

ORDERING GUIDE

Integritas™ Industrial Battery Chargers

IWC Series



Table of contents

| | |
|---------|-----------------------------|
| 03 | Overview |
| 04 – 05 | Specifications |
| 06 – 07 | Ordering Guide Information |
| 08 – 09 | Controllers |
| 10 –12 | Dimensions |
| 13 | Accessories and Spare Parts |

Integritas Industrial Battery Charger

Modular, Modern Switched Mode Battery Charging

Overview

The Integritas™ industrial battery charger is OmniOn's most reliable, rugged battery charger designed for cabinet, wall mount, or rack mount applications. It boasts true redundancy, a state-of-the-art controller with extensive monitoring capabilities and supports NERC compliance. The Integritas battery chargers can be configured for 24, 48, or 125Vdc output capacities ranging from 20A to 150A. The chargers incorporate a modular design which provides scalability, higher power output in a more compact design, and better reliability compared to traditional SCR based chargers in the same size. This modular design provides for minimal downtime and low mean time to repair. The charger is available in two nominal sizes, 19" (485mm) or 23" (564mm) wide, designed for mounting to a wall, or in a standard battery frame. Integrated into the battery charger is an advanced controller that is simple to operate and utilizes field proven technology. The controller provides the user key maintenance information and system monitoring capability making the Integritas battery charger a market leader for reliability and availability.



Industries

- Power Utilities
- Process Control
- Transportation
- Oil and Gas
- Manufacturing

Features

- N+1 and N+N redundancy
- Front panel access to most control and monitoring parameters including alarms
- Wide input voltage range
- Hot pluggable charger & control modules
- Rack mount or wall mount
- Secured remote access and monitoring
- Controller independent system operation
- Optional dual AC input
- Optional secondary output breaker for battery test or external loads

Applications

- Battery Charging / Standby Power
- Pump Control / Supply
- Emergency Lighting
- Switchgear Control Power



Specifications

| INPUT | RECTIFIER MODEL | MIN | TYPICAL | MAX | UNITS |
|--|---|-----------------------------------|---------|------|-------|
| Voltage Range 1Φ Low-Line (LL) | IP100ACR024ATEZ IP050ACR048ATEZ IP020ACR125ATEZ | 85 | 110 | 140 | VAC |
| 1Φ High-Line (HL) | IP100ACR024ATEZ IP050ACR048ATEZ IP020ACR125ATEZ | 175 | 220 | 305 | VAC |
| 3Φ High-Line | IP040H3R125ATEZ | 320 | 380-480 | 530 | VAC |
| Frequency | | 25 ² | 50/60 | 66 | HZ |
| Power Factor | | 98 | 99.5 | 99.8 | % |
| Total Harmonic Distortion | | 5 max (THD < 5% at load over 50%) | | | % |

| OUTPUT | IP100ACR024ATEZ | IP050ACR048ATEZ | IP020ACR125ATEZ | IP040H3R125ATEZ | UNITS |
|--|------------------|------------------|--------------------|------------------------|--------|
| Nominal Voltage | 24 | 48 | 125 | 125 | VDC |
| I_o (high-line) (low-line) | 100 44 | 50 22 | 20 10 | 40 ¹ N/A | AMPS |
| Vo Setpoint | 27.25 | 54.5 | 125 | 125 | VDC |
| Vo Range | 21—29 | 42-58 | 90-160 | 90-160 | VDC |
| Regulation | ±0.5 | ±0.5 | ±0.5 | ±0.5 | % |
| Efficiency | > 95 (Peak 95.6) | > 96 (Peak 96.4) | > 94.5 (Peak 95.1) | > 96 (Peak 96.5) | % |
| Output Voltage Ripple | <30 | <30 | <30 | <30 | mV |
| Thermal Output (Max) | 620 | 510 | 544 | 853 | BTU/HR |

| MECHANICAL | UNITS |
|-------------------------|--|
| System L x W x H | Type I (19 in): 361 (14.2) x 441 (17.4) x 719 (28.3) Type II (23 in): 361 (14.2) x 579 (22.8) x 719 (28.3) |
| Module Weight | 1Φ versions: 5.5 (12.1) 3Φ versions: 7.3 (16.1) |
| System Weight | Type I (19 in): 27.2-60 (60-133) Type II (23 in): 29-65.4 (64-145) |
| Finish | ANSI 61 Gray Powder Coated Paint |

| ENVIRONMENTAL | UNITS |
|------------------------------|--|
| Operating Temperature | -40 to +75 (-40 to 167) [de-rates above 50°C, see rectifier datasheets for details] |
| Storage Temperature | -40 to +85 (-40 to 185) |
| Relative Humidity | 95 max, non-condensing |
| Altitude | 4000 (altitudes above 2000, peak operating temp. de-rates 0.656° C /100M 4000M peak temp. rating is 62° C) |

Notes:

- 1 - Rectifier I_o: 50 amps out @ 90-125 VDC; 40 amps out @ 142 VDC; 32 amps out @ 160 VDC. All outputs based on operating temp up to 55 deg. C.
- 2 - IP020ACR125ATEZ is rated to operate at 25 Hz, in addition to 45-66 range. All others are rated for 45-66 Hz.

