

ADDENDUM FOR TW SERIES IOM MANUAL

(PART# 6 720 220 329 Initial Release 01-12)



ABOUT THE ADDENDUM

This addendum is intended to provide the information on the new model TW122 that is being introduced in the residential market for the first time by BOSCH, highlighting only the differences from the other TW models where applicable with reference to the main TW manual (part# 6720220047).



TW122 is available with rear water connections only.

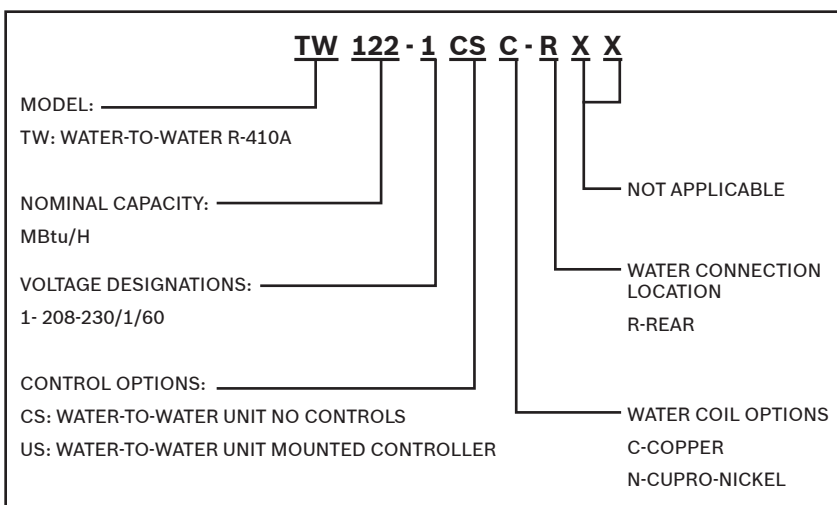
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GENERAL DESCRIPTION

The TW122 Water-to-Water heat pump is a nominal 10 ton capacity 2 stage high efficiency unit that is Energy Star Tier 3 compliant and is very suitable and effective for residential radiant floor heating application. The cabinet and construction of the TW122 unit is different from TW025 to TW071 models due to two single-step compressors being utilized for achieving a two stage operation compared to one two-step compressor used for the other smaller sizes. However, this does not cause any issues and is more or less invisible/transparent to either the installer or the home owner as the essential functionality of the unit related to performance, operation and safety are similar. This addendum provides information on some generic information applicable to the models (TW025-071) in the main manual such as the Comfort Alert Module (CADM) and some specific to the TW122 unit such as the wiring diagrams.

MODEL NOMENCLATURE



Comfort Alert Module

COMFORT ALERT™ DIAGNOSTICS – FASTER SERVICE AND IMPROVED ACCURACY

The Comfort Alert diagnostics module (CADM) is a breakthrough innovation for troubleshooting heat pump and air conditioning system failures.

The module installs easily in the electrical box near the compressor contactor.

By monitoring and analyzing data from the Copeland Scroll® compressor and the thermostat demand, the module can accurately detect the cause of electrical and system related failures without any sensors. A flashing LED indicator communicates the ALERT code and guides the service technician more quickly and accurately to the root cause of a problem.

CADM - FLASH CODES

Note: Troubleshooting Information Solution column may reflect possible fault that may be one of, or a combination of causes and solutions. Check each cause and adopt “process of elimination” and or verification of each before making any conclusion.

