

VLТ HVAC Drive Start-Up Check List



1. Reference Material	
	a. VLT HVAC Installation, Operation and Maintenance Manual.
	b. Customer Connection Diagram (specific for the order).
	c. Schematic Diagram (specific for the order).
2. Pre-Installation Checks	
	a. Compare the drive model number to what was ordered.
	b. Be sure the following are for the same voltage:
	i) Drive.
	ii) Power line.
	iii) Motor.
	c. Record the following motor data:
	i) Voltage
	ii) Frequency
	iii) Full load current
	iv) Full load speed
	v) Power (convert HP to Kw – approximately 746 watts/HP)
	d. Be sure that rated drive current is greater than or equal to the total full load current of all motors which will be driven at once.
	e. Check motor wiring:
	i) A disconnect or contactor between the drive and the motor may need to be interlocked to the drive or else nuisance trips may occur.
	ii) Multiple motors have individual motor overload and short circuit protection.
	iii) No power factor correction capacitors between the drive and the motor.
	iv) Two speed motors must be wired permanently for full speed.
	v) Y-start, Δ-run motors must be wired permanently for run.
	vi) Part winding start motors must be wired permanently for run.
3. Installation Checks	
	a. Verify appropriate short circuit protection is provided at the input of the drive. Specific fuse requirement necessary for UL (see instruction manual)
	b. Measure phase to phase line voltage and ensure measured voltage is within drive specification (see instruction manual)
	c. Measure phase to ground voltage. If any measured phase voltage is greater than 60% of phase to phase voltage, open RFI switch.
	d. Environmental concerns.
	i) Suitable for drive enclosure type, Chassis, NEMA/UL Type 1, 12, 3R or 4
	ii) Max 95% relative humidity, non-condensing.
	iii) 14°F to 113°F ambient temperature range (typical).
	iv) 3300 foot maximum elevation with no de-rating.
	v) Non-corrosive environment or unit conformal coated.
	e. Mounting
	i) No heat sink fins exposed out the back.
	ii) Drive mounting clearances observed (see instruction manual)
	iii) No excessive vibration.
	iv) Keep dirt and debris out of the drive
	v) Use knock-outs provided or conduit entry plates for wire entry
	f. Connections and Wiring
	i) Check all wiring connections are secure.
	ii) Each drive grounded individually, no daisy chain grounds.
	iii) 0-10Vdc and ma signal wires protected from noise.
	iv) Separated runs for input power, motor power, and control wiring.

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	v) Note some control connections may be 115VAC.
	vi) Motor thermistor wires separate from load wires.
4. Powering Drive	
	a. Double check all wire connections (correct terminal connection, correct tightness)
	b. All RUN commands off, all speed commands set to zero.
	c. Switch Power on.
	d. Display and PWR LED on.
5. Basic Drive Set-up, Use Quick Menu — <i>This step is essential!</i>	
	a. Parameter 0-01, LANGUAGE
	b. Parameter 1-20, MOTOR POWER (Kw)
	c. Parameter 1-22, MOTOR VOLTAGE (V)
	d. Parameter 1-23, MOTOR FREQUENCY (Hz)
	e. Parameter 1-24, MOTOR CURRENT (A)
	f. Parameter 1-25, MOTOR NOMINAL SPEED (RPM)
	g. Parameter 3-41, RAMP 1 RAMP UP TIME (S)
	h. Parameter 3-42, RAMP 1 RAMP DOWN TIME (S)
	i. Parameter 4-11, MOTOR SPEED LOW LIMIT (RPM)
	j. Parameter 4-13, MOTOR SPEED HIGH LIMIT (RPM)
	k. Parameter 1-29, AUTOMATIC MOTOR ADAPTATION
6. Set Application Related Parameters, Use Quick Menu Function Set-ups	
	a. Parameter Q3-4, Application Set-ups
	i) Parameter Q3-40, Fan Functions
	ii) Parameter Q3-41, Pump Functions
	iii) Parameter Q3-42, Compressor Functions
7. Operational Tests — HAND	
	a. Check the motor's rotation from the drive. If incorrect, reverse two leads between the drive and the motor.
	b. If a bypass is provided, check the motor's rotation in bypass mode. If incorrect, reverse two input power lines.
	c. Accelerate the motor to full speed and verify operation.
	d. Decelerate the motor to a stop and verify operation.
	e. Slowly operate the motor over the speed range and check for resonance. Adjust parameters 1-64 and 4-60 thru 4-63 to set bypass frequencies to avoid resonance.
8. Operational Tests — AUTO, Open Loop	
	a. Ensure that the drive follows run/stop commands from the system.
	b. Ensure that the drive follows the speed command from the system.
	c. Set final MIN/MAX References as required – Parameters 3-02 and 3-03
	d. Set final RAMP UP/RAMP DOWN Times as required – Parameters 3-41 and 3-42
9. Operational Tests — Auto, Closed Loop	
	a. Set up the PID control parameters as required.
	b. Ensure that the drive follows run/stop commands from the system.
	c. Ensure that the drive responds to the feedback signal from the system.
10. Final Adjustments	
	a. Set up parameter 1-73, FLYING START, as required.
	b. Copy parameters to other setups as required, Parameter 0-51
	c. Copy parameters to the LCP, Parameter 0-50