

WDFC Bypass Drive

User Manual



WDFCBP Bypass Panel

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Section 1 - Introduction

1.1 - Purpose of the Manual

This instruction manual provides information for safe installation, and commissioning of the WDFCBP series panel.

Read and follow the instruction manual in order to use the WDFCBP series safely and professionally, and pay particular attention to the safety instructions and general warnings. Keep this instruction manual available with the WDFCBP panel or access it on-line as noted below.

Note:

The WDFC Chassis Drive User Manual is also available on-line at https://worldwideelectric.com/products/motor_controls/worlddrive_chassis_variable_frequency_drives/wdfc_series_flex_control_vfds/

1.2 - Product Identification

Product name and rating data are detailed on the product rating label. Check the rating label information, before installing the product, to confirm it meets the application requirements.

Note:

Check the product name, open the packaging, and confirm the product is free from damage or defects. Contact your supplier if you have any questions about the product.

Section 2 - SAFETY INFORMATION

Read and follow all safety instructions in this manual precisely to avoid unsafe operating conditions, property damage, personal injury, or death.

Safety symbols in this manual

Danger

Indicates an imminently hazardous situation which, if not avoided, will result in severe injury or death.

Warning

Indicates a potentially hazardous situation which, if not avoided, could result in injury or death. Service or repair work should only be performed by qualified personnel.

Caution

Indicates a potentially hazardous situation that, if not avoided, could result in minor injury or property damage.

Safety Information

Danger

- Do not open the cover of the equipment while it is on or operating. Likewise, do not operate the inverter while the cover is open. Exposure of high voltage terminals or charging area to the external environment may result in an electric shock. Do not remove any covers or touch the internal circuit boards (PCBs) or electrical contacts on the product when the power is on or during operation. Doing so may result in serious injury, death, or serious property damage.
- Do not open the cover of the equipment even when the power supply to the inverter has been turned off unless it is necessary for maintenance or regular inspection. Opening the cover may result in an electric shock even when the power supply is off.
- The equipment may hold charge long after the power supply has been turned off. Use a multi-meter to make sure that there is no voltage before working on the inverter, motor or motor cable.
- Supply earthing system: TT, TN, not suitable for corner-earthed systems

Safety Information

Warning

- This equipment must be grounded for safe and proper operation.
- Do not supply power to a faulty inverter. If, you find that the inverter is faulty, disconnect the power supply and have the inverter professionally repaired.
- The inverter becomes hot during operation. Avoid touching the inverter until it has cooled to avoid burns.
- Do not allow foreign objects, such as screws, metal chips, debris, water, or oil to get inside the inverter. Allowing foreign objects inside the inverter may cause the inverter to malfunction or result in a fire.
- Do not operate the inverter with wet hands. Doing so may result in electric shock.

Caution

- Do not modify the interior workings of the inverter. Doing so will void the warranty.
- The inverter is designed for 3-phase motor operation. Do not use the inverter to operate a single phase motor.
- Do not place heavy objects on top of electric cables. Doing so may damage the cable and result in an electric shock.

Section 3 - WDFCBP Bypass Panel Drive Fusible Disconnect Selection

Model Number Selection

WDFC	BP	2	005	-	4	F
Product Family	Bypass	Contactor	Amperage		Voltage	Fused

*Consult the Motor Controls Catalog for full range of specifications, power ratings and options.

hp (VT)	Bypass Max. Amps	Standard: 2 Contactor Unit	Optional: 3 Contactor Unit	Frame Size
230 Vac Model Options				
1	5	WDFC-BP2005-2F	WDFC-BP3005-2F	Size 1
2	8	WDFC-BP2008-2F	WDFC-BP3008-2F	
3	12	WDFC-BP2012-2F	WDFC-BP3012-2F	
5	16	WDFC-BP2016-2F	WDFC-BP3016-2F	Size 3
7.5	22	WDFC-BP2022-2F	WDFC-BP3022-2F	
10	30	WDFC-BP2030-2F	WDFC-BP3030-2F	
15	42	WDFC-BP2042-2F	WDFC-BP3042-2F	
20	56	WDFC-BP2056-2F	WDFC-BP3056-2F	
25	69	WDFC-BP2069-2F	WDFC-BP3069-2F	

460 Vac Model Options				
1	3	WDFC-BP2003-4F	WDFC-BP3003-4F	Size 1
2	4	WDFC-BP2004-4F	WDFC-BP3004-4F	
3	6	WDFC-BP2006-4F	WDFC-BP3006-4F	
5	8	WDFC-BP2008-4F	WDFC-BP3008-4F	
7.5	12	WDFC-BP2012-4F	WDFC-BP3012-4F	
10	16	WDFC-BP2016-4F	WDFC-BP3016-4F	Size 3
15	24	WDFC-BP2024-4F	WDFC-BP3024-4F	
20	30	WDFC-BP2030-4F	WDFC-BP3030-4F	
25	38	WDFC-BP2038-4F	WDFC-BP3038-4F	
30	45	WDFC-BP2045-4F	WDFC-BP3045-4F	
40	61	WDFC-BP2061-4F	WDFC-BP3061-4F	Size 5
50	75	WDFC-BP2075-4F	WDFC-BP3075-4F	
60	91	WDFC-BP2091-4F	WDFC-BP3091-4F	
75	107	WDFC-BP2107-4F	WDFC-BP3107-4F	

