

## Recipe Example and Comments for the 20QP Programmable Temp Controller.

### Recipe: 1

- Seg 1:** Guaranteed Soak at 700F for 1Hr
- Seg 2:** Soak at 700F for 20 min with Steam Addition (EV2)
- Seg 3:** Ramp to 1100F over 1min (fast as possible)
- Seg 4:** Guaranteed Soak at 1100F for 1Hr
- Seg 5:** Ramp to 1200F over 1min (fast as possible)
- Seg 6:** Soak at 1200F for 1hr 30min
- Seg 7:** End of Cycle

In programming the **20QP** it is important to note that each segment is either a RAMP or a SOAK. **In the Program Editor, each seg starts with a Final SP (FSP) for that segment. If the FSP is the same as the FSP for the previous segment, then the segment is a soak. If the FSP is different from the previous segment FSP, then the segment is a RAMP.** Thus, to do a SOAK at 700 followed by a SOAK at 1100, there must be a RAMP segment between the segments to change the setpoint.

RAMPS may be specified by TIME or by GRADIENT (deg/hr). This is set in the program initialization section. In this example we use TIME in hh:mm.

RAMPS and SOAKS may be **GUARANTEED** using **Tracking Groups** (TGR1-TGR10). The tracking group parameters are specified as Deg Above and Below SP. Specified in **Runtime Group 9**. In this example we have set TA1 to 10Deg and TB1 to 10Deg. Thus using TRG1 on a SOAK segment causes the SOAK Timer to HOLD (PV display will flash) anytime the PV is outside the BAND SP-10 to SP+10. Using TRG1 on a RAMP segment causes the RAMP SP to hold anytime the PV falls outside the BAND SP-10 to SP+10. If you do not want to GUARANTEE a RAMP or SOAK then use TGR0.

Each **Output Event** to be used in the program must be specified in the program initialization section. Only Output Events configured as **Timer** event, **Break** event, **End of Cycle** event or **End of Profile** event are used (see **Configuration Section 5**). In the program initialization section set these events to yes or no depending on whether the program uses the event. Only Break events are used in the program segments. The Event Status (on/off) must be set for each Break Event in each segment. For this Example, we have set EV1 to End of Cycle, EV2=break (steam addition) and EV 3=break (future use).

**PID Groups** (PIDG1-PIDG5) may be specified in Runtime Group 4. Each program segment may use a different PIDG. For furnace applications it is usually best to use the Primary PID settings to do this, set the PIDG = 0 for each segment.

For the above Sample Recipe, the program edit values would be as follows:  
(refer to User Manual pgs 115-130)

LOWER           UPPER  
DISPLAY        DISPLAY  
PROMPT        VALUE  REMARKS

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=====  
**SE. 1           1                   Editing Program 1**

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TOP GREEN DISPLAY now reads PR. 1 indicating PROG 1 Initialization Section

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**t.SOK           hh:mm** SOAK times will be Hrs and Mins  
**t.rmP           hh:mm** RAMP times will be Hrs and Mins  
**EV. 1           yes**            EV1 **will be** used by this Prog (**EOC** event)  
**EV. 2           yes**            EV2 **will be** used by this Prog. (**Break** event)  
**EV. 3           no**             EV3 **will not** be used by this Prog. (**Break** event)  
**ItSP           700**            Initial SP = 700F

(Note: the status of **used Break** events must be specified in each segment)

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TOP GREEN DISPLAY now reads **01.01** indicating **PROG 1 SEG 1** Section

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**F.SP           700**            Indicates this will be a SOAK (no SP Change)  
**hh.mm1.00**           1 Hr SOAK Time  
**P.I.d.GO**            No special PID, use primary settings.  
**trKG           1**             GUARANTEE (SP +/- 10 Band)  
**b.E. 2          off**            EV2 off (no steam)

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TOP GREEN DISPLAY now reads **01.02** indicating **PROG 1 SEG 2** Section

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**F.SP           700**            Indicates this will be a SOAK (no SP Change)  
**hh.mm0.20**           20 min SOAK Time  
**P.I.d.GO**            No special PID, use primary settings.  
**trKG           0**             NO GUARANTEE  
**b.E. 2          on**            EV2 on for Steam Addition

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TOP GREEN DISPLAY now reads **01.03** indicating **PROG 1 SEG 3** Section

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**F.SP           1100**           Indicates this will be a RAMP (SP Change)  
**hh.mm0.01**           1 min RAMP Time (as fast as possible)  
**P.I.d.GO**            No special PID, use primary settings.  
**trKG           0**             NO GUARANTEE  
**b.E. 2          off**            EV2 off (no steam)

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LOWER           UPPER  
DISPLAY        DISPLAY  
PROMPT        VALUE  REMARKS

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TOP GREEN DISPLAY now reads **01.04** indicating **PROG 1 SEG 4** Section

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<b>F.SP</b>	<b>1100</b>	Indicates this will be a SOAK (no SP Change)
<b>hh.mm</b>	<b>1.00</b>	1 Hr SOAK Time
<b>P.I.d.GO</b>		No special PID, use primary settings.
<b>trKG</b>	<b>1</b>	GUARANTEE (SP +/- 10 Band)
<b>b.E. 2</b>	<b>off</b>	EV2 off (no steam)

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TOP GREEN DISPLAY now reads **01.05** indicating **PROG 1 SEG 5** Section

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<b>F.SP</b>	<b>1200</b>	Indicates this will be a RAMP (SP Change)
<b>hh.mm</b>	<b>0.01</b>	1 min RAMP Time (as fast as possible)
<b>P.I.d.GO</b>		No special PID, use primary settings.
<b>trKG</b>	<b>0</b>	NO GUARANTEE
<b>b.E. 2</b>	<b>off</b>	EV2 off (no steam)

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TOP GREEN DISPLAY now reads **01.06** indicating **PROG 1 SEG 6** Section

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<b>F.SP</b>	<b>1200</b>	Indicates this will be a SOAK (no SP Change)
<b>hh.mm</b>	<b>1.30</b>	1 Hr 30 min SOAK Time
<b>P.I.d.GO</b>		No special PID, use primary settings.
<b>trKG</b>	<b>0</b>	NO GUARANTEE
<b>b.E. 2</b>	<b>off</b>	EV2 off (no steam)

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TOP GREEN DISPLAY now reads **01.07** indicating **PROG 1 SEG 7** Section

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<b>F.SP</b>	<b>End</b>	Indicates end of cycle
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TOP GREEN DISPLAY now reads **PR. 1** indicating **PROG 1 Finalization** Section

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<b>rPt</b>	<b>0</b>	Do not repeat cycle
<b>bEOn</b>	<b>no</b>	All <b>Break</b> events off at end cycle
<b>End</b>	<b>mSP</b>	control at end of program SP
<b>mSP</b>	<b>500</b>	end of Program SP
<b>mPid</b>	<b>0</b>	end of program PID group, use primary settings.

=====  
=====END of

Program=====