COMPRESSOR SOFT STARTER - SINGLE PHASE SERIES

PREMIER BENEFITS:

- Most Compact Soft Starter in the Market
- Compatible with Modern Scroll Technologies
- Reduces In-Rush Current by 60-70%
- Lowers Start-Up Torque by 30-40%
- Reduces Compressor and Refrigerant Piping Stress
- Reduces Start-Up Noise and Vibration
- Eliminates Light Flicker at Start-Up
- Reverse Motor Protection
- Under Voltage and Overcurrent Protection
- Compatible with Major Utility Regulations
- Easy Retrofit

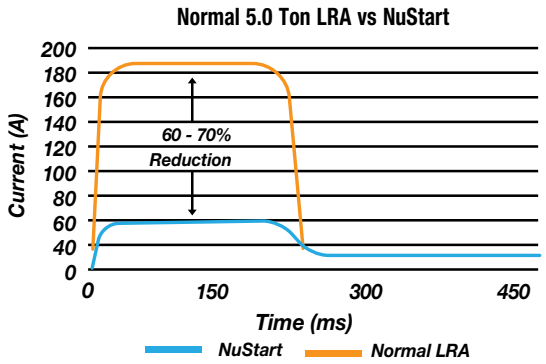
FURTHER ADVANTAGES:

- OEM Approved Technology – Time Proven
- Efficient Start-Up on Back-Up Power Sources
- Prevents Generator Stalls/Solar Inverter Shutdown
- Eliminates Motor Stalling During Brownouts
- Automatic Optimization of Motor Start-Up Current
- Protects Compressor from Rapid Cycling
- Reduces Contactor Arcing Damage
- Easy-To-Use LED Fault Diagnostics

Specialty Products

NuStart

Compressor Soft Starter



Description:

NuStart is a soft starter and protection device for scroll compressors in HVAC/R systems. NuStart uses current-based motor control to optimize start-up of the scroll compressor. In doing so, significant reductions inrush current and motor torque result. End-user benefits include: reduction in start-up noise and vibration, eliminates light flicker and nuisance circuit breaker trips at start-up, reduction in contactor arcing, and less mechanical stress of the compressor, compressor mounts, and connected refrigerant piping during start-up. Lowering the inrush current of the compressor allows for more efficient start-up with off-grid solutions such as solar/battery systems or other back-up power sources – allows the use of a smaller generator.

NuStart provides another level of protection for the scroll compressor in the HVAC/R system. NuStart offers reverse motor (scroll) protection, plus under voltage protection to prevent motor stalling at start-up or during operation in low voltage (brownout) events. The device also provides overcurrent protection to prevent the compressor from operating beyond a preset level. NuStart provides additional compressor protection – it is NOT a replacement for any primary circuit breaker or an overload protection device, nor is it a surge protector.

Application:

NuStart is the premier solution to start and protect scroll compressors in the HVAC/R market. The OEM approved technology is the most trusted in the HVAC/R market – with years of global installations.

NuStart is the most compact device available allowing for the easiest installation inside the condensing unit. In addition, the device provides unique advantages that many competing products don't offer including: reverse scroll protection technology, hard start time out feature, and best market line-up with single and three phase options for residential and commercial systems.

NuStart is designed for modern scroll compressor technologies in the HVAC/R market – single stage, dual stage, and digital type scroll compressor types. Do NOT use NuStart for inverter type scroll compressors. For other compressor types, contact Nu-Calgon.

NuStart must be selected on proper electrical phase, RLA, and LRA of the compressor stated on the nameplate of the condensing unit. Use NuStart for the following systems equipped with scroll compressors:

- Air Conditioning
- Heat Pumps
- Chillers
- Refrigeration

NuStart models 5010-20 and 5010-21 cover residential air conditioning and heat pump systems that operate on 208/230 VAC power. They are an excellent accessory to promote on a new HVAC install to provide efficient start-up and added compressor protection for the new homeowner investment, allows the homeowner smaller power back-up options to run the HVAC system or to simply reduce start-up noise and vibration. NuStart model 5010-10 requires 115VAC power input is intended for including marine or RV possibilities or outlier stationary HVAC system requiring this input.

