

BT300 HVAC Drives Conventional Bypass (C-Bypass) Options



Description

The BT300 Conventional Bypass is a companion package for the family of BT300 HVAC Drives.

For information on the family of BT300 HVAC Drives, see the *BT300 HVAC Drives Submittal Sheet* (154-126) and *BT300 HVAC Drives Technical Specification Sheet* (149-711).

BT300 C-Bypass Features

- Bypass Start-up Wizard
- Diagnostic board with test points
- Control logic short circuit protection
- 100,000 AIC short circuit rating
- Country of Origin (COO) USA
- IBC 2012 Seismic Certified
- Compact design

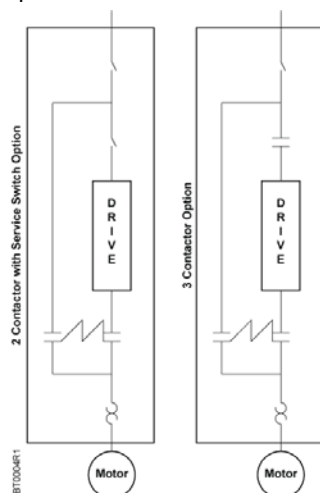
Bypass Power Features

2-Contactor: Output and Bypass

- Overload protection in bypass mode
- Electrically and mechanically interlocked

Drive Isolation

- Drive Service Switch allows the drive to be disconnected from power during troubleshooting without disrupting bypass operation.
- Optional 3-Contactor (Drive Input)
 - Contactors electrically interlocked.
 - Drive test function
 - Complete electrical isolation of drive



Input Device

- Fused disconnect
- Circuit breaker (optional)
- All doors are interlocked and can be secured with a padlock.

5% Input Impedance

- Internal reactors lower harmonics that the drive produces.
- BT300 C-Bypass requires no additional input reactors

Reactor Options

- Line reactor (in NEMA 1 enclosure) supplied separately.
- Load reactor (in NEMA 1 enclosure) supplied separately.

Bypass Control Features

- Enable Input
Generally used for safety tie-ins; the motor will not operate the drive or bypass when open.
- Common Remote Start/Stop
Common remote start/stop can be used in both drive and bypass mode.
- Essential Services Mode
 - Typically used for smoke purge; the motor goes to bypass regardless of the selected mode.
 - No call to stop will have an effect, including open safety or stop commands.
 - Only turning the power off or opening this contact will stop the motor.

Bypass – Door Mounted Control Devices

- Drive-Off-Bypass selector
- Bypass pilot light
- Drive Test on/off selector (with third Contactor)

Product Numbers

Example Product Numbers	B	T	E	-	0	0	1	X	2	-	F	0	1	2
	B	T	C	-	0	0	7	5	4	-	B	0	1	3
Bypass Models														
BTC	Conventional													
BTE	Electronic													
HP														
1, 1.5, 2, 3, 5, 7.5, 10, 15 20, 25, 30, 40, 50, 60, 75														
NOTE: 208V only up to 40 HP														
X=no fract HP, 5=1/2 HP														
Voltage														
2	208 to 240													
4	380 to 480													
Disconnect														
F	Fused Disconnect													
B	Circuit Breaker													
NEMA														
01	UL Type 1													
Type														
3	3 contactors (input, output and bypass) (for C Bypass only)													
2	2 contactors (output, bypass) w/ service switch													
Options														
L	Lon card installed													

Table 1. NEMA 1 C-Bypass Approximate Weights.

Frame	Weight lb (kg)
FS4	50 (23)
FS5	69 (31)
FS6	112 (51)
FS7	187 (85)

NOTE: Exact weight will be affected by actual horsepower/voltage and selected power options.

