BALDOR®

A MEMBER OF THE ABB GROUP

Series 5 Inverter

OPEN CHASSIS MOUNT - SINGLE PHASE INPUT

For Catalog Nos. ID56F50-CO, ID5601-CO & ID5602-CO

1/17 **Installation & Operating Manual** MN781

Table of Contents

Important:
Be sure to check www.baldor.com to download the latest version of this manual in Adobe Acrobat PDF format.

Introduction

Thank you for purchasing the Baldor Series 5 Inverter.
Main features include adjustable RMS Current Limit and I^2t Motor Overload Protection. In addition, Adjustable Slip Compensation with Static Auto-Tune and Boost provides high torque and excellent load regulation over a wide speed range. Delivers over 200% motor torque to ensure startup of high frictional loads. Electronic Inrush Current Limit eliminates harmful AC line inrush current.
The drive is suitable for machine or variable torque (HVAC) applications. For AC line and motor wiring, quick-connect terminals are provided. A 5 kΩ Main Speed Potentiometer is also included.

A Signal Isolator is optional on all models, which can be used for single-ended or bidirectional speed control and accepts voltage or current signal input. Other optional accessories include: Class A and B AC Line Filters and Dynamic Brake Module.

SAFETY NOTICE

A Warning statement indicates a potentially hazardous situation which, if not avoided, could result in injury or death.

A Caution statement indicates a potentially hazardous situation which, if not avoided, could result in damage to property.

A Note indicates additional information that is not critical to the installation or operation.

WARNING: This equipment may contain voltages as high as 1000 volts! Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt the start-up procedure or troubleshoot this equipment.

WARNING: Be sure the system is properly grounded before applying power. Do not apply AC power before you ensure that all grounding instructions have been followed. Electrical shock can cause serious or fatal injury.

WARNING: Electrical shock can cause serious or fatal injury. Be sure that all power is disconnected and there is no voltage present from this equipment or equipment to which it is or will be connected. Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt the installation and start-up procedures.

WARNING: Electrical shock can cause serious or fatal injury. Verify there is no voltage phase-to-phase or phase-to-neutral at the motor leads before connecting motor to this control. Motor may have high voltage present even when disconnected from this control.

WARNING: Do not use motor overload relays with an automatic reset feature. These are dangerous since the process may injure someone if a sudden or unexpected automatic restart occurs. If manual reset relays are not available, disable the automatic restart feature using external control wiring.

WARNING: This unit has an automatic restart feature that will start the motor whenever input power is applied and a RUN (FWD or REV) command is issued. If an automatic restart of the motor could cause injury to personnel, the automatic restart feature should be disabled.

WARNING: Using a jumper to eliminate the start/stop function will cause the motor to run at the Main Speed Potentiometer setting when the AC line is applied.

WARNING: If possible, do not adjust trim pots with the main power applied. Electrical shock can cause serious or fatal injury. If adjustments are made with the main power applied, an insulated adjustment tool must be used to prevent shock hazard and safety glasses must be worn.

WARNING: Do not use this drive in an explosive environment. An explosion can cause serious or fatal injury. This drive is not explosion proof.

WARNING: When the "CON1" jumper is installed, the drive and motor will start and run when AC power is applied, when power is restored after a momentary power loss, or after an overload or TCL fault is reset. The user must ensure that automatic start up of the driven equipment will not cause injury to operating personnel or damage to the driven equipment. The user is responsible for providing suitable audible or visual alarms or other devices to indicate that the drive may start at any moment. Failure to observe this warning could result in severe bodily injury or loss of life.

WARNING: Do not use start/stop, inhibit or enable functions as a safety disconnect. Use only an AC line disconnect for that purpose. Failure to observe this warning could result in severe bodily injury or loss of life.

Caution: Disconnect motor leads (U, V and W) from control before you perform a Dielectric Withstand test on the motor. Failure to disconnect motor from the control will result in extensive damage to the control. The control is tested at the factory for high voltage / leakage resistance as part of Underwriter Laboratory requirements.

Caution: Do not connect AC power to the Motor terminals U, V and W. Connecting AC power to these terminals may damage the control.

Caution: Baldor recommends not to use "Grounded Leg Delta" transformer power leads that may create ground loops. Instead, we recommend using a four wire Wye.

Caution: Suitable for use on a circuit capable of delivering not more than 5,000 RMS symmetrical short circuit amperes listed here at rated voltage.

Caution: Adjusting the current limit above 160% of the motor nameplate rating can cause overheating of the motor.

Caution: Do not leave the motor in a locked rotor condition for more than a few seconds since motor damage may occur.

Caution: The signal input must be isolated from the AC line. Earth grounding the reference input will damage the drive and void the warranty. It is recommended that Catalog No. ID5SIR-1 be installed.

Receiving

Each control is thoroughly tested at the factory and carefully packaged for shipment. When you receive your control, there are several things you should do immediately.

1. Observe the condition of the shipping container and report any damage immediately to the commercial carrier that delivered your control.
2. Verify that the part number you received is the same as the part number listed on your purchase order.
3. Do not unpack until ready for use.