Packaging:

NuStart, 115VAC Single Phase 12-20 RLA **5010-10**
NuStart, 230 VAC Single Phase 8-16 RLA **5010-20**
NuStart, 230 VAC Single Phase 16-32 RLA **5010-21**

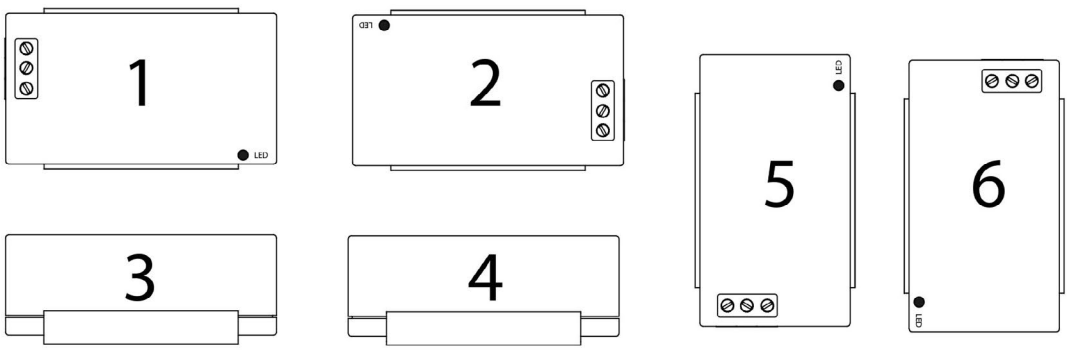
Specifications:

Attributes	Nu-Calgon Single Phase Models		
	5010-10	**5010-20**	**5010-21**
Nominal Voltage Rating	110-115 VAC	208-230 VAC	208-230 VAC
Rated Phase	Single	Single	Single
Rated Frequency, Hz	60	50/60	50/60
Motor Current, Max. RLA/FLA Range	12-20A	8-16A	16-32A
LRA, Max.	85A	85A	180A
Start Current Reduction	60-70% of LRA	60-70% of LRA	60-70% of LRA
Startup Torque Reduction	30-40%	30-40%	30-40%
Degree of Protection – Housing	IP20	IP20	IP20
Operating Temperature	-4° to 140°F	-4° to 140°F	-4° to 140°F
Storage Temperature	-40°F to 185°F	-40°F to 185°F	-40°F to 185°F
Maximum Number of Starts per Hour	15	15	15
Minimum Startup Voltage	103V	180V	180V
Maximum Permissible High Voltage	130V	253V	253V
Shutdown on Low Voltage	90V	175V	175V
Dimensions	5.30"x 1.96"x 2.94"	5.30"x 1.96"x 2.94"	5.30"x 1.96"x 2.94"
Weight	1.1 lb.	1.1 lb.	1.1 lb.
Life Expectancy	Minimum 100,000 Cycles	Minimum 100,000 Cycles	Minimum 100,000 Cycles
Limited Warranty	One Year from Install	One Year from Install	One Year from Install

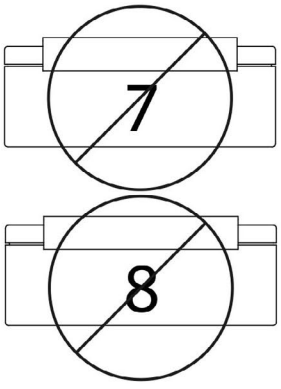
Cautions:

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 atttempting to run the unit on motor loads beyond stated capacity will void warranty!**

