

### NOTES:

- 1. ENCLOSURE IS A NEMA TYPE-1 / IP20 TOP-VENTED STEEL CABINET WITHOUT GASKETS. SHEET STEEL BASE IS 14 GA, SHROUD IS 18 GA & DOOR IS 16 GA. EXTERNAL FINISH IS ANSI-61 GRAY EPOXY POWDERCOAT.
- 2. ALLOW 6in / 152mm OF FREE AIR ON ALL VENTED SURFACES (TOP & SIDES) FOR COOLING.
- 3. SIX (6) KEY-HOLE SLOTS ARE PROVIDED ON BACK OF ENCLOSURE AS SHOWN. FOR WALL-MOUNTING WITH 0.25in / 6.25mm HARDWARE.
- 4. SIX (6) 1.31in / 33mm DIA KNOCKOUTS ARE PROVIDED AS SHOWN, WITH TWO (2) ADDITIONAL KNOCKOUTS FEATURED ON BOTTOM PANEL OF ENCLOSURE. USE OF ANY OF THESE FOUR (4) LOWER CONDUIT KNOCKOUTS WILL ALLOW REMOVAL OF CABINET SHROUD WITHOUT REMOVAL OF EXTERNAL WIRING.
- 5. DATA NAMEPLATE DECAL (WITH CHARGER RATINGS) APPLIED TO DOOR.
- 6. BATTERY CHARGER INSTALLATION WEIGHT: (SEE PRODUCT LITERATURE).
- 7. COPPER GROUND BUS BAR WITH 0.375 in / 9.5 mm DIA HOLE.

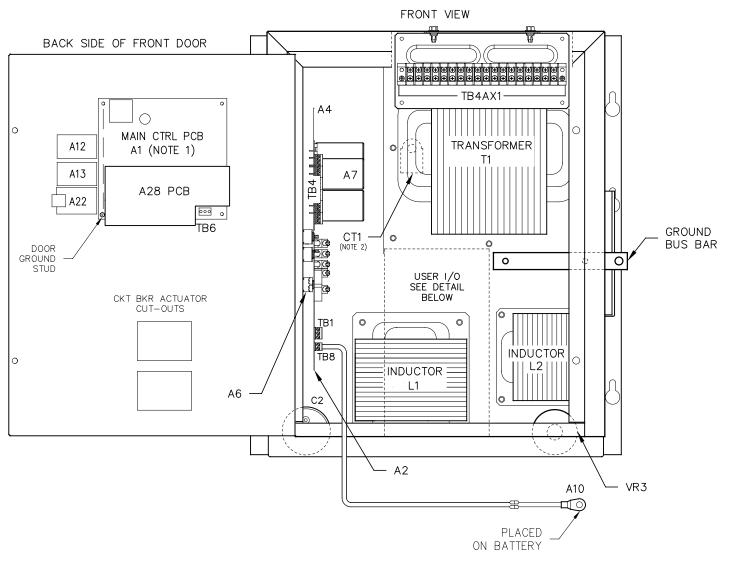
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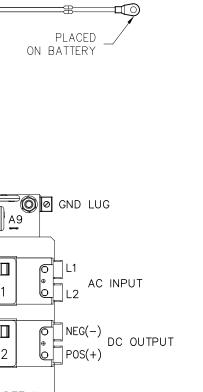
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ATEVO BATTERY CHARGER
OUTLINE: NEMA-1 STYLE-5054 ENCL
1PH 30-50ADC W/COMMON OPTIONS

2 1 of 1



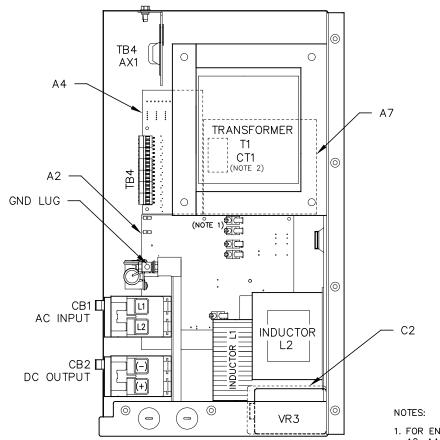


CB1

CB2

USER I/O DETAIL

AUXCB2



SIDE SECTION

### SYM STANDARD COMPONENT DESCRIPTION

- A1 MAIN CONTROL PCB
- A6 RECTIFIER H/S ASSEMBLY
- A2 POWER BOARD
- A7 FILTER BOARD (C1x/R9x) A9 MOV PCB
- CB1 AC INPUT CIRCUIT BREAKER (Bx)
- CB2 DC OUTPUT CIRCUIT BREAKER (Bx)
- AUXCB2 DC CKT BKR (CB2) AUXILIARY CONTACTS
  - L1 MAIN INDUCTOR
  - L2 FILTER INDUCTOR

