

## Multi Channel Temperature Controller CR15+



output values or current values of all zones are displayed simultaneously. An external optional current sensing module is required for heating current monitoring.

- Input mode: This mode allows to enter all values required for control operation. All parameters are described in text format. A three level password protection prevents unauthorized parameter entry. For a clearly arranged display this mode will show only the number of the selected channel and the corresponding setpoint and process value (see figure below).

### 1. Introduction

FELLER ENGINEERING's product range was extended by the Multi Channel Temperature Controller CR15+. The CR15+ is a further development of the well established CR15, so both controllers are based on mostly identical hardware.

### 2. Short Description

#### Inputs and Outputs

The CR15+ has a total of 30 outputs for control of max. 15 heating / cooling circuits. The outputs are able to switch 24VDC, 24 VDC or 230VAC in a pulse package mode. The input sensors can be Pt100, Fe-CuNi or NiCr-Ni. The supply voltage may be selected of 24VDC, 24VAC or 230VAC. The CR15+ has a standard RS485 interface to an external visualisation for control and monitoring. Optional RS232 or RS422 interfaces are available.

#### Operating and Display Unit

The display of parameters and the setting of parameters and operation modes is performed via the operating and display unit. There are two basic modes:

- Display mode: As requested by the user all setpoint values, process values, control deviations,



Display of CR15+ input mode

#### Alarms

All control circuits are monitored for under- and over-temperature. In case of alarm condition the referring isolated relay contacts change status. The alarms are indicated summary. The alarm code is displayed in the window of the corresponding channel. This enables to determine the type of error (over- / under-temperature, broken or shorted sensor) and the location of error (zone 1, 2 or..) immediately.

The integrated monitoring of the thermocouples prevents none plausible temperature behaviour like increasing temperature without any heating or no temperature increasing at max. heating current.

### ***Selfoptimizing Mode***

The CR15+ includes a selfoptimizing mode based on FUZZY-logic. Depending on the application different methods are available. For sluggish control systems (e.g. extruders) the tuning method „start-up trial“ is used to determine the heating parameters and the tuning method „sink“ to determine the cooling parameters. The tuning method „swing trial“ is used for fast control systems (e.g. hot-channel applications).

### ***Control Structure***

- The controller uses for internal calculation a temperature resolution of  $\frac{1}{4}$  °C. The display is reduced to 1° C resolution.
- The minimum calculation cycle per channel is 10 msec (= of 1% regulation rate).
- The scan time for all 15 channels is 1 sec.
- The control structure for all heating circuits is similar to a PID control with start up ramp.
- Four independent setpoint programs can be stored for each channel, e.g. stand by temperature or new temperature profiles. The programs stay in memory even without power supply. A 24 VDC PLC-parallel input allows external selection of setpoint programs.
- The parameter operation level allows process and user required presettings, e.g. activating ramp functions, selecting °C or °F or the modification of the PID-structure.
- For each channel the CR15+ may be switched to a power mode (manual or preselected output), this enables a mixed operation of the channels.

### ***Commissioning***

An additional feature of the CR15+ is the built-in diagnosis program. This will check all external connections and monitor faults like wrong wiring of sensors, sensor and heating circuit configuration. This is a useful tool for commissioning and start up.

### ***Process visualisation***

Offering FECON, a FELLER ENGINEERING software package, provides a universal process

visualisation. Using the data interface of the CR15+ controller this PC-software allows a comfortable data recording and process protocol option. More information is available on request.

### **3. Dimensions/Weight**

Front panel:

#### ***Rack-model***

- Height 128,4 mm (3PU)  
- Width 213,0 mm  
(42TE=1½19")

#### ***Cabinet-front-mount-model***

- Height 128,4 mm (3PU)  
- Width 230,0 mm

Depth:

- without terminals 213,0 mm  
- with terminals 230,0 mm  
- with interface connector 260,0 mm

Panel cut-out for front mounting:

- Height 114,5 mm  
- Width 212,0 mm

Weight: approx. 3 kg

### **4. Ordering information**

please specify:

- supply voltage
- output voltage
- required communication interface
- type of sensors
- number of channels
- rack or front panel mounting
- heating current monitoring

### **5. Pricing**

Please refer to the actual price list.

### **6. Delivery**

approx. 2-3 weeks ARO

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