WARNING: Do not use this drive in an explosive environment. An explosion can cause serious or fatal injury. This drive is not explosion proof.

Introduction

The Series 5 Drive is intended to be installed on a flat surface free of moisture, metal chips, or corrosive atmosphere.
Control installation must ensure unrestricted air flow.

Mounting

Mount the drive to the clean flat surface using the dimensions and information provided in Figure 2-1 through 2-3.

Enclosure - When mounting the drive in an enclosure, it must be large enough to provide proper heat dissipation. If full rating is required, a minimum enclosure size of 12"W x 12"D x 24"H should be used. Smaller enclosures may be used if full rating is not required or if adequate ventilation, or auxiliary cooling methods are used.

Figure 2-1 Catalog No. ID56F50-CO (Inches/mm)

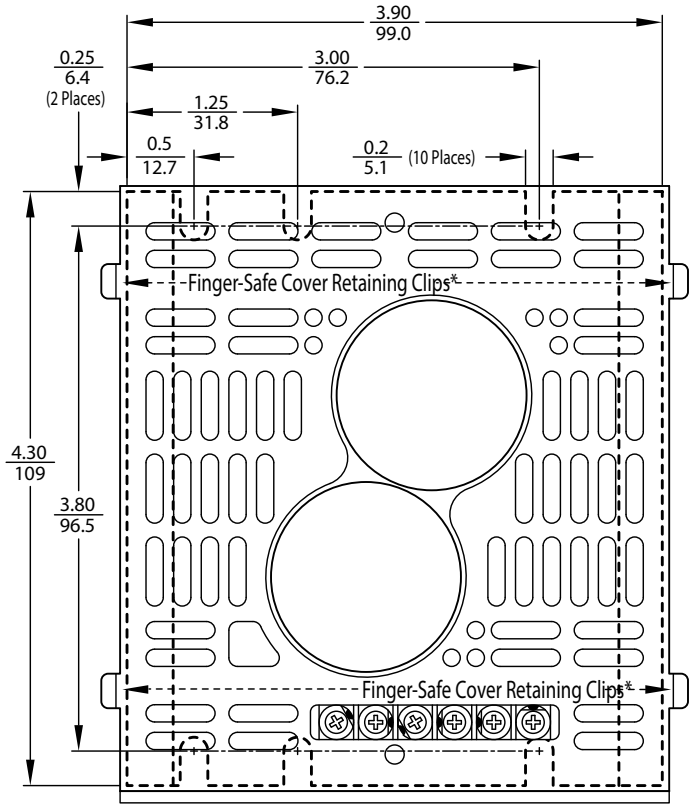


Figure 2-2 Catalog No. ID56F50-CO (Inches/mm)

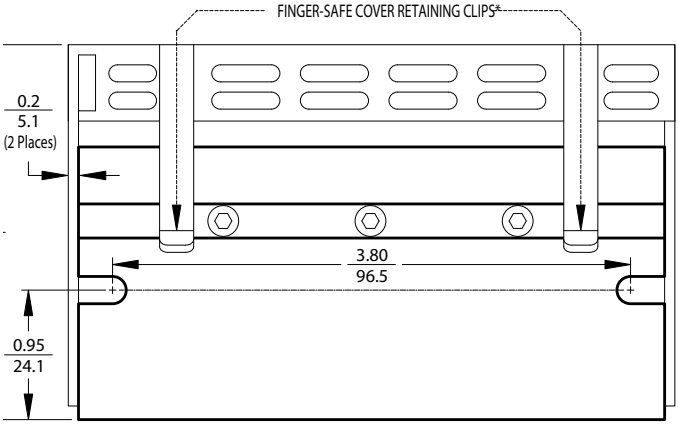
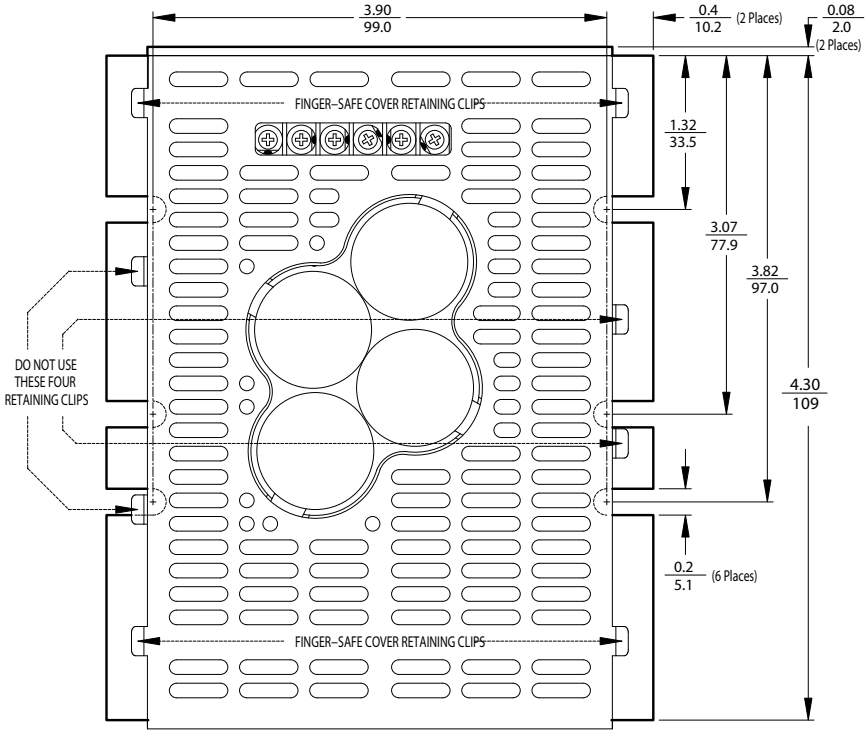
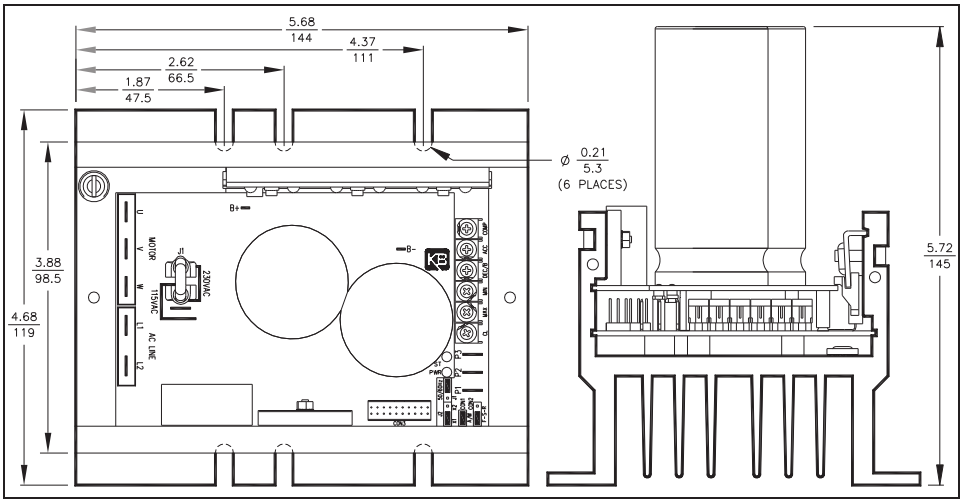