  - T1 POWER ISOLATION TRANSFORMER
- TB1 REMOTE SENSE (A2) TERMINAL BLOCK
- TB6 COMMON ALARM RELAY (A1) CONTACTS TB8 BATT TEMPERATURE (A2) TERM BLOCK

#### SYM STANDARD COMPONENT DESCRIPTION

- A4 AUXILIARY I/O BOARD
- A10 TEMPERATURE COMPENSATION PROBE
- A12 SERIAL COMMUNICATION ADAPTER
- A13 FORCED LOAD SHARING PCB
- A22 ETHERNET COMMUNICATION ADAPTER
- A28 AC METER MODULE PC BOARD
- C2 BATTERY ELIMINATOR FILTER CAP
- CT1 CURRENT TRANSFORMER
- TB4 AUX ALARM PCB (A4) TERM BLOCK
- VR3 AC INPUT LIGHTNING ARRESTOR

1. FOR ENHANCED VIEWS OF ALL PC BOARDS (A1, A2, A4 etc.) INCLUDING LOCATION AND ORIENTATION OF TERMINAL BLOCKS (A2-TB1 & A2-TB8) SEE DETAIL DRAWING (JE5253-21).

2. CURRENT TRANSFORMER (CT1) AFFIXED TO LINE 1 BETWEEN AC INPUT BREAKER (CB1) AND POWER ISOLATION TRANSFORMER (T1).

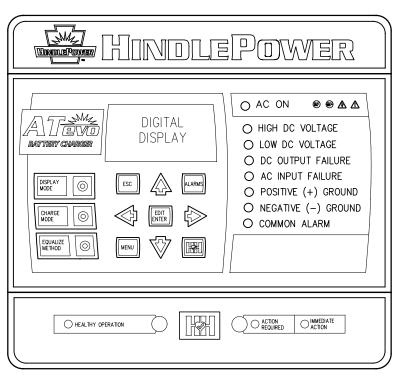
I/O TERMINAL	DESCRIPTION - TYPE	CONNECTION
CB2 (+/-)	POS/NEG DC OUTPUT TERMINALS - CIRCUIT BREAKER COMPRESSION LUG	#14-2/0 AWG
GND LUG	USER GROUND TERMINAL - CU-AL COMPRESSION BOX LUG	#14-6 AWG
CB1 (L1/L2)	AC INPUT TERMINALS - CIRCUIT BREAKER COMPRESSION LUG	#14-2/0 AWG
GND BUS	COPPER GROUND BUS - 0.375 in / 9.525 mm DIA HOLE	0.38in/9.7mm RING LUG
(A1) TB6	COMMON ALARM RELAY (A1) TERMINAL BLOCK - SOLDERLESS COMPRESSION SCREW	#22-14 AWG
← (A2) TB1	BATTERY Vdc REMOTE SENSE (A2) TERMINALS - SOLDERLESS COMPRESSION SCREW	#22-14 AWG
(A2) TB8 (A4) TB4	REMOTE TEMPCO PROBE (A10) TERMINAL BLOCK - SOLDERLESS COMPRESSION SCREW	#22-14 AWG
(A4) TB4	AUX I/O BOARD (A4) ALARM RELAY CONTACTS - SOLDERLESS COMPRESSION SCREW	#22-14 AWG
TB4AX1	BARRIER TYPE AUX ALARM (A4) CONTACT - 6-32 BNDR HD SCREW	#16-14 AWG
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RGER STYLE-5054 1PH 30-50ADC W/COMMON OPTIONS

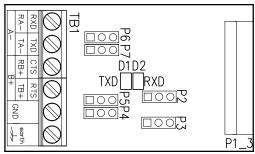
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CONTROL PANEL (p/n FK5047-00)

NOTE: UNLESS OTHERWISE SPECIFIED, ALL USER ALARM TERMINAL BLOCKS ARE SOLDERLESS COMPRESSION SCREW TERMINALS, ACCEPTING #22-14 AWG WIRE. ALARM CONTACTS SHOWN IN NON-ALARM STATE, WITH CHARGER ENERGIZED AND RELAYS ENERGIZED (FAIL SAFE). ALL ALARM CONTACTS WILL CHANGE STATE WHEN ATEVO POWERED DOWN. CONTACT RATING IS 0.5A @ 125VAC/VDC RESISTIVE.