Typical Specifications

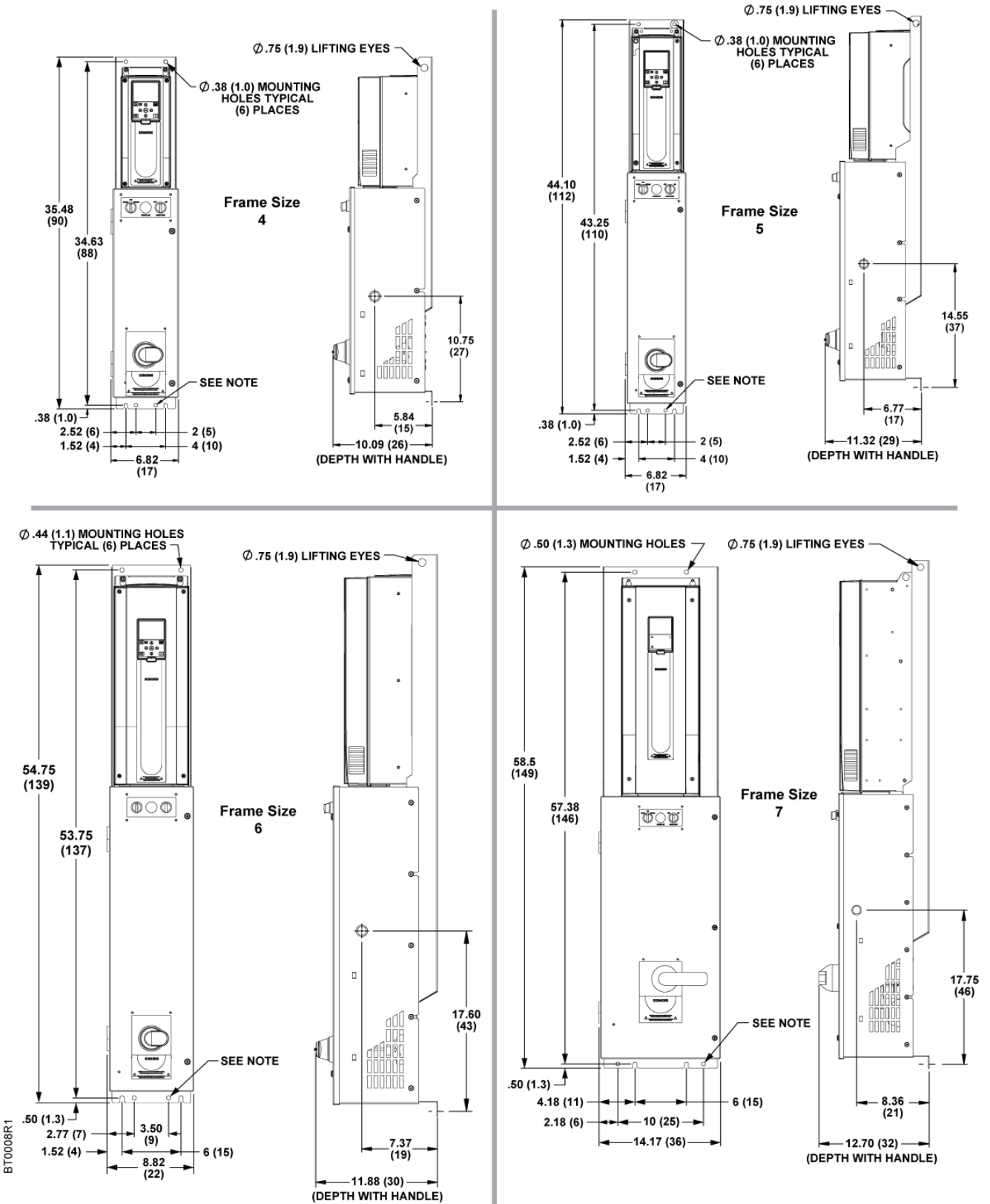
BT300 Bypass Options shall send the motor to bypass mode based on an easily accessible door-mounted selector or based on the drive's programmable relay. A bypass pilot light shall provide indication of the bypass mode. The bypass mode shall provide overload protection. Contactors shall be electrically and mechanically interlocked. An essential services mode shall send the motor to bypass regardless of the selected mode.

Table 2. C-Bypass Frame Sizes and Power Ranges per NEC Motor Tables.

HP	kW	Current Ratings			Frame Size		
		208	230	480	208	230	480
1	0.75	4.6	4.2	N/A	FS4		N/A
1.5	1.1	6.6	6	3			
2	1.5	7.5	6.8	3.4			
3	2.2	10.6	9.6	4.8			
5	4	16.7	15.2	7.6	FS5		FS4
7.5	5.5	24.2	22	11			
10	7.5	30.8	28	14	FS6		FS5
15	11	46.2	42	21			
20	15	59.4	54	27			
25	18.5	74.8	68	34	FS7		FS6
30	22	88	80	40			
40	30	114	104	52			
50	37			65			
60	45	N/A		77	N/A		FS7
75	55			96			

NOTE: Drives are current (amperage) rated devices. Verify that the listed ratings are \geq the motor full load current rating.

Dimensions



NOTE: USE MOUNTING HOLES INSTEAD OF SLOTS IN INSTALLATIONS THAT ARE PRONE TO SEISMIC ACTIVITY.

Figure 1. NEMA 1 C-Bypass Dimensions in Inches (cm).