Figure 2-3 Catalog Nos. ID5601-CO (Inches/mm)



(Catalog No. ID5602-CO Shown with Finger-Safe Cover Installed)

Figure 2-4 ID5602-CO



(Catalog No. ID5602-CO Shown with Finger-Safe Cover Installed)

Table 2-1 Electrical Ratings*

Catalog No.	AC Line Input			Drive Output			Fuse or Circuit Breaker Rating (Amps)	Net Wt.	
	Volts AC (50/60 Hz)	Phase (Φ)	Maximum Current (Amps AC)	Voltage Range (Nominal) (Volts AC)	Maximum Continuous Load Current (RMS Amps/ Phase)	Maximum Horsepower (HP (kW))		lbs.	kg.
ID56F50-CO	115	1	9.6	0 - 230	2.4	1/2 (.37)	15	1.3	0.6
	208/230	1	6.0				10		
ID5601-CO	115	1	14.0	0 - 230	4.0	1 (.75)	20	2.2	1.0
	208/230	1	10.0				15		
ID5602-CO*	115	1	22.0	0 - 230	5.5	1-1/2 (1.13)	25	2.9	1.3
	208/230	1	14.0				15		

WARNING: This equipment may contain voltages as high as 1000 volts! Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt the start-up procedure or troubleshoot this equipment.

Finger Safe Cover Removal

The drive is designed with an IP20 Finger-Safe Cover which provides protection against accidental contact with high voltage.

Disconnect all power and ensure no power is present in drive or motor circuits.

Removing the Finger-Safe Cover

The Finger-Safe Cover may have to be removed before connections to the drive or setting selectable jumpers. All trimpots can be readjusted with the Finger-Safe Cover installed. Note the orientation of the Finger-Safe Cover before removing it.

Note: The Finger-Safe Cover is designed with a removable panel (on the trimpots side) which must be removed for installation of optional accessories ID5SIR-1 Signal Isolator and Run/Fault Relay or Multi-Speed Board. Complete instructions are provided with the accessories.

Catalog Nos. ID5601-CO & ID5602-CO – To remove the Finger-Safe Cover, gently lift up on the four retainer clips until the cover disengages from the base. See Figures 3-2 and 3-3.

Note: On Catalog No. ID5602-CO, the inner bus capacitor support bracket should not be removed.

Installing the Finger-Safe Cover

To install the Finger-Safe Cover, be sure to properly align the retainer clips or push-ins. Gently push the Finger-Safe Cover onto the base until the retainer clips or push-ins are fully engaged with the base.

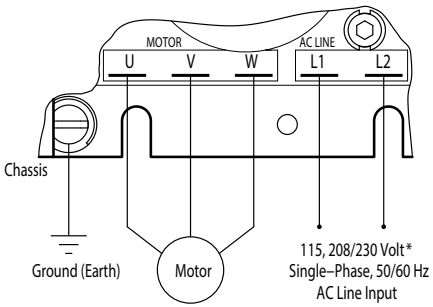
Power Connection

Refer to Figure 2-5 for connections.