## SERIAL COMMUNICATION ADAPTER (A12)



(NOTE 1)

CONNECTORS (A12): P1 - MAIN CONTROL BOARD

JUMPERS & CONFIGURATION SWITCHES (A12): P2 — RECIEVER ENABLE CONTROL SELECTION P3 — MEDIA CONTROL SELECTION (RS—234 OR RS—485) P4 - R5-485 TERMINATION RESISTOR ENABLE (RECIEVE)
P5 - RS-485 TERMINATION RESISTOR ENABLE (TRANSMIT) P6 - RS-485 INTERFACE 2 WRE/4 WRE SELECTION (A) P7 - RS-485 INTERFACE 2 WRE/4 WRE SELECTION (B)

TERMINAL BLOCKS (A12):
TB1 - USER CONNECTIONS TO SERIAL INTERFACE

INDICATOR LIGHTS (A12): TXD (D1) — SERIAL DATA BEING SENT RXD (D2) — SERIAL DATA BEING RECEIVED

### 0 ○ LED1 DIGITAL ○ LED2 DISPLAY O LED3 O LED4 LCD1 O LED5 ○ LED6 [ SW1 O LED7 SW7 O LED8 I SW2 SW5 SW8 SW11 [실 SW3 SW9 SW12 SW6 LED10 LED9 0

MAIN CONTROL PC BOARD (A1) FRONT VIEW - FACING CHARGER DOOR WHEN INSTALLED

16GB SD MEMORY CARD BAT-3V p/n PM5020-04 PUSH CARD IN A Tevo 0 TO EJECT J3 MEMORY CARDON 3٧ JP4 ° GND VOLTAGE ALARM BIS DS2 SEE BELOW 35 A12 COMM SERIAL ADAPTER D1D2 A13 FORCED LOAD SHARE A13 2) D1D2 SERIAL ADAPTER (NOTE A22 oTP1 A22 ETHERNET ADAPTER (NOTE P1 000 0 REV SEE BELOW

MAIN CONTROL PC BOARD (A1)

BACK VIEW - FACING CHARGER COMPONENTS WHEN INSTALLED

I/O TERMINAL | DESCRIPTION - TYPE

16GB

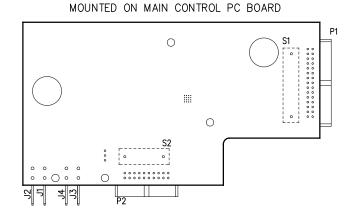
- 1. SERIAL COMMUNICATIONS ADAPTER (A12) SUPPORTS DNP3 LEVEL 2 AND MODBUS PROTOCOLS. SEE ATEVO COMMUNICATIONS MANUAL (JA0102-54) FOR DETAILS.
- 2. FOR FORCED LOAD SHARING & A13 PC BOARD DETAIL, SEE FLS DRAWING (JE5257-21).
- 3. ETHERNET ADAPTER (A22) SUPPORTS DNP3 LEVEL 2 AND MODBUS COMMUNICATIONS PROTOCOLS. SEE ATEVO COMMUNICATIONS MANUAL (JA0102-54) FOR DETAILS.

CONNECTORS (A5):
P1 - MAIN CONTROL BOARD
J1 - RJ-45 ETHERNET USER CONNECTION

INDICATOR LIGHTS (A5 LEDS):
D1 — ORANGE — ETHERNET SPEED INDICATION 10/100 MBPS
D2 — YELLOW — ETHERNET ACTIVITY (FLASHING)
D3 — RED — ETHERNET LINK

TEST POINTS (A5): TP1 - CLOCK OUT

## AC METER MODULE PC BOARD (A28)



MAIN CONTROL PC BOARD (A1)

JUMPERS:

J1 - ANALOG HIGH VOLTAGE SHUTDOWN JUMPER LED2 - RED - HIGH DC VOLTAGE ALARM

J3 - SD CARD PORT

TEST POINTS:

1.8V - 1.8 VOLTS

3.3V - 3.3 VOLTS

AGND - ANALOG GROUND

SDA - MAIN BOARD 12C DATA

SCL - MAIN BOARD 12C CLOCK

5V - 5.0 VOLTS

GND - GROUND

JP4 - RE-FLASH (FIELD PROGRAMMING) JUMPER

LED4 - RED - DC OUTPUT FAILURE ALARM TERMINAL BLOCKS: LEDS - RED - AC INPUT FAILURE ALARM TB6 - COMMON ALARM RELAY CONTACTS

LED6 - RED - POSITIVE (+) GROUND ALARM

LED7 - RED - NEGATIVE (-) GROUND ALARM

LED3 - RED - LOW DC VOLTAGE ALARM

LED8 - RED - COMMON ALARM

INDICATOR LIGHTS (LEDs):

LED1 - GREEN - AC ON

LED9 - RED - ACTION REQUIRED ALARM

LED10 - GREEN - HEALTHY OPERATION

DS1 - RED - HIGH LEVEL SHUTDOWN (HLD)

DS2 - RED - ANALOG LOW VOLTAGE ALARM (LLD)

DS3 - RED - MEMORY CARD ACTIVITY

SW1 - DISPLAY BUTTON

SWITCHES:

SW2 - CHARGE MODE BUTTON

SW3 - EQUALIZE METHOD BUTTON

SW4 - ESCAPE (ESC) BUTTON

SW5 - LEFT ARROW BUTTON

SW6 - MENU BUTTON

SW7 - UP ARROW BUTTON

SW8 - EDIT / ENTER BUTTON SW9 - DOWN ARROW BUTTON

SW10 - ALARM BUTTON

SW11 - RIGHT ARROW BUTTON SW12 - HINDLE HEALTH (HHS) BUTTON

SW13 - SYSTEM RESET BUTTON (BACK OF BOARD)

CONNECTORS:

P1 - POWER BOARD RIBBON

P2 - 3 PHASE RECTIFIER RIBBON

P3 - USB EXPANSION PORT

P4 - SPI & I2C EXPANSION PORT #1

ETHERNET ADAPTER (A22)

oTP1

D3 LINK

(NOTE 3)

D1 SPEED

P5 - SPI & I2C EXPANSION PORT #2

P6 - DISPLAY SPI PORT

P7 - DISPLAY JTAG PORTS

P10 - SERIAL INTERFACE PORT #1 P11 - SERIAL INTERFACE PORT #2 P12 - SERIAL INTERFACE PORT #3

P13 - ETHERNET INTERFACE PORT

P17 - GENERAL EXPANSION PORT

(A22) J1 ETHERNET COMMUNICATIONS CONNECTION - RJ45 PLUG TET | MCR | MCR | 04.03.2025 KJB 12.01.2021 DESCRIPTION 12.01.202 REV. 2 (04.03.2025) REV. 1 (02.14.2024) DATE 12.01.2021 REV. 0 (12.01.2021) NOTICE: UNCONTROLLED DOCUMENT  $\bigoplus \bigoplus$ 

