FAN FAIL DETECTION UNIT WITH TEMP. MONITORING

Part No: UL02-FFTDU-ALM-4-20

This Fan Fail Detection Unit with temperature monitoring is for 2 no. of fans.

Introduction:

The **UL02-FFTDU-ALM-4-20mA** is a micro-controller based AC Fan fail detection unit with temperature indication offered in a highly compact, rugged and reliable execution. The instrument has three keys on the front panel, with which the operator can set the parameters and configure the instrument as desired. A three digit 7-segment digital display is provided on the front panel which indicates the ambient cabinet temperature in real time. The display can indicate any scale range between 000 to 099 units (temperature) value in degree Celsius (°C). It has retransmission Analog Output of 4-20mA, can be configurable to any temperature value.

In case of power failure, the set points are retained in memory.
The Fan detection module provides powered output contacts for wiring the two AC Fans independently through internal control relays.

The instrument also senses the normal healthy current being drawn by each fan and provides short-circuit and open-circuit protection by cutting off the supply to the corresponding Fan in case any abnormality is detected. All these updating of upper current limit for rotor block detection is done automatically. The instrument operates on universal SMPS AC power supply of 90 to 270 V AC, 50/60 Hz.

Technical Specifications:

Type	Microcontroller based module for ambient temperature monitoring and control of two cooling Fans.
Number of Fans	Two
Fan Current Range	**Min.80mA / Max. 500mA**
Temperature Display	Three 0.4" inch seven-segment red LED displays.
Temp Range	000 to 099 degrees Celsius.
Keys	3 nos.
Input	Inbuilt Electronic temperature sensor.
Control Outputs	Four built-in Relays Relay 1 & 2 for AC Powered Contact for Fan 1 & 2 respectively. Relay 3 for Temperature high alarm Relay Relay 4 for fan failure Relay.
Contact Rating	10 Ampere @ 230 VAC.
Retransmission Analog Output	4-20mA (Configurable to any temperature value)
Indications	Two bicolor LED Fan 1 : Red/Green LED for indication of Fan-1 status Fan 2 : Red/Green LED for indication of Fan-2 status
Power Consumption	**4.7 Watt**
Input Power Supply	90-270 V AC, 50/60 Hz.
Protection	Short Circuit & Over Voltage Protection
Dimensions & Weight	75 x 55 x 110 mm [H x W x D] & 165.0 gm
Enclosure	Polycarbonate.

Operations and Settings:

The Instrument has three keys on the front panel, the functions of which are as below:

P	The P or PROGRAM key is the central key to be used to access the settings of the instrument. Pressing this Key allows the operator to view, change and save the parameters i.e. High alarm Set point
▲	The Incrementing key allows the operator to select the numeral on an increasing scale. The digit will sequentially display 00, 01, 02 …. 99 on each pressing of the key. This may be used to set the HIGH ALARM set point. The incrementing speed increases if the key is kept pressed.
▼	This is Reset Key as well as Decrementing key allows the operator to select the numeral on a decreasing scale. The digit will sequentially display 99, 98, 97….00 on each pressing of the key. This may be used to set the HIGH ALARM set point. The decrementing speed increases if the key is kept pressed. **Reset Key** is to be pressed in the event of fault condition.

On Power ON, the instrument takes approximately 30 seconds for initialization then the UL02-FFTDU-ALM display will show the ambient temperature and the LEDs will indicate the Fan status and Alarm status. The fan monitoring is indicated by dual-color LEDs with green color for healthy condition and RED color for fault. If the temperature sensor fails or becomes "Open", the display will show 'TF'. The other notations for various menu options are as below:

Key Notifications:

Abbreviation on Display	Explanation
FF	Fan Fail
Tf	Temperature Sensor Fault
E1	Enable Fan1
E2	Enable Fan2
HA	High Alarm

Front Facia:

Working for Fan-1 & Fan-2:

Key Pressed	Conditions	Initial Display	Alternating Display	LED Indication and Relay Status
(POWER ON)	YYY = Ambient Temperature	YYY	-	If both FANS are in healthy condition bicolor LEDs for FAN1(F1) & FAN2 (F2) will show GREEN color
Initialization take place for 10 seconds(after POWER ON)	If ambient temperature reaches "HA" set point, the display toggles between "HA" and the current ambient temperature.	HA	XX (High Alarm set point)	The Temperature Alarm will get generated.
-	In the event of FAN 1 Failure or open condition, the display will toggle between F1 and current ambient temperature.	FF	YYY	Bicolor LED for FAN1 (F1) will show Red color as well as FAN fail Alarm Relay will get energized
-	In the event of FAN 2 Failure or open condition, the display will toggle between F2 and current ambient temperature.	FF	YYY	Bicolor LED for FAN2 (F2) will show Red color as well as FAN fail Alarm Relay will get energized.
-	In the event of faults in both Fans, the display will toggle between Fb and the current ambient temperature.	FF	YYY	Bicolor LED for both FAN will show Red color as well as FAN fail Alarm Relay will get energized

Working of Single Fan Operation:

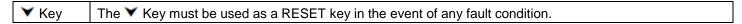| Key Pressed	Conditions	Initial Display	Alternating Display	LED Indication and Relay Status
(POWER ON)	YYY = Ambient Temperature	YYY	-	If FAN is in healthy condition bicolor LEDs for FAN1 (F1) will show GREEN color
-	If ambient temperature reaches "HA" set point, the display toggles between "HA" and the current ambient temperature.	HA	XXX (High Alarm set point)	The temperature Alarm Relay will get generated
-	In the event of FAN 1 Failure or open condition, the display will toggle between F1 and current ambient temperature.	FF	YYY	Bicolor LED for FAN1 (F1) will show red color as well as Fan fail alarm Relay will get energized

Settings and Calibrations:

The following is the sequence of settings on this module. All settings to be done using Increment (⋀) and Decrement (⋁) keys.

Key Pressed	Initial Display	Alternating Display	Function
(POWER ON)	023	-	Ambient Temperature
-	Tf		If Sensor Fails it shows error (Temperature failure)
INC and DEC (Together)	HA	035	Display will toggle between "HA" (i.e.; High Alarm Set Point) and previous set value.
PROG	HA	35	Use Increment (⋀) or decrement (⋁) key to set High Alarm Point. Display will toggle between HA and previous High Alarm Point value. Save the value using PROG key.
PROG	Tr		Not Applicable (For Auto Sensing)
PROG	E1	YS	YS=Enable Fan1, n0=Disable Fan1.Use Increment (⋀) or decrement (⋁) key to enable or disable Fan1. By selecting nO option user can skip Fan1
		nO	
PROG	H1	18	Not Applicable (Auto Sensing)
PROG	E2	YS	YS=Enable Fan2, n0=Disable Fan1.Use Increment (⋀) or decrement (⋁) key to enable or disable Fan1. By selecting nO option user can skip Fan2
		nO	
PROG	H2	18	Not Applicable (Auto Sensing)
PROG	E3	nO	n0=Disable Fan3.Fan 3 is Skipped.
PROG	E4	nO	n0=Disable Fan4.Fan 4 is Skipped.
PROG	CO	50	Here we set the value of Temperature for which output is 20mA using INC or DEC key
PROG	Zr	176	Here we digitally set the counts for 4mA
PROG	SP	462	Here we digitally set the counts for 20mA
PROG	24		Ambient Temperature

Fault Reset:

Another Use of Decrement key (⋁ Key)

⋁ Key	The ⋁ Key must be used as a RESET key in the event of any fault condition.

Testing Procedure:

Once Powered ON the UNIT, it takes 30 sec to sense the fan's current, and update the upper current limit automatically. After 30 sec block the fan to check rotor block condition, Fan will get stopped in 4 to 5 seconds.
Note: User don't have to change any configuration manually of L1, H1, L2, H2 as we use to do in OLD Model

*Note: Specifications are subject to change due to continuous development.