Before you begin, be sure incoming AC power is off. Use lock out / tag out procedures.

1. Connect AC line voltage to terminals L1 and L2. Use correct fuse or breaker (not provided). Littelfuse 326, Buss ABC fuses or equivalent are recomended. See Table 2-1.
2. Set jumper J1 (located on the upper PC board) to correct line voltage 115 or 230VAC position.
3. Connect the ground wire (earth) to the green ground screw.

Figure 2-5 AC Line Input, Motor and Ground Connections



4. Connect the motor leads to terminals U, V and W. The terminals are located on the upper PC board. Motor cable length should not exceed 100 ft. (30 m) - load reactors may be required and must be ordered separately.

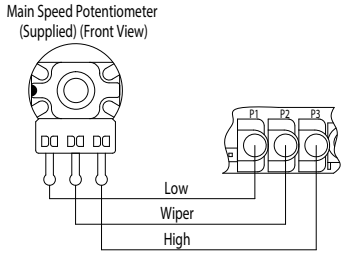
Main Speed Potentiometer

Refer to Figure 2-6 for connections.

A 5 kΩ Main Speed Potentiometer to control motor speed is provided.

Connect the Potentiometer to Terminals P1 (low), P2 (wiper), P3 (high).

Figure 2-6 Main Speed Potentiometer Connection



Voltage Following Connection Refer to Figure 2-7 for connections.

An isolated 0-5 VDC analog signal input can be used to control motor speed instead of the Main Speed Potentiometer. The drive output will linearly follow the analog signal input.

Connect the signal input positive lead (+) to Terminal "P2" and the negative lead (-) to Terminal "P1". The terminals are located on the lower PC board. With external circuitry, a 0-10 Volt DC analog signal can also be used.

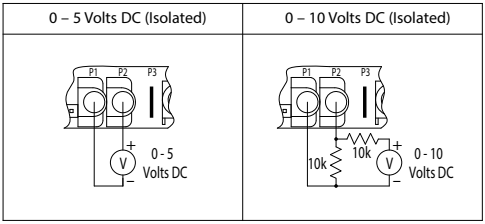
If an isolated signal not available, install the ID5SIR-1 Signal Isolator. The ID5SIR-1 accepts voltage

(± 2.5 through ± 25 VDC) or current (4-20mA DC) signal inputs.

Note: For signal following operation, the Minimum Speed Trimpot (MIN) must be set fully CCW.

Caution: The signal input must be isolated from the AC line. Earth grounding the reference input will damage the drive and void the warranty. It is recommended that Catalog No. ID5SIR-1 be installed.

Figure 2-7 Voltage Following Connection

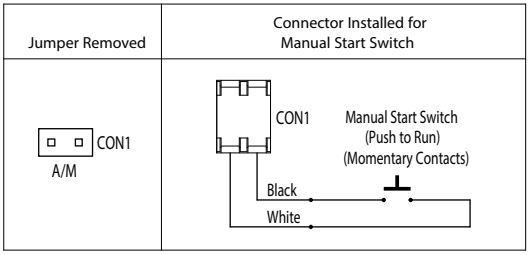


Manual Start Switch Connection (CON1) Refer to Figure 2-8 for connections.

The Manual Start Mode is used to manually start the drive or restart the drive (reset) if a fault has occurred. To operate the drive in the Manual Start Mode, remove the factory installed jumper on CON1 and install the 2-wire connector (supplied). CON1 is located on the lower PC board.
A momentary switch or contact must be used.

In the Manual Start Mode when a fault occurs (Overvoltage, Undervoltage, Short Circuit, and I^2t) the drive remains tripped even when the fault is cleared. To Start/Reset the drive, the switch or contact must be manually closed. Also, the drive must be restarted each time the AC line is interrupted.

Figure 2-8 Manual Start Switch Connection



Forward-Stop-Reverse Switch Connection (CON2) Refer to Figure 2-9 for connections.

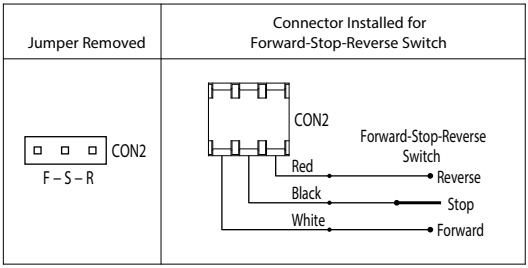
Connect the Forward-Stop-Reverse Switch as shown.

To operate the drive using a Forward-Stop-Reverse Switch, remove the factory installed jumper on CON2 and install the 3-wire connector (supplied). CON2 is located on the lower PC board.

Forward-Stop-Reverse Switch must have maintained contacts.

Note: The drive can be factory programmed for momentary contact operation.

