ISO 9001:2015 Certified

AT Series Product

ATevo Battery Charger

JF5054-00

INTRODUCTION

ATevo
BATTERY CHARGER

*"the **premier choice** for all stationary battery charger specifications"*

HindlePower products have been the utility industry standard for over 50 years. **ATevo continues the legacy of the AT10.1/ AT30 Series battery chargers.**

ATevo is designed and manufactured with the same high quality and reliability you've come to expect from HindlePower.

Complying with both NERC PRC-005 & TPL-001, ATevo is equipped with powerful diagnostics to better assess the health of your charging system, while meeting the demand for full system reliability.

WARRANTY 5 years

PROUDLY ENGINEERED & BUILT BY HINDLEPOWER IN MADE IN EASTON EASTON, PA, USA

TABLE OF CONTENTS

SIMPLE INSTALLATION & SETUP

The ATevo Quick Setup Guide leads you through five basic steps from installation to configuration via the Edit/Enter button.

INTUITIVE USER INTERFACE

The graphic LCD screen provides all the information you need with no guess work.

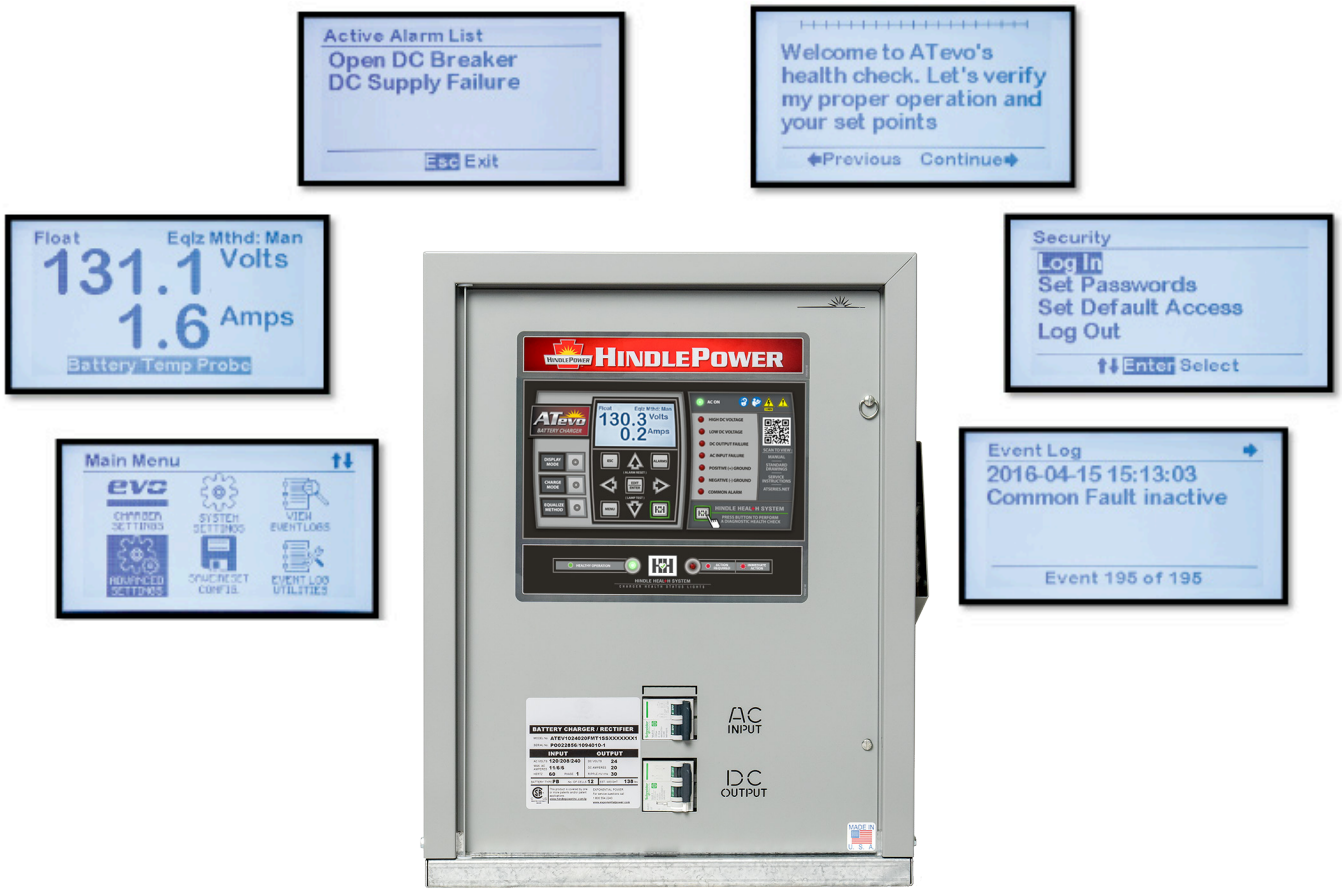
EASY STATUS VERIFICATION

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

HIGH QUALITY & RELIABILITY

ATevo comes with the same high quality and reliability that you have come to expect from HindlePower. Every battery charger is backed by our customer service, technical support, and dc expertise.

STANDARD FEATURES



UNIVERSAL CONTROL BOARD

The main control board can operate any ATevo battery charger regardless of input and output ratings.

GRAPHICAL LCD DISPLAY

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

FILTERING

Output filtering is essential whenever there is a need for low AC ripple and low noise on the DC bus for critical loads.

Available Options:

Filter Level 1 - Filtered (standard)
- available for 24/48/130V models

Filter Level 2 - High Filtered (optional)
- available for 24/48/130/260V models

Special 30mV Filtered on battery (optional)
- only available for 130V models

Definitions consistent with standard IEEE 2405-2022