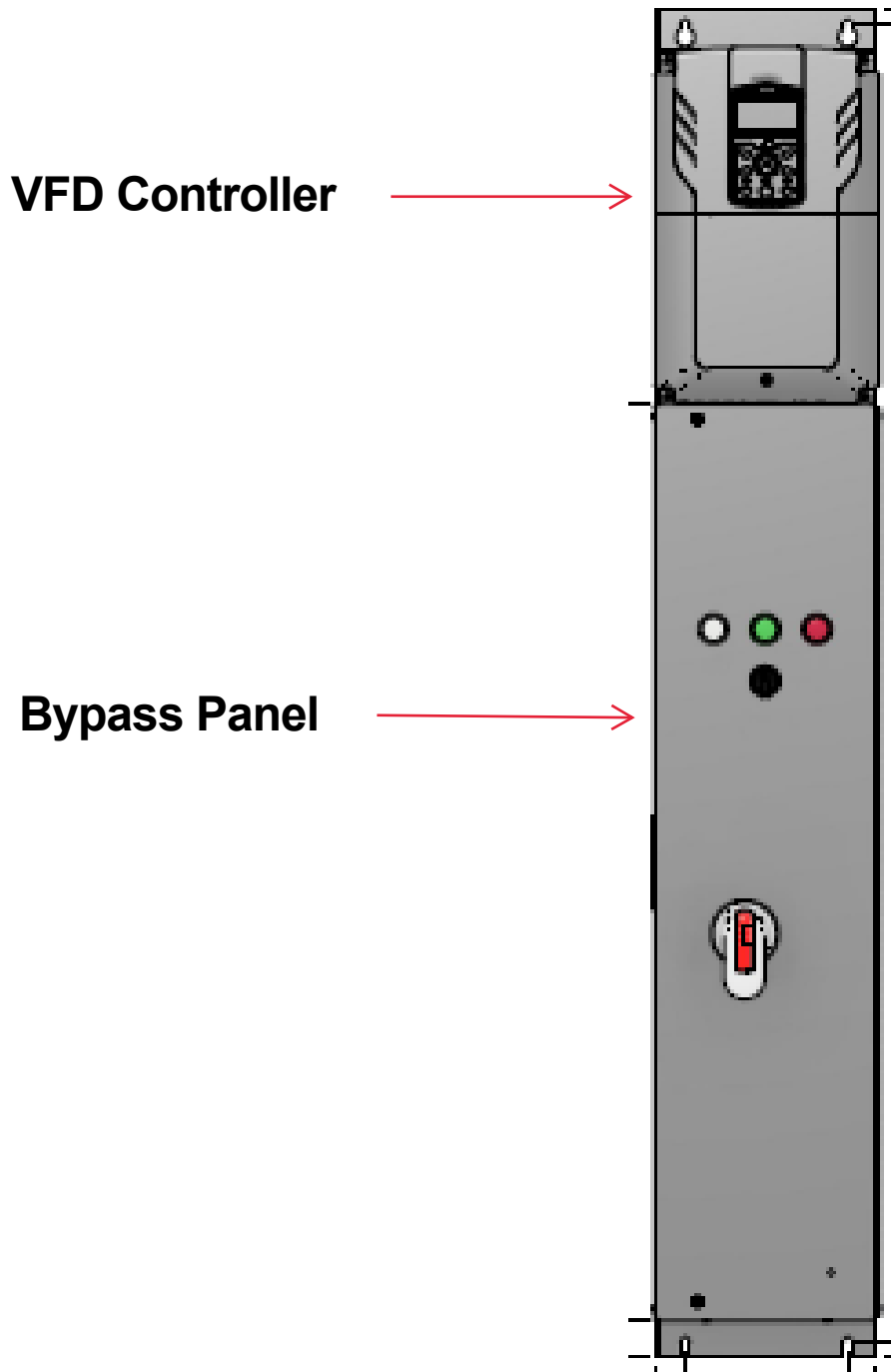


Section 3.1 - Bypass OL Overload Amp Rating

Bypass Overload Amp Range

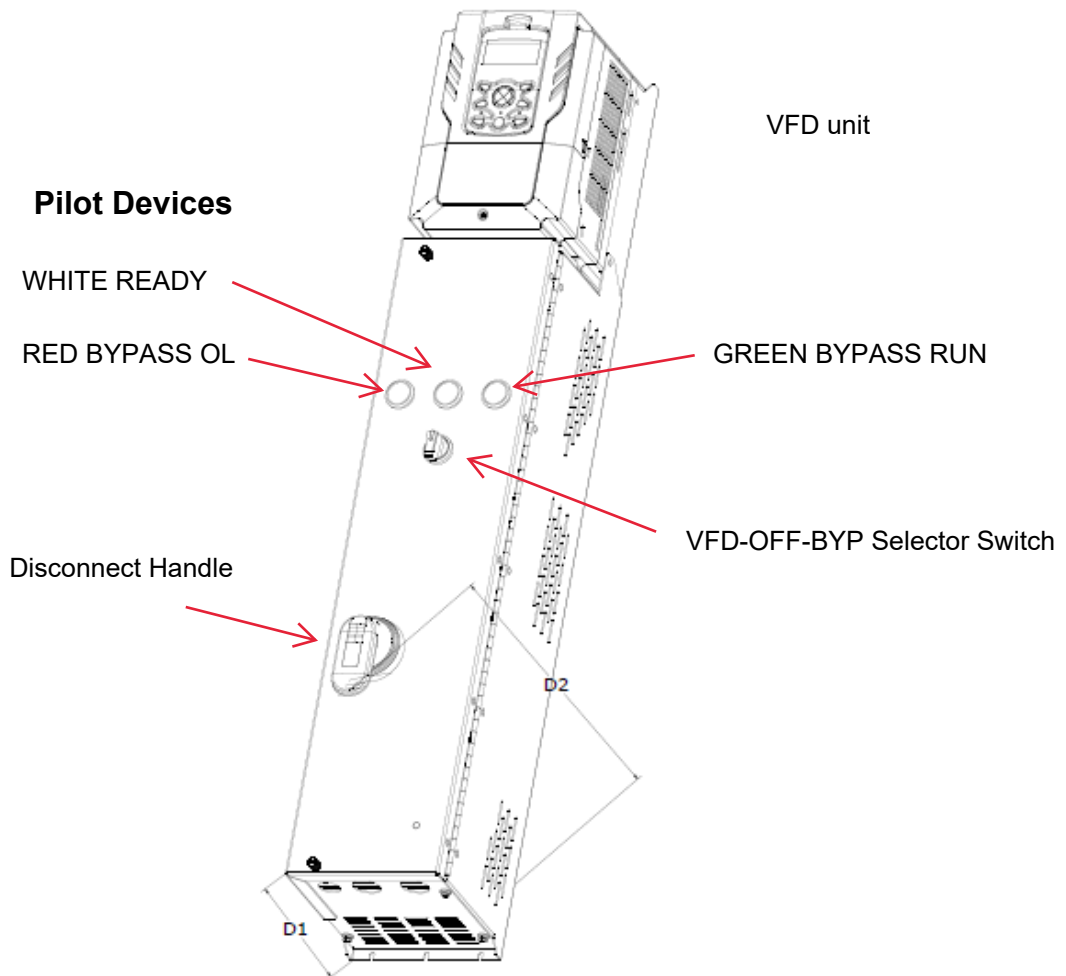
HP/Voltage	Frame	OL Amp Adjustment Range
1 to 2 / 230v	Frame 1	3 to 12 Amps
3 to 5 / 230v	Frame 1	10 to 40 Amps
7.5 / 230v	Frame 3	12.5 to 50 Amps
10 to 20 / 230v	Frame 3	20 to 80 Amps
25 / 230v	Frame 3	32 to 115 Amps
1 / 460v	Frame 1	1 to 4 Amps
2 to 5 / 460v	Frame 1	3 to 12 Amps
7.5 to 10 / 460v	Frame 1	10 to 40 Amps
15 to 40 / 460v	Frame 3	20 to 80 Amps
50 to 75 / 460v	Frame 5	50 to 200 Amps

Section 3.2 - WDFCBP Bypass Panel Drive



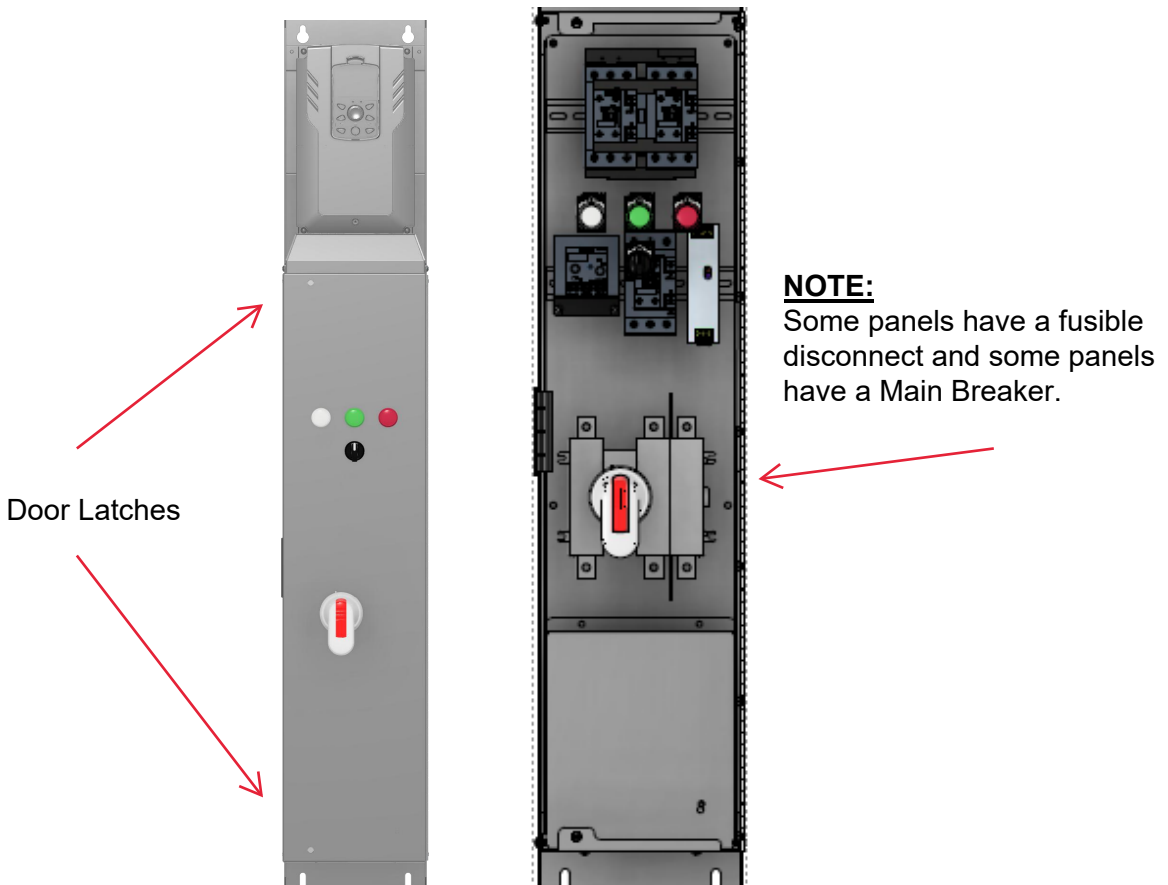
Section 3.3 - Key Component Names

Diagram descriptions remain consistent on product models.
Component locations vary slightly between frame sizes.



3.4 - Bypass Panel Door - Opening Instructions

- 1) Turn the VFD-OFF-BYPASS selector switch to the OFF position.
- 2) Turn the disconnect switch to OFF position to release the enclosure door.
- 3) Rotate the door latches, at top and bottom of door, counter clockwise.
- 4) Pull the recessed handle on left-side of enclosure to swing the door open.



ⓘ Caution

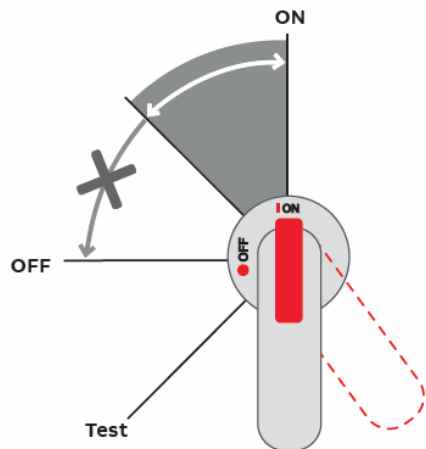
- The door will not open if the disconnect switch is set to the ON position.
- Use door cover handle, located on the left side, to open the door. Do not pull on the disconnect switch handle to open the door as it may damage the VFD controller.