Figure 2-9 Forward-Stop-Reverse Switch Connection



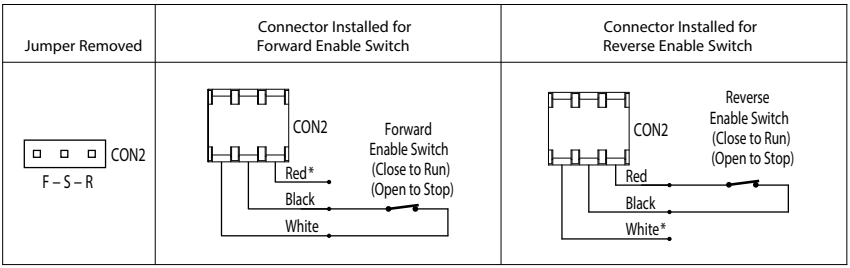
Enable Switch Connection (CON2) Refer to Figure 2-10 for connections.

The drive can be started and stopped with an Enable Switch (closed to run, open to stop). Remove the factory installed jumper on CON2 and install the 3-wire connector (supplied). CON2 is located on the lower PC board. The Enable switch a "maintained" switch or contact.

For Forward Enable Operation, connect the switch to the white and black wires. For Reverse Enable Operation, connect the switch to the red and black wires. When the switch is closed, the drive will run.

When the switch is opened, the drive will stop.

Figure 2-10 Enable Switch Connection



Chapter 3

Adjustments & Start-up

WARNING: This equipment may contain voltages as high as 1000 volts! Electrical shock can cause serious or fatal injury. Only qualified personnel should attempt the start-up procedure or troubleshoot this equipment.

Finger Safe Cover Removal

The drive is designed with an IP20 Finger-Safe Cover which provides protection against accidental contact with high voltage. Refer to Chapter 2 for instructions.

Important Application Information

Motor Type

Most totally enclosed fan-cooled (TEFC) and open ventilated 3-phase AC induction motors will overheat if used beyond a limited speed range at full torque. Therefore, it is necessary to reduce motor load as speed is decreased.

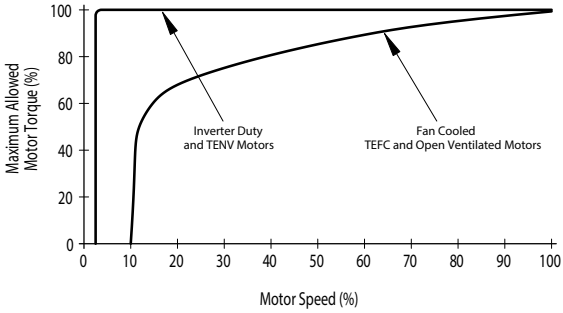
Note: Some fan-cooled motors can be used over a wider speed range.

Some motors have low speed characteristics which cause overheating and winding failure under light load or no load conditions. If the motor is operated in this manner for an extended period of time, it is recommended that the unloaded motor current be checked from 2–15 Hz (60 – 450 RPM) to ensure motor current does not exceed the nameplate rating.
Do not use motor if the motor current exceeds the nameplate rating.

It is recommended that the drive be used with Inverter Duty or TENV motors.

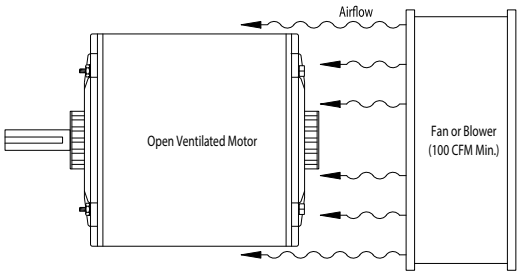
Inverter duty and most totally enclosed nonventilated (TENV) motors can provide full rated torque over an extended speed range without overheating. See Figure 4-1.

Figure 3-1 Maximum Allowed Motor Torque vs. Speed



If external fan cooling is provided, open ventilated motors can also achieve an extended speed range at full rated torque. A box fan or blower with a minimum of 100 CFM is recommended. Mount the fan or blower so the motor is surrounded by the airflow. See Figure 4-2.

Figure 3-2 Open Ventilated Motor with External Cooling



Electronic Motor Overload Protection

The drive contains Modified I^2t Overload Protection.* Part of this function consists of a Current Limit (CL) circuit, which limits the drive current to a factory preset level of 160% of the rated drive current. The CL Trimpot is used to recalibrate the drive current from 60% thru 200%. The Power Start™ circuit provides an overshoot function that allows most motors to develop more than 200% of starting torque and breakdown torque.

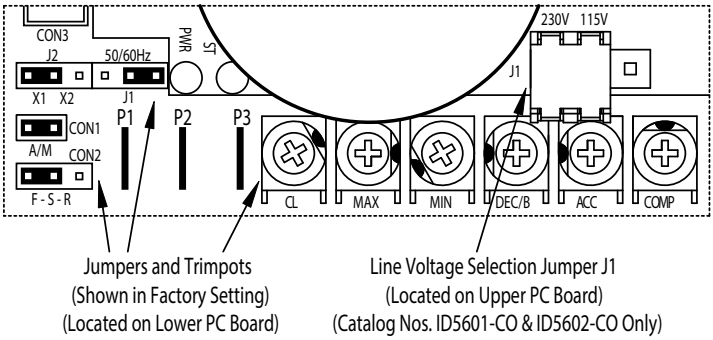
Standard I^2t is undesirable because it causes nuisance tripping. It allows a very high motor current to develop and will turn the drive off after a short period of time. RMS Current Limit Circuit avoids this nuisance tripping while providing maximum motor protection.