Status LED	Status LED Description	Status LED Troubleshooting Information Solution
Yellow “ALERT” Flash Code 3	Short Cycling Compressor is running only briefly	<ol style="list-style-type: none"> 1. Thermostat demand signal is intermittent 2. Time delay relay or control board defective 3. If high pressure switch present go to Flash Code 2 information 4. If low pressure switch present go to Flash Code 1 information
Yellow “ALERT” Flash Code 4	Locked Rotor	<ol style="list-style-type: none"> 1. Run capacitor has failed (may not be bad, verify) 2. Low line voltage (contact utility if voltage at disconnect is low) <ul style="list-style-type: none"> •Check wiring connections 3. Excessive liquid refrigerant in compressor 4. Compressor bearings are seized <ul style="list-style-type: none"> •Measure compressor oil level
Yellow “ALERT” Flash Code 5	Open Circuit	<ol style="list-style-type: none"> 1. Outdoor unit power disconnect is open 2. Compressor circuit breaker or fuse(s) is open 3. Compressor contactor has failed open <ul style="list-style-type: none"> •Check compressor contactor wiring and connectors •Check for compressor contactor failure (burned, pitted or open) •Check wiring and connectors between supply and compressor •Check for low pilot voltage at compressor contactor coil 4. High pressure switch is open and requires manual reset 5. Open circuit in compressor supply wiring or connections 6. Unusually long compressor protector reset time due to extreme ambient temperature 7. Compressor windings are damaged <ul style="list-style-type: none"> •Check compressor motor winding resistance
Yellow “ALERT” Flash Code 6	Open Start Circuit Current only in run circuit	<ol style="list-style-type: none"> 1. Run capacitor has failed (may not be bad, verify) 2. Open circuit in compressor start wiring or connections <ul style="list-style-type: none"> •Check wiring and connectors between supply and the compressor “S” terminal 3. Compressor start winding is damaged <ul style="list-style-type: none"> •Check compressor motor winding resistance
Yellow “ALERT” Flash Code 7	Open Run Circuit Current only in start circuit	<ol style="list-style-type: none"> 1. Open circuit in compressor run wiring or connections <ul style="list-style-type: none"> •Check wiring and connectors between supply and the compressor “R” terminal 2. Compressor run winding is damaged <ul style="list-style-type: none"> •Check compressor motor winding resistance
Yellow “ALERT” Flash Code 8	Welded Contactor Compressor always runs	<ol style="list-style-type: none"> 1. Compressor contactor has failed closed 2. Thermostat demand signal not connected to module
Yellow “ALERT” Flash Code 9	Low Voltage Control circuit < 17VAC	<ol style="list-style-type: none"> 1. Control circuit transformer is overloaded 2. Low line voltage (contact utility if voltage at disconnect is low) <ul style="list-style-type: none"> •Check wiring connections <i>Flash Code number corresponds to a number of LED flashes, followed by a pause and then repeated. TRIP and ALERT LEDs flashing at same time means control circuit voltage is too low for operation</i>



This module does not provide safety protection! The Comfort Alert module is a monitoring device and cannot shut down the compressor directly.

When an abnormal system condition occurs, the Comfort Alert module displays the appropriate ALERT and/or TRIP LED.

The yellow ALERT LED will flash a number of times consecutively, pause and then repeat the process.

To identify a Flash Code number, count the number of consecutive flashes.

Every time the module powers up, the last ALERT Flash Code that occurred prior to shut down is displayed for one minute.



STANDARD COMPONENTS LEGEND:

- #1 - FIRST STAGE
- #2 - SECOND STAGE
- CADM - COMPFORT ALERT DIAGNOSTIC MODULE
- CAP - COMPRESSOR RUN CAPACITOR
- CC - COMPRESSOR CONTACTOR
- CBR - 24VAC CIRCUIT BREAKER
- HPS - HIGH PRESSURE SWITCH
- LPS - LOW PRESSURE SWITCH
- RV - REVERSING VALVE (HEAT PUMPS ONLY)
- RVR - REVERSING VALVE PILOT RELAY

OPTIONAL COMPONENTS LEGEND:

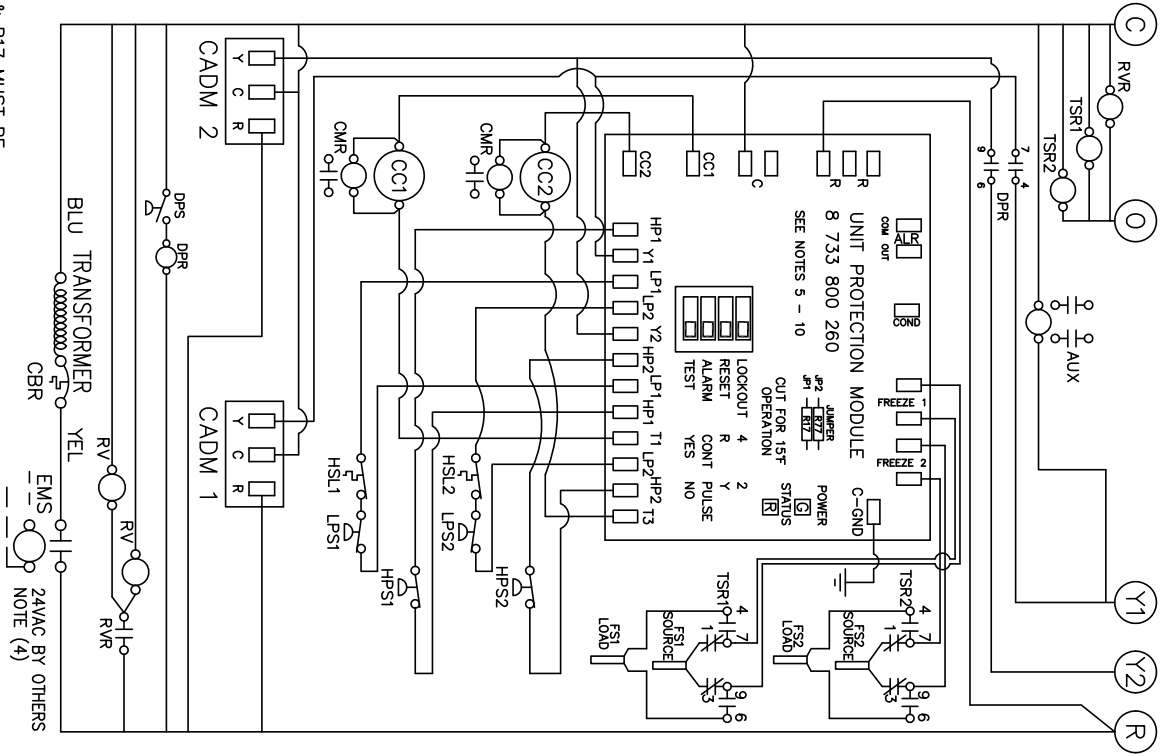
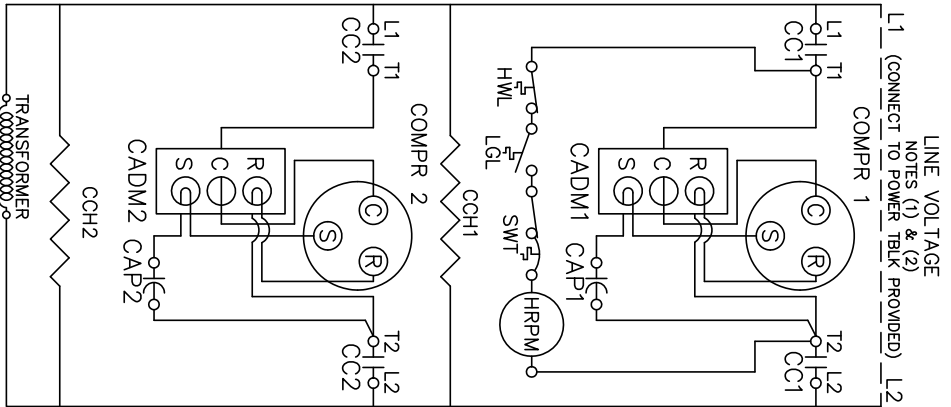
- [] AUXILIARY RELAY (FOR LOOP PUMP, ETC.)
- [] CCH - CRANKCASE HEATER
- [] GMR - COMPRESSOR MONITOR RELAY
- [] DPS - DIFFERENTIAL PRESSURE SWITCH RELAY (ENABLES Y1 & Y2)
- DDR - DIFFERENTIAL PRESSURE SWITCH
- [] EMS - ENERGY MGMT SYSTEM RELAY
- [] FFS - FREEZE SENSOR
- [] FSR - THERMISTOR SWITCHING RELAY
- [] HSL - HIGH TEMP SUCTION LIMIT (WITH H.G. BYPASS ONLY)
- [] HRP - HEAT RECOVERY PACKAGE INCLUDES:
 - HRPM - HEAT RECOVERY PUMP MOTOR
 - HWL - HOT WATER LIMIT (120 OR 140 DEG)
 - LGL - LOW GAS TEMP LIMIT
 - SWT - ON/OFF SWITCH AND OVERLOAD PROTECTION

