USER'S OPERATING MANUAL FOR FAAC+
(Model: FAAC+)

FAAC+
(96 X 96)

SPECIFICATIONS : -

1. DISPLAY TYPE : 16 x 2 Character LCD

2. STATUS LED'S :HEATER : Heater Control Output Status
   PURGING/EXHAST : Purg / Exhuast Output Status
   EOC : End Of Cycle Status

3. INPUT
   - Temperature Input : RTD Pt-100
   - Pressure Input : 4~20mA
   - Resolution : ± 0.1 °C
   - Accuracy : ± 0.3 °C
   - Sampling Time : 125 msec.
   - LWC for Pt-100 : Built in up to 18E max.
   - Digital Filter : 1 to 10 Sec.

4. RELAY OUTPUT
   - Contact type : N/O, COM
   - Contact Rating : 5A @ 250VAC or 30 VDC
   - Life expectancy : > 5,00,000 operations
   - Isolation : Inherent

5. SSR DRIVE OUTPUT
   - Drive Capacity : 12V @ 30mA.
   - Isolation : Non-Isolated.

6. FUNCTION
   - Output 1 : Heater output
   - Output 2 : Purg / Exhaust
   - Output 3 : Alarm Output

   Control Action : ON-OFF/PID (Select)

7. ENVIRONMENTAL
   - Operating Range : 0 ~50°C, 5~90% Rh
   - Storage Humidity : 95% Rh (Non-condensing)

8. POWER SUPPLY
   - Supply Voltage : 90~270VAC, 50/60Hz.
   - Consumption : 4W Maximum.

9. PHYSICAL
   - Housing : ABS Plastic

INSTALLATION GUIDELINES

1. Prepare the cut-out with proper dimension as shown in figure.
2. Remove clamp from Controller.
3. Push the Timer through panel cut-out and secure the Controller in its place by tightening the side clamp.

SAFETY INSTRUCTION

MECHANICAL

❖ Ambient temperature and relative humidity surrounding the Controller must not exceed the maximum specified limits.

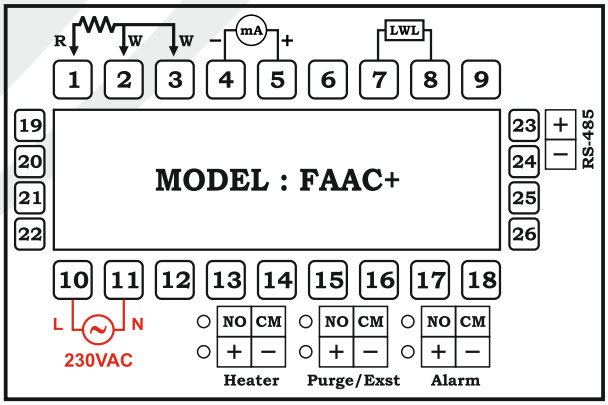
❖ The Controller in its installed state must be protected against excessive electrostatic or electromagnetic interferences.

ELECTRICAL

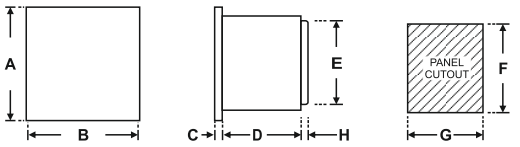
❖ The Controller must be wired as per wiring diagram & it must comply with local electrical regulation.

❖ The Electrical noise generated by switching inductive loads might create momentary Fluctuation in display, latch up, data loss or permanent damage to the instrument. To reduce this use snubber circuit across the load.

TERMINAL CONNECTIONS :



OVER ALL DIMENSIONS & PANEL CUT OUT (IN MM)



Model \ Dim	A	B	C	D	E	F	G	H
FAAC+	96	96	10	65	89	92	92	9

PROGRAMMING

USER LIST : To access the User List, Press & Release SET key once.