Specifications (continued)

| SAFETY AND STANDARDS COMPLIANCE | |
|---------------------------------|--|
| NEMA | NEMA PE5 NEMA 1 Enclosure |
| Safety | UL 1012 ANSI/UL60950-1-2014 CAN/CSA C22.2 No. 60950-1-07, Second Edition + A2:2014 (MOD), dated October 14, 2014 |
| RoHS | Compliant to RoHS EU Directive 2002/95/EC RoHS 6/6 |
| EMC | European Directive 2014/30/EU EN55032 Class B EN55035 Class B FCC Part 15 |
| ESD | EN61000-4-2, Level 4 |
| Seismic | IEEE 693-2018 |

| PROTECTION | DESCRIPTION |
|-------------------------|---|
| Voltage | Input under voltage, Input over voltage, Output overvoltage, Output under-voltage |
| Current | Fuse in both the input lines, output over current protection, Output short circuit protection |
| Thermal | Over temperature protection and auto restart upon removal of over temperature condition |
| Surge | Input surge protection, Output surge protection |
| Reverse Polarity | Battery reverse polarity |
| Ground Fault | Ground fault detection and alarm (only reporting) |
| Breakers | Industrial grade UL/IEC recognized bulk input and bulk output breaker |

Ordering Steps

The following pages show how to configure a battery charger model based on the intended application. The Integritas™ industrial battery charger is a modular design and requires two pieces of information to create a complete order.

1. Define the model number of the desired battery charger configuration.
2. Select the rectifier ordering code and quantity needed based on application needs.

Example:

For an application requiring 240 VAC single phase with single AC input, bottom access wiring, 125 VDC output with 40 amps output needed, independent breakers for both battery and load, and DNP3 communication interface to a master station, the following would be ordered.

Qty. 1, 3BR125-SACY-B10Y-N0D0 battery charger

Qty. 2, 150050531 IP020ACR125ATEZ rectifiers

Ordering Guide Information

| Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|-------------------|---------|------------|----------------|------------|----------|----------|-------------|----------------|----------|---------|-----------|----------|--------------|
| Item | Cabinet | Connection | Nominal DC Out | AC In Type | AC Input | AC Surge | DC Out Type | Breaker Rating | DC Surge | Control | Comm Type | Protocol | Ground Fault |
| Model Code | 3 | TR | 125 | S | AC | Y | S | 10 | Y | N | 0 | D | 0 |

Model numbers are defined by selecting the appropriate code from each of the thirteen group types as noted, based on specific application needs of the battery charger.

Example: 3TR125-SACY-S10Y-N0D0

| | | | |
|---------------------------------------|-------------|------------------------------|---|
| Group 1: Cabinet | Code | Description | Note |
| | 3 | Type I | Nominal 19 in. wide |
| | 6 | Type II | Nominal 23 in. wide |
| Group 2: Connection Type | Code | Description | Note |
| | BR | Bottom | Location for input and output connections |
| | TR | Top | Location for input and output connections |
| Group 3: Nominal DC Output | Code | Description | Note |
| | 024 | 24 V | |
| | 048 | 48 V | |
| | 125 | 125 V | |
| Group 4: AC In Type | Code | Description | Note |
| | S | Single | |
| | D | Dual | Code 6, Type II, 23 in. models only |
| Group 5: AC Input | Code | Description | Note |
| | AC | 110/120, 230/240 VAC | Single phase |
| | L3 | 208 Delta (208 - 240 VAC) | Three phase |
| | HW | 480Y/277 VAC | Three phase, 4-wire (L - N) + PE |
| | H3 | 480 Delta (380 - 520 VAC) | Three phase, 3-wire (L - L) + PE |
| Group 6: AC Surge | Code | Description | Note |
| | Y | AC Surge Protection Included | MOV (metal-oxide varistor) type protector |
| Group 7: DC Out Type | Code | Description | Note |
| | S | Single Load | One (1) load breaker |
| | D | Dual Load | Two (2) independent load breakers |
| | B | One Load, One Battery | One (1) load breaker, One (1) battery breaker |
| Group 8: Breaker Rating | Code | Description | Note |
| | 10 | 10 kAIC minimum | |
| Group 9: DC Surge | Code | Description | Note |
| | Y | DC Surge Protection Included | MOV (metal-oxide varistor) type protector |
| Group 10: Control | Code | Description | Note |
| | P | Pulsar XL | See Controllers section for more details |
| | N | Nebula | See Controllers section for more details |