If the motor is overloaded to 120% of full load (75% of the CL setting), the I^2t Timer starts. If the motor continues to be overloaded at the 120% level, the timer will shut down the drive after 30 minutes. If the motor is overloaded to 160% of full load, the drive will trip in 6 seconds.

*UL approved as an overload protector for motors.

Setting selectable jumpers For the location of jumpers, see Figure 3-3.
The drive has customer selectable jumpers which must be set before the drive can be used.

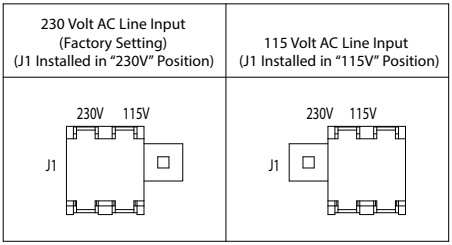
Figure 3-3 Jumper and Trimpot Location



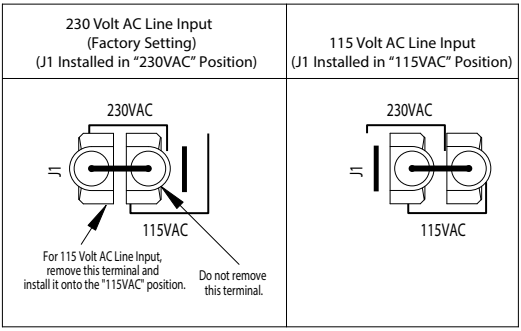
J1 -AC Line Input Voltage Selection (on the upper PC board)
Jumper J1 (located on the upper PC board) is factory set to the 230V position (208/230 VAC). For 115 Volt AC line input, set Jumper J1 to the 115V position.

Figure 3-4 AC Line Input Voltage Selection

Catalog Nos. ID56F50-CO & ID5601-CO



Catalog No. ID5602-CO

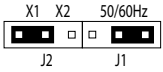
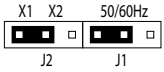


J1 & J2 -Drive Output Frequency Selection (on the lower PC board)
Both jumpers must be set for the appropriate motor nameplate frequency rating.

60Hz or 50Hz Motor Operation For the location of jumpers, see Figure 3-5.

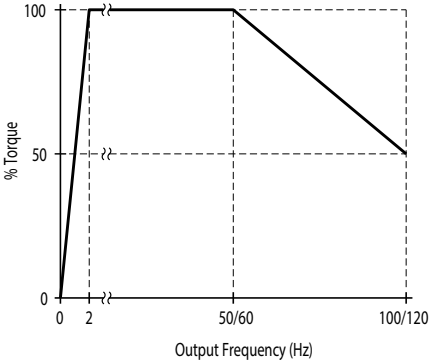
The drive is factory set to operate 60 Hz motors. Jumper J1 is factory set to the 60Hz position and Jumper J2 is factory set to the X1 position. For 50Hz motors, set Jumper J1 to the 50Hz position, and be sure Jumper J2 is set to the X1 position. Jumpers J1 and J2 are located on the lower PC board. See Figure 3-5.

Figure 3-5 60Hz & 50Hz Motor Selection

60 Hz Motor Operation (Factory Setting) (J1 Installed in "60Hz" Position) (J2 Installed in "X1" Position)	50 Hz Motor Operation (J1 Installed in "50Hz" Position) (J2 Installed in "X1" Position)
	

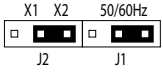
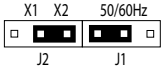
Setting the Drive for Two Times the Rated Motor RPM For the location of jumpers, see Figure 3-7. The drive can operate the motor up to two times the rated RPM. Constant horsepower will result during the X2 mode, above rated frequency. See Figure 3-6.

Figure 3-6 Available Torque vs. Output Frequency



For 120Hz output with 60Hz motor, set J1 to the "60Hz" position and J2 to the "X2" position.
For 100Hz output with 50Hz motor, set J1 to the "50Hz" position and J2 to the "X2" position.
See Figure 3-7.

Figure 3-7 120Hz & 100Hz Drive Output Frequency Selection

120 Hz Output with 60 Hz Motor (J1 Installed in "60Hz" Position) (J2 Installed in "X2" Position)	100 Hz Output with 50 Hz Motor (J1 Installed in "50Hz" Position) (J2 Installed in "X2" Position)
	

CON1 - Automatic Start (on the lower PC board)

CON1 is factory set for Automatic Start (jumper installed), as shown.
The drive will automatically start when power is applied and a run command is given.
The drive will automatically restart after a recovered fault (undervoltage, overvoltage, or short circuit).
A valid run command requires a closed circuit at CON1 (supplied jumper installed or momentary contact of user installed remote START pushbutton), and a closed circuit at CON2, either across F-S for forward direction, or across S-R for reverse direction.

For an I^2t Trip, due to a prolonged overload, the drive must be manually restarted.