3.5 - Fusible Disconnect Switch



Phases A, B, and C
 Shaft is between A and B

Rotate Clockwise for ON
 Rotate Counterclockwise for OFF

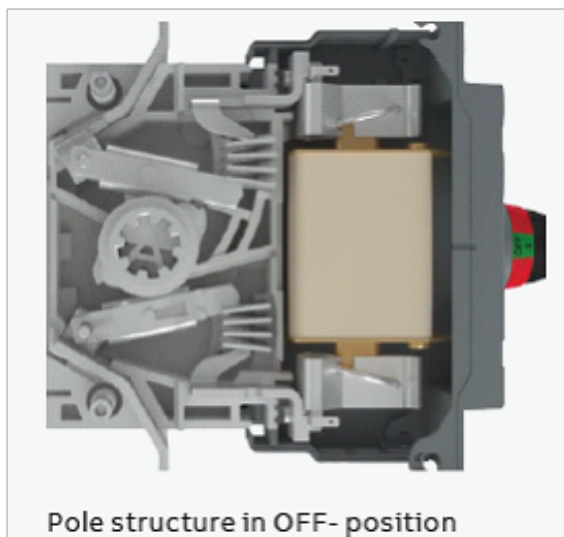
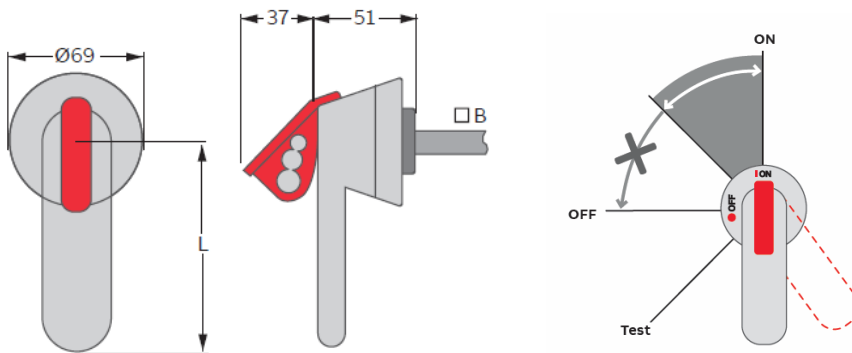


Manual operated switch fuses, BS-type, 20...32
 Protected tunnel terminals, IP20. Mechanism located at the end of the switch. The handles are IP65 protected, padlockable in the OFF-position and with door interlock in the ON-position.

Fused Disconnect Switch

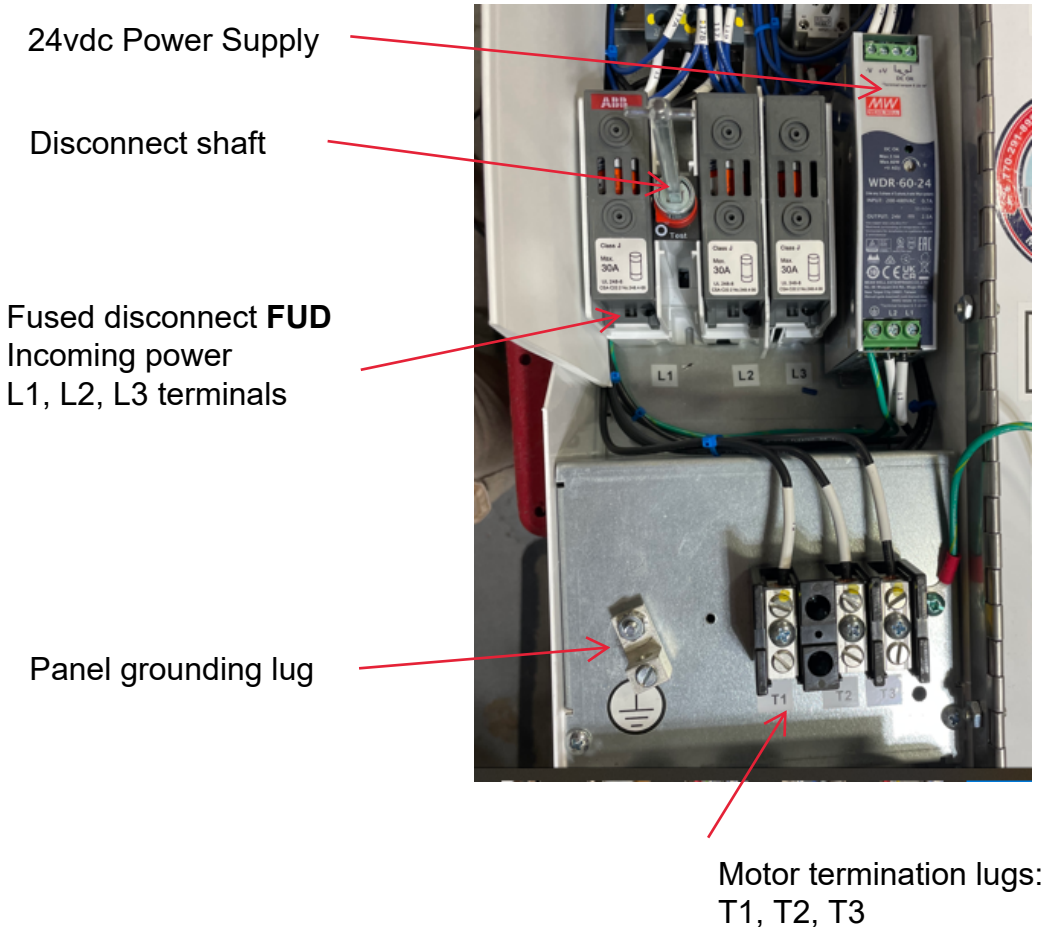
Safety, Reliability and Performance:

1. The fused disconnect is an optimal solution for motor protection
2. Test proven Type 2 coordination when properly fused.
3. The fused disconnect is designed for personal safety and for reliable process protection.
4. When in the ON position, the interlocked fuse protection covers cannot be removed.
5. When in the OFF position, the fuse link is fully isolated from both ends.
6. Handle is padlockable with three separate padlocks for ensured safety.



