

NuStart

Compressor Soft Starter

115/230 VAC Single Phase Series

Parts List:

1 x NuStart Soft starter	1 x Brown Wire
1 x Red Lead	1 x Mounting Bracket
1 x Blue Wire	1 x Green Connector
1 x Black Wire	1 x Pack of two Ferrules

NuStart Models:

5010-10
5010-20
5010-21



NuStart functions as a single phase motor starter, a contactor is required. NuStart is suitable for a wide range of air conditioning applications using scroll compressors, including digital types. NuStart is not for use with inverter type compressors. For other compressor types, consult Nu-Calgon. Care is required to determine the correct model as per nameplate data on the air conditioning unit or the compressor.

Caution:

1. NuStart is designed for install in the electrical compartment of the condensing unit, confirm dry fit location before install. If NuStart must be installed outside the condensing unit, contact Nu-Calgon.
2. All voltage to equipment **MUST** be disconnected before removing any devices.
3. Allow two minutes to discharge the run capacitor before disconnecting.
4. Do not swap the Run & Start Windings.
5. Prior to installation, be sure all start capacitors & start relays, along with hard-starters and/or any other start-assist devices, are removed.
6. The start capacitor is built into the NuStart. For use with single/dual stage scroll compressors, plus digital type scroll compressors.
7. Not for use with inverter type compressors. For other compressor types, contact Nu-Calgon.
8. Do not mount NuStart upside down from mounting bracket.
9. Loose terminals can lead to heating & subsequent damage to the soft starter. As per UL508 standard, ensure proper tightening torque as per field wiring specifications.
10. Compatible to be used with Emerson Comfort Alert or CoreSense modules.
11. Opening of the soft starter unit or attempting to run the unit on motor loads beyond stated capacity will void warranty!

LED Flash Codes

Flash Code	Definition	Time to re-start attempt
Rapid Flash (10 / 1 sec)	Low Voltage	3 min
Triple Flash (3 / 3 secs)	Lockout on 3 Failed Starts	50 min
Slow Flash (1 / 3 secs)	Lockout on Overcurrent	10 min
Steady Flash (1 / 1 sec)	Cycle Delay / Faults	3 min

NOTE: LED fault indicator remains off in normal running mode.

Field Wiring Specifications:

Wire Range:

8 to 12 AWG Cu, stranded, for terminals (Run Winding (R) and Active(T2))

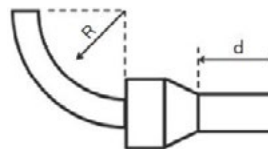
12 to 16 AWG Cu, stranded, for terminals (Run Capacitor (RC), Start Winding (S), and Compressor/Motor Common (C), these are supplied)

Tightening Torque: 11.5 lbs - in LARGE TERMINALS, 4.5 lbs - in SMALL TERMINALS.

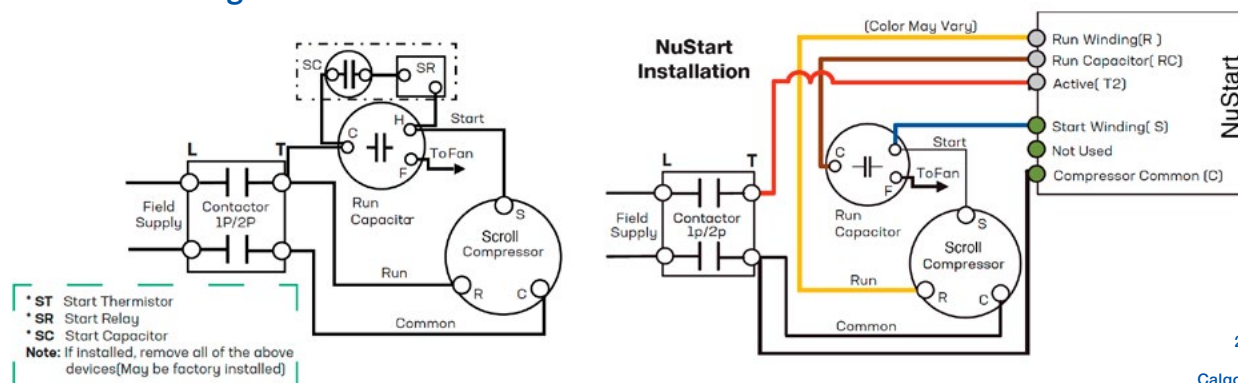
Field wiring conductors shall be rated 167°F [75°C]