For Manual Start, a momentary contact must be installed onto CON1

CON2 - Forward/Reverse Speed Selection (on the lower PC board)
CON2 is factory set for Forward Speed Operation (jumper installed in the F position of CON2).

For Reverse Speed Operation, install the jumper in the R position. See Figure 3-8.

Figure 3-8 Forward/Reverse Speed Selection

Forward Speed Operation (Factory Setting) (Jumper Installed in "F" Position)	Reverse Speed Operation (Jumper Installed in "R" Position)
	

Start-Up

When jumpers are set to the desired positions, and the electrical connections have been completed, the drive is ready for start-up.

First Time Start-up

Check of Electrical Items

1. Verify AC line voltage at source matches control rating.
2. Inspect all power connections for accuracy, workmanship and tightness and compliance to codes.
3. Verify control and motor are grounded to each other and the control is connected to earth ground.
4. Check all signal wiring for accuracy.
5. Be certain all brake coils, contactors and relay coils have noise suppression. This should be an R-C filter for AC coils and reverse polarity diodes for DC coils. MOV type transient suppression is not adequate.

Check of Motor and Coupling

1. Verify freedom of motion of motor shaft.
2. Disconnect the load from the motor shaft. Verify operation of the drive and motor before the load is attached.

Procedure

1. Before starting, be sure the main speed adjust potentiometer is fully CCW.
2. Apply AC power.
3. Observe the Power PWR LED is ON and the ST LED indicates Status (see Chapter 4).
4. Rotate the main speed adjust potentiometer clockwise. Motor speed should increase as potentiometer is rotated.
5. Verify the motor shaft is rotating in the desired forward direction. If the direction of rotation is wrong, stop the drive and disconnect AC power. Reverse any 2 of the motor lead connections.
6. When steps 1-5 operation is correct, stop the drive and disconnect AC power. Couple the load to the motor shaft, verify the connection is secure.
7. Repeat Procedure steps 1-5 with the load coupled to the motor shaft.

Trimpot ADJUSTMENTS

The control contains trimpots that are factory set for most applications. Figure 3-3 shows the location of the trimpots and their approximate calibrated positions. Some applications may require adjustment of the trimpot values.

To adjust the trim pots, be sure the First Time Start-up procedure was successful and that power is applied to the control and the drive is ready for operation.

Minimum Speed (MIN)
Sets the minimum speed of the motor. The MIN trimpot is factory set to 0% of frequency setting. To increase the minimum speed setting, rotate the MIN trimpot clockwise.

Maximum Speed (MAX)
Sets the maximum speed of the motor. The MAX trimpot is factory set to 100% of frequency setting. To increase the maximum speed setting, rotate the MAX trimpot clockwise. To reduce the maximum speed setting, rotate the MAX trimpot counterclockwise.

Acceleration (ACC)
Sets the amount of time for the motor to accelerate from zero speed to full speed. The ACC trimpot is factory set to 1.5 seconds. To increase acceleration time, rotate the ACC trimpot clockwise. For more rapid acceleration, rotate the ACC trimpot counterclockwise.

Note: Rapid acceleration may cause the current limit circuit to activate, extending the acceleration time.

Deceleration (DEC/B)
Sets the time for the motor to decelerate from full speed to zero speed. The DEC/B trimpot is factory set to 1.5 seconds. To increase deceleration time, rotate the DEC/B trimpot clockwise. For more rapid deceleration, rotate the DEC/B trimpot counterclockwise.

Note: For applications with high inertial loads, the deceleration may automatically increase in time. This will slow down the rate of speed of decrease to prevent the bus voltage from rising to the Overvoltage Trip point. This function is called Regeneration Protection. It is recommended that for very high inertial loads that both the ACC and DEC/B trimpots should be set to greater than 10 seconds.

For rapid stopping, install the optional Dynamic Brake Module (Catalog No. ID5RGA-1).

Slip Compensation (COMP)
Sets the amount of Volts/Hz to maintain set motor speed under varying loads. The COMP trimpot is factory set to 1.5 Volts/Hz, which provides excellent speed regulation for most motors.
To increase the slip compensation, rotate the COMP trimpot clockwise.
To decrease the slip compensation, rotate the COMP trimpot counterclockwise.

The slip compensation may be adjusted as follows:

1. Wire an AC RMS ammeter in series with one motor phase.
2. Run the motor and set the unloaded speed to approximately 50% (900 RPM on 4-pole 1500/1725 RPM motors).
3. Using a tachometer, record the unloaded speed.
4. Load the motor to the nameplate rated current (Amps AC).
5. Adjust the COMP trimpot until the loaded RPM is equal to the unloaded RPM.
6. The motor is now compensated to provide constant speed under varying load.

Boost (DEC/B)

When the drive is set for 50 Hz Motor Operation (Jumper J1 installed in the 50Hz position), the DEC/B trimpot automatically becomes the adjustable BOOST trimpot.

Most 60 Hz motors conforming to NEMA standards can operate from the preset Volts/Hz curve. 50 Hz motors, however, generally differ widely in their characteristics. Therefore, it is necessary to have adjustable Boost to obtain maximum motor performance.