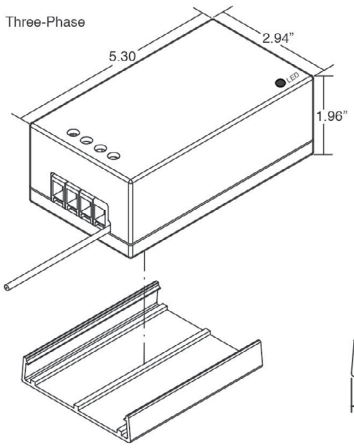
Approved Mounting:



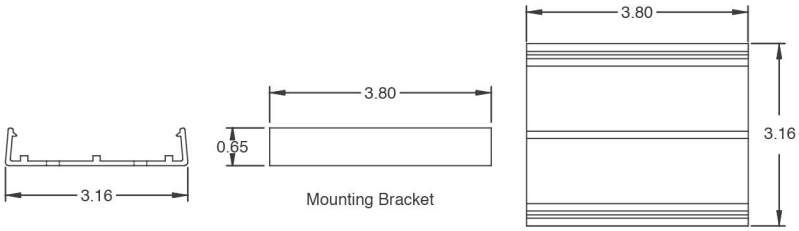
Not Approved



Dimensions:

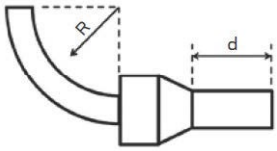


Note: Install mounting bracket to interior metal cabinet wall with two self-tapping screws (field supplied).



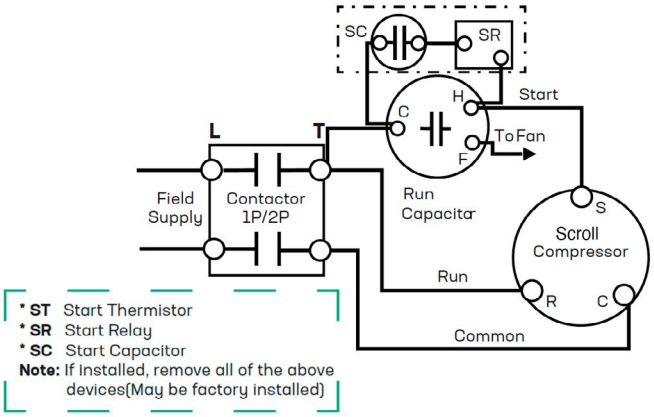
Field Wiring Specifications:

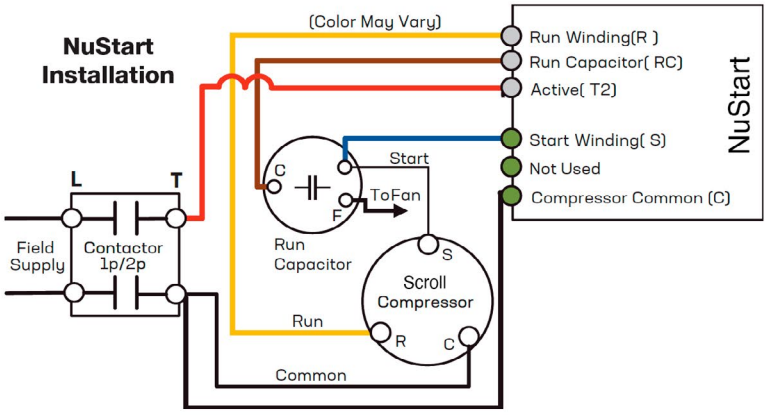
Wire Range:
8 to 12 AWG Cu, stranded, for terminals (Run Winding (R) and Active(T2))
12 to 16 AWG Cu, stranded, for terminals (Run Capacitor (RC), Start Winding (S), and Compressor/Motor Common (C), these are supplied)
Tightening Torque: 11.5 lbs - in LARGE TERMINALS, 4.5 lbs - in SMALL TERMINALS.
Field 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:





Notes:
1. NuStart is compatible with systems that use Emerson Core Sense and Comfort Alert current sensing models.
2. Above is a general wiring guideline for installing NuStart, but system variances exist. For more information, see www.nucalgon.com/nustart for more information about particular systems.

Certifications:

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