Ordering Guide (continued)

| | | | |
|--|-------------|------------------------------------|--|
| Group 11: Comm Type | Code | Description | Note |
| | 0 | Standard TCP | |
| Group 12: Protocol | Code | Description | Note |
| | 0 | SNMP/Modbus | |
| | D | SNMP/DNP3 Outstation | TCP/IP connection. Nebula only. |
| Group 13: Ground Fault Indication | Code | Description | Note |
| | 0 | DC ground fault indicator Included | Standard configuration |
| | E | Excluded | Another means for detecting DC ground fault must be provided when choosing this option |

LIST OF MATCHING RECTIFIERS BASED ON MODEL AND DC OUTPUT CURRENT REQUIREMENTS ²

| Type I cabinet can hold up to 3 rectifiers Type II cabinet can hold up to 6 rectifiers | | | | | Max current output (amps) per cabinet configuration and (x) number of rectifiers installed (Group 1) | | | | | |
|---|------------------------|-------------------------|--------------------------|----------------------------------|---|-----------------|-----------------|---------------|---------------|---------------|
| Ordering Code | Rectifier Model Number | AC Input Code (Group 5) | DC Output Code (Group 3) | Current output per rectifier (A) | Type I /II (x=1) | Type I/II (x=2) | Type I/II (x=3) | Type II (x=4) | Type II (x=5) | Type II (x=6) |
| 150052773 | IP100ACR024ATEZ | AC, L3, HW | 024 | 100 | 100 | 150 | 150 | 150 | 150 | 150 |
| 150050530 | IP050ACR048ATEZ | AC, L3, HW | 048 | 50 | 50 | 100 | 150 | 150 | 150 | 150 |
| 150050531 | IP020ACR125ATEZ | AC, L3, HW | 125 | 20 | 20 | 40 | 60 | 80 | 100 | 120 |
| 150052737 | IP040H3R125ATEZ | H3 | 125 | 40 ¹ | 40 | 80 | 120 | 150 | 150 | 150 |

Notes:

1 - Rectifier I_o: 50 amps out @ 90-125 VDC; 40 amps out @ 142 VDC; 32 amps out @ 160 VDC. All outputs based on operating temp up to 55 deg. C.

2 - Max DC current outputs shown are based on each respective rectifier I_o high-line output ratings, as listed in the specifications table.

LIST OF COMMON MODELS AND ASSOCIATED ORDERING CODE (Additional models available)

| Model Number | Ordering Code | Matching Rectifier | Rectifier Ordering Code |
|-----------------------|---------------|---------------------------|-------------------------|
| 3BR024-SACY-S10Y-P000 | 1600093520A | IP100ACR024ATEZ RECTIFIER | 150052773 |
| 3BR048-SACY-B10Y-P000 | 1600096134A | IP050ACR048ATEZ RECTIFIER | 150050530 |
| 3BR125-SACY-B10Y-N000 | 1600279058A | IP020ACR125ATEZ RECTIFIER | 150050531 |
| 3TR125-SACY-B10Y-N000 | 1600279059A | IP020ACR125ATEZ RECTIFIER | 150050531 |
| 3BR125-SACY-B10Y-N0D0 | 1600406017A | IP020ACR125ATEZ RECTIFIER | 150050531 |
| 3BR125-SACY-S10Y-P000 | 150050531 | IP020ACR125ATEZ RECTIFIER | 150050531 |
| 3TR125-SACY-S10Y-P000 | 1600063517A | IP020ACR125ATEZ RECTIFIER | 150050531 |
| 3BR125-SH3Y-B10Y-P000 | 1600226757A | IP040H3R125ATEZ RECTIFIER | 150052737 |
| 3TR125-SH3Y-B10Y-N000 | 1600459434A | IP040H3R125ATEZ RECTIFIER | 150052737 |
| 3BR125-SHWY-B10Y-P000 | 1600301334A | IP020ACR125ATEZ RECTIFIER | 150050531 |
| 3BR125-SL3Y-B10Y-N000 | 1600458269A | IP020ACR125ATEZ RECTIFIER | 150050531 |
| 6TR125-SACY-B10Y-N000 | 1600279061A | IP020ACR125ATEZ RECTIFIER | 150050531 |
| 6BR125-DH3Y-B10Y-P000 | 1600376035A | IP040H3R125ATEZ RECTIFIER | 150052737 |
| 6BR125-SH3Y-B10Y-N000 | 1600459436A | IP040H3R125ATEZ RECTIFIER | 150052737 |
| 6TR125-SH3Y-B10Y-N000 | 1600459437A | IP040H3R125ATEZ RECTIFIER | 150052737 |