Parameter	Upper Display	Lower Display	Range	Description	Default
Control Set Point	CONTROL SP	0.0	**0 ~ HSPL**	User can set the required setpoint at which the controller will maintain the PV.	**121 °C**
Soak Time	SOAK TIME VALUE	20	**1 ~ 999**	The time base for Soak Timer is in minutes. Once the PV reaches SV the SOAK timer starts decrementing.	**20 min.**
Air Setpoint	AIR SETPOINT	0.0	**0 ~ SP**	User can set the required AIR setpoint at which the output will go off after initation of cycle. The AIR output remains ON till it reaches AIR SETPOINT.	**100 °C**
Exhaust Setpoint	EXHAUST SP	0.0	**0 ~ HSPL**	User can set the required EXHAUST setpoint which would be taken into account after the completion of cycle. Once the cycle gets over, Exhaust output remains ON until EXHAUST SETPOINT.	**30 °C**
Cycle End Setpoint	CYCLE END SP	0.0	**0 ~ SP**	User can set the required CYCLE END setpoint at which the alarm goes on once the PV comes below this setpoint.	**30 °C**
High Alarm Deviation Setpoint	ALARM SP	0.1	**0.1 ~ 10.0**	User can set the required HIGH ALARM DEVIATION setpoint. If the PV goes above this, the alarm output remains high.	**5 °C**
Fail Safe Deviation Setpoint	FAIL SAFE SP	0.3	**0.3 ~ 20.0**	User can set the required FAIL SAFE DEVIATION setpoint. If the PV goes above this, the cycle is aborted and heater is switched off along with air outlet valve is opened to release the pressure.	**10 °C**

CONTROL LIST : To enter in this mode, Press SET & DOWN key simultaneously for 3 sec.

Parameter	Upper Display	Lower Display	Range	Description	Default
Lock Code	LOCK CODE	0	**1 ~ 9999**	Set this parameter to 15 (Default LOCK CODE) to access Control List. User has a choice to set different Lock Code via USER LOCK CODE in Config. List.	**15**
Proportional Band	PROPO TIONAL BAND	1.5	**0.0 to 99.9°C**	This parameter sets bandwidth over which the output power is adjusted depending upon the error (SV-PV). The value of this parameter is automatically set by AUTO TUNE function. If set to 0.0, the control action becomes ON-OFF.	**1.5 °C**
Integral Time	INTEGRAL TIME	96	**0 to 3600 Sec.**	This parameter sets the time taken by the PID algorithm to remove steady state error. Value of this parameter is automatically set by AUTO TUNE function. This parameter will not be prompted, if the value of PROPOTIONAL BAND is set to 0.	**96**
Derivative Time	DERIVATIVE TIME	24	**0 to 300 Sec.**	This parameter defines how strongly the controller will react to the rate of change of PV. Value of this parameter is automatically set by AUTO TUNE function. This parameter will not be prompted, if the value of either PROPOTIONAL BAND or INTEGRAL TIME is set to 0.	**24**
Cycle Time	CYCLE TIME	16.0	**1.0 to 100.0 Sec.**	User can set this value based on process being controlled & type of output being selected. For Relay O/P, cycle time should be more than 12 sec & for SSR O/P, cycle time should be less than 10 sec. This parameter will not be prompted, if the value of PROPOTIONAL BAND is set to 0.	**16 Sec.**
Control Hys.	CNTRL HYSTERISIS	0.2	**0.1 to 10.0**	This parameter will be prompted, only if PROPOTIONAL BAND is set to 0. It sets the dead band between ON & OFF switching of the output. Larger value of hysteresis minimize the number of ON-OFF operation of load. This increases life of actuators like contactors but also produces large errors (between PV & SV).	**0.2**
Air Hys.	AIR HYSTERISIS	0.2	**0.1 to 9.9**	It sets the dead band between ON & OFF switching of the Air output.	**0.2**
Hold Back Strategy	HOLD STRATEGY	NONE UP DOWN BOTH	**----**	Timer will not pause, if HOLD BACK STRATEGY is selected to NONE. Timer will pause, if PV is outside hold back band and above setpoint. Timer will pause, if PV is outside hold back band and below setpoint. Timer will pause, if PV is outside hold back band both above and below setpoint.	**DOWN**

