



INSTALLATION, OPERATION AND MAINTENANCE MANUAL

FOR

X-TRAC

INDIRECT FIRED HEATING CONTROLLER



UNIT MODEL NO. _____
UNIT SERIAL NO. _____
SERVICED BY: _____
TEL. NO: _____

**CANADIAN
HEAD OFFICE
AND FACTORY**

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CALGARY, ALBERTA
T2G 4C8
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NEWMARKET, ONTARIO
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SALES OFFICES ACROSS CANADA AND USA

Retain instructions with unit and maintain in a legible condition.
Please give model number and serial number when contacting
factory for information and/or parts.

www.engineeredair.com

X-TRAC

Model 2.0 and earlier.

If any errors or omissions are noted please contact Wade Pascoe at (403) 287-4775 or Fax: (403) 287-4799 or (403) 243-5059.

To ensure warranty is honored, only a qualified HVAC service person should be employed for service and troubleshooting. If further information is required please contact the nearest Engineered Air office.

Under no conditions (except for temporary copying) should the unit function be removed from the unit. There are two copies that come with the unit. One is in an envelope for you to easily copy and replace in the unit or store in a safe place. The other is affixed to the door and should never be removed. If you need a copy of the function for a particular unit, record the unit serial number and X-TRAC model number (ex model X-TRAC 2.0). When you have this data contact the nearest Engineered Air Factory for a copy of the unit function.

Warning: This unit is connected to high voltages. Electrical shock or death could occur if instructions are not followed. This equipment contains moving parts that may start unexpectedly. All work should be performed by a qualified technician. Always disconnect power before servicing. DO NOT bypass any interlock or safety switches under any circumstances.



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INTRODUCTION

The X-TRAC control is designed to control discharge air temperature, heating functions, and supply blower on Engineered Air XE, RT, DJ and PACK furnaces.

Note: All of the remote control wiring shall be complete and operational before starting the unit.

TEMPERATURE CONTROL

The X-TRAC is a discharge air temperature controller. The base discharge air temperature setpoint is typically set from the control dial located on the face of the X-TRAC. Optionally, this setpoint may be remote mounted. Refer to the wiring diagram and function.

The discharge air temperature is normally adjusted from a remote signal to maintain a comfortable temperature in the space. This is called reset. The X-TRAC discharge temperature can be reset from a standard single stage room heating thermostat or a 0-10Vdc Building Management System (BMS) control signal.

SEQUENCE OF OPERATION

When terminal H is powered (24Vac), the supply output terminal SA will close, enabling the supply blower. This contacts will remain closed until there is a low limit condition, open sensor, high limit condition, or the power is removed for terminal H. The heat switch input terminal HS allows the heat to operate, if required.

On a call for heat, output terminal FR will be energized (24Vac) to enable the ignition control and establish the flame. For the X-TRAC2 only, a feedback signal is sent to terminal VFB24 confirm the main firing valve is open. The X-TRAC outputs a Vdc signal (from terminals MX1 and MX2), and modulates the gas valve to maintain the required discharge air temperature. Some cycling of the burner is expected when the required temperature is below the minimum firing rate of the burner.

DIAGNOSTIC TOOLS

The X-TRAC has 2 LED indication lights and 2 temperature readout points for diagnostics.

Red LED: The X-TRAC is locked out on either low discharge air temperature limit, or open discharge air sensor.

Green LED: The FR contact is closed and the heating is enabled.

The temperature readout points are for use with a DC voltmeter. Referenced to ground, the output voltage corresponds to temperature. Multiply the DC voltage by 10 to convert the reading to degrees Celsius. For example, and output of 2.1Vdc equals 21°C.

DTEMP: This will return a value that represents the actual discharge air temperature being measured by the temperature sensor.

SPC: This is the calculated temperature setpoint that the X-TRAC will use to maintain the discharge air temperature. This setpoint will normally correspond to the face mounted setpoint dial, however the output may differ if reset is being used.

Vdc conversions to °C and °F.

Vdc	0.5	1.0	1.3	1.56	1.83	2.1	2.4	2.7	2.9	3.2
°C	5	10	13	15.6	18.3	21	24	27	29	32
°F	40	50	55	60	65	70	75	80	85	90

Note the above actual temperature reading is the value at the Engineered Air sensor or setpoint. If there is a building management system measuring temperature, its sensor should be located within one inch of the Engineered Air sensor.

LOW LIMIT BYPASS TIME

Note: Optional low limit sensing may be disabled. Refer to the unit function to clarify.

On initial start-up the low limit circuit is disabled for 3.5 minutes to allow the heat exchanger to reach full operating temperature, as sensed by the discharge air temperature sensor. On low limit failure the heating and supply blower will be disabled, and the previously noted red LED will be illuminated. To reset the unit after a low limit failure, simply interrupt power to the X-TRAC terminal H.

REMOTE SETPOINT

A remote setpoint potentiometer (pot) can be installed to terminals RS and RP, and a jumper wire between terminals S and RS. The amount of resistance determines the setpoint. Note the table below for the resistance values.

Ohms	0	100	200	300	400	500	600	700	800	900	1000
°F	120	100	91	79	73	66	61	57	53	50	48
°C	50	38	33	26	23	19	16	14	12	10	9

BURNER / HEATER TYPE

Note: Factory installed X-TRAC's will already have the required jumper cut.

The X-TRAC must be configured to operate the particular style of burner it is being used to control. On the back of the X-TRAC are 2 jumpers located just above the center of the circuit board. One is marked DJ, the other marked XE/RT.

XE, RT AND PACK FURNACES

For these style heaters, cut the jumper marked DJ.

DJ FURNACES

For this style heater, cut the jumper marked XE/RT.

LOW LIMIT ENABLE

Note: Factory installed X-TRACs will already have the jumper cut if required.

Low limit protection is optional and may be enabled by cutting the LL OFF jumper. This jumper is located on the back of the X-TRAC just below and to the right of center of the circuit board.

Note: Cutting this jumper will also enable open sensor monitoring.

MAXIMUM TEMPERATURE POT

An additional pot is located on the face of the X-TRAC that sets the maximum discharge air temperature limit. The maximum discharge temperature setting is 125°F (52°C)

SENSOR TABLE

Sensor Resistance Chart for the Engineered Air TE6000-3

°C	°F	Resistance Ω	°C	°F	Resistance Ω	°C	°F	Resistance Ω
-40.0	-40	602	18.3	65	983	48.9	120	1234
-34.4	-30	633	20.0	68	996	54.4	130	1269
-28.9	-20	665	20.6	69	1000.7	60.0	140	1333
-23.3	-10	698	21.1	70	1005	65.5	150	1365
-17.8	0	732	23.9	75	1026.5	71.1	160	1437
-12.2	10	768	26.7	80	1048	76.7	170	1491
-8.7	20	804	29.4	85	1070	82.2	180	1546
-1.1	30	842	32.2	90	1092	87.7	190	1602
4.4	40	881	35.6	95	1116	93.3	200	1659
10.0	50	921	37.8	100	1139	98.8	210	1718
12.8	55	942	43.3	110	1186	100.0	212	1778

Reference resistance is 1035 ohms at 77°F (25°C). Resistance tolerances are ±0.05 to 0.15% at 77°F (25°C). Temperature range +32 to +104°F (0 to 40°C).