CIRCUIT BREAKER PROTECTION

ATevo comes factory equipped with thermal magnetic or hydraulic magnetic breakers for both the AC input and DC output. Higher Ampere Interrupting Capacity (AIC) ratings are available.

Refer to Input Current (Aac) / Circuit Breaker Tables:
- JF5072-01 for a full list of 1PH AIC ratings
- JF5072-03 for a full list of 3PH AIC ratings

LOCAL & REMOTE VOLTAGE SENSE

Allows the charger to read the battery terminal voltage.

STANDARD ALARMS

The ATevo allows users to configure the common alarm and also group alarms into high and low priority.

- High DC Voltage *
- Low DC Voltage *
- DC Output Failure *
- AC Input Failure *
- Ground Fault *
- Common Alarm *
- Open DC Breaker
- Open External and Internal Feedback
- Ambient Temperature Probe Failure
- DC Short Circuit
- DC Supply Failure
- Equalize Mode Disabled
- High Level Shutdown
- Low AC Shutdown
- Low AC Supply
- High Level Detect
- Low Level Detect
- Rectifier Over-temp
- Relay Failure
- End of Discharge
- Current Limit
- Open Battery Alarm
- Positive/Negative Ground Fault Warning
- Positive/Negative Ground Fault Critical
- Open DC Output
- Rectifier Temperature Sense Failure
- Alarm Relay Failure
- Ground Voltage Imbalance Warning
- Ground Voltage Imbalance Critical

**** supplied with discrete LED indicator***

SECURITY

Three levels of password protected security prevents unauthorized users from changing any settings on the ATevo battery charger.

EVENT LOGGING

Don't miss a thing! ATevo can log up to 1,024 events such as alarms and/or parameter changes.

GROUND FAULT METERING

Standard, digital, zero-center voltmeter alerts users of any imbalance on the dc bus.

SD MEMORY CARD

Included with every ATevo, the SD card allows users to copy data from the event log, save and restore battery charger configuration, and load firmware updates.

CLEAR SAFETY COVER

Clear acrylic protective cover marked with layout and connection diagram covering all internal components (excludes certain larger battery charger enclosures).