Section 4.1 - Fusible Disconnect Panel Components

Lower panel components



Section 4.2 - Fusible Disconnect Panel Components

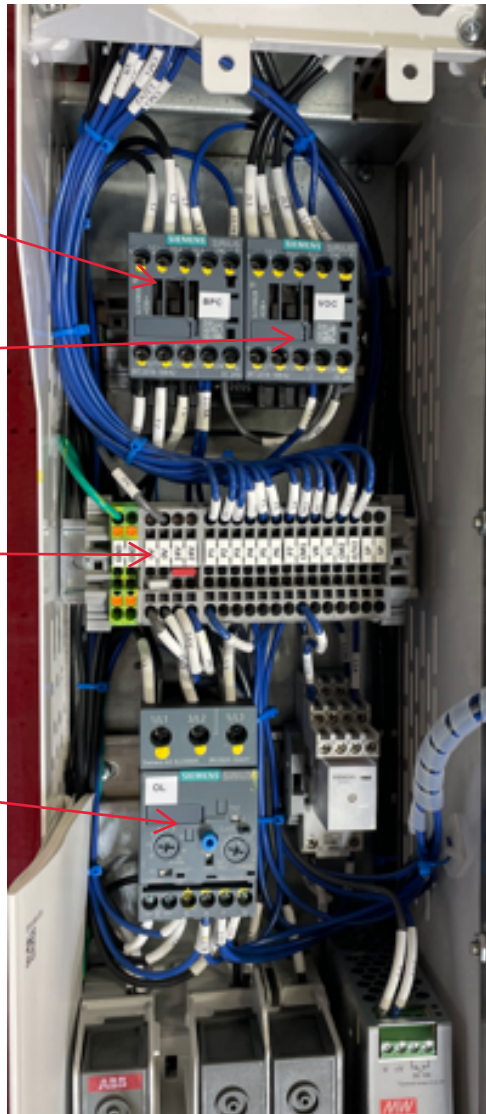
Upper panel components

Bypass Contactor **BPC**

VFD Output Contactor **VOC**

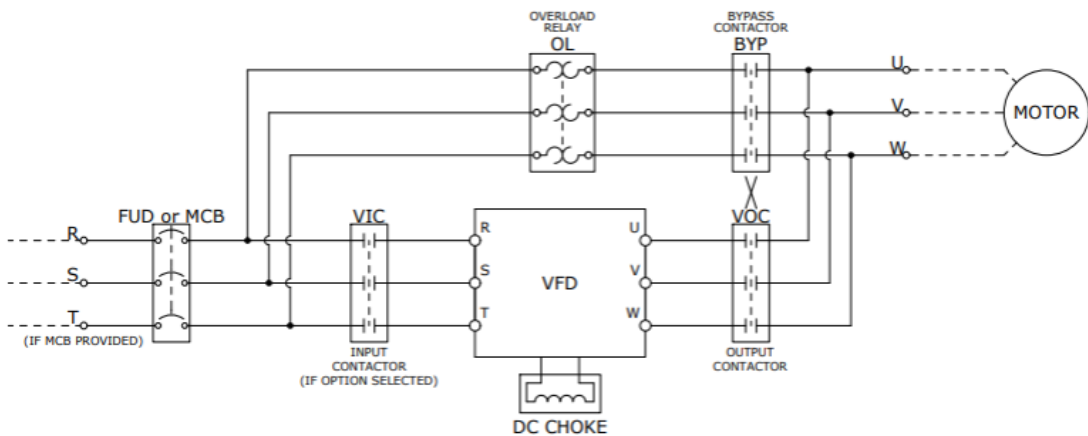
Control Terminals **TB1**

Motor Overload Relay **OL**
with Blue RESET button



Section 5 - Block Diagram

Key Component Names



Main Part Label	Name	Description
R,S T	VFD Line power input	VFD Line Input Power pre-wired to disconnect
U,V W	VFD Output to motor	VFD Load Output power to motor prewired to VOC
L1, L2, L3	Line power to panel	Main incoming power to bottom of FUD or MCB
T1, T2, T3	Load power to motor	Motor output terminals - connect to motor leads
VIC	Input Contactor	VFD Isolation Contactor - Adder Option
VOC	Bypass Contactor	VFD Output Contactor for VFD control to motor
DC CHOKE	Choke	VFD bus DC Choke - below cover in panel
OL	Overload Relay	Motor Overload - in bypass mode operation
TB1	Terminal Block 1	Control Terminal Blocks - 24vDC power, blue wires
FUD	Fused Disconnect	* Fused Disconnect Switch - of incoming power
MCB	Main Circuit Breaker	* Main Circuit Breaker - of incoming power
		* Designates panel model specific disconnect

Section 6 - Equipment Ratings

Environmental Ratings

Items	Description
Ambient Temperature	-10°C to 40°C (14F to 104F)
Ambient Humidity	90% relative humidity (no condensation)
Storage Temperature	-20°C to-65C (-4F to -149F)
Environmental Factors	An environment free from corrosive or flammable gases, oil residue or dust. NEMA 1 enclosure.
Altitude/Vibration	Lower than 3,250 ft (1,000 m) above sea level/less than 0.6 G (5.9m/ sec ²)

Section 7 - Fusible Disconnect Panel Dimensions and Weights

Note:

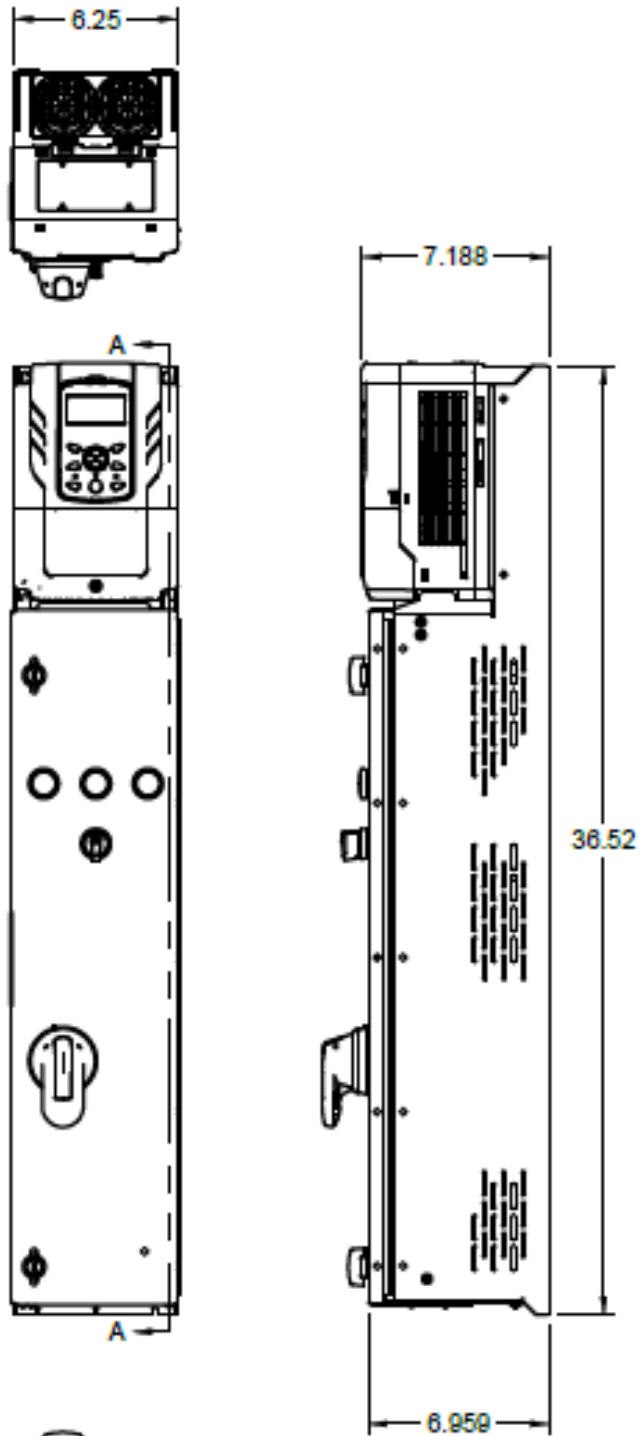
Enclosure weights do **not** include the weight of the VFD.
 Each Frame size panel & sub-panel accommodate multiple
 VFD chassis units of varied weights.

Frame	Dimensions
Frame 1	36.52"H x 6.25"W x 7.00"D
Frame 3	52.65"H x 8.50"W x 9.65"D
Frame 5	57.50"H x 12.80"W x 11.50"D

Frame	Weights
Frame 1	38.50 lbs
Frame 3	88.50 lbs
Frame 5	105.00 lbs

Dimensions and Weights are approximate and subject to change

Section 7 - Fusible Disconnect Panel Dimensions



Section 8 - Installation Instructions

8.1 - Cable Selection

When you install power and signal cables in the terminal blocks, only use cables that meet the required specification for the safe and reliable operation of the product. Refer to the following information to assist you with cable selection.

General Recommendations: Follow all local, State and NEC codes.

- 1) Metallic conduit or shielded power cable is recommended and may be required in some applications to avoid electrical noise issues. Interference is more likely when multiple devices are installed near to each other.
- 2) Drive input power cable may be standard cable type. Typically this cable will be sized at 125% of the drive input current rating. (Not the motor FLA value)
- 3) Drive input power cable may require shielding for EMC compliance.
- 4) Motor power cable should be inverter rated. Cable should include proper shielding and three symmetrical ground conductors to minimize electrical interference.
- 5) Motor power cable ground conductors should be grounded at BOTH the drive and at the motor. (Low impedance ground less than 30-Ohms)

⚠ Caution

- Wherever possible use cables with the largest cross-sectional area for mains power wiring, to ensure that voltage drop does not exceed 2%.
- Use copper cables rated for 600 V, 75°C for power terminal wiring.
- Use copper cables rated for 300 V, 75°C for control terminal wiring.
- The inverters in the range between 15 and 55 kW must be grounded conveniently with fixed connections.
- The inverters in the range between 5.5kW and 11kW must be grounded with an industrial connector according to IEC 60309.
- The minimum size of the protective earthing conductor shall comply with the local safety regulations for high protective earthing conductor current equipment.
- Only one conductor per terminal should be simultaneously connected

8.2 - Control Signal Cable Recommendations

- 1) Use STP (shielded twisted-pair) cables for signal wiring.
- 2) Metallic conduits are recommended for electrical noise immunity and cancellation.
- 3) Control signal wires should only be grounded at one end to avoid ground loop issues.
- 4) Low impedance grounds are required to avoid electrical noise issues. Below 30-Ohms resistance is recommended.
- 5) Do not mix control wires with main power cables.
- 6) Do not mix control wires voltages: Ex: 24vdc with 120vac signals.
Run in power cable and control wires in individual conduits.

Notes

- Use STP (Shielded Twisted Pair) cables to connect a remotely located motor with the inverter. Do not use 3 core cables.
- Make sure that the total cable length does not exceed 492 ft (150 m). For inverters ≤ 3.7 kW capacity, ensure that the total cable length does not exceed 165 ft (50 m).
- Long cable runs can cause reduced motor torque in low frequency applications due to voltage drop. Long cable runs also increase a circuit's susceptibility to stray capacitance and may trigger over-current protection devices or result in malfunction of equipment connected to the inverter.
- Voltage drop is calculated by using the following formula:
- Voltage Drop (V) = $[\sqrt{3} \times \text{cable resistance (m}\Omega/\text{m)} \times \text{cable length (m)} \times \text{current (A)}] / 1000$
- Use cables with the largest possible cross-sectional area to ensure that voltage drop is minimized over long cable runs. Lowering the carrier frequency and installing a micro surge filter may also help to reduce voltage drop.

Distance	1 5 ft 5 m	33 ft 1 m	33 ft 1 m
Allowed Carrier Frequency	<15 kHz	<5 kHz	<2.5 kHz

Warning

Do not connect power to the inverter until installation has been fully completed and the inverter is ready to be operated. Doing so may result in electric shock.

