

Modular HE with Smartpack2

The Eltek Modular DC power system, powered by the Flatpack2 line of power modules, delivers up to 1200A in a compact, rack-mount unit. Use of the highly-efficient and reliable Flatpack2 rectifier, a variety of configurable distribution layouts, and the advanced Smartpack2 controller make for optimal system design and cost-effective deployment.



Modular with Smartpack2 Controller

Modular HE with Smartpack2 DC Power System

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APPLICATIONS

Eltek's Modular system is a high-efficiency power solution with an optimal 23" rack-mount footprint. It is designed for 1200A applications at -48 Vdc output.

PRODUCT DESCRIPTION

The Modular system is designed for use in standard 23" telecommunication racks.

Powered by Flatpack2 HE rectifier modules, typical efficiency exceeds 95% at -48 Vdc output.

The distribution section is 15U high and incorporates the AC input junction box. The available 15U distribution space accommodates a variety of circuit breakers and fuses. Bulk cable connections are also available, along with shunt and LVD options. All cabling is vertical, and distribution panels are tiered for convenient cabling and access.

KEY FEATURES

- **CONFIGURABLE DISTRIBUTION**
Both large and small breakers and fuses can be utilized by configuring up to four distribution panels, potentially using up to 96 small breakers and fuses.
- **INTEGRATED AC INPUT BOX**
AC input terminals options include compression terminals (for bare wire) and barrier strips (for one-hole lugs).
- **DIGITAL CONTROLLERS**
The Smartpack2 digital controller system provides comprehensive monitoring and regulation by utilizing a variety of specialized data collection devices.
- **HEAT MANAGEMENT**
Flatpack2 modules feature front-to-back airflow and chassis-integrated heat-sinks, supplementing high-efficiency energy conversion with excellent heat management.
- **COST-EFFICIENCY**
A true plug-and-play system, the Modular system reduces both time-to-install and overall costs.

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SMARTPACK2 CONTROLLERS

The Smartpack2 controller system handles plant control and monitoring. A variety of modules is used to collect a large variety of metrics to provide comprehensive system regulation and alarming.

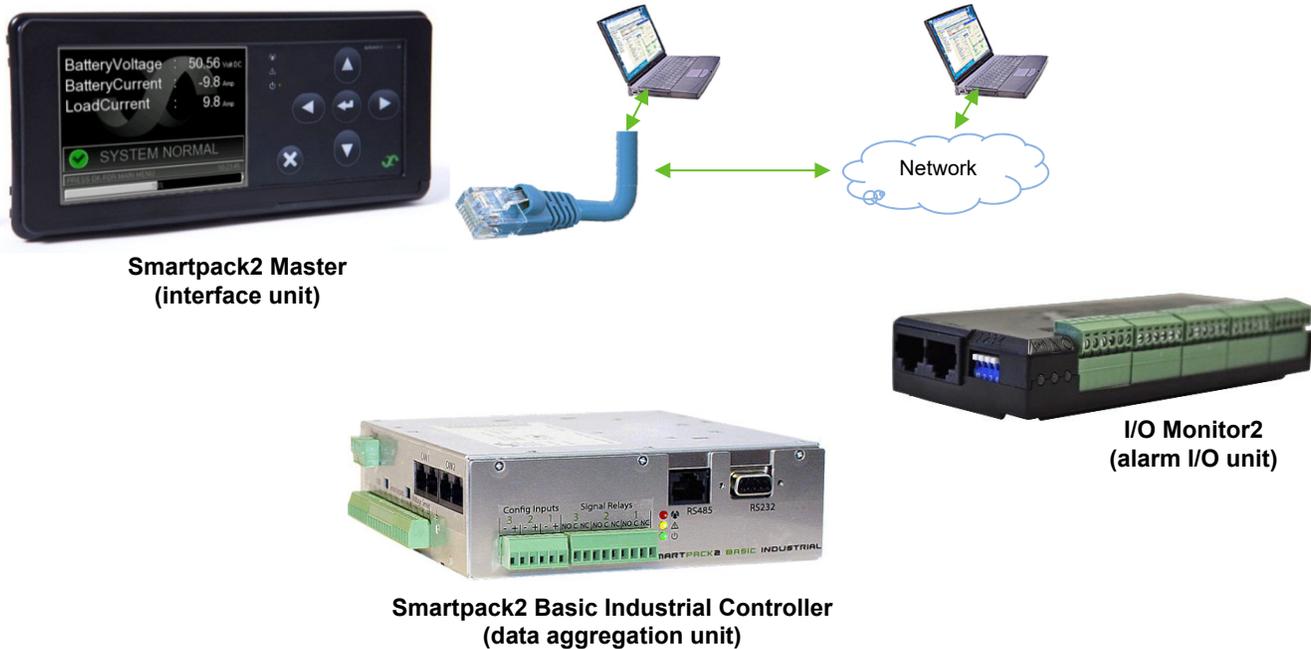
The following three units make up a complete *Smartpack2* control system:

- Smartpack2 Master is the master controller and contains the interactive display.
- Smartpack2 Basic Industrial handles internal data aggregation and housekeeping.
- I/O Monitor2 (Type 2) handles external alarm inputs and outputs.

The system can be expanded with additional *Basic* controllers, I/O units and other CAN nodes in the *Smartpack2* family. All control and monitoring devices interconnect via the CAN bus.

A single Smartpack2 Master controller is used for the entire system; it is installed in the distribution door. The Smartpack2 Master controller contains an Ethernet port, which can be connected either directly to a computer or to a network (e.g., an office LAN). The Smartpack2 Basic Industrial Controller is located in the controller tray at the bottom of the distribution section. The controller tray also houses the I/O Monitor2 unit, which provides a total of 6 alarm inputs and 6 alarm output relays.

SMARTPACK2 CONTROL SYSTEM



SUPPORTED CAN NODES

In addition to the devices discussed above, other CAN nodes are available for use with the Smartpack2 control system:

- Battery Monitor contains an internal temperature probe to measure battery temperature. It also has monitor inputs for one shunt and one breaker.
- Load Monitor can monitor up to eight shunts and eight fuses. Additional Load Monitors can be ordered to monitor external distribution devices or shunts.
- CAN Power provides CAN bus isolation and can be used to supplement the available power in the control system.

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FLATPACK2 HE RECTIFIERS AND DC-DC CONVERTERS

Flatpack2 HE rectifiers provide primary output power for the Modular systems. There are three module options available, identified by DC voltage and power output:

- 48V/2000W
- 48V/3000W

HE rectifiers feature typical efficiencies higher than 95% (the 48V/2000W module typically performs higher than 96%). See the respective datasheets for more detailed specifications.



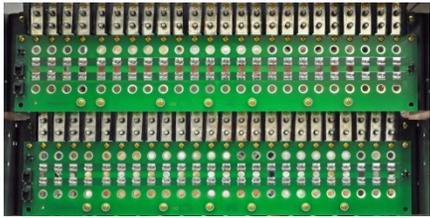
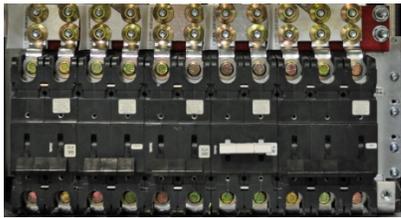
Flatpack2 HE Rectifier

CONFIGURABLE DISTRIBUTION

The Modular distribution section features 12U of space that can be configured for the following devices:

- Plug-in, bullet-style circuit breakers (1-, 2-, and 3-pole sizes available, up to 250A)
- TPS-style fuses with plug-in adapter (up to 125A)
- Large GJ-style breakers (1-, 2-, and 3-pole sizes available, up to 600A); shunt option available
- TPL-style fuses (up to 600A); shunt included

There are two styles of distribution panels that can be installed (below), and any combination of panels can be configured within the space available. The panels are tiered to accommodate cabling.

| 24-POSITION BULLET BREAKER PANEL | GJ BREAKER/TPL FUSE PANEL |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |
| Accommodates up to 24 one-pole, plug-in, bullet-style circuit breakers and TPS-style fuses with plug-in adapters. Kits are available for multi-pole circuit breakers. | Provides up to 12 positions for GJ-style circuit breakers and TPL-style fuses. |
| Up to two panels can be installed per tier, for a maximum of four panels in one Modular plant. | Up to two panels can be configured for one Modular plant. |

Bulk battery cable landings are available in the rear of the distribution, for two-hole lugs (3/8" studs on 1" centers). A shunt is standard; an LVBD option is also available.

