



Compact DC 220V power supply systems are designed for medium power DC loads. These are medium-sized systems (19", >3U) with power up to 20kW and simple and fast installation.

GENERAL DESCRIPTION

The modular power supply TIP DC1 is designed to supply of DC loads with 220VDC or 110VDC rated voltage. In conjunction with the battery, it provides uninterrupted power to critical DC loads during designed autonomy.

The system is controlled by EMU unit which monitors and controls the operation of individual modules. Energy is processed by high efficient, constant power ER rectifiers.

Depending on the configuration, the TIP may include:

- EMU controller and up to 3x 1-phase or 3-phase rectifiers.
- 5x3-phase rectifiers
- 6x1-phase rectifiers

The EMU controller is also suitable for mounting on a 4U grill or on a switchboard door. The EGU, EBU measuring units are designed for mounting on DIN rail.

APPLICATION

- Power stations switchgears
- Industrial automation systems
- Service batteries charging systems

KEY FEATURES

- ✓ Compact design 4U, 19"
- ✓ Uninterruptible supply of the 110VDC or 220VDC critical loads in cooperation with the battery
- ✓ Modern rectifiers, MTBF> 250000
- ✓ Fast on-line expansion of rectifiers (hot-swap)
- ✓ Color display with touch panel function for viewing and configuration of the power supply and the entire 220 / 110DC switchgear
- ✓ Internal event logger
- ✓ Programmable alarm outputs - dry contacts - 7pcs
- ✓ Continuous, remote control of the system operation and quick reporting of the alarm states
- ✓ Simple and completely safe operation
- ✓ High efficiency> 91% - lower energy consumption and heat generation
- ✓ Active load sharing of three rectifiers
- ✓ Wide operating temperature range: -10 °C ÷ + 40 °C
- ✓ Soft start
- ✓ High tolerance to mains quality
- ✓ Immunity to short-circuits and overloads of output circuits
- ✓ Resistance to electromagnetic interference
- ✓ Open communication interface for RTU and DCS stations
- ✓ Clock synchronization according to IRIG-B
- ✓ Wide selection of optional equipment: mains and battery monitoring, temperature control, earth fault control, load protections state control



TECHNICAL SPECIFICATIONS

AC input		
Nominal voltage	VAC	3x230(400)
Supply voltage for functional expansion modules	VDC	80 ÷ 320
Frequency	Hz	45÷65
AC network configuration	-	3xL+N+PE (1-phase rectifiers) or 3xL+PE (3-phase rectifiers).
Power coefficient	-	>0,99

DC output		
Range of the rectifiers output voltage regulation	VDC	176 ÷ 286(320) @220V 1-phase (3-phase) 88 ÷ 143(160) @110V
Stabilization of output voltage	%	< 0,5
Stabilization of output current	%	< 0,5
Load voltage ripple	%	< 0,1
Load-sharing asymmetry	%	< 5
Maximum output power	kW	16x1,4 (1-phase) 16x2,8 (3-phase)

Control and monitoring	
Controller	EMU01MC
Operation status signaling	LED
Local control	control buttons & OLED display or by PC
Remote control	Infra manager (option) 4DC manager (option) Ethernet webserver
Alarming,	LED
Operation signaling	dry contacts
Alarm output	7pcs

Mechanical parameters		
Dimensions of a single cassette (H x W x D)	mm	176,8(4U)x482,6(19")x423
Ingress protection		IP20
The weight of a single sub-rack	kg	12 ÷ 32

Rectifier		
Types of rectifiers		ER22005/S – 220V 5A (1-phase)
		ER11010/S – 110V 10A (1-phase)
		ER22010/T – 220V 10A (3-phase)
		ER11020/T – 110V 20A (3-phase)
Rated current	A	5/10/20

Rated power	kW	1,1 (single phase) 2,2 (three phase)
Max. Overload	A	110%×I _n
Efficiency	%	>91
Cooling	-	forced

Standard equipment	
EMU01MC controller	1
ER rectifier	1÷16
Measuring units	eEMU01MC - measurement of AC & DC network parameters, ground fault detection and localization, temperature measurement, binary contacts actual status EGU02MC - binary contacts actual status, inputs of the SLDx3K and temperature sensors EBU01 - measures the voltage of the individual cells and the battery temperature SLDx3K - leakage current sensor used for locating earth leakage Temperature sensor Shunt for current measurement
Accessories - sensors	
Battery asymmetry control	1

Measurements		
DC voltage range	Vdc	0 ÷ 320
AC voltage range	Vac	0 ÷ 550
Frequency range	Hz	45 ÷ 60
DC current range with shunt	A	0 ÷ 3000
Temperature range	°C	-25 ÷ +75
Insulation resistance	kΩ	0 ÷ 999
Maximum number of monitored outputs	-	448
Voltage between rail (+/-) and earth	V	0 ÷ 320

Environmental specifications		
Operating temperature	°C	-10÷40
Relative humidity	%	<95 (non-condensing)

Design standards	
Resistance in the industrial environment	IEC61000-6-2
Electrical safety	PN-EN 60950
Electromagnetic compatibility (EMC)	PN-ETSI EN 300 386 PN-EN 61000-6-4
Environmental	RoHS, WEE, LVD