(A12) TB1 RS-232 / RS-485 USER CONNECTIONS - SOLDERLESS COMPRESSION SCREW

FORCED LOAD SHARE SIGNAL - SOLDERLESS COMP SCREW

COMMON ALARM TERMINAL BLOCK (A1) - SOLDERLESS COMPRESSION SCREW

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CONNECTION

#22-14 AWG

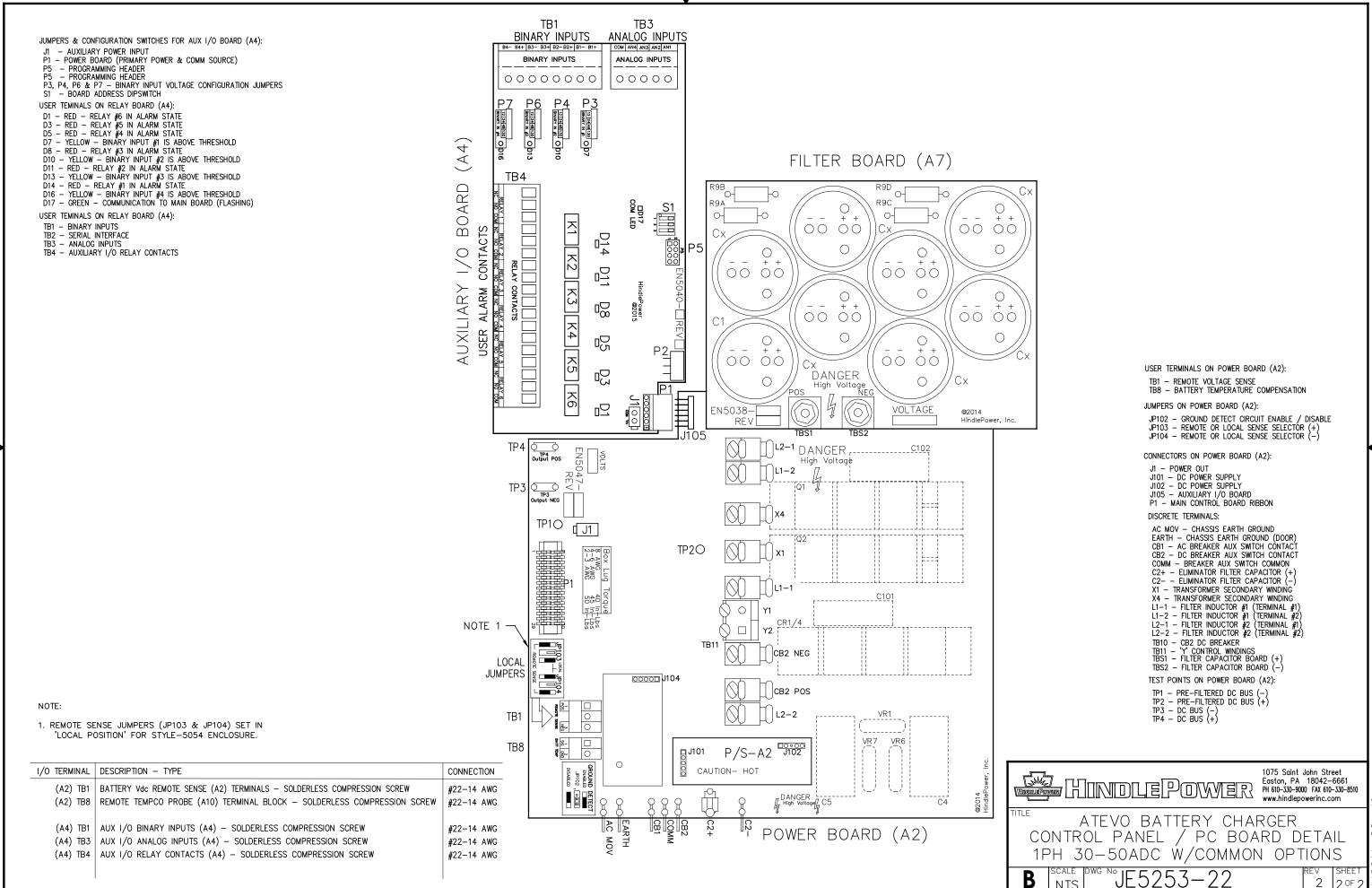
#22-14 AWG

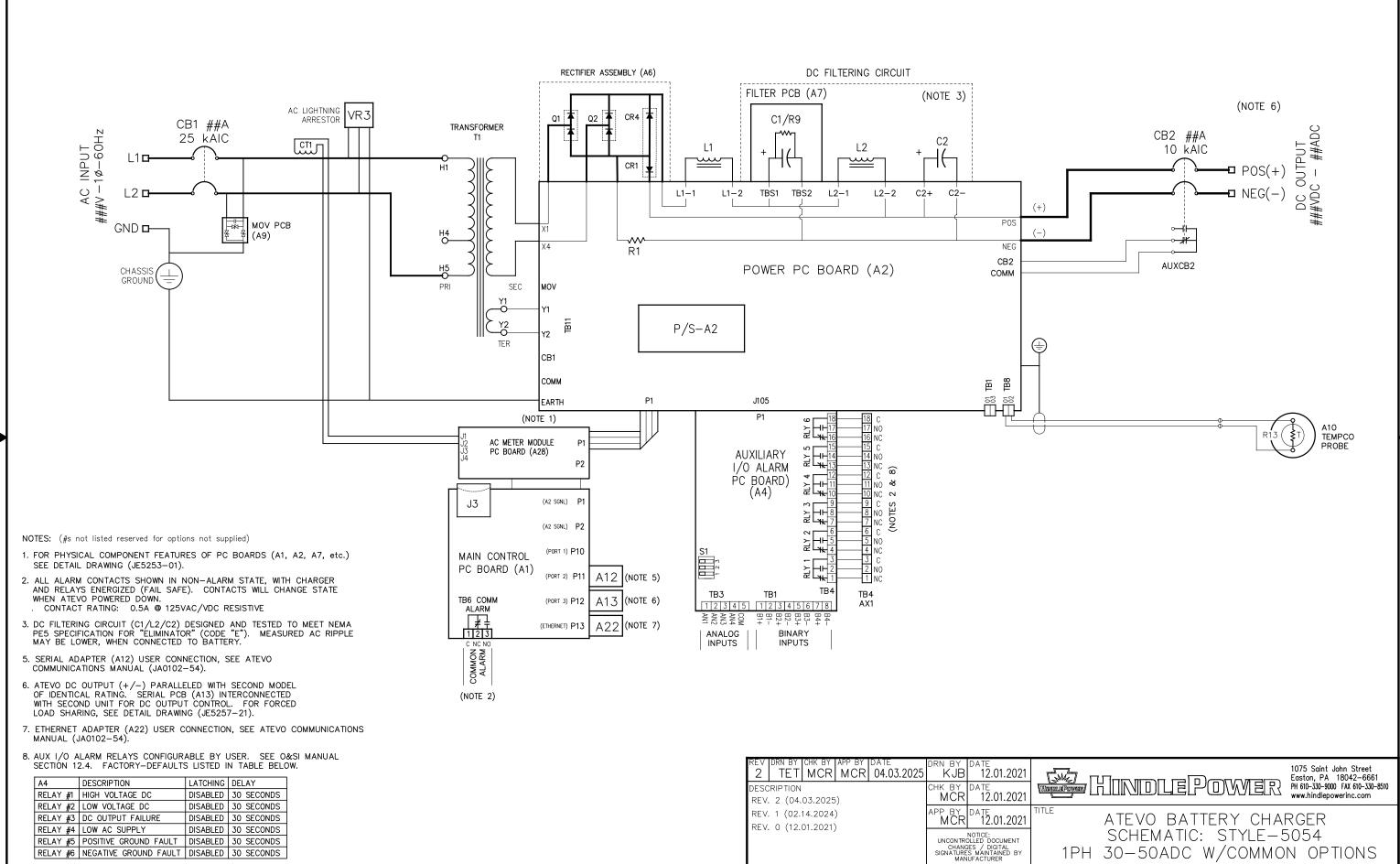
#22-14 AWG

CAT5/6 UTP

ATEVO BATTERY CHARGER CONTROL PANEL / PC BOARD DETAIL 1PH 30-50ADC W/COMMON OPTIONS

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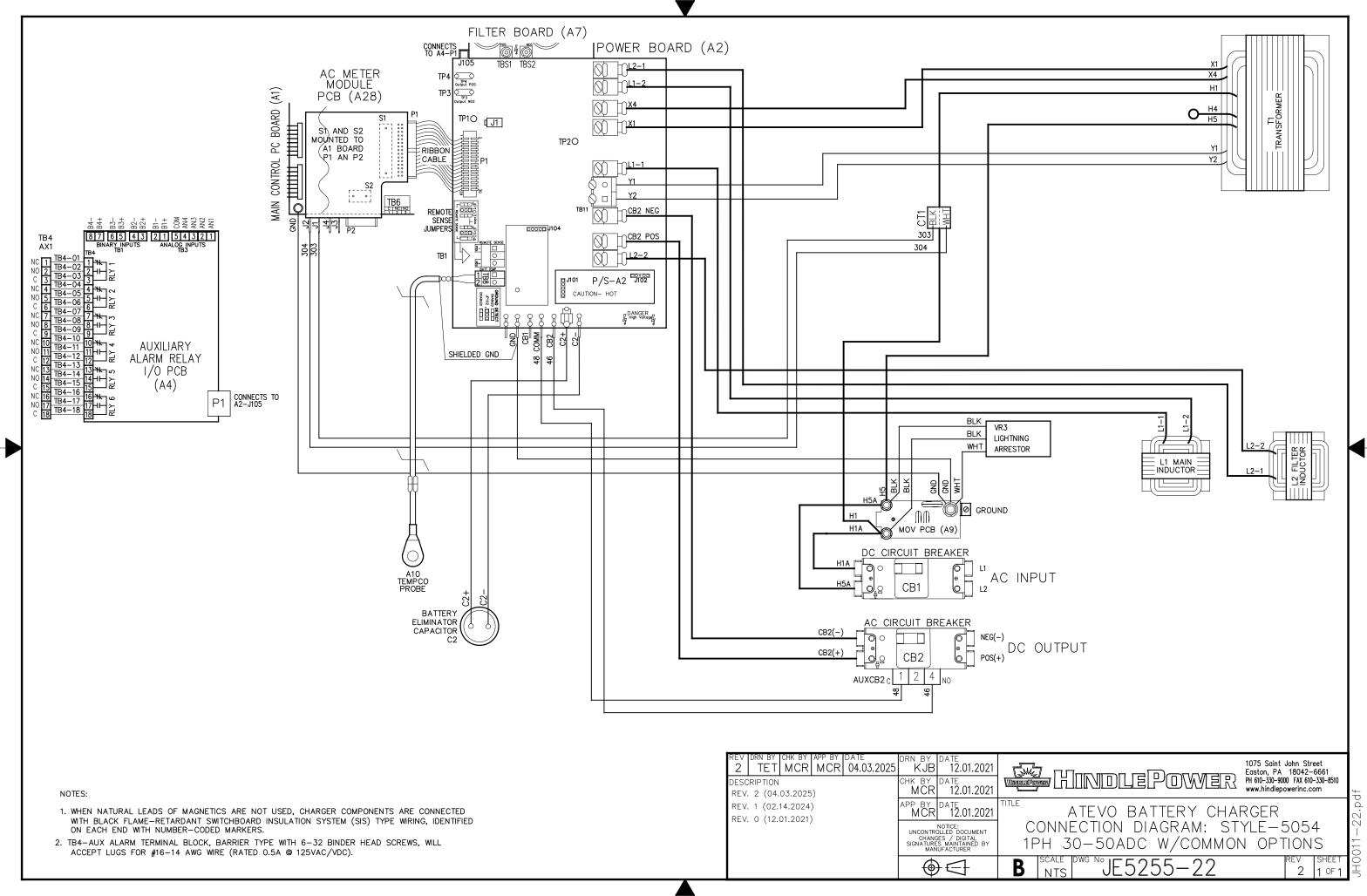




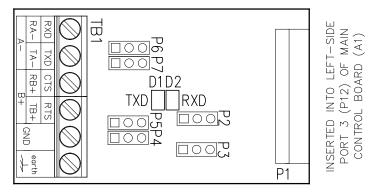
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 A13 PCB DFTAIL



WARNING (NOTE 5)

