Infinitum IEs
Quick Start Guide

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Content

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1   Inspection and Motor Removal

1.1   Packing Inspection

Inspect the motor packing for damages during shipping. If the package is damaged, remove packing and inspect the motor for damage. Motor damage from shipping must be reported to shipper.

1.2   Verify Receipt of Correct Motor

Once motor has been safely removed from the container, review the data on the name plate with your purchase order to verify that you have received the correct motor. Compare data on name plate for desired power supply and control equipment requirements.

1.3   Remove Motor from Container

The motor is provided with two lifting eyebolts. To reduce the possibility of personal injury or death these eyebolts are intended to lift the motor and drive assembly only. Attaching the component it drives (i.e. fan, pump, etc.) may exceed the design weight limits of the eyebolts. Make sure the eyebolts are threaded completely into the motor housing to ensure they do not rotate out during lifting. Use an approved lifting device (crane) and sling to remove the motor from the packing crate.

1.4   Motor Output Shaft Rotation and Electrical Connections

WARNING!

The rotor in this motor incorporates a Permanent Magnet (PM) design. When the rotor is rotated a voltage is produced in the stator even when the motor is disconnected from a power source. Do not open electrical compartments or touch unprotected terminals while the rotor is turning. Disconnect motor supply power and allow five minutes for capacitors to discharge before servicing or replacing. Failure to comply with rotor safety procedures can cause serious injury or death and equipment damage.

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2 IEs Supply and Control Wiring

The IEs unit is pre-programmed to run utilizing remote inputs wired to the Control & Communication PCB connections once the appropriate power connections are provided. The default configuration provides a simple I/O setup for hard wired control (Start/Stop, Analog Speed Control). ModBus control is also available (User Configurable).
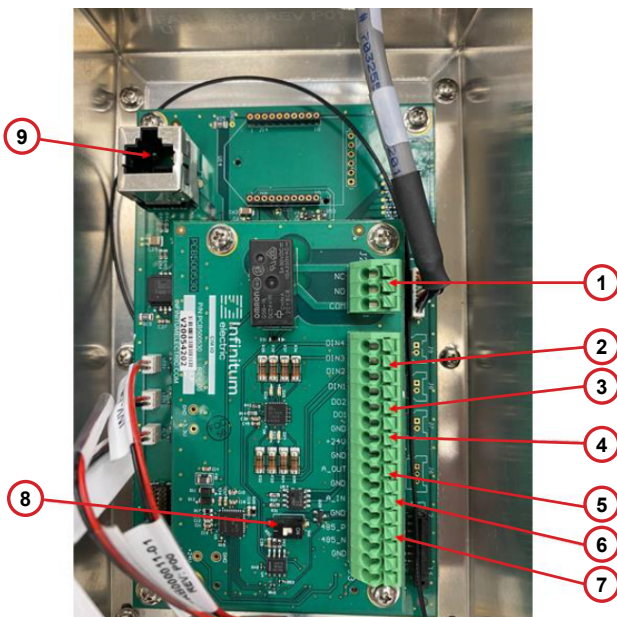
2.1 Input Power:

Remove drive cover for access
460V, 3-Phase, 60Hz power shall be provided to unit utilizing the following connection points:
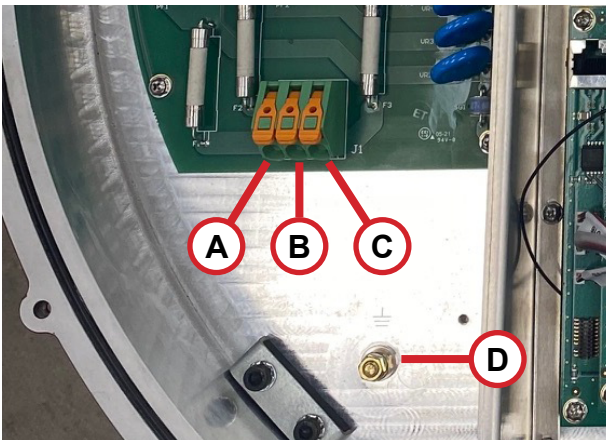
A	Supply Voltage Phase A
B	Supply Voltage Phase B
C	Supply Voltage Phase C
D	Ground Lug - Connect grounding cable to the ground lug

2.2 Control Connections:

1	Relay (1) – NO/NC (COM must be used).
2	Digital Input (4) – DIN1, DIN2, DIN3, DIN4
3	Digital Output (2) – DO1 & DO2
4	Auxiliary Voltage (1) – +24V (GND must be used)
5	Analog Output (1) – A_OUT (GND must be used) N/A on -C motors. See specification.
6	Analog Input (1) – A_IN (GND must be used)
7	EIA-485 Interface (1) – 485_P & 485_N (GND must be used)
8	Modbus Termination
9	RJ45 for GUI Connection

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## 2.3 Default Control Configuration and Wiring Requirements

Consul the factory for the Firmware Defaults of your motor. The following are
User Selectable values:

SETTING	USER VALUES
SPEED- USER MINIMUM	New speed must be between Abolute Minimum and Absolute Maximum
SPEED - USER MAXIMUM	New speed must be between Absolute Minimum and Absolute Maximum
ACCELERATION RAMP DURATION (SEC)	30 – 90 (sec)
DECELERATION RAMP DURATION (SEC)	30 – 90 (sec)
SKIP SPEED 1 (Avoid operation at this speed)	Speed must be between Absolute Minimum and Absolute Maximum
SKIP SPEED 2 (Avoid operation at this speed)	Speed must be between Absolute Minimum and Absolute Maximum
SKIP SPEED 3 (Avoid operation at this speed)	Speed must be between Absolute Minimum and Absolute Maximum
SKIP SPEED BANDWIDTH (Bandwidth for speed ranges to be avoided in SKIP SPEED selection)	30 RPM, 60 RPM, 120 RPM
DIRECTION ALLOWED	BOTH CCW AND CW, CCW ONLY, CW ONLY
DIRECTION (Looking from shaft to motor)	CCW, CW
CONTROL MODE (Source for control signals)	ANALOG/DIGITAL or MODBUS
SPEED INPUT SOURCE	MODBUS, ANALOG, DI1 and DI2, DI2 and DI3, DI3 and DI4
CLEAR FAULT INPUT SOURCE (Selects source for fault reset command)	MODBUS, DIN1, DIN2, DIN3, DIN4
DIRECTION INPUT SOURCE	MODBUS, DIN1, DIN2, DIN3, DIN4
CLEAR FAULT INPUT SOURCE (Selects source for fault reset command)	MODBUS, DIN1, DIN2, DIN3, DIN4
EMERGENCY STOP INPUT SOURCE	MODBUS, DIN1, DIN2, DIN3, DIN4
NUMBER OF ATTEMPTS (Defines number of automatic fault reset attempts)	0-10, 99 (infinite)
RESET DELAY (SECONDS) (Defines time between successive automatic reset attempts)	0.0-120.0 seconds
A_IN FUNCTION	SPEED
A_IN MINIMUM SETTING (Defines minimum percent value corresponding to minimum mA(V) signal for analog input AI1: 0 = 0 to 100% (0 to 20 mA) 20 = 20 to 100% (4 to 20 mA))	0-99
A_IN MAXIMUM SETTING (Defines percent value corresponding to maximum mA(V) signal for analog input AI1: 80 = 0 to 80% (0 to 16 mA) 100 = 0 to 100% (0 to 20 mA))	1-100
CONSTANT SPEED 1 (RPM) (Speed motor operates at when corresponding combination of digital inputs are activated.)	Speed must be between Absolute Minimum and Absolute Maximum
CONSTANT SPEED 2 (RPM) (Speed motor operates at when corresponding combination of digital inputs are activated.)	Speed must be between Absolute Minimum and Absolute Maximum
CONSTANT SPEED 3 (RPM) (Speed motor operates at when corresponding combination of digital inputs are activated.)	Speed must be between Absolute Minimum and Absolute Maximum
CONSTANT SPEED 4 (RPM) (Speed motor operates at when corresponding combination of digital inputs are activated.)	Speed must be between Absolute Minimum and Absolute Maximum
A_OUT FUNCTION (Connects motor signal to analog output AO1) Note: Analog Out is not available on -C motors	SPEED, TORQUE, POWER, CURRENT, 10V (Potentiometer)
DO1 FUNCTION(Selects motor status indicated by corresponding output)	DO1 FUNCTION(Selects motor status indicated by corresponding output)
DO2 FUNCTION (Selects motor status indicated by corresponding output)	DO2 FUNCTION(Selects motor status indicated by corresponding output)

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2.4   Analog Control Guidelines

To control the unit using Analog Control, please utilize the following wiring guidelines on the communication board:
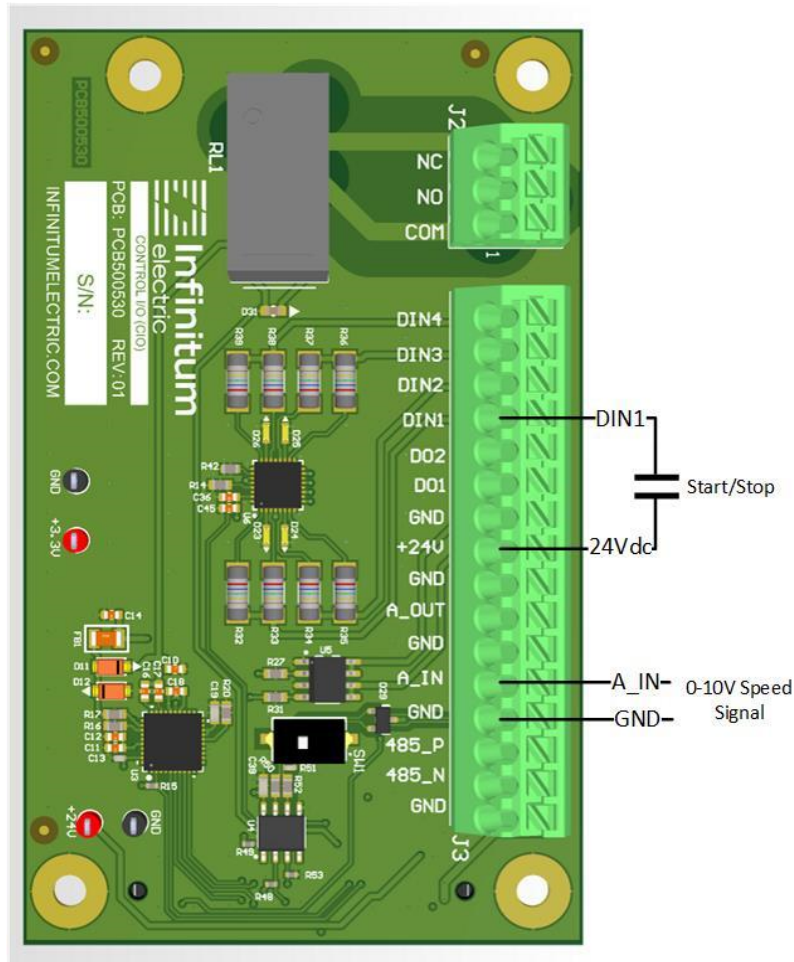
WARNING!
DIN1-DIN4 are limited to 24VDC input. AI1 is rated 0-10V @ 100mA max. Exceeding these voltages will permanently damage the communication board. Do not insert external wiring larger than 16 AWG (0.05" or 1.3mm) into control terminals.

