

### Description

Forza™ modular DC power shelf and cabinet systems are designed to meet rigid telecom applications. These power solutions provide rectification, system management and power distribution while maintaining high reliability and offering flexibility for future expansion. The Forza Power System is based on hot-swappable rectifier modules (FMP 32.48) with output power available at 3200W per module.

System management is accomplished through messages and alarms displayed on the system controller's (PCS) LCD screen and can also be displayed remotely via the PC-based PowCom™ software package.

Several cabinet options are available. The PBC series of cabinets combines rectifiers, DC distribution and battery backup in a single rack. PPC cabinets allow advanced scalability through the use of vertical raiser bars which allow "hot" expansion of rectifier and DC distribution shelves.

### Features

- High reliability
- Simple installation and operation
- LCD display for self-guided controller operation
- Interface standards include RS232, and Form "C" dry alarm contacts with grouped alarms
- Site programmable supervision unit
- Intelligent battery management
- Optional Ethernet (SNMP compatible) interface module
- International standards compliance



## System Configurations



### PPC 32 System

A floor cabinet solution with a built-in DC bus that enables the connection of rectifier subracks and battery load/ breaker shelves. This system can accommodate up to 20 rectifier modules, a supervision module (PCS), and a wide range of plug-in DC load distributions (low and high ohmic). The PPC offers flexible configurations that meet numerous site requirements.

- Up to 1280A/ 64kW/ 48V per cabinet
- Inter-cabinet paralleling bus allows live expansion up to 8192A
- Internal DC bus for simple plug-in of load distribution modules, battery breaker modules and rectifier subracks
- Internal data bus for advanced system monitoring and control
- Wide range of plug-in DC load distributions (low and high ohmic)
- Easy configuration of both internal and remote DC distribution
- Footprint - 600 x 600mm
- Height - 2150mm



### PBC System

A floor cabinet solution that combines rectifiers, DC distribution, backup batteries and monitoring in a single footprint. This system can accommodate up to 5 rectifier modules, a supervision module (PCS), and a DC distribution with up to 6 battery breakers and 21 load breakers.

- Up to 320A/ 16kW/ 48V per cabinet
- Space for 510Ah backup batteries per cabinet
- Footprint - 600 x 600mm or 600 x 400mm
- Height - 1800 or 2000mm

## System Components

### Rectifier Modules

The Forza™ system utilizes plug-in rectifier modules that are based on a soft-switching approach. Features include 3 LEDs for rectifier status indication, thermal shutdown and input overvoltage disconnection with an automatic reset.

#### Rectifier Features

Model	Voltage	Power (max.)	Current (max.)
<b>FMP 32.48 SIC</b>	48V DC	3200W	64A



FMP 32.48 Rectifier

### Supervision Module

Advanced system supervision is accomplished using a microprocessor based control module (PCS) that allows both local and remote system monitoring.

#### PCS Features

- Menu guided operation
- RS232 interface for remote operation
- Enhanced battery management:
  - Automatic and/or manual capacity test
  - Monthly data logging
  - Optional battery symmetry measurement with alarm
  - Optional temperature compensation
  - Programmable low voltage disconnect from batteries
  - Optional programmable PLD function for load shedding
- Site programmable flash EPROM
- Multiple language choices
- Programmable alarms, logic functions and operations
- Optional Ethernet interface through SNMP and/or TCP/IP



PCS Supervision Module

### Rectifier Subrack

The Forza Rectifier Subrack is available in both 19in. and 23in. configurations.

#### Rectifier Subracks

Model	Positions (max.)	Output (max.)	Mounting
<b>PPR 32/5 23in. 400d</b>	5	16kW	23in.
<b>PPR 32/5 19in. 600d</b>	4	12,8kW	19in.



5 Position Subrack



4 Position Subrack

# Forza Power System

## Cabinet & Shelf Systems

### Input

Model	Forza PPC Cabinet	Forza PBC Cabinet
Input	100-240V AC single phase or 230/400V AC 3-phase (site configurable)	100-240V AC single phase or 230/400V AC 3-phase (site configurable)
Inputs (max.)	Single input for every 6 rectifier positions (4 inputs for 24 rectifier cabinets)	Single input

### Output

Rectifier Modules (max. per cabinet)	20	5
Battery Outputs	Several battery breaker modules are available based on: MCCB's: 1x1500A, 2x600A, 4x384A  MCB's: 12x100A  Knife fuses: 5xNH1-3	3 minimum 6 maximum
Load Outputs	Several load breaker modules are available based on: MCCB's: 1x1500A, 2x600A, 2x384A, 4x384A  MCB's: 24x2-63A, 16x80-100A, 24x2-16A high ohmic  Knife fuses: 5xNH1-3, 9xNH00	21 (2-63A MCB's)
48V DC	Yes	Yes

### Expansion

Expansion Rack	Up to five subracks per cabinet, each with four rectifier modules	N/A
Expansion Cabinet	Yes (up to 128 rectifier modules)	Yes (up to 10 rectifier modules)

### Battery

Battery Symmetry Inputs	4 (expandable to 12 by adding the optional interface circuit board)	4
Low Voltage Battery Disconnection (LVBD)	Yes (through a trip coil in each MCCB or contactor)	Yes (contactor with automatic reset)
In-Cabinet Battery	N/A	Yes (up to 510A)

### Mechanical

Dimensions (WxHxD)	600x2150x600mm	600x2000x600mm 600x2000x400mm 600x1800x600mm 600x1800x400mm
Cable Entry	Top or bottom	Top
Plug-in for multiple racks, subracks, and PDU's	A total of 35U is available for rectifier subracks, distribution, and battery breaker modules (29U at bottom cable entry)	N/A

### Options

Temp. Comp. Charge	Yes	Yes
Ethernet Network Interface	Yes	Yes
Modem Interface	Yes	Yes

Note: All specifications are subject to change without notification.