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AC INPUT

| | |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal Input Voltage | Single-phase 208/240 Vac (48V/3000W, 48V/2000W rectifiers) Single-phase 277 Vac (48V/3000W rectifier only) Three-phase 208 Vac or 240 Vac (48V/3000W, 48V/2000W rectifiers) |
| Rated Input Voltage Range | 100-250 Vac (24V/1800W, 48V/2000W rectifiers) 100-277 Vac (48V/3000W rectifier only) |
| AC Connectors | Compression terminals: Individual for single-phase input; three rectifiers per feed for three-phase input; bare wire Barrier strip: Dual-feed, one-hole lugs |
| Input Protection | MOVs and fuses in the rectifier modules |

DC OUTPUT

| | |
|------------------|-----------------|
| Nominal Voltage | 48 Vdc |
| Adjustable Range | 43.2 – 57.6 Vdc |
| Maximum Power | 60 kW |
| Maximum Current | 1200A |

MONITORING

| | | |
|---------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Monitoring Unit | Smartpack2 control and monitoring devices | |
| Local Operation | Interactive Display (Smartpack2 Master unit) | |
| Remote Operation | WebPower (WEB Interface, SNMP protocol and email) | |
| Alarm Relays | 6 x Form-C dry contact relays (NO, NC, C) on I/O Monitor2 | |
| Visual Indications (LEDs) | Green – System ON; Yellow – Warnings and Minor alarm(s); Red – Major alarm(s) | |
| Controller Inputs | 6 x multipurpose digital inputs configurable as digital / analog, or temperature measurement (I/O Monitor2) | |
| Current Measurements | Battery current | Rectifier current |
| Alarms | Load fuse alarm Battery fuse alarm LVD operated Low output voltage alarms (2 individual alarm levels) | High output voltage alarms (2 individual alarm levels) Battery capacity Temperature alarm Symmetry alarm and more |

DC DISTRIBUTION OPTIONS

| | |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 24-position Bullet Breaker Panel | 24 positions for one-, two-, and three-pole plug-in circuit breakers and TPS-style fuses (with plug-in adapters). Up to four panels can be installed in one system. |
| GJ Breaker/TPL Fuse Panel | Up to 12 positions for GJ-style circuit breakers and TPL-style fuses; shunt option available for each device. Up to two panels can be installed in one system. |
| Bulk battery connections | 14 connections, 3/8" studs on 1" centers |
| Bulk load connections | 2 connections, 3/8" studs on 1" centers |
| Programmable LVBD | Up to one LVBD per system |

ALARM CONNECTIONS

| | |
|--------------|---------------------------------------------------------------|
| I/O Monitor2 | Pluggable terminal blocks, up to 1.5 mm ² [AWG 12] |
|--------------|---------------------------------------------------------------|

OTHER SPECIFICATIONS

| | |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------|
| Operating temperature | -40 to +45°C (-40 to +113°F) |
| Storage temperature | -40 to +70°C (-40 to +158°F) |
| Nominal rack size | Standard 23" rack |
| Dimensions | Overall depth: 570.8 mm (22.47") Maximum height: 932.90 mm (38.41"/22U), with up to 5 power shelves (1U each) |
| Weight (excluding rectifiers and rack) | Approx. 102 kg [225 lbs], depending on distribution panels and number of power shelves installed |

APPLICABLE STANDARDS

| | |
|-------------------|------------------------------------------------------------------------------------|
| Electrical Safety | UL/CSA 60950-1, 2 nd Edition EN/IEC 60950-1, 2 nd Edition |
| EMI/EMC | GR-1089-CORE EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4 |
| Environment | GR-63-CORE |

Specifications are subject to change without notice