Parameter	Upper Display	Lower Display	Range	Description	Default
Hold Band	SOAK TIME BAND	0.1	**0.1 to 5.0 Sec.**	It sets the temperature limits with respect to the setpoint for the soak timer to stop.	**0.1**
Soak Time Delay	SOAK TIME DELAY	0	**0 to 99 Sec.**	The value of this parameter sets the activation time for ALARM when SOAK TIMER is over. Setting this parameter to '0' will make ALARM output continuously ON at the end of SOAK time till USER starts next cycle.	**20 Sec.**
Power Fail Recovery Method	POWER FAIL	ABORT START CONTINUE	**----**	At every power on, a new cycle will have to be issued. The timer re-runs the complete soak time. The soak timer resumes operation for the balance time.	**ABORT**

CONFIGURATION LIST :

(1) To enter in this mode, press and hold SET & UP key simultaneously for 3 sec.
(2) Press UP or DOWN key to scroll between parameter options.
(3) Press SET key to store the current parameter & move on to the next parameter.

Parameter	Upper Display	Lower Display	Description	Default
Lock Code	LOCK CODE	0	Set this parameter to 15 (DEFAULT LOCK CODE) to access CONFIGURATION LIST. User has a choice to set different Lock Code between 1 to 9999 via USER LOCK CODE in CONFIGURATION LIST.	**15**
Higher SP Limit	HIGHER SP LIMIT	135.0	Sets the maximum limit for setpoint adjustment. It can be set from 0.0 to 150.0	**135.0 °C**
Process Value Offset	PV OFFSET	0.0	Function of this parameter is to add/subtract a constant value to the measured PV to obtain final PV for control applications. This parameter value can be altered : (1) To compensate for known thermal gradient. (2) To match the display values with another recorder or indicator measuring the same PV.	**0 °C**
Input Filter	INPUT FILTER	1	The controller is equipped with an adaptive digital filter which is used to filter out any extraneous pulses on the PV. The filtered PV value is used for all PV dependent functions. If the PV signal is fluctuating due to noise, increase the filter time constant value.	**4**
Input 2 Type	INPUT 2 TYPE	NONE 4-20 mAmpere	By setting input 2 type to NONE will disable input 2 function. By setting input 2 type to 4-20, instrument will accept 4-20 mA.	**NONE**
Input 2 Resolution	I/P2 RESOLUTION	0000 000.0 00.00 0.000	By this parameter, user can select display reolution.	**0000**
Input 2 Offset	INPUT 2 OFFSET	0	Function of this parameter is to add/subtract a constant value to the measured PV to obtain final PV for control applications. This parameter value can be altered : (1) To compensate for known thermal gradient. (2) To match the display values with another recorder or indicator measuring the same PV.	**0**
Input 2 Filter	INPUT 2 FILTER	1	The controller is equipped with an adaptive digital filter which is used to filter out any extraneous pulses on the PV. The filtered PV value is used for all PV dependent functions. If the PV signal is fluctuating due to noise, increase the filter time constant value.	**4**
Analog Range Low	ANALOG I/P LOW	0	This parameter will only be prompted, if input 2 type is 4-20. By this parameter, user can select low scale for input signal which can be between -1999 to Analog Range High.	**0**