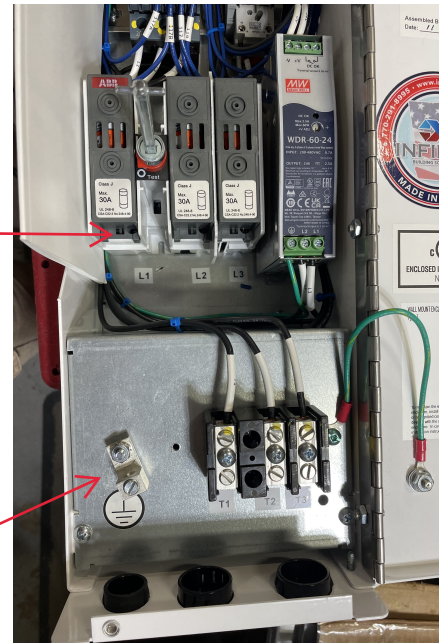
8.3 - Connect Incoming Power to the Panel

- 1) Feed incoming power cables through left-side conduit holes in bottom of enclosure.
- 2) Feed power cables across plate to the left-side of the T1, T2, T3 terminal block. Connect incoming line power to L1, L2 and L3 terminals of the Fusible Disconnect Switch or the Main Circuit Breaker depending upon the model of the drive panel.

NOTE:

Fusible disconnect or Main Breaker is pre-wired to the **VFD Input R, S, and T** terminals.

Connect incoming power to terminals located at bottom of the fusible disconnect: L1, L2 and L3 respectively labeled.



Properly connect system ground rod to the panel ground lug.

Notes

- 230 V products require Class 3 grounding. Resistance to ground must be $\leq 100 \Omega$.
- 460 V products require Special Class 3 grounding. Resistance to ground must be $\leq 10 \Omega$.
- Keep the ground wire connections as short as possible.
- Do not ground one inverter to another in a “daisy chain” fashion.
- Follow the motor manufacturer wiring requirements.

⚠ Warning

Install ground connections for the inverter and the motor by following the correct specifications to assure safe and accurate operation. Using the inverter and the motor without the specified grounding connections may result in electric shock.

8.4 - Connect Motor Cables to Panel

- 1) Feed incoming power cables through right-side conduit holes in bottom of enclosure.
- 2) Feed power cables directly to the **T1, T2, T3 terminal block**.



NOTE:

Power terminal block T1, T2 and T3 terminals are pre-wired to the VFD Output U, V, and W terminals.

Properly wire and connect motor lead cables to the T1, T2 and T3 terminals respectively labeled.

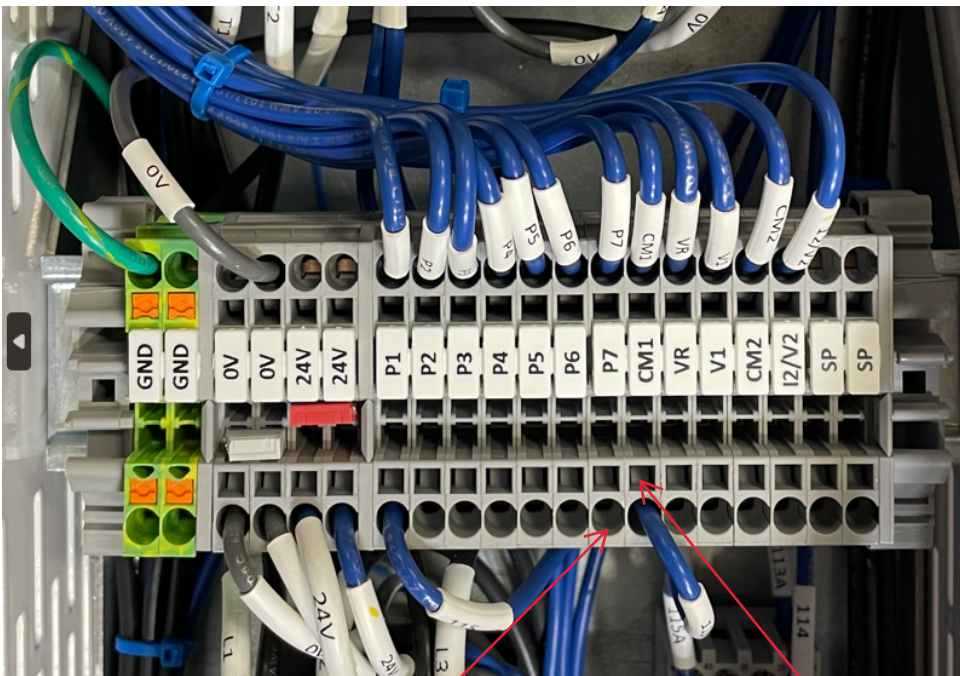
Properly wire and connect system ground cable to the panel ground lug. Low impedance ground less than 30-Ohms recommended.

8.5 - Control Wires on Terminal Block (TB1)

- 1) Control signals to VFD are 24vdc power and internally powered.
- 2) Control wires are BLUE in color
- 3) Digital INPUTS to the drive are numbered P1, P2, P3, P4, P5, P6 and P7
Example: Dry contact closure from P1 to CM1 (Common) is wired to VFD Selector switch to activate P1 input to RUN the VFD.
- 4) P2 through P7 are activated when dry contact closure connects them to CM1 or CM2 terminals.

WARNING:

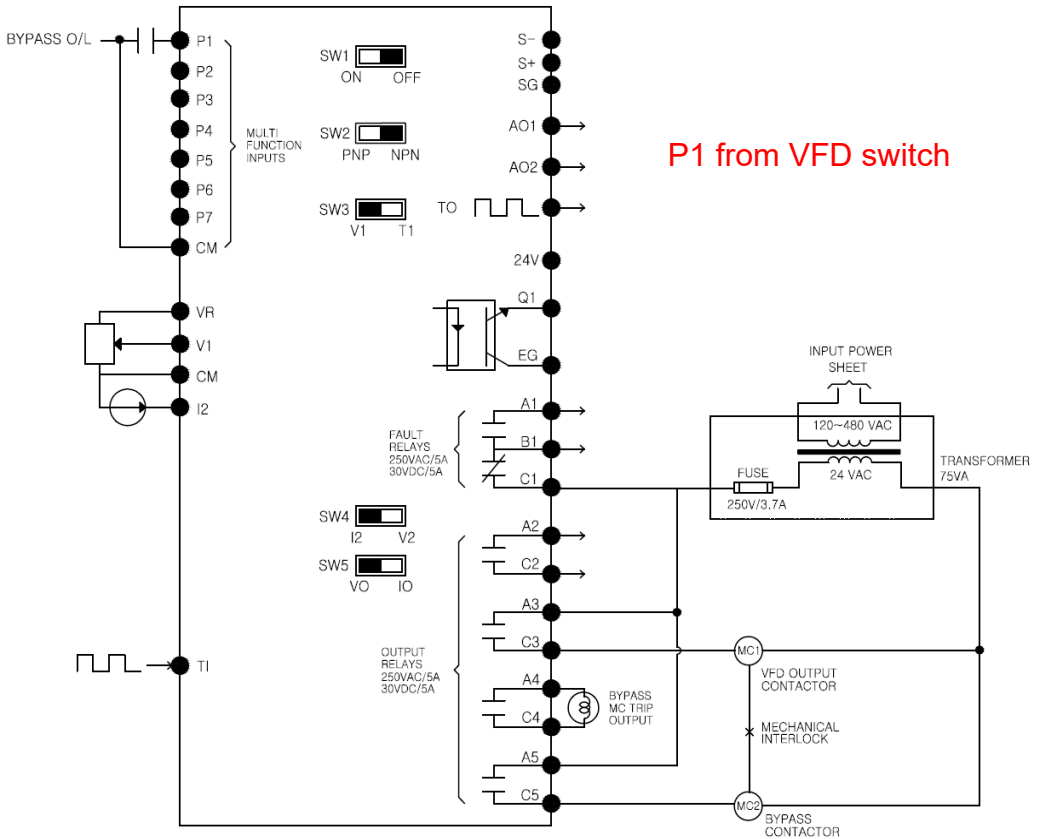
Do **not** bring external 24vdc or 120vac to this drive as it will damage the VFD and panel.



Round terminal block holes for field wiring to dry contacts.
Square blocks are depressible points to release connected wires.

9 - Bypass Panel VFD Diagram

Diagram below shows layout of the VFD control terminals. Before wiring the control terminal, make sure that the cables you are using meets the application requirements.



Note

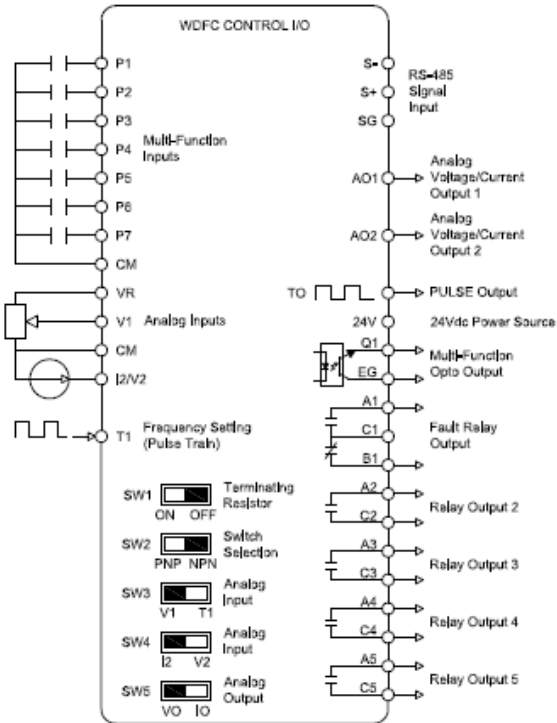
Do not change the pre-connected control wiring because it is connected to the software. Use terminals that are not assigned when connecting additional control wires.