Controllers

Pulsar XL Controller

The Pulsar XL controller is a cost-effective unit that provides basic system monitoring and control features for Integritas™ battery chargers. The controller monitors system components within the assembly including rectifiers, inputs, outputs and alarms utilizing a multi-drop RS-485 digital communications bus. The Pulsar XL has a 2-inch monochrome LCD front-panel screen that uses a simple menu driven approach to read system status, alarms, and parameters. The display also has a unique 3 color (green, amber, red) backlit feature that changes color when an alarm occurs. Basic settings and alarm thresholds can be configured from the menu. Using a computer, the user can connect to the Pulsar XL via local RS-232 or Ethernet port which provides complete access to all assignments, configurations, alarms, inputs, and outputs. Remote access through a network connection via Internet or Intranet is also available.



Pulsar XL Key Features

Standard System Features

- Standard and user defined alarms
- 10 alarm relays (7 user assigned)
- Rectifier management features
- Multiple Low Voltage Load and Low Voltage Battery Disconnect thresholds
- Configuration, statistics, and history All stored in non-volatile memory
- Remote/local backup and restore of configuration data
- Industry standard defaults
- Basic, busy hour, and trend statistics
- Detailed event history
- User defined events and derived channels

Standard Battery Management Features

- Float/boost mode control
- Battery discharge testing
- Slope thermal compensation

Remote Access and Features

- Integrated 10/100Base-T Ethernet Network
 - TCP/IP, SSH, SSL
 - SNMP V2c, SNMPV3, IPV6
 - SMTP for email
 - DHCP for plug-n-play
 - FTP for rapid backup and upgrades
 - HTTP & HTTPS for standard web pages and web browsers.
- SCADA communication protocols
 - Modbus TCP
- 3 password protected security levels

| GENERAL | DESCRIPTION |
|----------------------|---|
| System Plant Voltage | Accuracy ±0.5%, resolution 0.1V |
| One System Shunt | Accuracy ±0.5% full scale, resolution 1A |
| Inputs | 6 inputs close/open to battery, 9 inputs close/open to return, user assignable |
| Outputs | 10 NC/NO alarms (125 Vdc @ 0.5 A), 7 user assignable |
| 1-Wire Bus Devices | Up to 16 temperature probes (via optional QS873 device), up to 16 mid-string monitors (via optional ES771 device) |
| Display | 8-line by 40-character with color alarm indicating backlit LCD (Red = major, Amber = minor, Green = none) |
| Radiated Emissions | European Directive 2014/30/EU; EN55032, (CISPR22) Class B, EN55035 (CISPR24) |

Controllers

Nebula Controller

The Nebula is the latest embedded controller in the Integritas™ family of products with advanced system monitoring and control features. Built on a modern ARM-based platform, the controller monitors system components within the charger including rectifiers, inputs, outputs, and alarms utilizing a high speed digital communications bus. The Nebula has a 7-inch LCD full color touch screen with object-oriented graphics that present concise data about the system. On the left side of the display are quick view status indicators that change color to indicate a problem. A host of information is available at the touch of the screen including system status, alarms, and key parameters; all in a quick, easy to view graphic user interface. From the front panel display the user can quickly gather information on how the charger is operating. Connecting to the Nebula via an Ethernet port, and using standard secure login protocol, provides for complete access to all assignments, configurations, alarms, inputs, and outputs. Remote connectivity through a high-speed dual port network connection is available that allows the battery charger to be connected to plant-wide DCS systems. The Nebula controller is built to deliver connectivity between the battery charger and your data networks.



Nebula Key Features

Standard System Features

- Standard and user defined alarms
- Four “quick view” color changing status indicators (AC, DC, System, Ground Fault) plus alarm cutoff (ACO)
- 10 auxiliary inputs
- 10 alarm relay outputs
- Rectifier management features
- Multiple Low Voltage Load and Low Voltage Battery Disconnect thresholds
- Configuration, statistics, and history all stored in non-volatile memory
- Detailed event history

