

SECTION III. OPERATION

5.3.1 INTRODUCTION

Automatic operation of the temperature/dewpoint sensor is controlled by the acquisition control unit (ACU) via the data collection package (DCP). This Section provides turn-on and turnoff procedures and information on operation, checkout, and diagnostic testing of the sensor.

5.3.2 CONTROLS AND INDICATORS

The temperature/dewpoint sensor contains maintenance controls and indicators on the transmit logic board and the calibrator assembly. Descriptions of the test data displayed as part of the system diagnostic test program are provided in Chapter 1. The temperature/dewpoint sensor controls/indicators are illustrated on figure 5.3.1 and described in table 5.3.1.

5.3.3 TURN-ON PROCEDURES

The temperature/dewpoint sensor is designed for continuous operation and normally remains on at all times, except for maintenance or repair. The temperature/dewpoint sensor turn-on procedures are provided in table 5.3.2.

5.3.4 CHECKOUT PROCEDURES

5.3.4.1 **Model H083R Checkout.** The ACU via the DCP continuously monitors the model H083R temperature/dewpoint sensor data for proper format and temperature limits. If the ACU detects a failure, it flags the temperature/dewpoint sensor off-line. Actual testing of the model H083R temperature/dewpoint sensor must be performed manually using the procedures provided in Section V of this chapter.

5.3.4.2 **Model 1088 Checkout.** The ACU via the DCP continuously monitors the model 1088 temperature/dewpoint sensor diagnostic output for failure indications. If the ACU detects a failure, it flags the temperature/dewpoint sensor off-line and enters the appropriate message in the system log. The technician can review the sensor's test data via Temperature/Dewpoint Sensor (Model 1088) Page on the OID, and can prompt specific responses by entering T commands per table 5.5.10. (Byte/bit formats for response words are given in the model 1088 vendor's manual.) For most failures, the diagnostic identifies the faulty field replaceable unit (FRU). If the diagnostic fails to indicate the faulty FRU, the troubleshooting procedures provided in Section V of this chapter should be performed for the model 1088 sensor.

5.3.5 RUNNING DIAGNOSTICS

The ASOS contains diagnostic pages for both the model H083R and 1088 sensors. Because the model H083R does not contain any detailed diagnostics, the display page for this model only provides data on transmission status and watchdog timer failures. The model 1088, however, does contain a complete diagnostic test, which can be performed by using an on-demand diagnostic test as explained in Chapter 1.