DIGITAL ONLINE MANUAL

Full manual is available in both English and Spanish with easy **QR Code** access on charger.

OPTIONS & ACCESSORIES

AUXILIARY ALARM RELAY BOARD

The Auxiliary Alarm Relay Board gives users the ability to monitor and report ATevo status to or from third party equipment.

Each auxillary input/output board is equipped with:

(6) programmable alarm relays
(4) programmable generic binary inputs
(4) programmable generic analog inputs

EJ5301-##

BARRIER 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.

EI5205-##

COMMUNICATIONS

ATevo communication options allow users to remotely monitor and control the battery charger using DNP 3 Level 2, Modbus, and IEC 61850 Protocols. Refer to Communications Manual **JA0102-54**.

SERIAL COMMUNICATIONS ADAPTER	EN5034-00
ETHERNET COMMUNICATIONS ADAPTER	EN5035-00
IEC 61850 COMMUNICATIONS ADAPTER * may include seperate enclosure depending on charger size	EJ5309-5#

COPPER GROUND BUS

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

EI5098-0#

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.

EJ5308-0#

NEMA TYPE-2 DRIP SHIELD

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

EI0191-5#

NEMA TYPE-4 ENCLOSURES

All-weather cabinets (will also meet NEMA TYPE-12 and TYPE-13).

CONSULT FACTORY

HindleHealth+

An electronically enhanced shunt that provides continuous monitoring of open battery status and calculates the anticipated amp-hour remaining in your battery, offering the industry's highest level of resolution and accuracy. Refer to document **JF5081-00** for more information.

EJ5178-##

- Mounted in a seperate enclosure
- Includes Battery Charge / Discharge Meter & Battery Discharge Alarm
- Includes Temperature Compensation & Battery Temperature/Alarm
- Utility compliance with NERC PRC-005 & TPL-001

TEMPERATURE COMPENSATION & BATTERY TEMPERATURE/ALARM

Adjusts the dc output in response to battery temperature fluctuations. Compatible with lead acid and NiCad type batteries.

Displays battery temperature/alarm on charger LCD screen.

EJ5304-0#

FORCED LOAD SHARING

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

EJ5306-0#

INTERNAL COATINGS

Fungus proofing, anti-static, and PCB conformal.

Fungus Proofing	Anti-Static	PCB Conformal
EJ1076-00	EJ1076-01	EJ1076-03

FLOOR STANDS

Allows for floor mounting of Style-5054 and Style-5070 enclosures.

Style-5054	Style-5070
EI0192-50	EI0184-71

WALL MOUNTING BRACKETS

Allow for wall mounting of floor mounted Style-5070 enclosures.

EI5008-##

RELAY RACK MOUNTING

Available for Style-5054 and Style-5070 enclosures. These brackets allow mounting into standard EIA 19in/23in/24in relay racks.

EI0193-5#

LOCKING PROVISIONS

Provide extra security by physically locking the front door.

Padlock	Keylock
EI0215-0#	EI0215-1#

TOUCH UP PAINT

2oz bottle of ANSI 61 gray touch up paint.

EI5047-00

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 HEATER

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

EJ5156-0#

INSECT/RODENT/SNAKE SCREENING

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

EJ1076-02

HEAT SHRINK WIRE MARKERS

Provides the additional durability of heat shrink wire markers on the ends of each wire which correspond to the wire numbers on the charger wiring diagram.

EJ1076-04

FAN CONTROL CONTACTOR

Mounted in a separate NEMA 1 enclosure, this accessory provides a relay contact to activate a battery installation vent or exhaust fan when the charger is in equalize.

10Adc

EJ5017-2#

20Adc

EJ5017-3#

VOLTAGE AND CURRENT TRANSDUCERS

Transmits 4-20 mA, 0-5Vdc, 0-10Vdc analog outputs for: DC Voltage, DC Current, AC Current(s), and/or AC Voltage(s) measurements

Vdc	Vac
EJ5318-##	EJ5316-##
Adc	**Aac**
EJ5319-##	EJ5317-##

CIRCUIT BREAKER/DOOR INTERLOCKS

An added measure of protection that allows the operator to open the battery charger door only when the ac and dc breakers are open.