Standard Battery Management Features

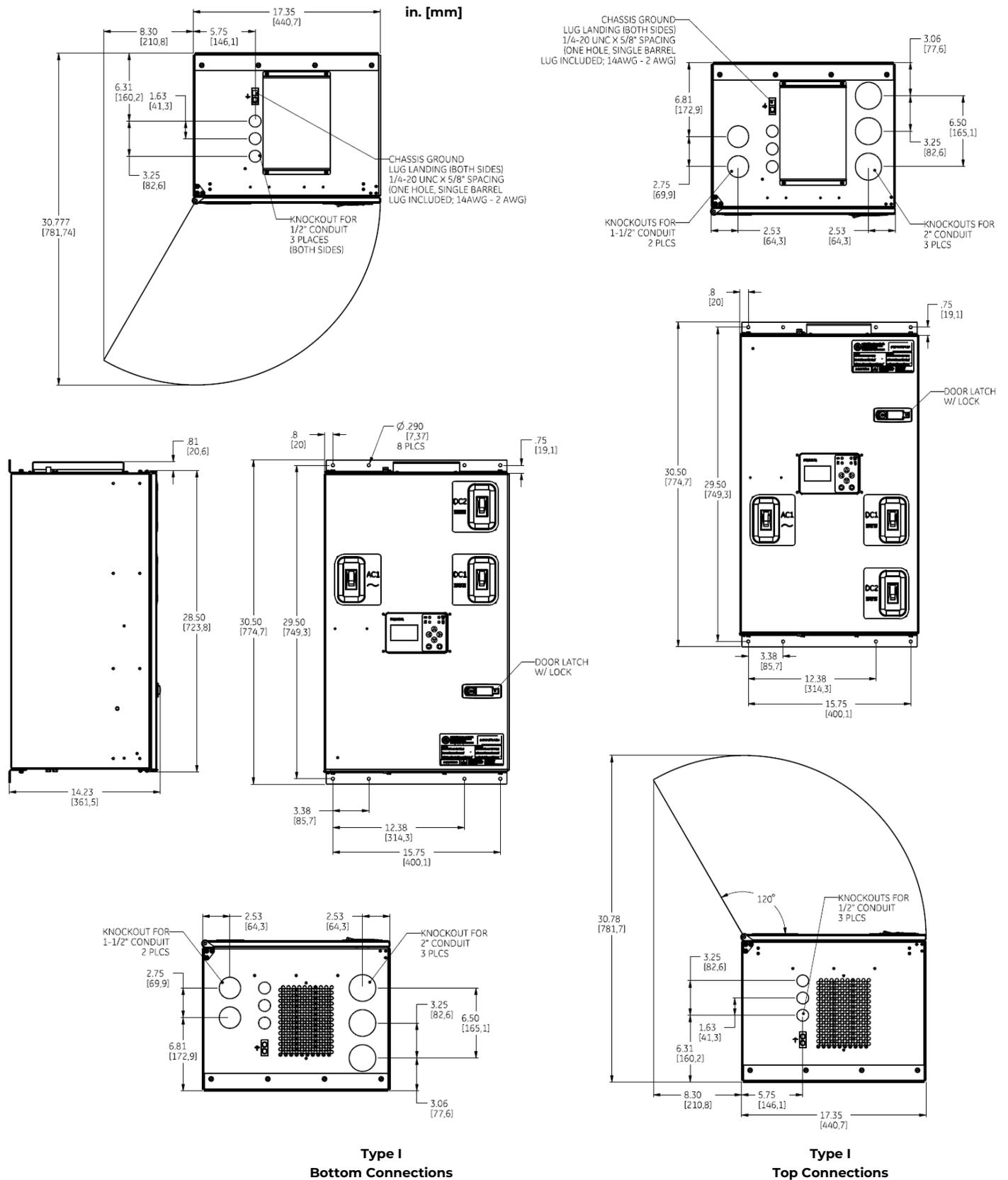
- Float/boost mode control
- Battery discharge testing
- Slope thermal compensation

Communication Features

- 10/100/1000 Base-T dual-port Ethernet
 - TCP/IP, TLS
 - SMTP allowing for email notification of alarms
- Built-in web browser interface
- SCADA communication protocols
 - DNP3 Outstation
 - Modbus
- 3 password protected security levels