To increase the boost, rotate the BOOST trimpot clockwise.
To decrease the boost, rotate the BOOST trimpot counterclockwise.

For the 50 Hz motor to run properly, the boost must be adjusted. If the application does not require full torque below 10 Hz, the BOOST (DEC/B) trimpot can be conservatively set at 8% (9 o'clock position).

Note: In 50 Hz motor operation, the deceleration time is automatically set to the same as the Acceleration trimpot (ACC) setting.

Caution: To avoid motor winding heating and failure, do not overboost the motor.

The BOOST (DEC/B) trimpot may be adjusted as follows:

1. Wire an AC RMS ammeter in series with one motor phase.
2. Run the motor unloaded at approximately 4 Hz (or 120 RPM).
3. Increase the boost until the ammeter reaches the nameplate rated current (Amps AC).
4. Using the Main Speed Potentiometer, slowly adjust the motor speed over a 0-15 Hz (0-450 RPM) range. If the motor current exceeds the nameplate rating, decrease the boost setting.

Note: An unloaded motor with excessive boost will draw more current than a partially loaded motor.

Motor Overload (I^2t) with RMS Current Limit (CL)*

Sets the current limit (overload), which limits the maximum current to the motor, prevents motor burnout, and eliminates nuisance trips. The CL trimpot is factory set to 160% of the drive rating.

To increase the current limit, rotate the CL trimpot clockwise.
To decrease the current limit, rotate the CL trimpot counterclockwise.

*UL approved as an electronic overload protector for motors.

To ensure that the motor is properly protected with the I^2t feature, it is required that the CL trimpot be set for 160% of the motor nameplate rating. This is accomplished as follows:

Note: This adjustment must be made within 6 seconds or the I^2t Trip will occur.

1. Connect an AC RMS ammeter in series with one motor phase.
2. Set the CL trimpot fully counterclockwise.
3. Adjust the speed setting to 30% of full speed.
4. Lock the motor shaft and adjust the CL trimpot to 160% of the motor nameplate rating.

Example: A 1/2 HP motor has a full load current rating of 1.8 Amps.
Set the CL trimpot to 1.8 X 160% = 2.9 Amps.

LED Indications

The front cover has two diagnostic LEDs to display the drive's operational status.

1. Power On Indicator (WR) - This LED is Green when AC power is applied to the control.
2. Status Indicator (ST) - The ST LED is a tricolor LED which provides indication normal operation or a fault or abnormal condition. The information provided can be used to diagnose an installation problem such as incorrect input voltage, overload condition, and drive output miswiring. Table 4-1 summarizes the ST LED functions. Possible causes and solutions for these conditions may be found in Table 4-2.

Note: In some applications, especially those requiring the motor to cycle on and off or, changing from one speed to another, the OL indicator may blink indicating a transient overload. This may be a normal condition for the application.

Table 4-1 Drive Operating Condition and Status LED Indicator

Drive Operating Condition	Flash Rate[1] and LED Color
Normal Operation	Slow Flash Green
Overload (120%-160% Full Load)	Steady Red[2]
I^2t (Drive Timed Out)	Quick Flash Red
Short Circuit	Slow Flash Red
Undervoltage	Quick Flash Red / Yellow[3]
Overvoltage	Slow Flash Red / Yellow[3]
Stop	Steady Yellow

Notes: The drive is factory set to Automatic Start mode.

[1] Slow Flash = 1 second on and 1 second off. Quick Flash = 0.25 second on and 0.25 second off.

[2] In Manual Start Mode, when the Overload is removed, before the I^2t times out and trips the drive, the ST LED will flash Green.

[3] In Manual Start Mode, when the Undervoltage or Overvoltage condition is corrected, the ST LED will flash Red / Yellow / Green.

Table 4-2 Troubleshooting Guide

Indication	Possible Cause	Corrective Action
Motor is not running and Stop LED is on.	Start/stop switch is in the stop position.	Move the switch to the start position.
	The main speed potentiometer is set to zero speed.	Set the main speed potentiometer for the desired speed.
	The main speed potentiometer, signal input, or motor connections are open.	Verify main speed potentiometer, signal input, or motor connections.
Motor is not running and Stop LED is not on.	Inhibit is asserted or enable is opened.	Remove the inhibit signal or enable the drive.
Motor runs then stops after a short time or, the drive trips due to overload (TCL Fault).	Drive is tripped. Drive is overloaded.	Restart drive by cycling AC power. Reduce load.
Line fuse blows or circuit breaker trips.	The fuse or breaker is the incorrect rating.	Install correct size fuse or breaker.
OL LED indicator is on.	Motor is overloaded.	Check motor amps with DC ammeter in series with armature. (If motor is shunt type, field may be open or not receiving proper voltage.) Correct problem.
	Check motor for shorts or grounds.	Motor may be defective. Replace motor.
	Check position of CL trimpot.	Adjust CL trimpot if set too low.
	Rapid Acceleration caused OL trip.	Verify Accel trim pot setting. Cycle power.
Power ON LED is not on.	Verify AC power is available.	Correct AC input power problem.
		Replace fuse or reset breaker.

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