"Power and Energy Solutions"

Version: 1.0

TL-DC

Thyristor Rectifiers 10A – 800A

TL-DC: Charging Systems for Stationary Batteries

Thytron's **TL-DC** range of rectifiers/battery chargers, based on microprocessor-controlled thyristor technology, provides high-quality and reliable protection for critical DC loads.

The **TL-DC** series covers the range between 10A and 800A with outputs from 24 to 220Vdc. The output accuracy is better than +/- 1% and the system is designed to change open or sealed lead acid and nickel cadmium batteries.

All alarms, monitoring and status indicators (via display and LEDs) are managed through a digital control system. Each type of battery requires special charging characteristics, which are managed by the controller. The systems are completely customizable to the specific characteristics and needs of each client and application.

The robust design ensures that the installation requires low maintenance and can work for long periods without special attention.

Performances

- Microprocessor controlled thyristor technology.
- Galvanic isolation between input and output via transformer.
- Complete six – pulse bridge.
- Ventilation by natural convection.
- Standard DC output earth fault detection.
- Electrolyte level detection for NiCd batteries (optional).
- Charging states: floating, fast, and exceptional.
- Robust and compact design.
- High power density.
- Monitoring of all equipment parameters through LCD display.
- Possibility of redundant parallel operation.
- Operation with lead acid or nickel cadmium batteries.
- Temperature-compensated float voltage.
- Automatic disconnection in the event of minimum battery voltage or temperature.
- Extensive configuration options.
- High MTBF and low MTTR.
- Easy installation, start-up, and maintenance.

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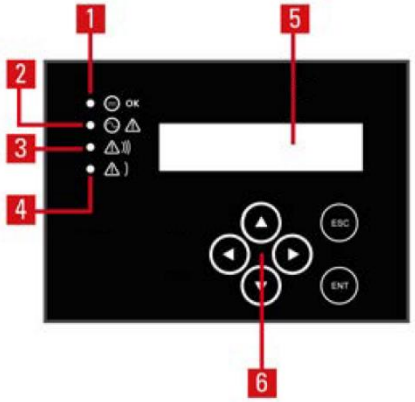
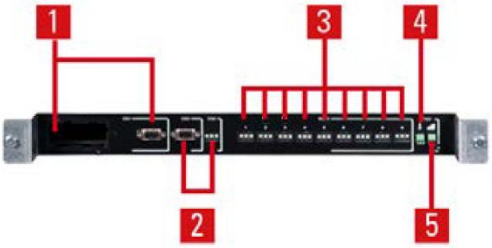
Applications: Efficient, Reliable, and Robust Solutions

TL-DC system are designed to protect DC loads of maximum criticality and to operate with nickel cadmium or lead acid batteries in harsh and demanding operating environments, such as power plants, electrical substations, oil and gas pipelines, petrochemical plants, mines, railways, telecommunications facilities, hospitals, industrial plants, etc.





Display

1. Output voltage indicator.
2. Input voltage fault indicator.
3. Urgent alarm indicator (customisable).
4. Non-urgent alarm indicator (customisable).
5. LCD display with multiple languages.
6. Navigation keys.

Communications

1. Slot for the telemagement or RS-232 interface.
2. RS-485 serial ports. MODBUS communication protocol.
3. Programmable relay (x6) interface.
4. Baterry temperature measurement input.
5. NiCd electrolyte level detection input. (1)

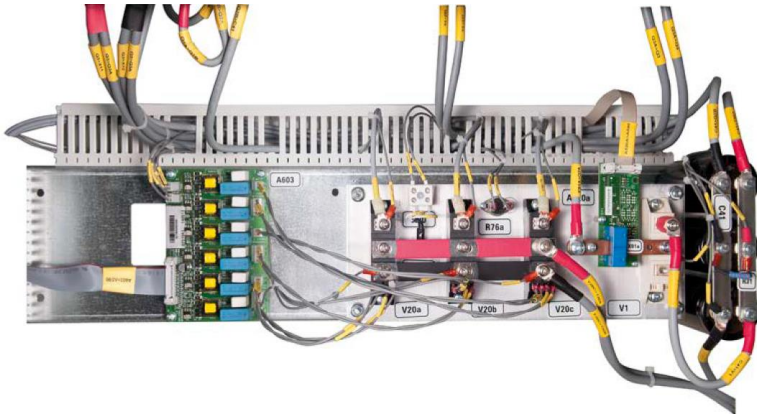
(1) Only extended version

Options

- 12-pulse rectifier with isolation transformer.
- Voltage drop diodes.
- TCP/IP interface.
- Heater.
- Output diodes for parallel operation.
- Different types of batteries (SLA, lead acid, nickel cadmium, etc.).
- Other degrees of protection.
- Other input voltages on request.
- Top cable entry.