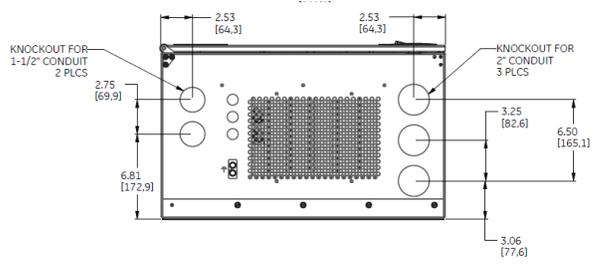
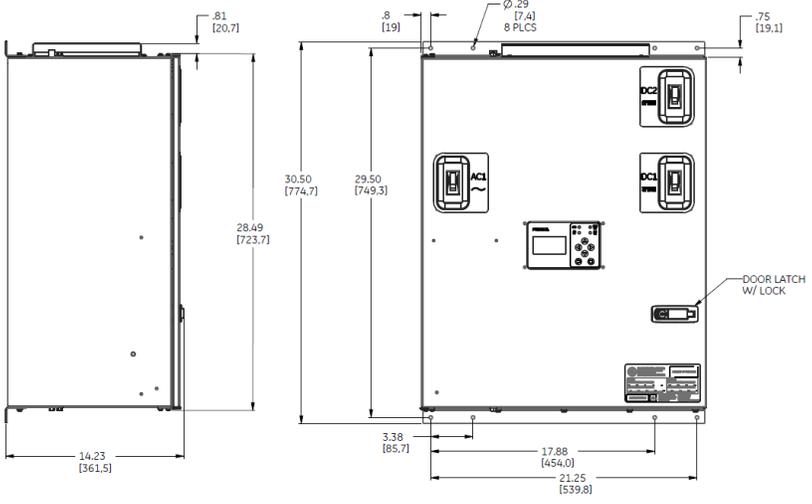
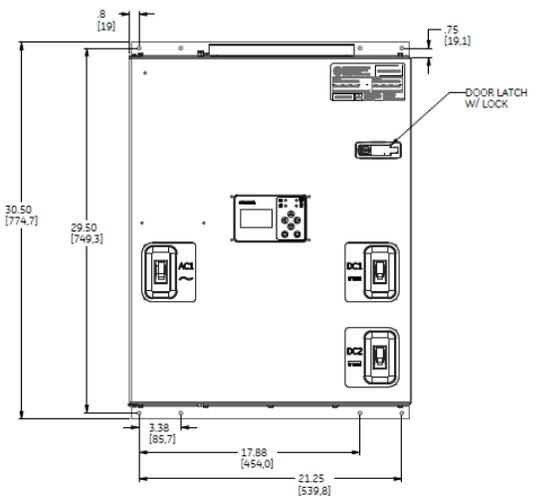
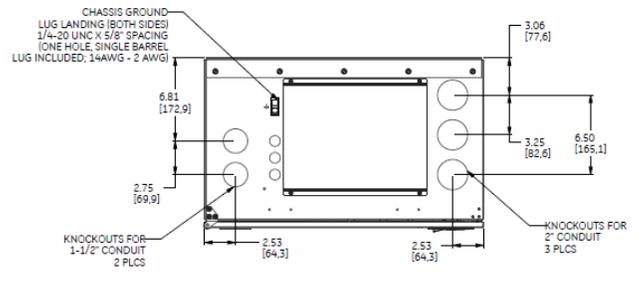
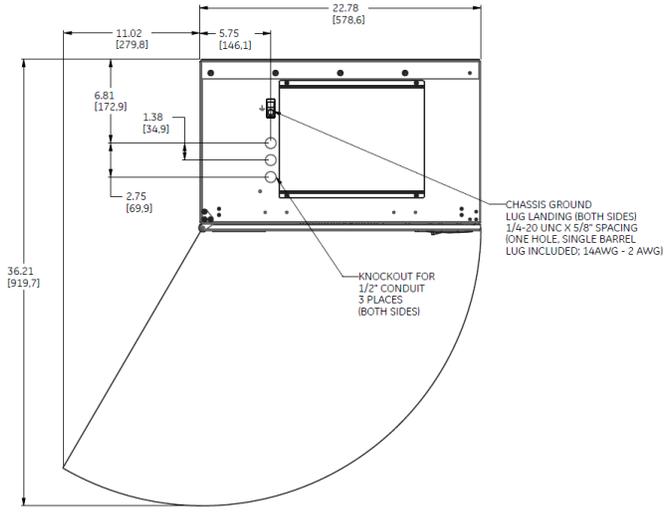
| GENERAL | DESCRIPTION |
|----------------------|--|
| System Plant Voltage | Accuracy ±0.5%, resolution 0.1V |
| One System Shunt | Accuracy ±0.5% full scale, resolution 1A |
| Inputs | 10 binary total (6 “dry” no voltage, 4 opto-isolated 24V sourced) user assignable |
| Outputs | 10 form-C alarm (125 Vdc @ 0.5 A), 7 user assignable |
| 1-Wire Bus Devices | Up to 16 temperature probes (via optional QS873 device) |
| Display | 7 in. full color 640 x 480 touch screen and traditional tactile navigation buttons |
| Radiated Emissions | European Directive 2014/30/EU; EN55032, (CISPR22) Class B, EN55035 (CISPR24) |

