

Swapping out an ST series zone control to model NCM300 zone control

1. The relay based logic ST series zone control *is not* WiFi compatible with most thermostat brands, except Pro1®. The Pro1 model 855i (EWT-855i) is compatible with the ST series controller, because Pro1 is the only thermostat Mfr to include separate “O & B” (Summer/Winter) terminals on all their thermostat models.
2. So the typical reason for upgrading to the NCM300 zone control, is to achieve the ability to use *other* brand WiFi thermostats (Nest®, Ecobee®, Honeywell®) through- out the home, or at least in Zone 1 of the home.
3. EWC strongly recommends that you hire a licensed contractor/electrician to perform this work. Injury and/or electrocution is possible.
4. The wiring diagram on page 3 is a basic guideline. Study all of these pages including the ST and NMC300 technical bulletins and prepare the work site ahead of time:

RECOMMENDED TOOLS: Volt-Meter, wire cutter/stripper, pocket screwdriver (included in NCM300 box), drill & bits, standard and phillips screwdriver.


MOUNTING: Choose a suitable location to mount the zone control housing. Suitable locations are on the Return Duct, a Nearby Wall or Convenient Studs where plywood can be installed to support the housing. Avoid mounting the Zone Controller on the Supply duct. **Do not** mount the Zone Controller directly to any Air-Handler, Furnace, Hot Water Cabinet or Evaporator Cabinet to avoid damaging these components. **Do not** mount the Zone Controller in the “open” return air stream or inside the duct. Follow all National and/or Local Mechanical & Building Codes.

POWER SUPPLY: The Zone Controller requires a “dedicated” 24vac transformer. 40va minimum - 60va maximum. If the ST controller had a dedicated 24vac transformer, reuse it for the NCM300. If not, use this opportunity to install a dedicated power supply. Follow National Electrical Code and/or Local Electrical Code.

WIRING: Use standard 18awg solid copper multi-conductor cable. Shielded cable is unnecessary. Connect the Power Supply to the Zone Controller and wire-up thermostats and dampers. Use the knock-outs provided on the housing as the cable entry-way. Strip the cable jacket back to the point where the cable enters the housing. Doing so reduces bulk and allows easier routing of the individual wires to each terminal block, for a professional looking install.

PROGRAMMING: The NCM300 comes from the factory already programmed for a Gas/Oil furnace with Air Conditioning. This type of HVAC system is most likely what your ST zone control is connected to. So right out of the box, you should not have to move any of the programming dip switches. Your NCM300 may come with a Supply Air Sensor. If so, don't worry about installing it until after the main work is done and completed. Refer to the Supply Air Sensor (SAS) submittal sheet for guidance on installing the sensor.

5. Take several pictures of the existing wiring connections on the ST zone control. Familiarize yourself with them and confirm the wiring matches the typical ST wiring found on page 3 of this document, or the typical ST wiring found in Technical Bulletin #090375A0115_K.
6. You may find it helpful to mark and tag each existing wire as to it's designation. ie. Z2 “W” or Z1 “Y”, which stands for Zone 2 “W” wire or Zone 1 “Y” wire. Use some 1” wide masking tape and a sharpie marker. Wrap the tape around each wire and make sure it's secure, so they don't come off when you start pulling wires out of the old housing, and/or inserting them into the new housing.
7. Plan to perform this work on a mild weather day (avoid extremely hot/cold weather) and if possible, on a weekday rather than the weekend. If you run into trouble, you can contact EWC Technical Support for assistance.

 EWC[®] CONTROLS INC. Englishtown, NJ 07726 Form# 600114A0001A	Drawn By:	Approved By:	Date:	Drawing Name:
	JPB	LYT	07/14/20	REPLACE ST2E/3E WITH NEW NCM-300
	Size:	Rev:	Dwg No:	DISCLAIMER: EWC Controls Inc., Cannot be held liable for the use or misuse of this supplied information. It is the responsibility of the user to determine the suitability of the application. Malfunctions, improper operation, and/or subsequent damage to any related equipment or property damage as a result of using this supplied information is the responsibility of the user. EWC Controls Inc., is not responsible for any misapplications including, but not limited to negligence, defect in products(s), system incompatibility, poor workmanship and/or installation.
A	C	090512A0369		
Sheet: 1 of 4		COPYRIGHT © EWC CONTROLS INC. ALL RIGHTS RESERVED		

8. De-energize the HVAC system and measure for 24v at the ST zone controller. Shutting off the HVAC system's power supply, may or may not de-energize the ST zone control. Use the volt meter to confirm that power is off and it's safe to work.

9. Slowly begin the work of removing one wire at a time from the ST zone control. Work methodically and stay focused:

A. The "O" and "B" wires from the existing Zone 1 thermostat are not required on the NCM300 for typical gas/oil based HVAC (non- heat pump) systems.

B. You may re-purpose the "O" or "B" wire as the new 24v Common "C" wire for the new Zone 1 WiFi thermostat. Zone 1 certainly has enough wires now.

C. If the existing thermostat in Zone 2 does not have "Heat/Off/Cool" selection capability, then it must be upgraded as well.