### NEVER SEPARATE THE ATEVO CHARGER FROM THE DC BUS WHILE IN FORCED LOAD SHARING

When ATevo chargers are operating in Load Share Mode, they MUST both be connected to the same dc bus. If your application and system includes disconnects, whereby chargers may be isolated from each other, the Forced Load Sharing MUST first be disabled, by disconnecting the load share cable or disablininterrupting the load sharing communications. Failure to disable forced load sharing when the ATevos are not connected to the same dc bus will result in an undesirable operation, whereby the battery may become DISCHARGED.

JUMPERS ON SERIAL COMMUNICATIONS ADAPTER (A13) MUST BE CONFIGURED TO OPERATE IN 2-WIRE RS-485 MODE.

- JUMPER P2 (RXCNTRL) MUST BE SET TO TXE LEFT TWO PINS
- JUMPER P3 (MEDIA) MUST BE SET TO 485 LEFT TWO PINS
- JUMPERS P4 & P5 (485-TERM) MUST BE SET TO OFF LEFT TWO PINS
- JUMPERS P6 & P7 (# WIRES) MUST BE SET TO 2W LEFT TWO PINS

### INTRODUCTION

Multiple battery chargers are sometimes employed in dc power systems to provide redundancy. Two (2) chargers of the same voltage rating can be connected in parallel, each of them capable of powering the connected dc load and charging the battery. When two (2) chargers operate in parallel, they normally will not share the load current equally. Since any two (2) chargers will usually have slightly different connection paths, one of the chargers in a system will typically have a slightly higher dc output voltage, and will therefore assume more of the burden of providing the necessary load current.