TRANSFORMER PRIMARY LEAD CLR:	FACTORY WIRE	UNIT GROUND LUG
120 - WHI	---	---
208 - RED	---	---
240 - ORG	---	---
277 - BRN	---	---
380 - PUR OR YEL	---	---
460 - BLK/RED	---	---
575 - GRY	---	---

STATUS LED/ALARM BLINK CODES
1 HIGH PRESSURE FAULT - CKT 1
2 LOW PRESSURE FAULT - CKT 1
3 HIGH PRESSURE FAULT - CKT 2
4 LOW PRESSURE FAULT - CKT 2
5 FREEZE SENSOR FAULT
6 CONDENSATE FAULT
7 BROWN OUT FAULT

NOTES:

1. SEE UNIT NAME PLATE FOR ELECTRICAL RATING
2. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH N.E.C.-N.F.P.A. #70. COPPER CONDUCTORS ONLY.
3. 208/230V UNITS ARE FACTORY WIRED FOR 230V OPERATION. FOR 208V OPERATION, REMOVE ORG LEAD AND REPLACE WITH RED LEAD. CAP ALL UNUSED LEADS.
4. FOR ALTERNATE EMS COIL VOLTAGES CONSULT FACTORY.
5. UPM-1 INCLUDES BUILT IN: 270-300 SECOND RANDOM START 300 SECOND DELAY ON BREAK 1200 SECOND LOW PRESSURE BYPASS
6. "TEST" DIP SWITCH REDUCES DELAYS TO 10 SEC WHEN SET TO YES. MUST BE SET TO "NO" FOR NORMAL OPERATION.
7. "FREEZE SENSOR" WILL OPERATE AT 30°F BY DEFAULT. IF 15°F OPERATION IS REQUIRED JUMPERS R77 & R17 MUST BE CUT IF FREEZE SENSOR IS NOT INSTALLED A JUMPER SHALL BE INSTALLED BETWEEN THE FREEZE SENSOR TERMINALS.
8. "ALARM OUTPUT" DIP SWITCH MUST BE SET TO "PULSE" IF BLINKING 1-STAT SERVICE LIGHT IS DESIRED.
9. DEFAULT SETTINGS FOR UPM BOARD FROM FACTORY SHOWN. ALSO SEE INSTALLATION MANUAL.
10. ALARM OUTPUT IS NORMALLY OPEN (NO) DRY CONTACT. IF 24 VAC IS NEEDED, CONNECT R TO ALR-COM TERMINAL, 24VAC WILL BE SENSED ON THE ALR-OUT WHEN THE UNIT IS IN ALARM CONDITION. OUTPUT WILL BE PULSED IF PULSE IS SELECTED.
11. TERMINATE "PR" PUMP RELAY TO DO1 ON I/O ZONE 560 WHEN DDC OPTION IS AVAILABLE IN UNIT.



2 STAGE - 1 PHASE - WATER TO WATER	DATE	REV
10 TON CAPACITY	12/21/2011	0
UPM II		
PART No. 8 733 902 230	DRAWN BY: GRP	
DWG No. TW120000		