Minimum end use enclosure size: 10" x 8" x 6"

- CRIMP CORRECT SIZED FERRULES TO ENSURE PROPER TERMINATION
- INSERTION LENGTH OF FERRULE "D": 11 ± 1 mm (0.43 ± 0.04")
- CABLE BEND RADIUS "R" > 38mm (1.5") MINIMUM



General Wiring Schematic:



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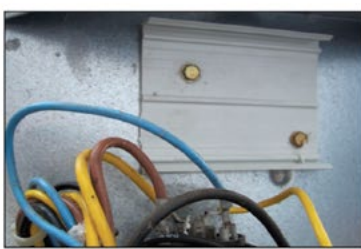


Installation:

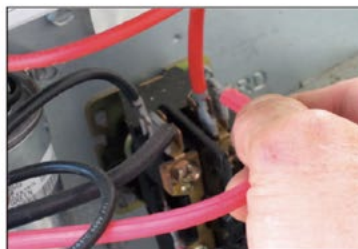
NuStart must be installed by qualified/licensed technician. Record date of installation on device.



1. Turn off all power to the HVAC unit at the circuit breaker.



2. Secure the mounting bracket for the NuStart inside the control



3. Remove the compressor Run wire from the contactor or Run Capacitor terminal, as applicable.



4. Strip the compressor Run wire at least 1/2 in* Crimp appropriate size Ferrule (supplied) onto it.



5. Attach the compressor Run wire to the NuStart Run Winding terminal.



6. Attach the brown wire supplied with the NuStart to the Run Capacitor terminal of NuStart.



7. Identify the cable connecting the contactor and the Run Cap. Remove this connection to the Run Cap. Attach the flagged end of the brown wire to the same terminal of the Run Cap^{#1}.



8. Attach the black wire (supplied) to Compressor Common on the NuStart green terminal connector.



9. Attach the flagged end of the black wire to the Compressor Common on the "T" side of the contactor.



10. Attach the blue wire (supplied) to the Start Winding on the NuStart green terminal connector.



11. Attach the flagged end of the blue wire to the other terminal^{#2} of the Run Capacitor. Ensure that this terminal on the capacitor also joins to the Start Winding of the compressor.



12. Attach the red wire (supplied) to the Active Terminal on the NuStart.



13. Remove the loose wire (from Step 7) from the active input of the contactor and attach the stripped end of the Active wire in its place.



14. Apply power to the equipment and cycle^{#3} to ensure proper operation.

**Caution**

NuStart must be installed in a location that ensures that the external heat from a hot gas line, compressor discharge piping, or similar heat source will not cause damage. Minimum 3" (76 mm) clearance is recommended.

Sample schematic is not a reflection of all HVACR units in the field. If the wiring differs from the base schematic or if it needs to be wired through a control board, please contact us: info@nucalgon.com

Compliances / Certifications

All NuStart products are complaint to RoHS, REACH, 3TG and SCIP regulations. UL compliance as per UL IEC60947-4-2 Compliant under ETL file 5008 865 CE compliance as per IEC60947-4-2 and IEC61000 series EMI/EMC standards

**Warning**

This product can expose you to chemicals including Bisphenol A and Ethylene Glycol, which are known to the State of California to cause cancer or birth defects, or other reproductive harm. For more information, go to www.P65Warnings.ca.gov

Suitable for use on a circuit capable of delivering no more than 5000rms symmetrical amperes, 240 volts maximum, when protected by a non-time delay RK5 fuse or circuit breaker rated 80A, or a time delay fuse rated 70A. NuStart does not provide current limiting control or equivalent.

NuStart is NOT an overcurrent protection device and must NOT be used as a replacement for any primary circuit overcurrent protection.

NOTES:

#1 This is the Common (C) terminal for Dual Compressor/Fan Capacitors.

#2 This is the Herm (H) terminal for Dual Compressor/Fan Capacitors.

#3 NuStart device could take up to six (6) starts to optimize.

Limited Warranty: NuStart offers a limited one-year warranty from the date of installation. The warranty does not cover labor, return shipping charges, damages caused by normal wear and tear, field modifications within the housing, inadequate maintenance or faulty repair, failure to observe the operating instructions, overloading, use of any unsuitable material, effect of chemical or electrolytic action, building or resulting from other reasons beyond Nu-Calgon's control. Contact Nu-Calgon with further questions.