

**EngA**<sup>®</sup>

**ENGINEERED AIR**<sup>®</sup>

# INSTALLATION AND OPERATION

## MANUAL

FOR

## CRD

C-TRAC3 REMOTE DISPLAY

AFTER

NOVEMBER 2010

UNIT MODEL NO. \_\_\_\_\_

UNIT SERIAL NO. \_\_\_\_\_

SERVICED BY: \_\_\_\_\_

TEL. NO: \_\_\_\_\_

**CANADIAN  
HEAD OFFICE  
AND FACTORY**

1401 HASTINGS CRES.  
SE  
CALGARY, ALBERTA  
T2G 4C8  
Ph: (403) 287-4774  
Fx: 888-364-2727

**USA  
HEAD OFFICE  
AND FACTORY**

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DESOTO, KANSAS  
66018  
Ph: (913) 583-3181  
Fx: (913) 583-1406

**CANADIAN  
EASTERN FACTORY**

1175 TWINNEY DRIVE  
NEWMARKET, ONTARIO  
L3Y 5V7  
Ph: (905) 898-1114  
Fx: (905) 898-7244

[www.engineeredair.com](http://www.engineeredair.com)

### 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.

## CRD

If any errors or omissions are noted please contact Engineered Air – Calgary Service at (403) 287-4775 or Fax (403) 287-4799.

To ensure warranty is honored, only a qualified HVAC service person, who has received training on the CRD and C-TRAC3, 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 provided with the unit. One is in an envelope for copying, then return it to the unit or store in a safe place. The other is attached to the control panel door and should never be removed.

This manual is intended to be used in conjunction with the C-TRAC3 Operation, Installation and Maintenance manual, and the unit function sheet.

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## INTRODUCTION

The Engineered Air CRD remote display panel is designed to monitor and control C-TRAC3 equipment operations via Modbus communication.

### CRD Command Capabilities

- Quickly identify the current operation of the equipment.
- Ability to scroll to the page associated with specific unit operations.
- Alarm identification and associated alarm status.
- Password protection for manual adjustments.
- Adjustment of manual discharge air setpoints, minimum outside air, unit on/off and time clock schedules.
- Change status from Celsius or Fahrenheit.
- Save setpoints and time schedules to flash memory.

The CRD panel can be ordered with the following control features:

Feature 1: Display only

Feature 2: Control unit on/off, adjust discharge setpoints, damper minimum position & internal time clock

Feature 3: Remote hand held display c/w options #1 and #2

## CRD WIRING

The RS-485 Modbus communication cable from the CRD to the C-TRAC3 is 24awg shielded twisted pair (STP) with a shunt capacitance of 16pF per foot and 100 ohm characteristic impedance. Category 5 cable can be used as defined by the EIA/TIA/ANSI 568 specification.

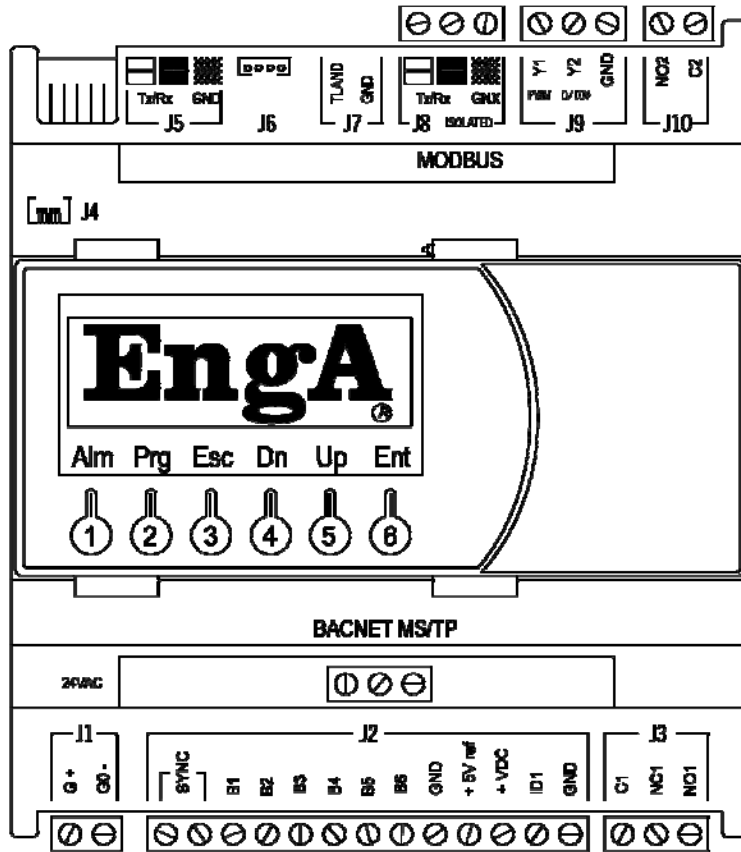
An additional set of 24VAC wires is required to power the remote panel. Refer to the table below for minimum wire size and maximum distance to the remote panel.