C1. If you only have 4 wires available at Zone 2, you can still install a WiFi thermostat there as well. Connect "R, C, Y & W" only. You don't need the "G" wire.

C2. If you only have 3 wires available at Zone 2, you don't have enough wires for a WiFi thermostat. But you can install a new "programmable" battery powered thermostat of your choice. Connect "R, Y & W" only. You don't need the "G" wire.

C3. The ST thermostat terminal block heat designation is "W". While the NCM300 thermostat terminal block heat designation is W/E. Depending on the thermostat you are installing, the heat designation may be W or W1. Don't worry because they are all the same...W = W/E = W1.

D. All existing damper motor wiring re-connects to the NCM300 the same as the ST zone control. The damper motor output terminals are identical.

E. The 24v transformer terminals on the ST zone control are designated 1 & 2.

E1. Re-connect the #1 wire to "C" on the NCM300 24v T'former terminal block.

E2. Re-connect the #2 wire to "R" on the NCM300 24v T'former terminal block.

E3. 1 = C and 2 = R.

F. The wires on the ST zone controller's "system" terminal block will -re-connect to the NCM300's "system" terminal block as follows:

F1. "R to Rc", "Y to Y", "G to G", "W to W1/B".

F2. There is no need to place a jumper from Rc to Rh on that terminal block.

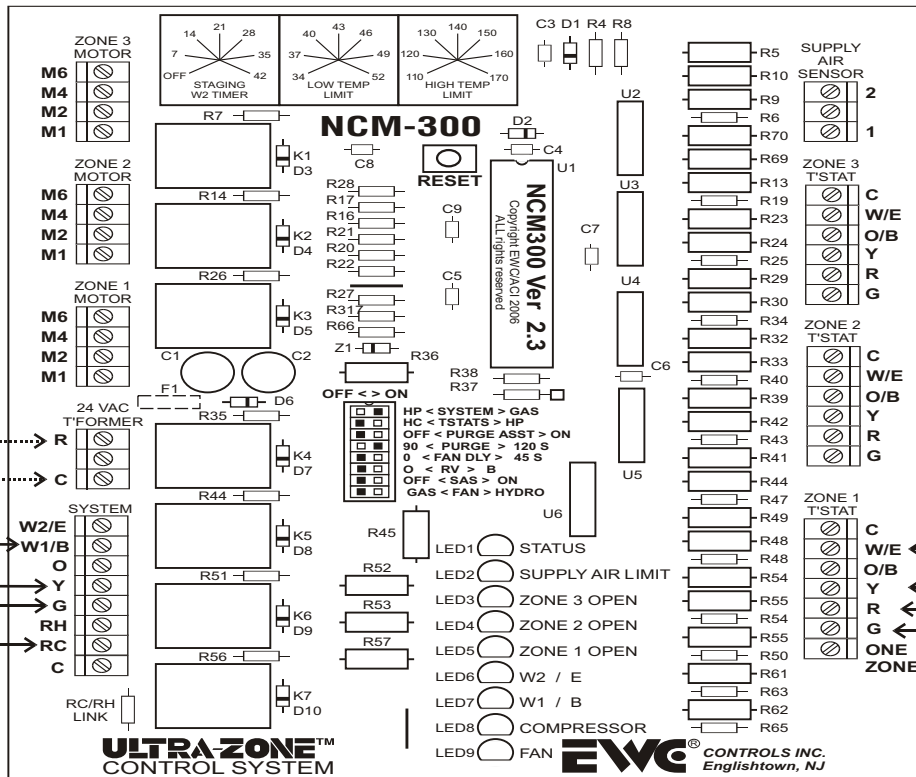
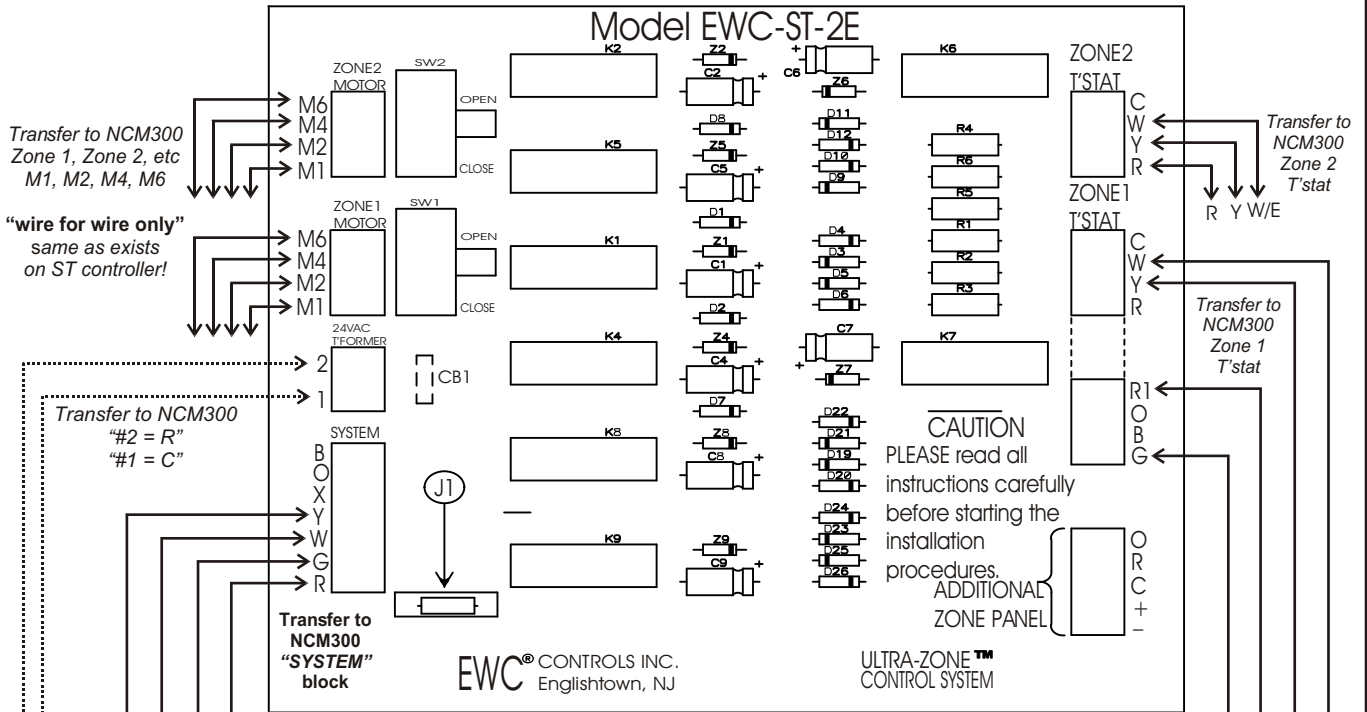
10. When finished, double check and review your work for accuracy. Restore power to the HVAC system and the NCM300. The NCM300' status LED should blink at a steady pace to indicate the processor is functioning. There is a 4 minute start-up delay, so be patient.