EI5136-0#

AC METERING

Displays input voltage (Vac), input current (Aac), and frequency on the battery charger's digital LCD screen.

EJ5303-##

AC CIRCUIT BREAKER AUXILIARY SWITCH

Generates alarm when AC circuit breaker is open. (DC Circuit Breaker Auxiliary Switch is standard)

EJ5305-1#

SPECIFICATIONS

DC OUTPUT

Voltage Ratings:
24, 48, 130 and 260 Vdc nominal

Current Ratings:
1PH units available from 6-100A
3PH units available from 16A-1000A
(refer to next page for available charger output ratings)

Continuous Rating:
110% rated current at maximum equalize voltage at -10 to 50°C

Transient Rating:
Per IEEE std 2405

Current Limit Adjustment Range:
50% to 110 % rated output

Voltage Regulation:
+0.25% for line, load, and temp. variations
* regulation at extended equalize voltages may not meet +0.25%

Electrical Noise:
26dBrnc

Ripple:
24/48Vdc
- Filter Level 1- Filtered- 2% Vrms*
- Filter Level 2- High Filtered- 30mVrms**

130Vdc
- Filter Level 1- Filtered- 2% Vrms*
- Filter Level 2- High Filtered- 100mVrms**
- Special 30 mVrms Filtered on 130V battery

260Vdc
- Filtered Level 2- 200mVrms**

* Filter Level 1 equivalent to NEMA PE5 filtered output
** Filter Level 2 equivalent to NEMA PE5 battery eliminator filter

Surge Withstand Capability:
Designed to meet IEEE-472, ANSI C37.90a

AC INPUT

Code	Input Voltage:
120	120V 60 Hz*
208	208V 60 Hz
240	240V 60 Hz
480	480V 60 Hz
600	600V 60 Hz
220	220V 50/60 Hz
380	380V 50/60 Hz
416	416V 50/60 Hz
MT1	120/208/240 60 Hz*

*120 Vac and multi-tap inputs not available for certain single phase units, and all three-phase units

Input Voltage Tolerance:
+10%, -12%

Input Frequency Tolerance:
+/- 5%

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

ENVIRONMENTAL

- Operating ambient temperature -10 °C to 50 °C w/o derating
- Operating altitude 3,300ft (1,000m) above sea level w/o derating
- Relative humidity 0% to 95% (w/o condensation)
- Audible noise less than 65 dBA at any point 5ft (1.5m) from any vertical surface of enclosure

SAFETY & ACCEPTANCE

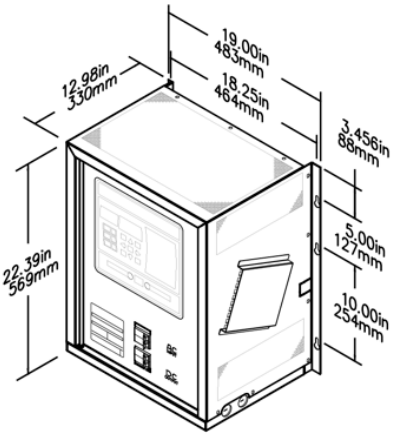
- Standard IEEE 2405 2022 (supercedes NEMA PE5)
- Standards UL 1564 & UL 1012
- Standard CSA 22.2
- Standard IEEE/ANSI C37.90
- Standard FCC Part 15 Subpart J Class A
- Seismic qualified IEEE 693, CBC & IBC
- HindlePower Standard 5-year Warranty
  (refer to document JF5001-00)

Standard Drawings & Operating Instructions

AVAILABLE MODELS & STANDARD ENCLOSURES (Single Phase Inputs)