Distance	<100ft.	<150ft.	<200ft.	<300ft.	<350ft.	<450ft.
AWG #	#20	#20	#20	#18	#18	#16

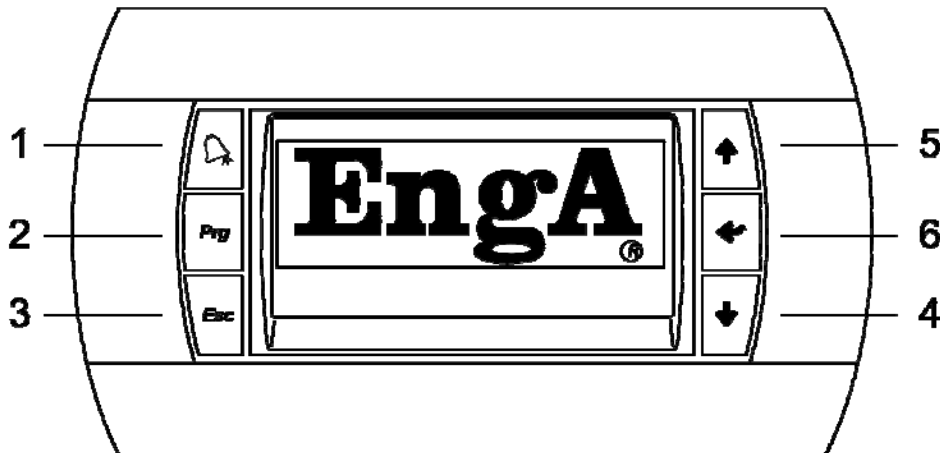
## WIRING REMOTE HAND HELD DISPLAY

Phone cable (RJ45) connection has a maximum distance of 150ft. For greater distances (up to 600ft), use 2 twisted pair awg/24 shielded cable.

**CRD LCD DISPLAY**






- BUTTON #1 = Alarm Page (used to acknowledge and see alarms).
- BUTTON #2 = Program Page (used to see, service, networking and time scheduler options).
- BUTTON #3 = Escape (cancel an entry or action).
- BUTTON #4 = Down Page (go to next page down or it is used to increment / decrement a value).
- BUTTON #5 = Up Page (go to next up or it is used to increment / decrement a value).
- BUTTON #6 = Enter (advances to the next page and adjustable variables).












**HAND HELD LCD DISPLAY**




## CRD OPERATION




To move between pages press either DN  or UP .

To escape from modifying an entry press ESC .





To make any adjustments you must first enter the password, press ENT  then UP  or DN  to change the password #, press ENT  and continue until the new password is entered. Press ENT  when complete.

To modify a manual value, move to the page that allows manual changes to the setpoint. Press ENT  and then press DN  to decrease and UP  to increase the value. When the appropriate value has been set, press ENT  to save.