Product Dimensions

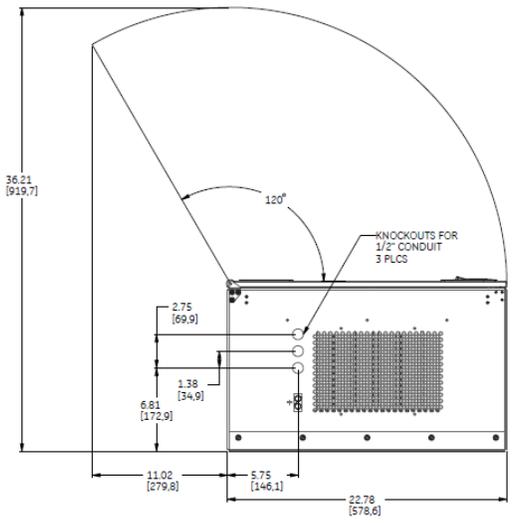


Product Dimensions

in. [mm]



Type II
Bottom Connections

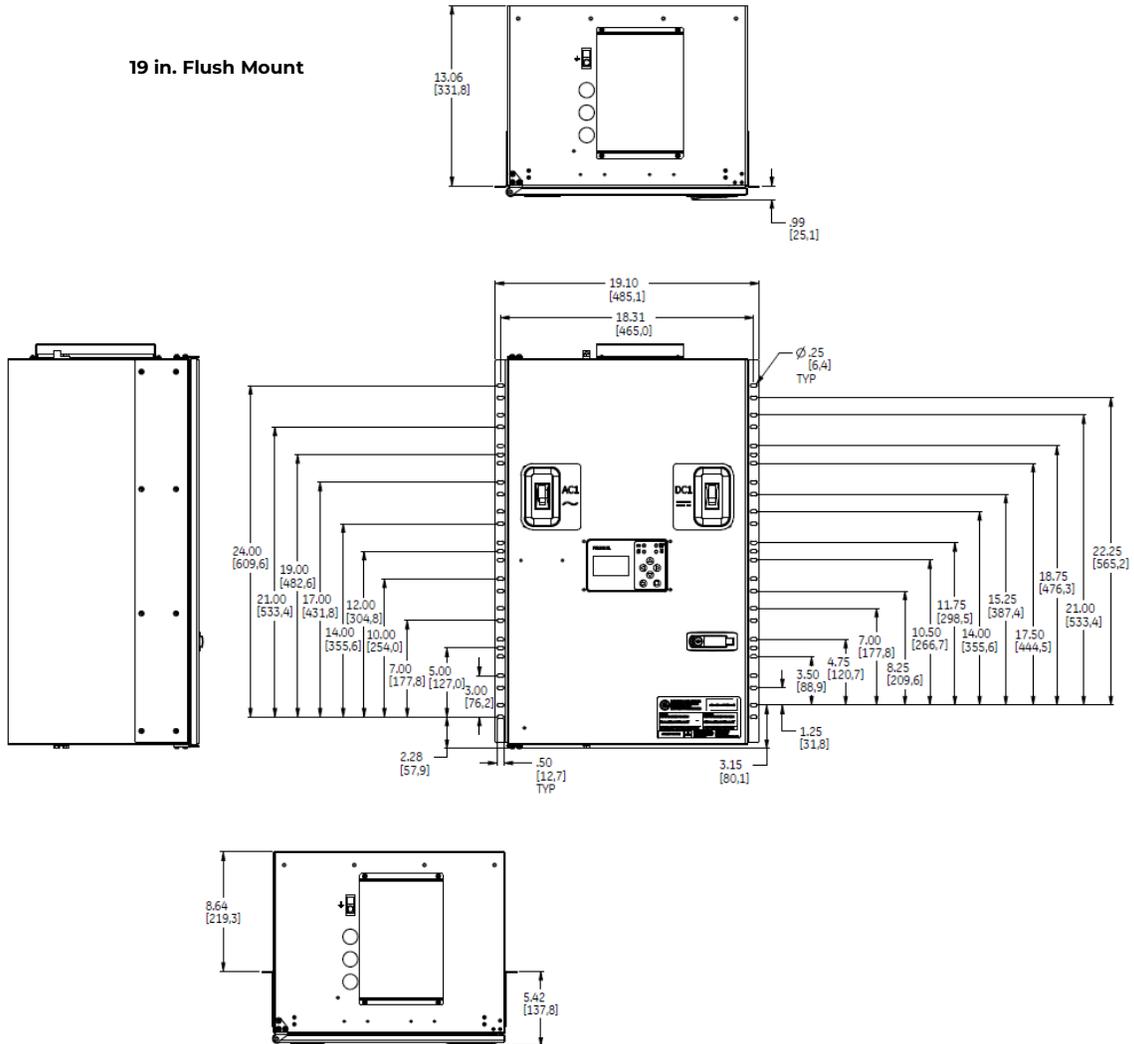


Type II
Top Connections

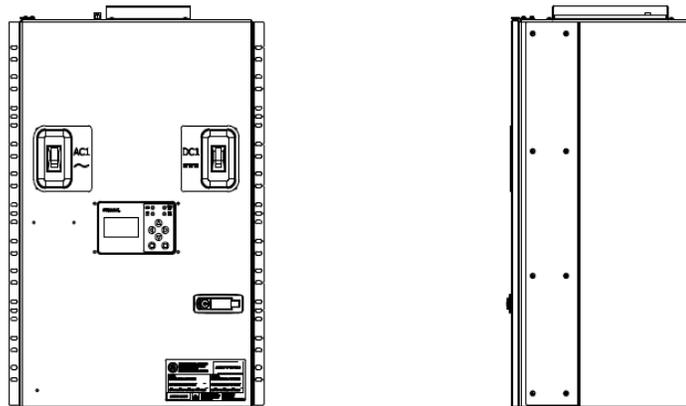
Product Dimensions

in. [mm]

19 in. Flush Mount



19 in. Mid Mount



Accessories and Spare Parts

| Battery Thermal Probes | | |
|--|---|--|
| Ordering Code | Description | Application |
| 1600127057A | Thermal probe bridge 1 IN/OUT 4 | Battery thermal probe interconnect module |
| 1600093513A | DTP873 battery sensor | Battery thermal probe sensor |
| Additional Accessories (Mounting Hardware, Filters, etc.) | | |
| Ordering Code | Description | Application |
| 1600097831A | 19IN IWC 19IN frame mount kit | Mounting hardware to attach 19" battery charger to 19" frame |
| 1600097832A | 19IN IWC 23IN frame mount kit | Mounting hardware to attach 19" battery charger to 23" frame |
| 850052732 | Filter, IWC battery charger, 19 | Air filter for 19" battery charger cabinet |
| 850053032 | Filter, IWC battery charger, 23" | Air filter for 23" battery charger cabinet |
| Additional Accessories (Surge Protection Replacement Modules) | | |
| Ordering Code | Description | Application |
| 4600367368P | VAL-SEC-T2-350-P | AC L-N surge arrestor replacement module |
| 4600186517P | VAL-SEC-T2-N/PE-350-P | AC N-PE surge arrestor replacement module |
| 4600367370P | PLT-SEC-T3-24-P-UT/PT | 24V DC surge arrestor replacement module |
| 4600367371P | PLT-SEC-T3-60-P-UT/PT | 48V DC surge arrestor replacement module |
| 4600367372P | PLT-SEC-T3-230-P-UT/PT | 125V DC surge arrestor replacement module |
| Controller Modules | | |
| Ordering Code | Description | Application |
| 1600093508A | IP843G_24V_S controller module | Integritas battery charger, Pulsar XL hot-swappable 24Vdc controller module with secure protocols |
| 1600093510A | IP843G_48V_S controller module | Integritas battery charger, Pulsar XL hot-swappable 48Vdc controller module with secure protocols |