Parameter	Upper Display	Lower Display	Description	Default
Analog Range High	ANALOG I/P HIGH	1000	This parameter will only be prompted, if input 2 type is 4-20. By this parameter, user can select high scale for input signal which can be between Analog Range Low to 9999.	**1000**
Pressure	PRESSURE	DISABLE ⌄ ⌃ ENABLE	If “Disabled”, the Saturated Steam Pressure indication is suppressed. Set this parameter to “Enable”, if it is desired to indicate the Saturated Steam Pressure (computed based on Autoclave temperature)	**ENABLE**
Unit for Pressure	PRESSURE UNIT	PSI ⌄ ⌃ KGCM	Unit for pressure will be PSI. Unit for pressure will be KGCM.	**PSI**
Auto Tune	AUTO TUNE	DISABLE ⌄ ⌃ ENABLE	If Disabled, this parameter will not be prompted, if User presses Shift key for 3 sec. If Enabled, this parameter will be prompted, if User presses Shift key for 3 sec.	**DISABLE**
Control Setpoint	CONTROL SP	DISABLE ⌄ ⌃ ENABLE	If Disabled, User cannot view & edit the Control Setpoint in User List. If Enabled, User can view & edit Control Setpoint in User List.	**ENABLE**
Air Setpoint	AIR SETPOINT	DISABLE ⌄ ⌃ ENABLE	If Disabled, User cannot view & edit the Air Setpoint in User List. If Enabled, User can view & edit the Air Setpoint in User List.	**ENABLE**
Exhaust Setpoint	EXHAUST SP	DISABLE ⌄ ⌃ ENABLE	If Disabled, User cannot view & edit the Exhaust Setpoint in User List. If Enabled, User can view & edit the Exhaust Setpoint in User List.	**ENABLE**
Cycle End Setpoint	CYCLE END SP	DISABLE ⌄ ⌃ ENABLE	If Disabled, User cannot view & edit the Cycle End Setpoint in User List. If Enabled, User can view & edit the Cycle End Setpoint in User List.	**ENABLE**
High Alarm Deviation Setpoint	ALARM SP	DISABLE ⌄ ⌃ ENABLE	If Disabled, User cannot view & edit the Alarm Setpoint in User List. If Enabled, User can view & edit the Alarm Setpoint in User List.	**ENABLE**
Fail Safe Deviation Setpoint	FAIL SAFE SP	DISABLE ⌄ ⌃ ENABLE	If Disabled, User cannot view & edit the Fail Safe Deviation Setpoint in User List. If Enabled, User can view & edit the Fail Safe Deviation Setpoint in User List.	**ENABLE**
Device ID Number 1	DEVICE 1 ID	1	Set Device ID for communication. Range : 1 to 9999 **Note** : This Device ID is for Temperature.	**1**
Device ID Number 2	DEVICE 2 ID	2	This is a VIEW ONLY parameter. This Device ID is for Pressure. The Device ID will be the very next ID after temperature Device ID.	**2**

Parameter	Upper Display	Lower Display	Description	Default
Baud	BAUD RATE	9600 ⌄ ⌃ 19200 ⌄ ⌃ 31250 ⌄ ⌃ 38400 ⌄ ⌃ 76800	By this parameter, User can select baud rate for communication purpose.	**9600**
Parity	PARITY	NONE_8_1 ⌄ ⌃ NONE_8_2 ⌄ ⌃ ODD_8_1 ⌄ ⌃ ODD_8_2 ⌄ ⌃ EVEN_8_1 ⌄ ⌃ EVEN_8_2	By this parameter, User can select parity for communication purpose.	**ODD_8_1**
User Lock Code	USER LOCK	15	Default USER LOCK CODE is 15 to access Control & Configuration List. User has a choice to set its own USER LOCK CODE between 1 to 9999, this is to prevent unauthorized access of Control & Configuration List.	**15**

AUTO TUNING MODE : To enter in this mode, Press & hold SHIFT key for minimum 3 sec in the Run Mode.

Parameter	Upper Display	Lower Display	Description	Default
Auto Tuning Mode	AUTO TUNING	NO ⌄ ⌃ YES	This function will be executed only, if Auto Tune Mode is kept Enable in the CONFIGURATION LIST. Auto Tuning Function can be started by setting this parameter to 'YES'. The AT led continuously flashes till Auto tuning function is in progress. During Auto-tuning, controller learns the process characteristics by itself & calculates required P, I & D values. User can cancel or abort this feature by setting this parameter to 'NO'.	**NO**

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