DC OUTPUT RATINGS		Enclosure Style	Approximate Weights (lbs.(kg))	Heat Loss Watts (BTU/hr)
VOLTS	AMPERES			
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	398 (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)
	75	5070	422 (192)	826 (2821)
260Vdc	6	5054	199 (90)	120 (411)
	12	5054	227 (103)	235 (803)
	16	5070	380 (172)	312 (1064)
	25	5070	420 (190)	484 (1652)

5054



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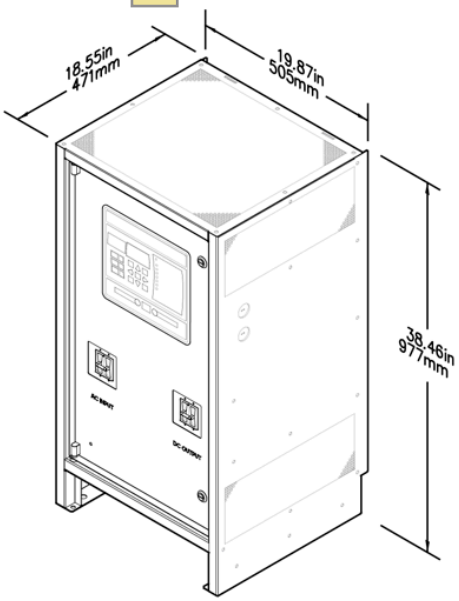
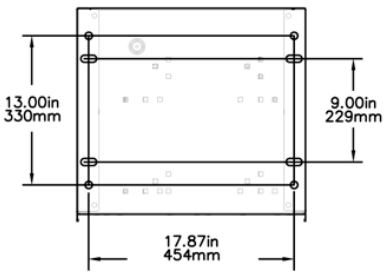




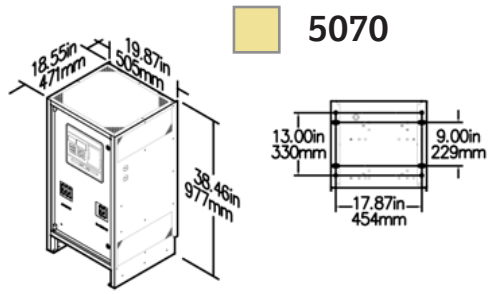
HOW TO SIZE YOUR BATTERY CHARGER
(Simplified Formula)

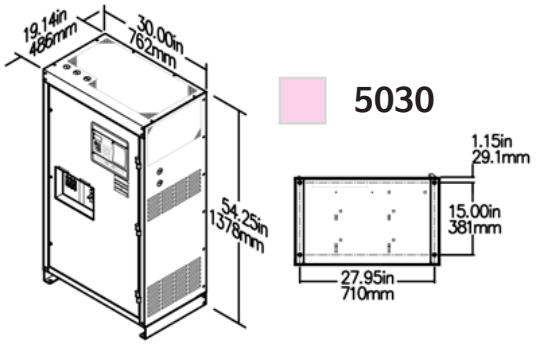
$$\left(\frac{Ah \times 1.R}{t}\right) + L = \text{Continuous Charger Output Rating}$$

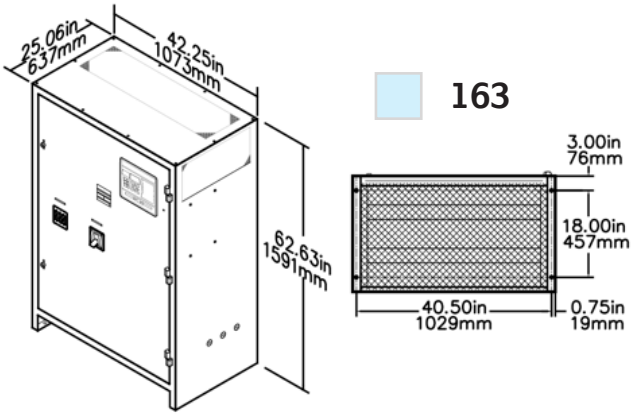
Ah = Ampere hours removed
R = Recharge factor (1 = Pb) or (3 = NiCd)
L = Additional standing load
t = Recharge time in hours