11. All zone thermostats will now function independently. Create a cooling or heating demand at each thermostat and observe the HVAC system and zone damper operation, individually by zone (confirm airflow into the correct zone) and then all zones together at the same time.

12. If you have any issues, de-energize and review you work for errors. If you cannot figure out what's wrong, contact EWC Controls for assistance.

 <p>EWC[®] CONTROLS INC. Englishtown, NJ 07726 Form# 600114A0001A</p>	Drawn By:	Approved By:	Date:	Drawing Name:	
	JPB	LYT	07/14/20	REPLACE ST2E/3E WITH NEW NCM-300	
	Size:	Rev:	Dwg No:	<small>DISCLAIMER: EWC Controls Inc., Cannot be held liable for the use or misuse of this supplied information. It is the responsibility of the user to determine the suitability of the application. Malfunctions, improper operation, and/or subsequent damage to any related equipment or property damage as a result of using this supplied information is the responsibility of the user. EWC Controls Inc., is not responsible for any misapplications including, but not limited to negligence, defect in products(s), system incompatibility, poor workmanship and/or installation.</small>	
A	B	090512A0369			
Sheet:	2 of 4		COPYRIGHT © EWC CONTROLS INC. ALL RIGHTS RESERVED		

REPLACE ST-2E/ST-3E WITH NEW NCM 300



EWC®
CONTROLS INC.
Englishtown, NJ 07726
Form# 600114A0001A

Drawn By: JPB	Approved By: LYT	Date: 07/14/20	Drawing Name: REPLACE ST2E/3E WITH NEW NCM-300
Size: A	Rev: B	Dwg No: 090512A0369	DISCLAIMER: EWC Controls Inc., Cannot be held liable for the use or misuse of this supplied information. It is the responsibility of the user to determine the suitability of the application. Malfunctions, improper operation, and/or subsequent damage to any related equipment or property damage as a result of using this supplied information is the responsibility of the user. EWC Controls Inc., is not responsible for any misapplications including, but not limited to negligence, defect in products(s), system incompatibility, poor workmanship and/or installation.
Sheet: 3 of 4		COPYRIGHT © EWC CONTROLS INC. ALL RIGHTS RESERVED	

Job Notes:

 CONTROLS INC. Englishtown, NJ 07726 Form# 600114A0001A	Drawn By: JPB	Approved By: LYT	Date: 07/14/20	Drawing Name: REPLACE ST2E/3E WITH NEW NCM-300
	Size: A	Rev: B	Dwg No: 090512A0369	<small>DISCLAIMER: EWC Controls Inc., Cannot be held liable for the use or misuse of this supplied information. It is the responsibility of the user to determine the suitability of the application. Malfunctions, improper operation, and/or subsequent damage to any related equipment or property damage as a result of using this supplied information is the responsibility of the user. EWC Controls Inc., is not responsible for any misapplications including, but not limited to negligence, defect in products(s), system incompatibility, poor workmanship and/or installation.</small>
	Sheet: 4 of 4	COPYRIGHT © EWC CONTROLS INC. ALL RIGHTS RESERVED		