Wiring Diagrams

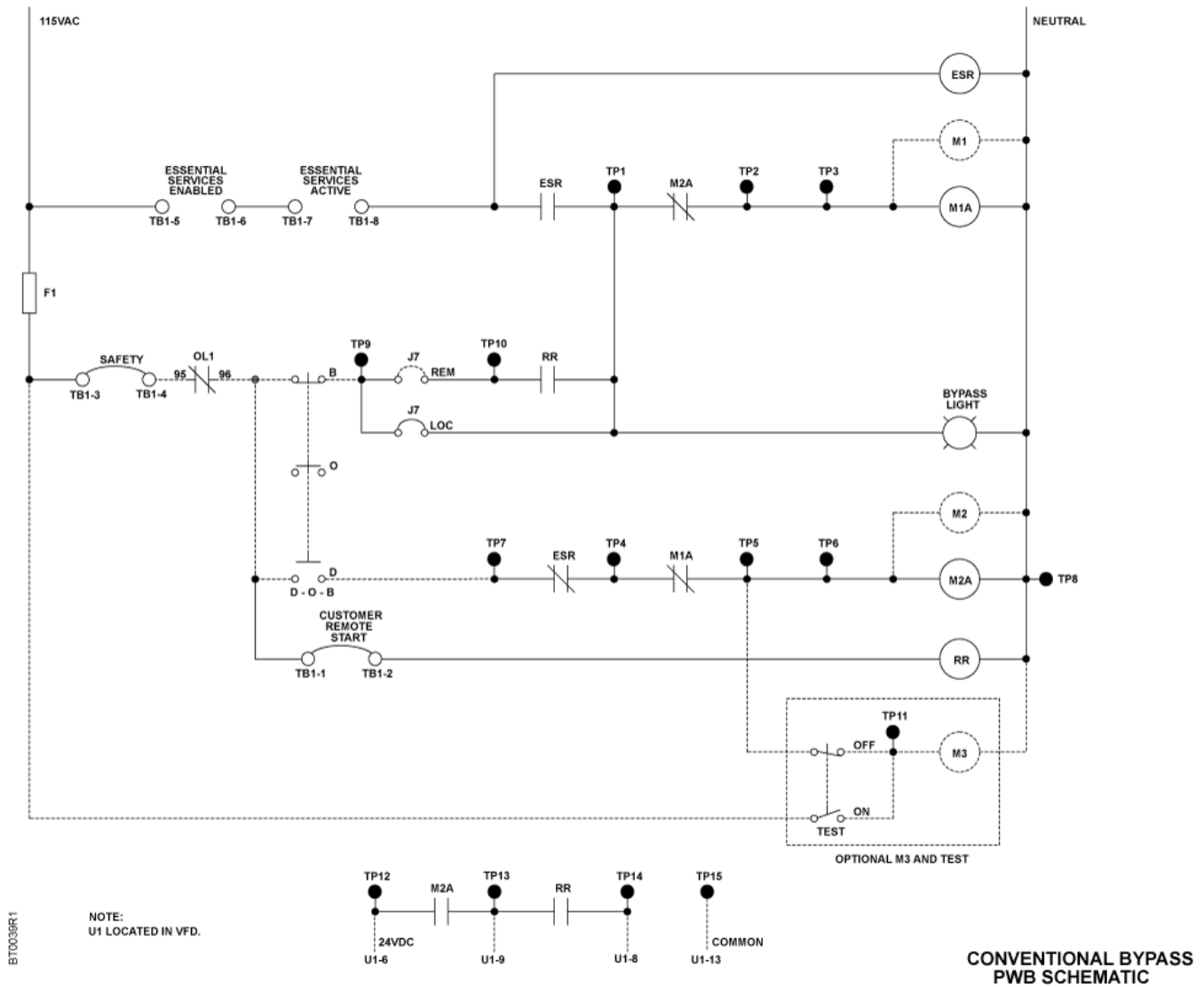


Figure 2. C-Bypass Control Logic.