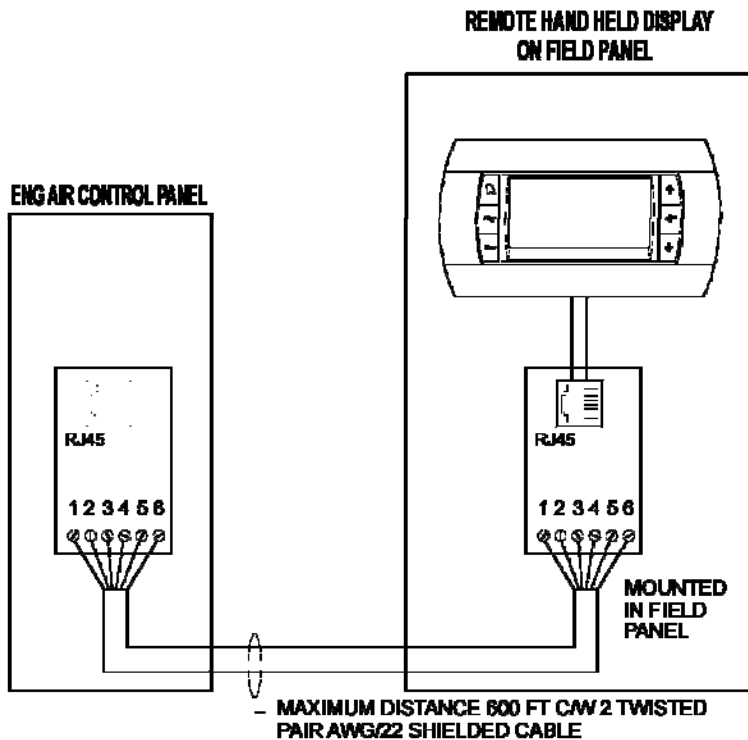
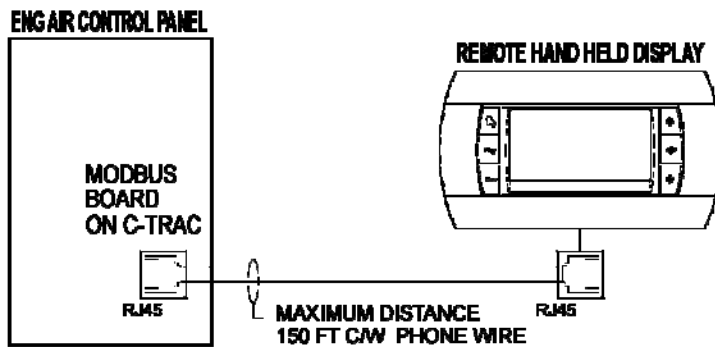
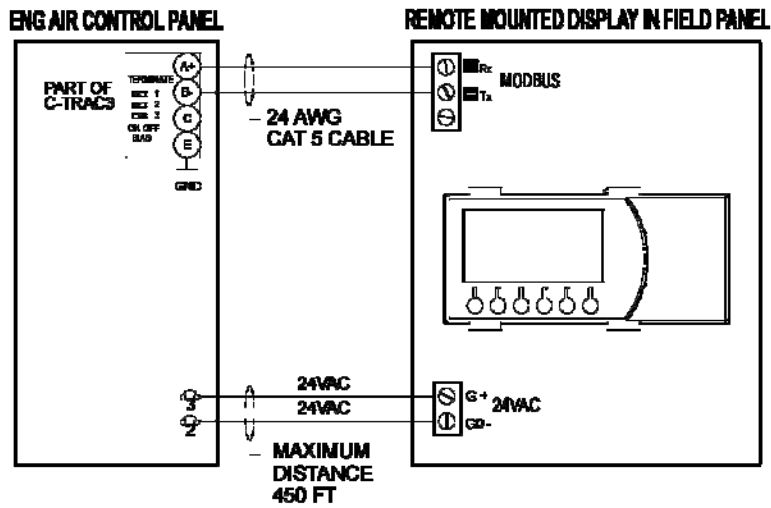
To ensure the value is not lost in the event of a power failure or equipment servicing, be sure to save it. Go to Save Setpoints then ENT  and UP  for On, then press ENT  to save.

To restart the equipment from the CRD go to Enable Unit and press ENT  then press UP  for On, then press ENT  to restart the equipment.

## CLOCK / SCHEDULER

If the time clock/scheduler is enable press ENT  on the clock/scheduler to go to the time and date page. Press the ENT  to change the dates and times. Press the DN  to go to the scheduler page. The scheduler # can have up to 7 different schedules with different on/off times and days of the week. Press ENT  to advance to the time on, time off and days enabled as per the schedule #.

**FIELD WIRING DIAGRAM**



## **PAGE DESCRIPTION**

The status information that can be viewed on each page is dependent on the type of equipment being operated and the current status of the equipment. For example, a make-up air unit will not have a minimum position.

The CRD can be enabled to allow for the adjustment of setpoints, such as the discharge air temperatures, or the outside air damper minimum position, turn the equipment on or off, and set the occupied or unoccupied schedule.

Every CRD is preprogrammed with the following information. The LCD will display this information on display pages and each page is designed to provide the correct state of operations.

- Unit Modes
- Scheduler
- Unit Operation
- Discharge Temperature and Setpoints
- Ambient and Damper Information
- Additional Inputs And Outputs
- Alarm Status
- Customer Password

## **UNIT MODE**

Describes the current operating modes that are enabled, fan status, as well as the program number.