The ATevo forced load sharing feature supports a single "Primary" charger, and a "Secondary" charger. The Primary charger communicates with a Secondary charger over a serial connection. Each charger requires a Serial Communications Adapter (A13) set for RS-485, wired to all other chargers to create the forced load sharing communication network.

### SYSTEM REQUIREMENTS

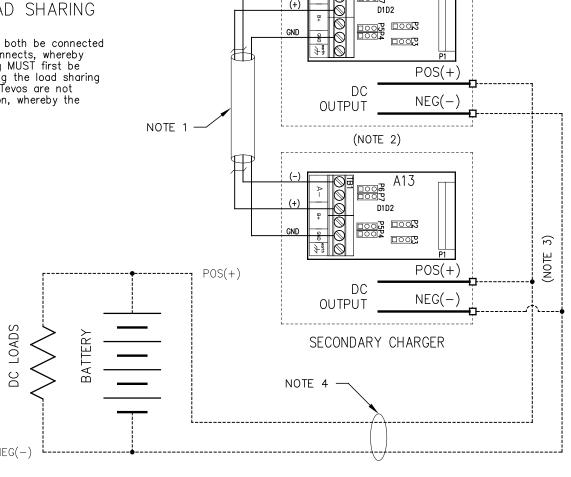
- Both battery chargers must be ATevo Series. The ATevo forced load sharing feature will not operate with legacy AT10.1 and AT30 Series battery chargers.
- Both connected chargers must have the same voltage settings, have the same output current rating, and have the same version of ATevo Main Control PC Board (A1) firmware.
- Each ATevo requires a Serial Communications Adapter (A13) to be installed in either Port 2 or Port 3 of the Main Control PC Board (A1).

### ATEVO CHARGER LOAD SHARING CONFIGURATION

If the ATevo is ordered with the forced load sharing feature, the hardware and software configuration will be completed at the factory. The forced load sharing Serial Communications Adapters (A13) and software will be verified during the charger production test. The signal interconnection cable will be supplied in a bagged kit, to be connected to the chargers in the field after installation. If forced load sharing is added to the ATevo in the field, hardware and software configuration will be required.

### INSTALLING SERIAL COMMUNICATIONS ADAPTER (A13)

Refer to the Serial Communication Adapter section of the ATevo Communications Manual (JA0102-54) for instructions on how to install the Serial Communications Adapter. Refer to User Instructions (JA5054-50), or Forced Load Sharing Section 13 of the Operating and Service Instructions, for instructions on how to configure ATevos to share dc load.



PRIMARY CHARGER

### NOTES:

- 1. FOR TWO (2) UNITS TO LOAD SHARE, CONNECT A13-TB1 OF "PRIMARY" CHARGER TO A13-TB1 OF "SECONDARY" CHARGER USING SUPPLIED ##ft / ##m INTERCONNECTION CABLE (p/n EH5052-0#).
- 2. FORCED LOAD SHARING FEATURE ONLY FUNCTIONAL WITH ATEVO MODELS (Vdc-Adc) OF IDENTICAL RATING.
- 3. ATEVO BATTERY CHARGERS OPERATING IN FORCED LOAD SHARING MODE MUST BE CONNECTED TO COMMON DC BUS.
- 4. CHARGER/BATTERY/LOAD INTER-CONNECTION DC CABLING NOT SUPPLIED WITH ATEVO, NOR WITH FORCED LOAD SHARING ACCESSORY (p/n EJ5306-0#). DC CABLING MAY BE SUPPLIED BY BATTERY MANUFACTURER, SYSTEM INTEGRATOR, OR SITE INSTALLER. SEE BATTERY/SYSTEM DRAWINGS FOR SPECIFICATIONS.
- 5. TWO (2) WARNING DECALS (p/n FK5046-00) SUPPLIED WITH BAGGED LOAD SHARING KIT FOR FIELD APPLICATION TO VITAL LOCATIONS.
- 6. FOR DETAILED INSTALLATION, OPERATING AND TROUBLE-SHOOTING PROCEDURES, SEE ATEVO FORCED LOAD SHARING http://www.atseries.net/PDFs/JA5054-50.pdf USER INSTRUCTION (JA5054-50).

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