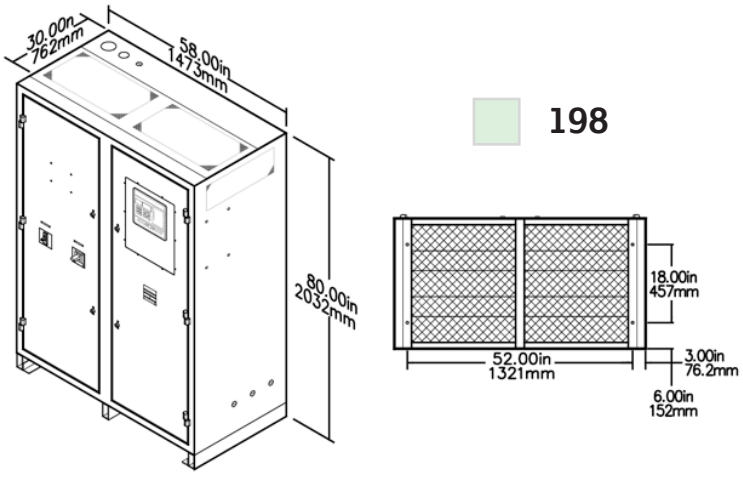
AVAILABLE MODELS & STANDARD ENCLOSURES (Three Phase Inputs)

DC OUTPUT RATINGS		Enclosure Style	Approximate Weights (lbs.(kg))	Heat Loss watts (BTU/hr)
VOLTS	AMPERES			
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)
	600	163	1530 (694)	2712 (9257)
	800	198	2020 (916)	3614 (12336)
	1000	198	2440 (1107)	4516 (15416)
48Vdc	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)
130 Vdc	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)
260 Vdc	16	5070	344 (156)	312 (1064)
	25	5070	372 (168)	484 (1652)
	50	5030	683 (309)	963 (3286)
	75	5030	725 (329)	1441 (4920)
	100	5030	819 (371)	1920 (6553)
	150	163	1319 (598)	2877 (9820)
	200	163	1502 (681)	3834 (13088)
	300	198	2323 (1053)	5748 (19622)
	400	198	2428 (1101)	7662 (26156)









ATEVO ORDERING CODE

SAMPLE CODE														
ATEV	1	130	025	E	240	S	S	X	X	X	X	X	X	G	1
	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 (refer to page 3-4)	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	1k0	1000 Adc
E	DC Output Filtering	F	Level 1		
		E	Level 2*		
		S	130V Special Filtering		
F	AC Input Supply Voltage**	120	120V 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 60 Hz***		

*260Vdc only available with Level 2 filter
**Refer to JF5072-00 for available ac inputs voltages and specific kAIC ratings for each breaker option
***Multi-tap input only available on single-phase units 25A or less, in 5054 enclosure

DESCRIPTION		CODE	FEATURE
G	**AC Input Protection ******	S	Standard AIC
		M	Medium AIC
		H	High AIC
		U	Ultimate AIC
H	**DC Output Protection ******	S	Standard AIC
		M	Medium AIC
		H	High AIC
		U	Ultimate AIC
J	**Auxiliary I/O PC Boards (refer**	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 (Consult Factory)
		4	Four Aux I/O Board (Consult Factory)
		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 (Consult Factory)
		D	Four Aux I/O Board w/ Barrier Terminal Blocks (Consult Factory)
K	**Remote Communications**	X	No Remote Communications Supplied
		1	Serial Communications Module
		2	Ethernet Communications Module
		3	Both Serial & Ethernet Communications Module
		4	IEC 61850 Communications Module
		C	Custom Communications (Consult Factory)
L,M N,P	**Factory Use Only**		
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 and DC breakers must match for chargers in a 5054 enclosure

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