- **Security relevant topology**
  No static breakthrough Uin / Uout
- **Step-up / Step-down converter**
  U_{out} lower-equal-higher as U_{in}
- **Noise suppression EN 55022.B**
- **Isolated Interfaces**
  Set value / actual value / inhibit
- **U_{out}/I_{out} adjustable from zero up to max**
  (alternatively)
  Current regulated output *(standard)*
- **Efficiency up to 96%**

for Vehicles / Railway

Series ERG 02

US Pat. no. 5.991.166 u. 6.094.366
D Pat. no. 195 15 210 u. 195 05 417

Main points:

Output:

- Constant current output with regulated voltage clamping
- No-load proof / Short circuit protected
- Over voltage protection (Thyristor)

Input:

- Iout-set point value 0-10V*
- Iout-actual value feedback 0-10V*
  * optionally adaptable
- Inhibit (on/off) Off=open / On=>8V
- Axiliary supply (13-26)V /40mAmax
- Reverse pol. protection cross diode (pre switched fuse - customer)
- Disturbances EN 61000-4-5 level 3/2Ω Load-dump-puls
- Noise suppression EN 55022 B

General:

- Under voltage switch-off / hysteresis
- Over temperature signal >110°C - 0V
  < 80°C - 24V
- Ambient temperature -25°C / +70°C
- Option H: -40°C / +85°C
- Derating: 2%/°C >70°C
- Moving air >5m/s over heat sink
- MTBF on request
- Set-point value linearity <1,5%
- Connections:
  Power part: M5 terminal
  Interface: Phönix MC 1,5/8-STF-3,81
- Shock / vibration
- Protection class depending on build-in situation
- Weight approx. 6kg
- Dimension:
  374 x 250 x 62,5 mm³ + clamps
  Option: other mechanic on request

Uin V	Iout A	Uout V	Model number
20 - 50 20 to 16V power- reduction	0-10 dyn 8,0 stat	0-90	ERG 02.24.90.100
42 - 101 surge proof	0-10 dyn 8,0 stat	0-90	ERG 02.72.90.100
67 - 154 67 to 55V power- reduction	0-10 dyn 8,0 stat	0-90	ERG 02.10.90.100
(H)	-40°C up to +85°C		Additional charge

First saple modification costs

Modification costs for possible changes above values: on request

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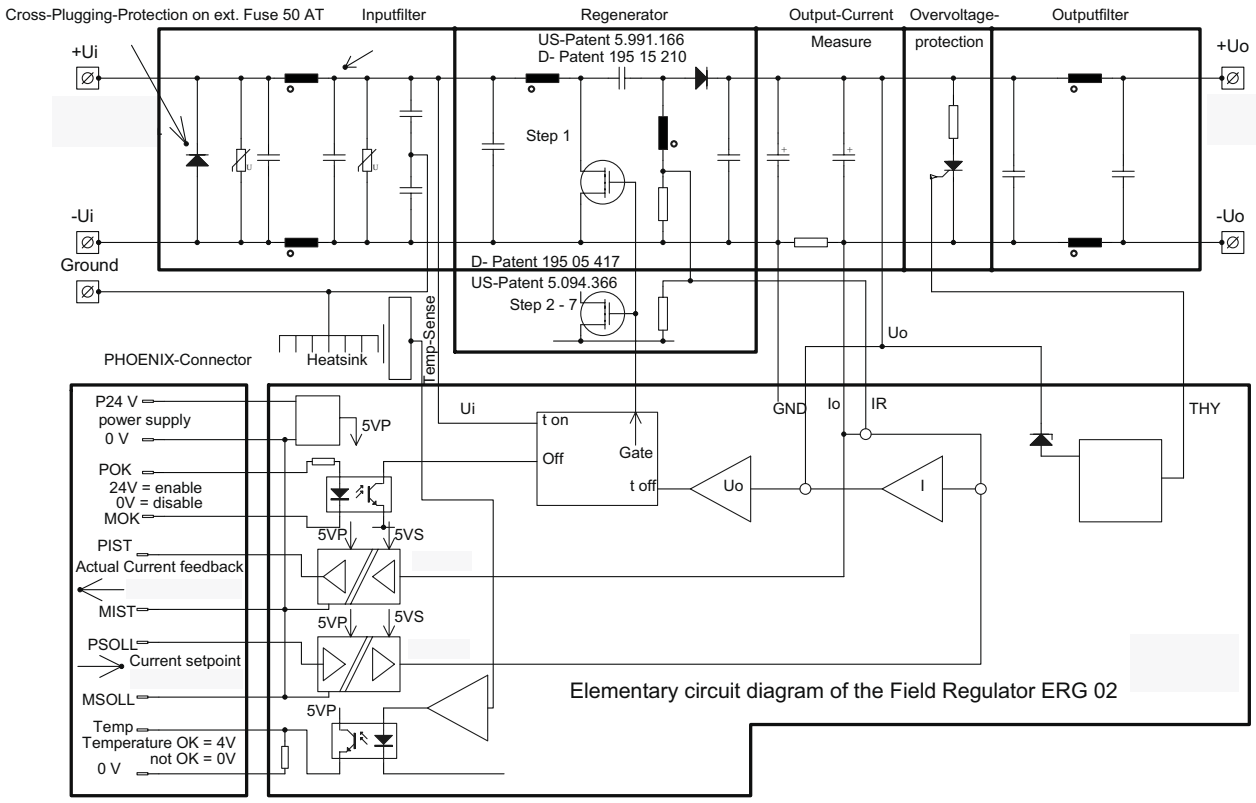

The ***ERG 02 field regulator*** is designed for the supply of an excitation winding with constant current on a complex burden (R-L) in brushless synchronous machines / generators for Diesel-electric-drives. The ERG series works according to the EN 50155 / 121 railway standards and is build up with the patented Regenerator-technology as a current cascaded buck-boost topology with a clock frequency of approx. 100 kHz.

This actuating element works as an independent, subordinated control-loop with control unit, regulation unit and functional interface. This means that for this voltage-control-loop the customer's superposed current-regulation-circuit is the set-point value (0 – 10V) as an amplified failure-difference. The regulated output current I_{out} (e.g. 0 - 8A) is directly proportional to the isolated set-point value (e.g. 0 - 8V) and constant over the whole input voltage range, load range and temperature range. The output voltage is the result of I_{out} and the field winding's complex resistance L and R. Furthermore the output current is isolated given back with 0 – 10V as the actual current value for the customer's control loop.

The output is activated with an integral run-up (t = 500ms) to the set-point given output current by connecting a control voltage of 8 - 50V with a constant current of 5mA to the OK-Signal-input. An open OK-Signal-input deactivates the converter. The output U_{out} is dynamically and statically overload protected, short circuit proof and no-load stable.

That the converter does not switch off by reaching the minimum input voltage in the case that the full power (kick down) is needed and the battery is weak at the same time, the converter reduces the output current (power reduction) and works down to the minimum input voltage. At a load throw-off the converter's output voltage is rising up to a defined limit value (88V).

A Thyristor limits the output voltage to approx. 120V in the case of an over voltage caused by a defect voltage control loop. An auxiliary voltage of 13 - 26V must available customer sided to supply the isolated function-interface.

The Temp-Output is signalling the converter's over temperature (>110°C). 24V = temperature OK, 0V = over temperature.

To keep the requirement of a reverse polarity protection and to reduce the power loss a square diode is used input sided instead of a length-diode. Input sided an external fuse (delayed) must be connected ahead as an emergency protection.