## **SCHEDULER**

If the equipment is operated by a time clock schedule this page allows the user to turn the equipment back on for a predetermined time.

## **UNIT OPERATION**

Describes the units mode of operation.

### **Enable Unit On/Off**

If enabled it allows the user to enable or disable equipment operation (on/off).

### **Heating**

Shows the actual heating signal output (%) from the C-TRAC3 to the heating device, as well as indicating the return signal (on or off) to confirm heating is operational.



## **Cooling**

Describes the number of cooling stages as a percentage. For example, if the equipment has 3 compressors the output will indicate 33, 66 and 100%, as well as indicating the return signal (on or off) to confirm cooling is operational.

## **Economizer**

Indicates the actual C-TRAC3 economizer output to the dampers (%) as well as indicating the return signal (on or off) to confirm dampers are operational.

Deviations may occur between setpoint and actual output. Refer to the C-TRAC3 manual for clarification.

## **Discharge Temperature and Setpoint**

Indicates the discharge air temperature and setpoint. The secondary sensor and setpoint may be used for two applications, multizone cold deck & dehumidification pre-cool. Setpoint changes may be made here, but will not be saved unless saved to flash memory.

## **Ambient, Damper and VFD Information**

Indicates the ambient sensor reading and the economizer minimum position of the outside air dampers, setpoint and actual. Setpoint changes may be made here, but will not be saved unless saved to flash memory. Also notes the variable frequency drive feedback signal, if equipped.

## **Additional Inputs And Outputs**

The CRD may be configured to allow for additional inputs and outputs, such as a clogged filter switch or room temperature.

## **Alarm Status**

Alarm indication is activated by either of 2 events. These events are low limit, or freeze protection failure, and the other is a heating failure.

If any additional sensors are used for status and the sensor exceeds the predetermined resistance range, an alarm is indicated. Also high and low limits can be added for alarm status. The CRD digital inputs may be used to provide an alarm from an open or closed contact.

## **Customer Password**

If enabled the customer may enter a unique password to start/stop the equipment and make adjustments to the discharge air setpoints and the damper minimum position.



**POINTS LIST**

Unit Mode	FAN : ON OCCUPIED MODE
	: OFF
	: ON UNOCCUPIED MODE
	OCCUPIED MODE : ENABLED/DISABLED
	COOLING : ENABLED/DISABLED
	ECONOMIZER : ENABLED/DISABLED
	HEATING : ENABLED/DISABLED
	UNOCCUPIED MODE : ENABLED DISABLED
Scheduler If Enabled For Time Clock	CLOCK OVERRIDE: ON/OFF
	OVERRIDE TIMER: 1,2 OR 3 HRS
Unit Operation	UNIT MODE : NO MODE
	: HEATING MODE
	: ECONOMIZER MODE
	: COOLING MODE
	ENABLE UNIT : ON / OFF
	UNIT STATUS : OCCUPIED
	: OFF
	: UNOCCUPIED
	HEATING : ON / OFF %
	: L/O HI AMBIENT
	COOLING : ON /OFF %
	: L/O LOW AMBIENT
ECONOMIZER : ON/OFF %	
: L/O HI AMBIENT	
Discharge Temperature And Setpoints	DISCHARGE TEMP : F OR C
	DISCHARGE STPT : F OR C
	ADJ DISCH STPT : WRITE F/C READ F/C
	SECONDARY DT TEMP : F OR C
	ADJ SEC DT TEMP : WRITE F/C READ F/C
Ambient and Damper Information	AMBIENT SENSOR : F OR C
	ECON MIN POSITION : %
	ADJ ECON MIN POS : %
	VFD FEEDBACK : %
	VFD L/O COOLING : NO / YES
	SAVE SETPOINTS : OFF / ON
Additional Inputs Outputs	

Alarm Status	LOW LIMIT LOCKOUT : OK /ALARM
	HEAT FAILURE LOCKOUT : OK / ALARM
	PREPURGE ALARM : OK / ALARM
	FLAME FAILURE : OK / ALARM
	HE OR LMK FAILURE : OK / ALARM

Alarm Status	DISCHARGE AIR :OK / ALARM
	SECONDARY DT : OK /ALARM
	AMBIENT : OK / ALARM

Insert Customer Password (PW1)	
	0000