Techincal Support and Service

- Pre and post- sales advice.
- Multiple maintenance and telemaintenance options.



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Range

MODEL	OUTPUT CURRENT (A)	INPUT VOLTAGE (VAC)	OUTPUT VOLTAGE (VDC)
TL-DC-10	10	120/230	24 / 48 / 110 / 120 / 125 / 220
TL-DC-20	20	120/230	24 / 48 / 110 / 120 / 125 / 220
TL-DC-30	30	120/230	24 / 48 / 110 / 120 / 125 / 220
TL-DC-50	50	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-25	25	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-50	50	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-75	75	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-100	100	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-150	150	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-200	200	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-250	250	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-300	300	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-350	350	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-400	400	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-450	450	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-500	500	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-600	600	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-700	700	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220
TL-DC-800	800	3 x 208 / 3 x 220 / 3x 400	24 / 48 / 110 / 120 / 125 / 220

Check for other output currents.

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Technical Specifications

MODEL		TL-DC
TECHNOLOGY		Thyristor
INPUT	Rated Voltage	120 / 230 V (F + N); 3 × 208 / 3 × 220 / 3 × 400 V (3F + N)
	Voltage Range	±15%
	Rated Frequency	50/60Hz
	Frequency Range	±5%
	Power Factor	0.85
	Performance	>85%
OUTPUT	DC Nominal Voltage	24 V, 48 V, 110 V, 120 V, 125 V, 220 V
	Float Voltage	2.27 V/cell (SLA) / 1.4 ÷ 1.45 V/el (NiCd)
	Fast Charging Voltage	2.5 V/cell (SLA) / 1.5 V/el (NiCd)
	Exceptional Charging Voltage/formation	2.7 V/cell (SLA) / 1.65 V/el (NiCd)
	Accuracy	±1%
	Ripple	<1% (1)
	Single Phase Current	10 / 20 / 30 / 50 A(2)
	Three Phase Current	25 / 50 / 75 / 100 / 150 / 200 / 250 / 300 / 350 / 400 / 450 / 500 / 600 / 700 / 800 A(2)
BATTERY	Protection	Against overvoltage and undervoltage
	Battery Type	SLA (sealed or open) or NiCd
	Charge Type	IU constant as per DIN 41773
	Charging Current	0.1 to 0.3 C adjustable
	Recharge Time	Up to 80% in 4 hours (0.2C)
	Voltage / Temperature compensation	Yes, customisable as per battery specifications (mV/°C)
	No. of cells Pb	12 (24 V) / 24 (48 V) / 55 (110 V) / 60 (120 V) / 62 (125 V) / 110 (220 V)
	No. of elements NiCd	19 (24 V) / 38 ÷ 39 (48 V) / 81 ÷ 86 (110 V) / 88 ÷ 94 (120 V) / 92 ÷ 96 (125 V) / 161 ÷ 173 (220 V)
COMMUNICATION	Ports	RS-232/485 - 6 Dry contacts
	Intelligent slot	Yes, one / Optional (Network Management Card) MODBUS TCP, RTU, SNMP, WebUI
PROTECTION	Input and Output	Circuit Breaker
	Battery	Fuses
	Soft Start	Yes
GENERAL	Operating Temperature	-10º C ÷ +55º C (3)
	Storage Temperature	-20º C ÷ +70º C (4)
	Relative Humidity	Up to 95% non-condensing
	Maximum operating altitude	Up to 3000 m.a.s.l.(5)
	Dielectric Strenght (Input – Output)	2500V @ 1minute
	Degree of Protection	IP41
	Cooling	Natural
STANDARDS	Safety	IEC/EN 61204, IEC/EN 60950-1, IEC 60146
	Electromagnetic Compatibility (EMC)	IEC/EN 61204-3 class A
	Quality and Environmental Management	ISO 9001 & ISO 14001

1) Premium version
(2) Includes battery charging current (Ibat). In Premium, Ibat version. can power loads
(3) Power degradation from +40ºC
(4) Without batteries
(5) Power degradation from 1000 m.a.s.l.

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