9.1 - Chassis VFD Standard Diagram

Inputs P1-P7 are programmable

Factory Defaults

P1 = FX Forward
 P2 = RX Reverse
 P3 = BX Block output
 P4 = RST Reset
 P5 = Speed-L
 P6 = Speed-M
 P7 = Speed-H
 CM = Common



NOTES:

- While making wiring connections at the control terminals ensure that the total cable length does not exceed 165 ft (50 m).
- Ensure that the length of any safety related wiring does not exceed 100 ft (30 m).
- Use ferrite material to protect signal cables from electro-magnetic interference.

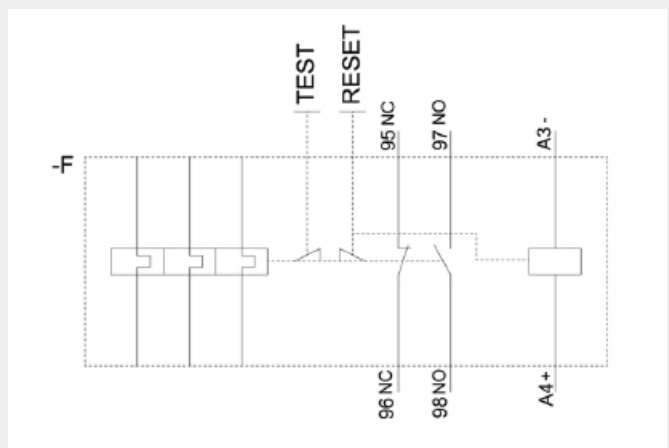
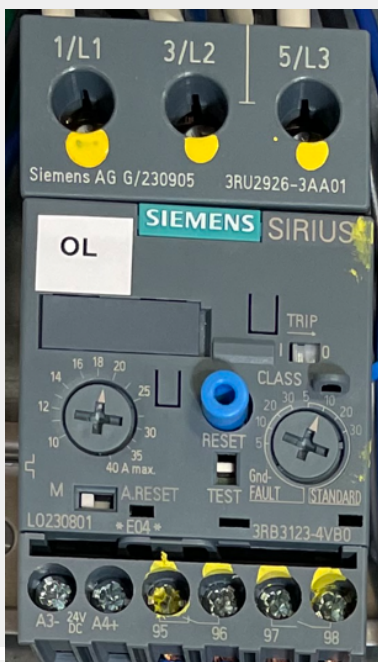
10 - Startup Procedure

10.1 - Check-list items before applying main power

- 1 Confirm the panel door is closed.
- 2 Confirm the power switch and selector switch are OFF.
- 3 Confirm the VFD, bypass panel and the motor is grounded properly.
- 4 Confirm the cable sizes for the input power and motor are proper.
- 5 Confirm the input power and motor cables are safely connected.
- 6 Confirm the control wiring is connected correctly.
- 7 Confirm the control shield cable is grounded properly.
- 8 Confirm the control wires and power cables are routed separately.

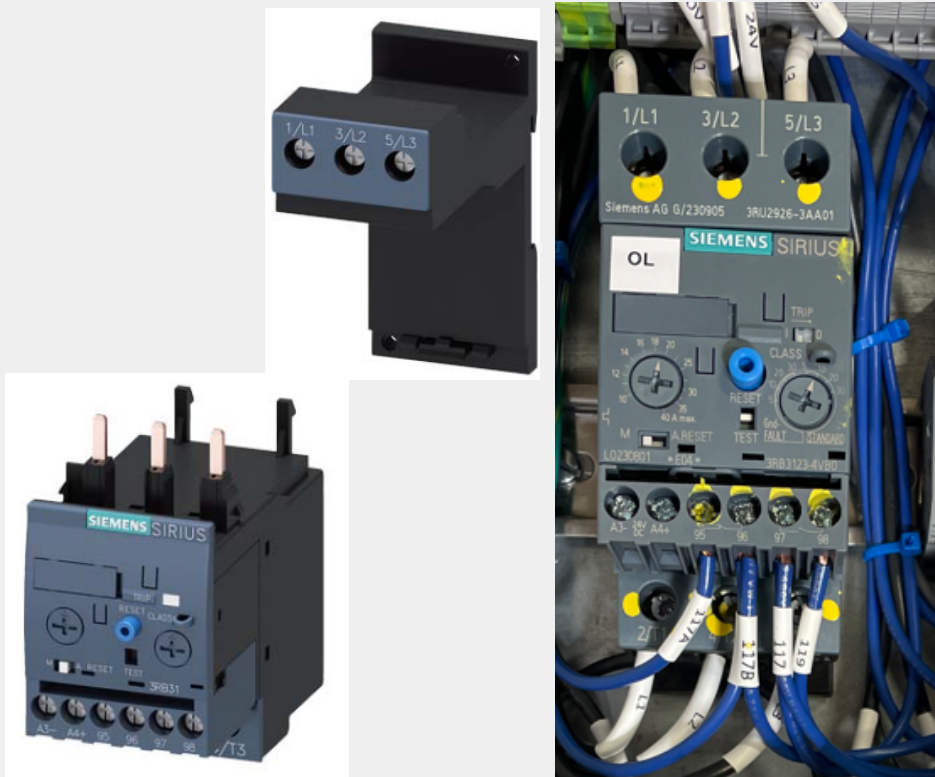
⚠ Caution

1. Adjust the overload dials to match the motor and application requirements.
2. Improper setup could result in faulty operation or damaged equipment.



10.2 - Overload Device: Current and Trip Adjustments

1. Adjust amp trip value to match motor nameplate data
2. Adjust amp class value to match application requirements.
 Trip class:dial: 5E, 10E, 20E, and 30E adjustable range. (Seconds)
 Dial can be set to Gnd FAULT or STANDARD selections.
3. Adjust reset switch to M (Manual) or A (Automatic)



Overload relay with stand-alone option. Main circuit: Screw Auxiliary circuit:

Manual or Automatic Reset slide switch. Internal ground fault detection.

Adjustable dials for AMP and CLASS settings.

Blue RESET button - press inward to reset a tripped condition.

Bypass panel configuration is A3, A4 have no voltage leaving 95, 96, 97 and 98 terminals as dry contracts switching VFD control circuits.

10.3 - Energizing VFD Panel with main power

Caution - Main panel door should be in the closed position for safety purposes.

1. Confirm the VFD-OFF-BYP switch is in the OFF position.
2. Energize the main power by rotating disconnect switch handle clockwise.
3. Rotate the selector switch to the VFD position.
4. Confirm VFD power is ON when the selector switch is set to VFD. (*Keypad will be energized*)

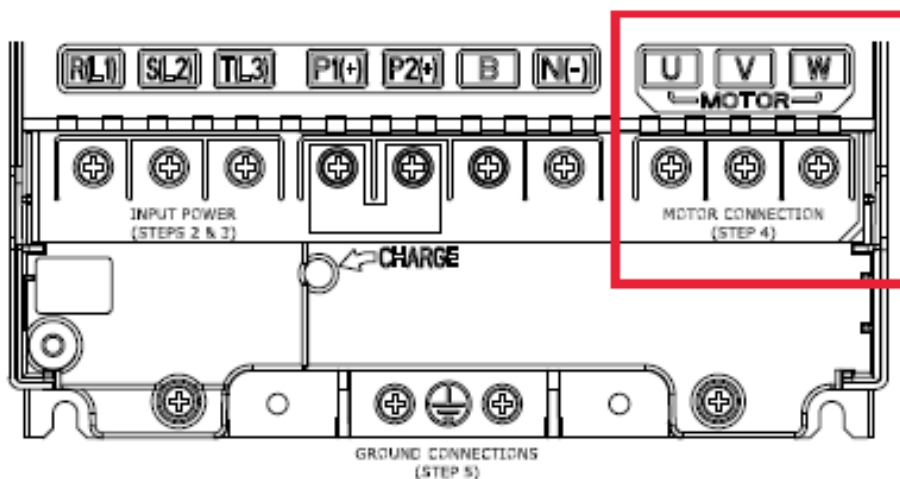
11 - VFD Programming and Setup

1. VFD is now energized but not operating the motor. (*From previous steps above*)
2. Use the Quick Start program guide in **Section 12** to configure the VFD.
3. Motor rotation checks are covered in Sections 11.1 and 11.2 below.

11.1 - VFD Motor Rotation Change

1. **VFD controlled direction** is wrong - swap any **two** of **U, V or W** motor leads at VFD output. Remove the cover at bottom side of VFD.

Example: Swap **V** and **W** motor lead connections.

