type 2 Drip Shield Mounted to Standard NEMA Type 1 Enclosure
		4	Special NEMA Type 4 (12) Water-Proof Cabinet (Vented & Fan Cooled)

* AC Fuses not available in chargers in 5054 style cabinets

** AC DC breakers must match for chargers in a 5054 enclosure

*** For future use

SPECIFICATIONS

AC INPUT

Input Voltage:

120, 208, 240, 480
120/208/240, 550/600 (multi-tap) @ 60Hz
220, 380/416 @ 50-60Hz

*120 VAC and multi-tap inputs not available for three-phase units

Input Voltage Tolerance:

+10%, -12%

Input Frequency Tolerance:

±5%

Efficiency:

85-90% typical for 130Vdc at 50-100% load

Safety & Acceptance

- Meets NEMA PE5
- Third party agency approvals:



Seismic qualified IEEE 693/IBC CBC
ABS or CE certification available upon request.

DC OUTPUT

Voltage Ratings:

24, 48, 130 or 260Vdc nominal

Current Ratings:

6, 12, 16, 20, 25, 30, 40, 50, 75, 100, 125, 150, 200, 250
300, 400, 500, 600, 800, 1000 Adc

1ph units available from 6-100A (130V only up to 75A)

3ph units available from 25A-1000A (24 and 48V start at 50A)

*260Vdc - 6,12 Adc only

Continuous Rating:

110% rated current at maximum equalize
voltage at -10 to +50°C

Transient Rating:

Per NEMA PE-5

Current Limit Adjustment Range:

50% to 110% rated output

Voltage Regulation:

±0.25% for line, load and temp. variations

*Regulation at max. extended equalize voltages may not meet ±0.25%

Electrical Noise:

32dBrc

Ripple:

24/48Vdc

- Filtered on battery 30mVrms
- Filtered off battery 1% Vrms
- Battery Eliminator 30mVrms

130Vdc

- Filtered on battery 100mVrms
- Filtered off battery 2% Vrms
- Battery Eliminator 100mVrms
- Super Eliminator 30mVrms

260Vdc

- Filtered on battery 200mVrms
- Filtered off battery 2% Vrms
- Battery Eliminator 200mVrms

Surge Withstand Capability:

Designed to meet IEEE-472, ANSI C37.90a

Environmental

- Operating Ambient Temperature 5°F to 122°F (-10°C to 50°C) w/o derating
- Operating Altitude 3300 feet (1000 meters) above sea level without derating
- Relative Humidity 0% to 95% (without condensation)
- Audible Noise Less than 65 dBA at any point 5ft (1.5m) from any vertical surface of enclosure



MADE IN THE U.S.A.

Companion Products

Other available HindlePower products engineered for system integration to ensure dc operation and reliability. All HindlePower products, including the EPIC 2.0 Console, are backed by a 5-Year warranty.



EPIC Console 2.0



AT10.1 Battery Charger



BRUNO DC System Watchdog



DC Distribution Panel



Best Battery Selector



DC Disconnect Switch

FOR MORE INFORMATION:



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All specifications subject to change.