| 1600093509A | IP843G_125V_S controller module | Integritas battery charger, Pulsar XL hot-swappable 125Vdc controller module with secure protocols |
| 1600093511A | IP843G_IO module | Integritas battery charger, Pulsar XL input / output module (compatible with all charger voltages) |
| 1600272809A | IWC943LG_DSP | Integritas battery charger, Nebula hot-swappable front panel user Interface |
| 1600272801A | IWC943_24/48V controller application module | Integritas battery charger, Nebula hot-swappable 24Vdc/48Vdc controller module with secure protocols |
| 1600272802A | IWC943G_125V controller application module | Integritas battery charger, Nebula hot-swappable 125Vdc controller module with secure protocols |
| 1600272800A | IWC943G_IO module | Integritas battery charger, Nebula input / output module (compatible with all charger voltages) |
| Miscellaneous | | |
| Ordering Code | Description | Application |
| 8600092348P | Blank IP charger module faceplate | Blank filler for empty charger slots |
| 1600134098A | Thermal probe wire set, 25 ft. | Wiring between thermal probe bridge and controller |
| 1600134099A | Thermal probe wire set, 50 ft. | Wiring between thermal probe bridge and controller |
| 1600134100A | Thermal probe wire set, 100 ft. | Wiring between thermal probe bridge and controller |
| 1600134101A | Thermal probe wire set, 250 ft. | Wiring between thermal probe bridge and controller |
| 1600134102A | Thermal probe wire set, 500 ft. | Wiring between thermal probe bridge and controller |

OmniOn Power Inc.

601 Shiloh Rd.
Plano, TX USA

omnionpower.com

We reserve the right to make technical changes or modify the contents of this document without prior notice. OmniOn Power does not accept any responsibility for errors or lack of information in this document and makes no warranty with respect to and assumes no liability as a result of any use of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of OmniOn Power. This document does not convey license to any patent or any intellectual property right. Copyright© 2023 OmniOn Power Inc. All rights reserved.