

Linear Post-Processor Unit TC.LIN

for Regatron Power Supplies

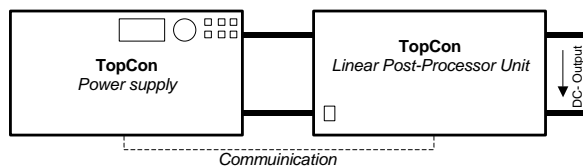


Linear Post-Processor Unit TC.LIN

Features

- The *Linear Post-Processor Unit* combines the advantages of a primary switched power supply like high efficiency, small outline, light weight, cost efficiency, with the fast, smooth linear controlled output capability of a linear power supply.
- To be used in combination with TopCon power supplies.
- Modular concept for easy power increase: Parallel, master-slave-operation of power supplies and *Linear Post-Processor Units*.
- Very fast digital controller features quick response time, enhanced dynamics and programmable control characteristics for a fast regulation around the MPP of a IV-curve.
- User-friendly PC program available. This enables the user to communicate over the power supply to the *Linear Post-Processor Unit*.¹⁾
- Seamless integration into the well established TopControl software.
- Swiss made: developed, manufactured and tested in Switzerland by Regatron AG.

System Configuration (single Modules)



50 A / 25 A / 1500 VDC

TC.LIN.75.1500.50

Input requirements and output specifications

Mains input data (Auxiliary Supply)

Voltage..... 189 – 253 V_{AC}
 Frequency..... 48 – 62 Hz
 Input power 50 W

DC Input ratings

Input voltage 0 – 1500 V_{DC}
 Input current..... 50 A_{DCmax}
 Leakage current DC to PE < 10 mA

Output ratings

Output voltage range 0 – 1500 V_{DC}²⁾
 Drop Voltage (typical) 50 V³⁾
 Output current full range 0 – 50 A⁴⁾
 Output current half range 0 – 25 A
 Output Capacitor < 100 nF

Dissipation Power

Continuous power diss..... 2000 W⁵⁾
 Power diss. < 3 Min..... 2500 W⁶⁾
 Transient power diss..... Full SOA protection

Operating modes^{15),16)}

AAP⁷⁾ current regulation..... 0 – 100 % I_{max}
 @ 0 – (V_{max}-V_{Drop})

Resolution

Voltage, current resolution 14.5 Bit⁸⁾

Static accuracy

Load regulation < ± 0.05 % FS typ.⁹⁾
 Line regulation < ± 0.05% FS typ.¹⁰⁾

Transient response time

Load regulation < 10 µs¹¹⁾
 Set value tracking < 50 µs¹²⁾

Stability

..... < ± 0.02 % FS¹³⁾

Temperature coefficient

Current, voltage < 0.01 % FS/°C¹⁴⁾

Remote sensing

Terminals on rear side cable voltage drop compensation

General specifications

Weight..... ~21 kg
 Width front panel..... 483 mm
 Width housing 444 mm (19")
 Height front panel..... 132 mm
 Height housing 132 mm (3 U)
 Depth with PACOB 515 mm
 Depth housing..... 452 mm
 DC input connections max.: 16 mm²
 (DC+, DC-, PE)
 DC Output connections max.: 16 mm²
 (DC+, DC-, PE)
 Remote Sensing connections max. 0.8 mm²
 (DC+,DC-)

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Ambient conditions

Operating temperature	5 – 35 °C
Storage temperature.....	-25 – 70 °C
Relative air humidity	0 – 95 %
..... (non-condensing)	
max. output cabling length:	10 m ¹⁷⁾

Cooling

Integrated liquid cooling system of the power stage with completely integrated liquid to liquid heat-exchange system.

Heat exchanger

Material..... EN AW-5083

Inlet/outlet on rear side size: G ½"

Liquid temperature..... 15 – 40 °C

Flow..... ≥ 2.5 l/min

Pressure max. ≤ 10 bar

Pressure drop..... 50 mbar@3 l/min

Safety**Type of protection (IEC 60529)**

Basic construction IP 20

Mounted in cabinet up to IP 53

Isolation

Line to output..... 4000 V_{rms}

Line to case 2500 V_{rms}

DC-Input, Output to case:..... ± 1000 V_{DC}, > 10 MΩ

Conformity CE-Marking**EMC Directive**

EMC emission EN 61000-6-4

EMC immunity EN 61000-6-2

Low Voltage Directive

Electronic equipment

for use in power installations EN 50178

Standard programming interfaces**Control port**

Isolation to electronics and earth:..... 125 V_{rms}

Connector..... 15 pin D-sub, female

..... on rear panel

Control port

Input functions Future use

Output functions Future use

Standard programming interfaces (continued)**RS232**

Isolation to electronics and earth:..... 125 V_{rms}

Connector 9 pin D-sub, female

..... on rear panel

Baud rate 38400 baud

Resolution (programming and readback):

U, I 0.005 % FS

Ordering code

TC.LIN.75.1500.50

Scope of delivery

TopCon Linear Post-Processor Unit ready to install, including:

Operating manual language..... english

RS232 cable length..... 1.8 m

CAN bus..... CAN cable

..... CANTerm Connector

Software

TopControl on Installation disc

API (DLL file)..... for LabVIEW® and C/C++

..... (and other programming languages,

..... to be used in combination

..... with TopCon Power Supplies.)

- 1) Most commonly used parameter are accessible via PC Program TopControl connected to TopCon power supply.
- 2) Maximum Output Voltage = Input Voltage – Drop Voltage.
- 3) **AdjThe wiring has to be as low-inductive as possible. Dimensioning assistance or/and longer cabling length up on request.** unstable Value, the Drop Voltage influences directly the power dissipation.
- 4) Full Range / Half Range are selectable by PC program TopControl.
- 5) At ambient temperature 25 °C, for *current half range* 60 % of specified value. To reach this current a slightly higher input current of the power supply is needed.
- 6) For Drop Voltage < 250 V_{DC}, for *current half range* 50 % of specified value.
- 7) Application Area Programming, e.g. I(U) curves of solar panel / solar array.
- 8) Improved by using oversampling technics.
- 9) Typical value for 60 % to 70 % load variation, at voltage drop and temperature conditions.
- 10) Typical value for variation within 20 V to 60 V drop voltage, at constant load and temperature conditions.
- 11) Typical recovery time to within < ± 2 % band of set value for a load step 60 % to 70 %, ohmic load, voltage drop > 30 V and constant temperature conditions.
- 12) Typical recovery time to within < ± 2 % band of set value for a set value step 60 % to 70 %, ohmic load, voltage drop > 30 V and constant temperature conditions.
line input and temperature conditions. Transient response time can be slightly affected by multi-unit operation.
- 13) Maximum drift over 6 hours after 30 minute warm-up time, at constant line input, load and temperature conditions.
- 14) Typical change of output values versus ambient temperature, at constant line input and load conditions.
- 15) Fast steps from Uoc to Isc, Isc to Uoc, MPP to Isc or MPP to Uoc due to the SOA protection not for all IV-curves possible.
- 16) TC.LIN has to be controlled with a IV-curve. IV-curves can be generated with the AAP function of the TopControl function engine TFE or with the solar array simulation software SASControl.
- 17) The wiring has to be as low-inductive as possible. Dimensioning assistance or/and longer cabling length up on request.