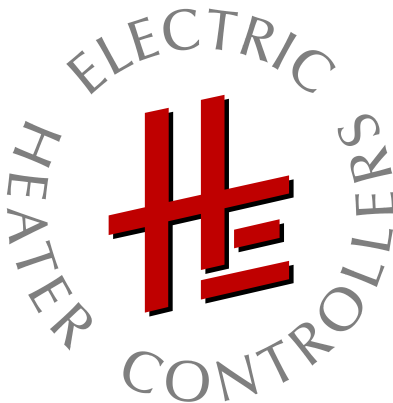


# HC heater controller

Know-how -  
TQS RAPIDIUM heaters



---

**HETRONIK GmbH**

Heisinger Str. 12

D-87437 Kempten / Germany

phone: +49 / (0)831-56 58 59-30

fax: +49 / (0)831-56 58 59-39

e-mail: [contact@hetronik.de](mailto:contact@hetronik.de)

---

[www.heatcontrol.com](http://www.heatcontrol.com)

---

RAPIDIUM heating elements, made by TQS (<https://tqs-quartz.com/>)



are quartz cassette heating elements / heaters.

As normal quartz heaters, RAPIDIUM heaters use a coil made from heat-resistant resistance wire



When applying a voltage, the resulting electric current causes the coil to increase heat.

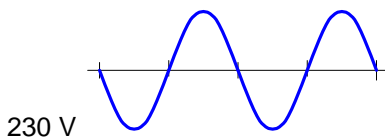
Electrically speaking, TQS RAPIDIUM heaters do not behave differently from TQS standard quartz heaters or quartz heaters of other makers:

The coil resistance varies (max. 5 %) with temperature changes.

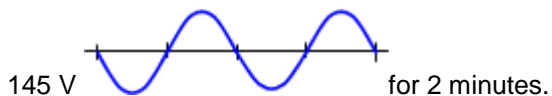
I.e., also RAPIDIUM heaters do not have a higher inrush current, when switched ON from cold coils.

In contrast to “normal” quartz heaters, RAPIDIUM heaters use a particular / special coil, designed for lower voltage (145 V), but temporarily allowed to be supplied with a higher voltage (230 V).

According to TQS specifications, RAPIDIUM heaters are allowed to be operated for maximum of 6 seconds at



Thereafter, the operation voltage has to be limited to



RAPIDIUM heaters are available in different sizes and different power ratings.

The most powerful RAPIDIUM heater shown:

**S** 230V 1265W

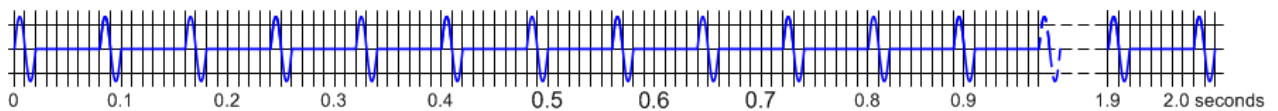
**C** 145V 500W

I.e.:

**Start** (for max. 6 seconds every 2 minutes) with 1'265 W at 230 V = 5.5 A,  
there after **Continuous** with 500 W at 145 V = 3.45 A.

For cost prohibitive reasons also HETRONIK multi-channel Heater Controllers do not change the voltage level (the effective value) of the AC voltage to adjust power output, but switches full or half sinusoid waves.

E.G. 25 % full sinusoid waves at 50 Hz:



Full and half sinusoid wave control (burst fire) is permitted and recommended by TQS for RAPIDIUM heaters.

At 230 V (i.e. all full sinusoid fired / ON) this RAPIDIUM heater has 1'265 W.

Continuous only 500 W are allowed.  
500 Watt of 1.265 W is 39.52 %.



**TQS allow RADIDIUM heaters to be operate continuously with 40 %**

I.e., in continuous operation, the power can be adjusted in 40 steps from 0 to 500W.  
Not with 100 steps like "normal" quartz heaters.

All 16-channel output-cards

- HC500-OC2-230-16
- HC500-OC2-230-16-I
- HC700-OC2-230-16

are designed for continuous 1'500 W / 230 V

Wattage (P) = voltage (U) <sup>2</sup> / resistance (R)

Measured electric resistance: R = 41.8 Ohm

$$P_{230V} = 230^2 \text{ V}^2 / 41,8 \text{ Ohm} = 1'266 \text{ W}$$

$$P_{230V} = 145^2 \text{ V}^2 / 41,8 \text{ Ohm} = 503 \text{ W}$$

145 V are 63 % of 230 V.

But **ATTENTION**, if 63 % of the full or half sinusoid waves are fired (= ON), the RAPDIUM heater has 797 Watt (1'265 W x 0,63). 797 W continuously is not allowed for RAPDIUM heaters.