Wiring Diagrams, Continued

FUSED DISCONNECT VERSION FS07-FS09

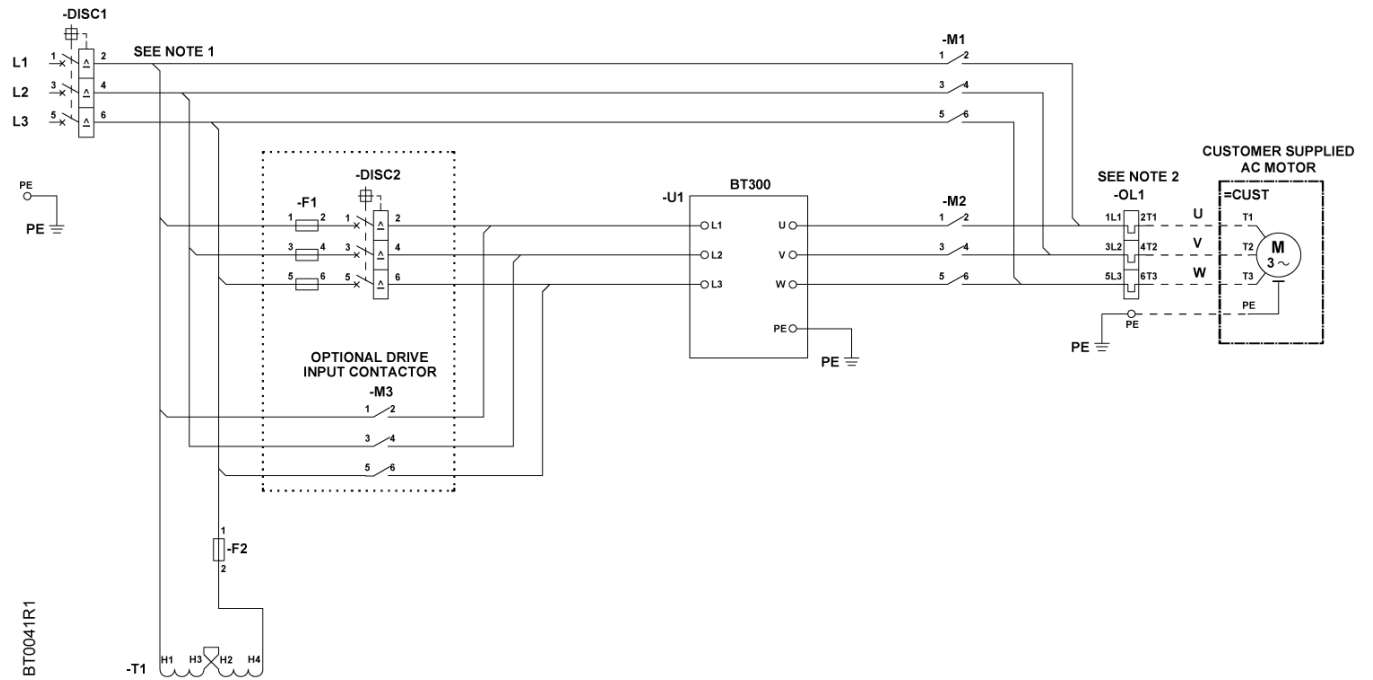


Figure 3. Power Wiring.