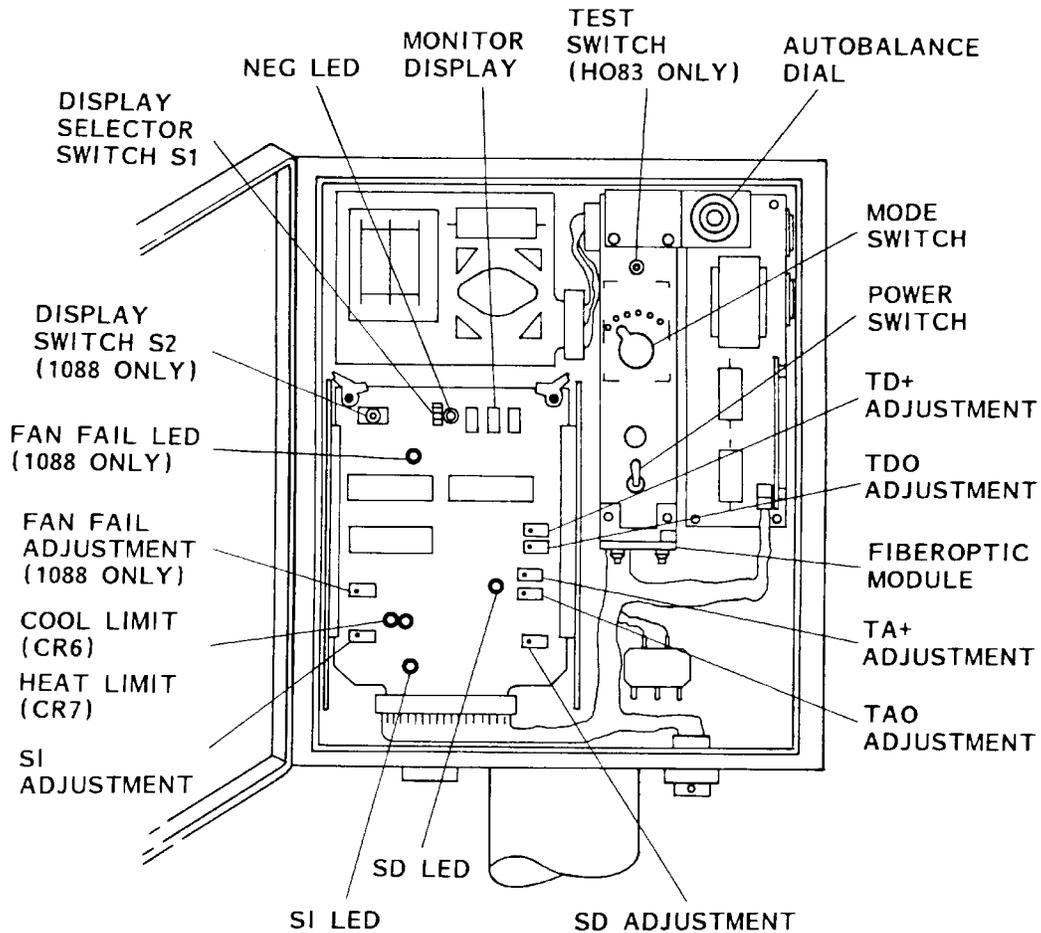


Figure 5.3.1. Temperature/Dewpoint Sensor Controls and Indicators

Table 5.3.1. Temperature/Dewpoint Sensor Controls and Indicators

Control/Indicator	Type	Description
Transmit Logic Board 2MT4A2A1		
TD+	Variable resistor	Sets gain of dewpoint temperature scaling amplifier.
TDO	Variable resistor	Sets offset of dewpoint temperature scaling amplifier such that with a -5.0V signal applied to scaling amplifier input, output is 0 volts.
TA+	Variable resistor	Sets gain of ambient temperature scaling amplifier.
TAO	Variable resistor	Sets offset of ambient temperature scaling amplifier such that with a -5.0V signal applied to scaling amplifier input, output is 0 volts.
NOTE		
When DISPLAY SWITCH S2 (model 1088 only) is pressed, normal sensor data transmissions to the DCP are interrupted and the sensor processing algorithm or diagnostic program may log the sensor as missing.		
Monitor Display	Seven-segment display	Displays ambient temperature and dewpoint temperature values for sensor maintenance and calibration. Temperature/dewpoint or ambient temperature readings are selected via DISPLAY SELECT switch S1. For model 1088, DISPLAY SELECT switch S2 must be pressed to display selected temperature.