2.5   Fault Relay Operation

The Fault Relay contacts correspond to the units' fault status, essentially the same function as the visual red LED.

When an internal fault occurs, the NC (Normally Closed) dry contact will open, and the NO (Normally Open) dry contact will close to indicate a fault has occurred. Note, both are free of voltage.

2.6 **Reconfiguring Unit from (Default) Analog Control to Modbus TCP Control**

To reconfigure your IEs motor/drive unit, the Infinitum Motor Drive Control software is required.

The required software can be obtained on the Infinitum support portal at:
https:IE-SW-Download   **You must login to access this file.**

Refer to the following articles on the Infinitum support portal for the proper setup:

Establish Connection to IEs Motor/Drive using Modbus TCP:
https://bit.ly/modbus-tcp

IEs Motor Drive Control Software Overview Video:
https://bit.ly/IE-sw-overview

2.7 **IEs Motor Drive Control Software**

The following information is accessible via the IEs Motor Drive Control Software:

Parameter Settings: (Allows specific parameter adjustments to be installed.):
Operating Limits, Operation Type, Fault Reset, Terminal Settings **To control the motor using the GUI, the Operation Type: Control Mode must be set to "ModBus" for motor operation. Be sure to use the "APPLY" button to set this information in your motor.**

All other information and setting options are available via pull-down settings in the software. For more information, see the Control SW video on support@infintumelectric.com in the Communication Setup video section. We recommend viewing the Motor Drive Control Software video before starting your motor.

After configuring your computer for the static IP connection, connect it to the IE's motor RJ45 port with a standard ethernet cable.

After setting the correct parameter settings, you can "START" your motor. After starting, motor runtime information will be displayed including the "Actual Speed", the Motor Information windows, the Graphical Readbacks, and Digital Readbacks.

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IEs Motor Drive Control Software

2.8   Modbus RTU Setup

To control the unit with Modbus RTU, please utilize the following wiring guidelines to the communication board:
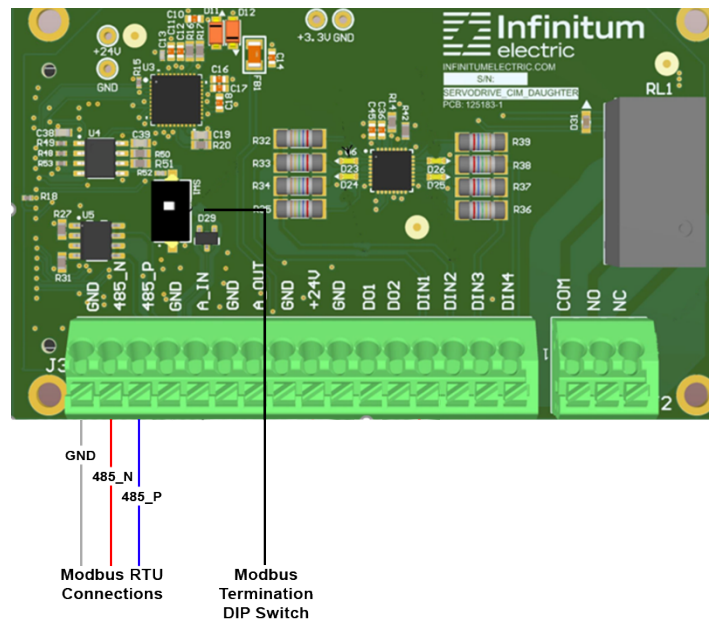
Note: The last unit a daisy-chain configuration should have the Modbus Termination DIP switch "ON". All other units must have the DIP switch in the "OFF" position.

Modbus RTU operation requires changes to the motor configuration parameters. See the IE support site for further information.

Support Page
https://bit.ly/ie-modbus-support

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