Wiring Diagrams, Continued

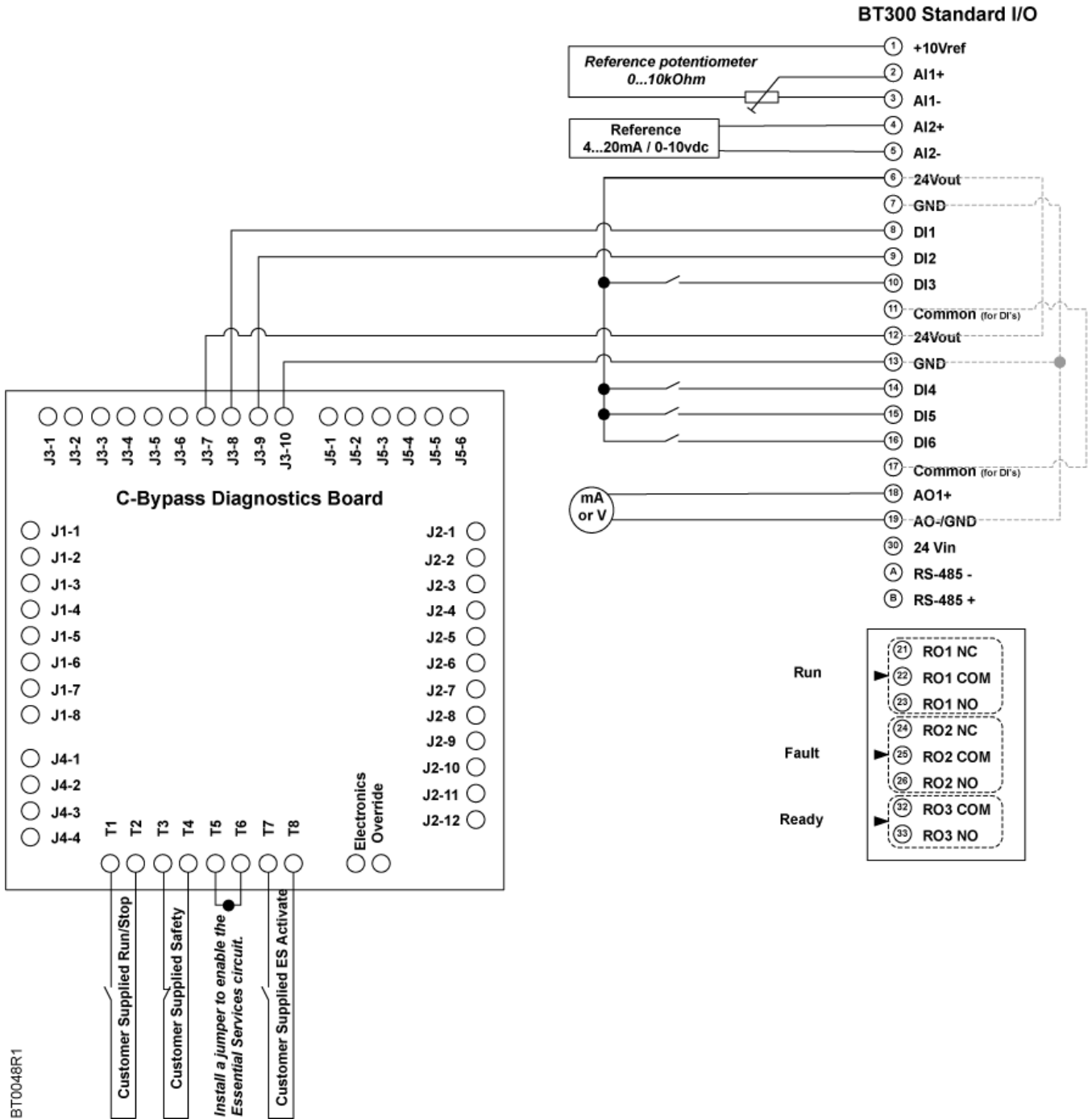


Figure 4. C-Bypass Controller Board Digital Inputs and Outputs.

Table 3. C-Bypass Specifications.

Specifications	Description
Input Voltage (3-phase)	208V, 3 AC±10%. 1 hp to 40 hp (3.9 amps to 105 amps) 480V, 3 AC ±10%. 1 hp to 75 hp (2.1 amps to 105 amps)
Standard Bypass I/O Analog Inputs Analog Output	2: Voltage or current (up to 10 Vdc, 0/4 to 20 mA) 1: Selectable voltage or current
Digital Inputs	All Digital Inputs are fully programmable. Defaults are configured as follows: <ul style="list-style-type: none"> • Remote start input • Remote safety 1 • Essential services • Overload trigger Inputs require a contact closure capable of providing a low impedance path at currents less than 20 mA.
Relay/Digital Outputs	All Relay/Digital Outputs are fully programmable. Defaults are configured as follows: <ul style="list-style-type: none"> • VFD fault • Programmable output • Drive Run • Bypass select Each relay has a maximum rating of 2A at 120 Vac.
Short Circuit Withstand Rating	100,000 AIC
Temperature	Ambient Operating: 14° F (-10°C) no frost to 104°F (40°C) without de-rating and 131°F (55°C) with de-rating Storage: -40°F to 158°F (-40°C to 70°C)
Relative Humidity	0 to 95% RHJ, non-condensing, non-corrosive
Air Quality	IEC 60068-2-60
Chemical Vapors	IEC 60721-3-3, unit in operation, class 3C3
Mechanical Particles	IEC 60721-3-3, unit in operation, class 3S2
Altitude	100% load capacity (no de-rating) up to 3,280 ft (1,000 m) 1% de-rating for each 328 ft (100 m) above 3,28 ft (1,000 m) Maximum altitude 14,763 ft (4,500 m)
Vibration	IEC 61800-5-1 and IEC 60068-2-6
Seismic	2012 International Building Code (IBC)
Shock	IEC 61800-5-1 and IEC 60068-2-27
Enclosure	UL Type 1
Agency Approvals	UL 508C
Auxiliary Input Voltage	24 Vdc
Auxiliary Output Voltage	24 Vdc at 50 mA maximum
Serial Interface Embedded Resident Protocols	RS485 and Ethernet Modbus RTU, Modbus TCP; BACnet MSTP, BACnet IP; N2 All in either Drive or Electronic Bypass
Protection features	Under-voltage trip limit, Over-voltage trip limit, Ground fault protection, Mains supervision; Motor phase supervision; Over-current protection; Unit over-temperature protection; Motor overload protection; Motor stall protection; Motor underload protection; Short-circuit protection of +24V and +10V reference voltages.