Table 5.3.1. Temperature/Dewpoint Sensor Controls and Indicators -CONT

Control/ Indicator	Type	Description
DISPLAY SELECTOR S1	Two-position slide switch	Selects either ambient temperature (TA) or dewpoint temperature (TD) values for display on the seven-segment display.
NEG. temperature	Light emitting diode (LED)	When illuminated, indicates that values being displayed on seven-segment display are negative.
COOL LIMIT	LED	When illuminated, indicates that system is in a maximum cooling condition.
HEAT LIMIT	LED	When illuminated, indicates that system is in a maximum heating condition.
SI GAIN	Variable resistor	Enables indirect sensor amplifier gain adjustment. During system calibration, SI GAIN is adjusted until SI LEVEL indicator illuminates.
SD GAIN	Variable resistor	Enables direct sensor amplifier gain adjustment. During system calibration, SD GAIN is adjusted until SD LEVEL indicator illuminates and then extinguishes.
SI LEVEL	LED	Indicates when indirect signal (SI) is above threshold. With a dry mirror, should be off. For normal operation, should be on.
SD LEVEL	LED	Indicates when direct signal (SD) is above threshold. With a dry mirror, should be on. For normal operation, should be off (or flickering).
FAN FAIL (model 1088)	LED	When illuminated, indicates a fan failure. Also used during fan sensor calibration to set threshold level of detection circuit.
FAN FAIL (model 1088)	Variable resistor	Enables detection threshold of fan sensor circuit to be adjusted.
NOTE		
When DISPLAY SWITCH S2 is pressed, normal sensor data transmissions to the DCP are interrupted and the sensor processing algorithm or diagnostic program may log the sensor as missing.		
DISPLAY SWITCH S2 (model 1088)	Momentary switch	When pressed, causes monitor display to indicate current dewpoint temperature or ambient temperature, as selected by DISPLAY SELECTOR switch S1.
TEST (model H083R)	Momentary toggle switch	When pressed, enables the temperature dewpoint mirror temperature to be forced to a high or low temperature for testing purposes. When released, returns to the center position, which enables the system to return automatic temperature control of the mirror.
MODE (model H083R)	Four-position rotary switch	Enables precision resistors to be substituted in place of the resistive temperature sensors for testing and checking the accuracy of the instrument circuits. During normal operation of the sensor, must be set to OPR.
Calibrator Assembly 2MT4A2A2		
MODE (model 1088)	Six-position rotary switch	When set to TEST 0 or TEST 50, enables precision resistors to be substituted in place of resistive temperature sensors for testing and checking accuracy of instrument circuits. During normal operation of the sensor, must be set to OPR. When set to HEAT or COOL, enables the temperature dewpoint mirror temperature to be forced to a high or low temperature for testing purposes. When set to SENSOR TEST, disables mirror cool circuitry, which enables mirror temperature to stabilize at ambient air temperature. Under this condition, TD and TA readings should be the same (± 1 degree). This verifies that TD and TA sensors function properly.
Autobalance	Dial	Indicates current autobalance setting and allows manual reset of autobalance during calibration.
FUSE	Two-ampere main power fuse	Controls 115 vac power to aspirator and transmitter.
POWER	Two-position toggle switch	Controls 115 vac power to aspirator and transmitter. Power is applied when set to the up position.

Table 5.3.2. Temperature/Dewpoint Sensor Turn-On Procedures

Step	Procedure
Tools required: Large flat-tipped screwdriver	
1	Using large flat-tipped screwdriver, open temperature/dewpoint sensor transmitter access door.
2	On calibrator assembly, ensure that MODE switch is set to OPR and POWER switch is set to on (up) position.
3	Inside DCP equipment cabinet, set circuit breaker on temperature/dewpoint sensor power control module to on (left) position. Model H083R monitor display on transmit logic board illuminates and begins to update at 18.75-second interval. After approximately 5 minutes, the display stabilizes. Model 1088 monitor display illuminates and displays the word OFF.
4	Using large flat-tipped screwdriver, close and secure temperature/dewpoint sensor transmitter access door.

5.3.6 NORMAL OPERATING PROCEDURES

The temperature/dewpoint sensor is in continuous operation under the control of the DCP. The temperature and dewpoint temperature readings are displayed in the TEMP/DEWPT field on the 1-minute display at the OID.

5.3.7 TURNOFF PROCEDURES

The temperature/dewpoint sensor should be turned off for maintenance purposes only using the procedures provided in table 5.3.3.

Table 5.3.3. Temperature/Dewpoint Sensor Turnoff Procedures

Step	Procedure
Tools required: Large flat-tipped screwdriver	
1	Inside DCP equipment cabinet, set circuit breaker on temperature/dewpoint sensor power control module to off (right) position.
2	Using large flat-tipped screwdriver, open temperature/dewpoint sensor transmitter access door.
3	On calibrator assembly, set POWER switch to OFF (down) position.
4	Using large flat-tipped screwdriver, close and secure temperature/dewpoint sensor transmitter access door.