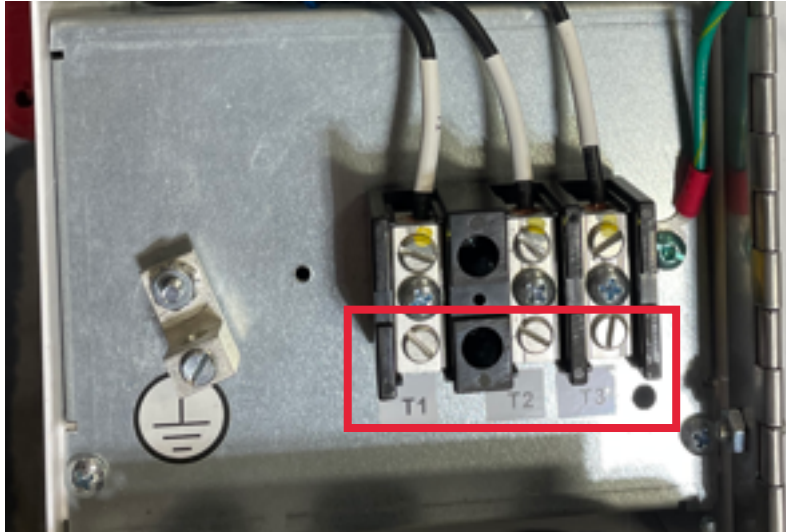


Remove VFD bottom cover to access U, V and W terminals.



11.2 - Bypass Motor Rotation Change

2. **Bypass controlled direction** is wrong - swap any **two** of **T1, T2 or T3** motor leads at the "BOTTOM" side of the power terminal block. Example: Swap **T2** and **T3** leads

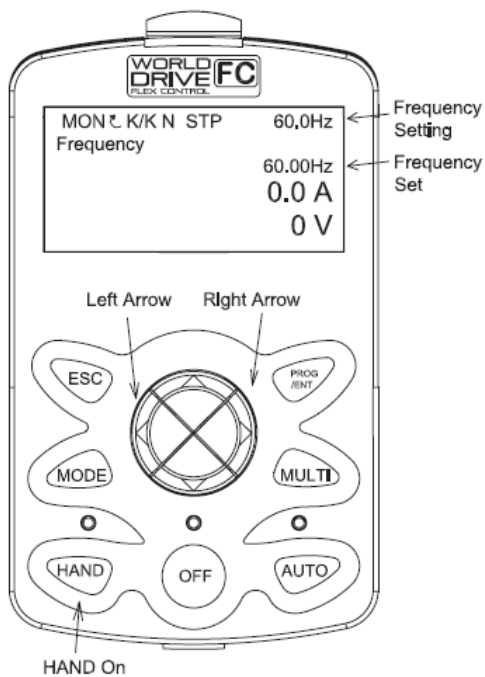


Warning:

1. Do **NOT** swap wires on the **top** side of the block.
2. Only swap wires on the bottom of the block.
3. Do **NOT** swap factory wiring on contactors or components inside the panel.

Section 11.3 VFD Keypad Layout

Use the VFD Keypad to set the parameter values to match the application and motor requirements. The following Quick Start reference covers commonly used parameters and values. See the WDFC User manual for complete details.

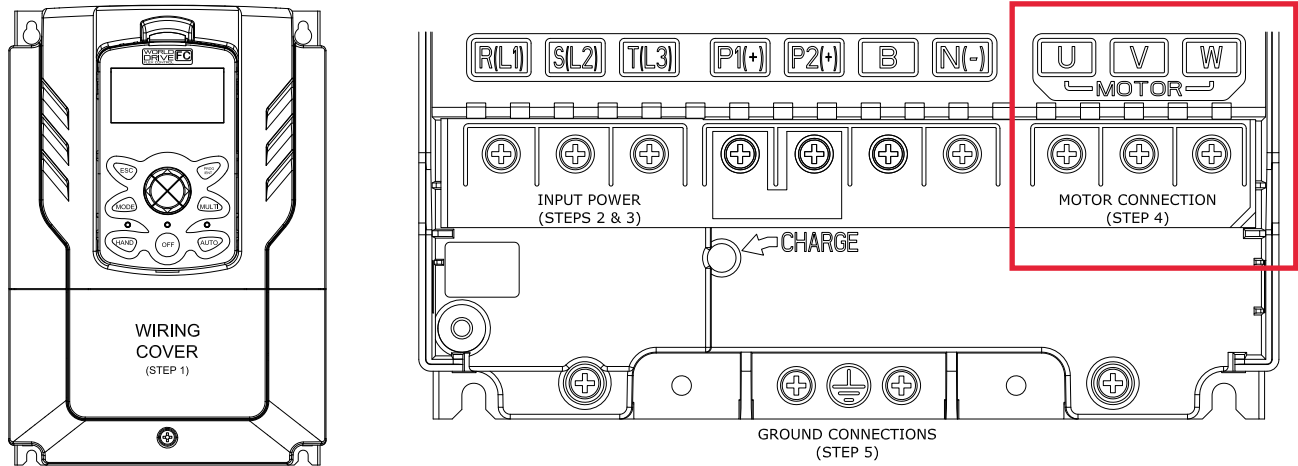


WDFC Chassis VFD Safety Information

- **NOTE:** This Quick Start Guide is intended for users with basic knowledge of electricity and electric devices. If you are unfamiliar with the installation and operation of Variable Frequency Drives or are unsure about any procedure, please contact qualified personnel for installation assistance.
- Do not open the cover of the Variable Frequency Drive (VFD) while it is on or energized. Do not operate the VFD while the cover is open. Exposure of high voltage terminals or charging area to the external environment may result in an electric shock. Do not remove any covers or touch the internal circuit boards (PCBs) or electrical contacts on the product when the power is on or during operation. Doing so may result in serious injury, death, or serious property damage.
- Do not open the cover of the VFD even when the power supply to the VFD has been turned off unless it is necessary for maintenance or regular inspection. Opening the cover may result in an electric shock even when the power supply is off.
- The equipment may hold charge long after the power supply has been turned off. Use a multimeter to make sure that there is no voltage before working on the VFD, motor or motor cable.
- This equipment must be grounded for safe and proper operation.
- Do not supply power to a faulty VFD. If you find that the VFD is faulty, disconnect the power supply and have the VFD repaired or replaced.
- The VFD becomes hot during operation. Avoid touching the VFD until it has cooled to avoid burns.
- Do not allow foreign objects, such as screws, metal chips, debris, water, or oil to get inside the VFD. Allowing foreign objects inside the VFD may cause the VFD to malfunction or result in a fire.
- Do not operate the VFD with wet hands. Doing so may result in electric shock.

Input Power and Motor Wiring

1. Remove screw and wiring cover if changing VFD rotation of motor is required.
2. Factory wiring of the incoming power to terminals **R(L1) S (L2) T (L3)** is already completed in the bypass panel.
3. Factory wiring from motor terminals **U, V, W** to **T1, T2** and **T3** terminals is already completed in the bypass panel.
4. Factory wiring from VFD Ground to panel ground is already completed in the bypass panel.

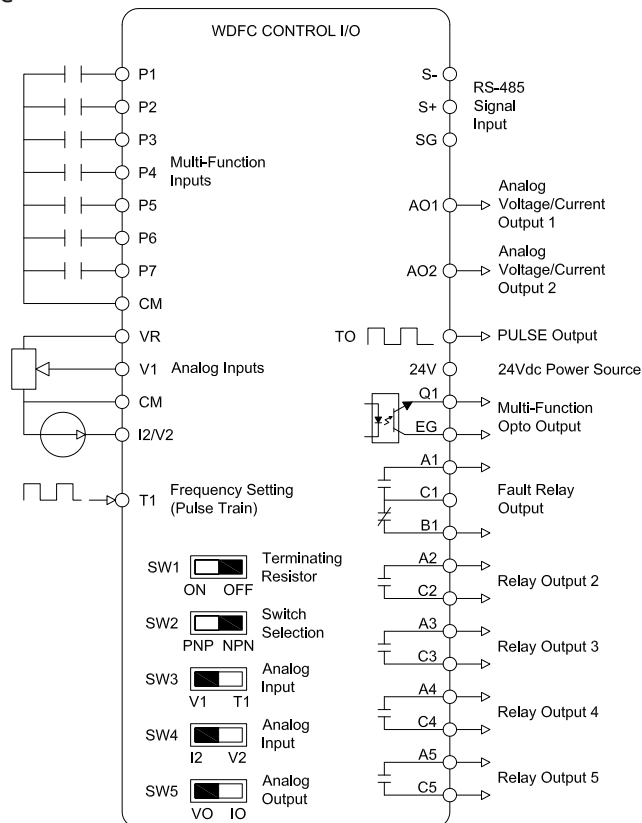


Control Input and Output Wiring Diagram

Inputs P1-P7 are programmable

Factory Defaults

- P1 = FX Forward
- P2 = RX Reverse
- P3 = BX Block output
- P4 = RST Reset
- P5 = Speed-L
- P6 = Speed-M
- P7 = Speed-H
- CM = Common



EzStart Steps

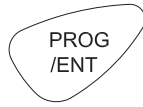
EzStart [N] STP 0.0Hz 99 Start Easy Set 0 ----- No ----- D 1 ----- Yes ----- C	↓ 	When the drive powers on, the Quick Start Easy Set menu will come on the display. Select Yes (Program/Enter key) to Continue. D = Default value setting C = Current (present) value setting
EzStart [N] STP 0.0Hz 99 Macro Select 0 Basic D 1 Compressor 2 Supply Fan	↓ 	Select 0 - Basic Macro Basic Macro simplifies setup and support. Selecting other Macros may delay technical support
EzStart [N] STP 0.0Hz BAS10 60/50 Hz Sel 0 60 Hz DC 1 50 Hz	↓ 	Select the correct Hz for your motor.
EzStart [N] STP 0.0Hz DRV14 Motor Capacity 5 3.0 HP 6 4.0 HP 7 5.0 HP DC	↓ 	Select the correct HP for your motor.

Sample Motor Nameplate

		PREMIUM EFFICIENCY	259277			
	3-PHASE INDUCTION MOTOR	CC006A				
		ISO9001	C Us Energy Verified			
Model	Ser No.		Low Voltage 6-4-5 7-8-9 1-2-3 L1 L2 L3 High Voltage 4-5-6 7-8-9 1-2-3 L1 L2 L3			
HP	S.F.	Type		Encl	IP	
Frame	P.F.	Ins Cl		Rating	°C AMB Cont	
Voltage	230/460	Hz		Design	DE Brng	
Amps		RPM		Code	ODE Brng	
Nom. Eff.	FL	% 3/4		%	230/460V	Date
Usable on 208V network at		Amps 1.0SF		Class I DIV. 2 Groups A B C D	Amb. 40°C	T3C(160°C)
10:1 CT 20:1 VT PWM VFD		1.0SF		Class I Zone 2 IIC	Amb. 55°C	T3A(180°C)
60Hz		HP	V	A	rpm	S.F.1.0
WorldWide Electric Corporation						

EzStart Steps (continued)

EzStart [N] STP 0.0Hz
BAS13 Rated Curr
 8.0 A
 0.0 ~ 1000.0 A
 D:3.6 C:8.0



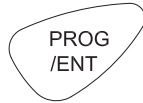
Input FLA from the nameplate of the motor.

EzStart [N] STP 0.0Hz
BAS15 Rated Volt
 460V
 170 ~ 480 V
 D:0 C:0



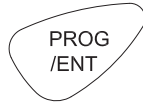
Input the **motor voltage**.

EzStart [N] STP 0.0Hz
BAS11 Pole Number
 4
 2 ~ 48
 D:4 C:4



Input the number of poles for the motor.

EzStart [N] STP 0.0Hz
BAS19 AC Input Volt
 460 V
 320 ~ 528 V
 D:220 C:380

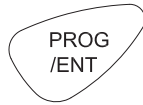
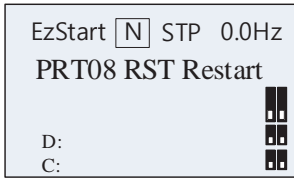


Input the correct **service voltage**.

Sample Motor Nameplate

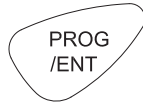
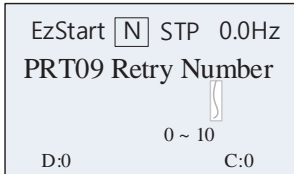
CE		WORLDWIDE		PREMIUM EFFICIENCY		259277	
				CC006A		US	
				ISO9001		Energy Verified	
Model		Ser No.		Low Voltage		6 4 5	
HP	S.F.	Type	Encl	IP		7 8 9	
Frame	P.F.	Ins Cl	Rating	°C AMB Cont		1 2 3	
Voltage	230/460	Hz	Design	DE Brng		L1 L2 L3	
Amps	RPM	Code	ODE Brng			High Voltage	
Nom. Eff.	FL	% 3/4	%	230/460V		4 5 6	
Date						7 8 9	
Usable on 208V network at		Amps 1.0SF		Class I DIV. 2 Groups A B C D		Amb.40°C T3C(160°C)	
10:1 CT 20:1 VT PWM VFD		1.0SF		Class I Zone 2 IIC		Amb.55°C T3A(180°C)	
60Hz		HP		V		A	
				rpm		S.F1.0	
WorldWide Electric Corporation							

EzStart Steps

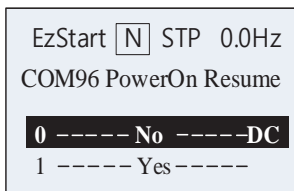


Press Program / Enter to continue
This menu is to program input the restart functions.
Please refer to the manual for further instructions.
(WorldDrive Flex Control - VFD - The WDFC: Operation and Instructional Manual)

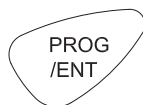
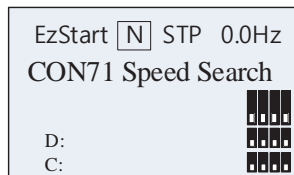
wwec.co/WDFC-Manual



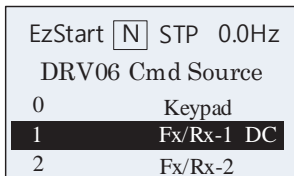
Press Program / Enter to continue. This menu will input the number of auto restarts. Please refer to the manual for further instructions.



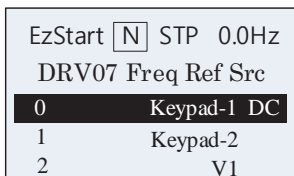
Select Yes if operation is to resume running when the power is restored.



Press Program / Enter to continue. This menu is to set the Speed Search.
Please refer to the manual for further instructions.



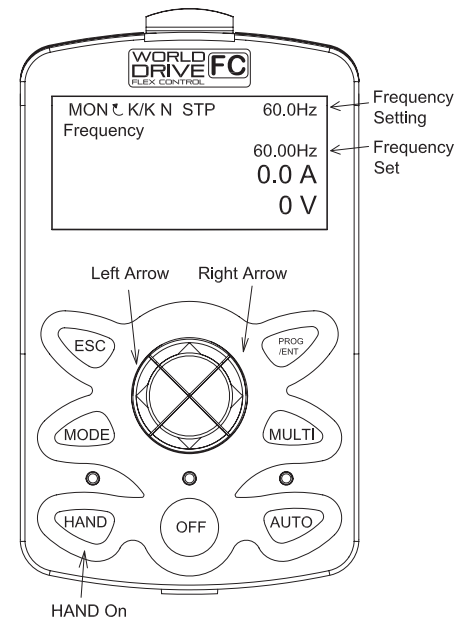
Input the command source.
If the keypad is to start and stop operation, select "0".
"1" Fx/Rx-1 is common for controls wired to input terminal strip.



Input your reference source.

Verify Motor Rotation:

1. On the Keypad DRV menu, set DRV07 to "1 - Keypad"
2. On the Keypad MON menu, use Left /Right/Up/Down arrow keys to set the a 10.00 Hz frequency reference value (see keypad display upper right corner)
3. Press the [HAND] key to start / bump the motor then press the [OFF] key
4. If rotation is backward: power-down, wait 5-minutes, and swap any "TWO" output cables at drive output terminals U, V or W



Commonly Used Parameter Groups

Group - Drive - DRV

Default Parameters Shown	
1 Cmd Frequency	0.00 Hz
2 Keypad Run Dir	Forward
3 Acc Time	20.0 sec
4 Dec Time	30.0 sec
6 Cmd Source	FX/RX-1
7 Freq Ref Src	Keypad
9 Control Mode	V/F
14 Motor Capacity	xx HP
20 Max Freq	60.00 Hz

Group - Basic - BAS

Default Parameters Shown	
4 Cmd 2 nd Src	Fx/Rx-1
5 Freq 2 nd Src	Keypad-1
6 Input Phase	3 Phase
11 Pole Number	4
12 Rated Slip	40 rpm
13 Rated Curr	xx.x amps
14 Noload Curr	xx.x amps
15 Efficiency	72.0%
19 AC Input Volt	220 or 460V
20 Auto Tuning	None

Group - Advanced - ADV

Default Parameters Shown	
1 Acc Pattern	Linear
2 Dec Pattern	Linear
8 Stop Mode	Dec
9 Run Prevent	None
10 Power-on Run	No
24 Freq Limit	0 = No
25 Freq Limit Lo	0.50 Hz
26 Freq Limit Hi	60.00 Hz
64 FAN Control	During Run
74 RegenAvd Sel	No
75 RegenAvd Level	350 or 700vdc
76 CompFreq Limit	1.00Hz
77 RegenAvd Pgain	50.0%
78 RegenAvd Igain	500ms

Group - Config - CON

Default Parameters Shown	
4 Carrier Freq	3.0kHz
70 Speed Search	Flying Start-1
71 Speed Search	b0000

Group - Inputs - IN

1 Freq at 100%	60.00Hz
5 V1 Monitor[V]	0.00V
6 V1 Polarity	Unipolar
16 V1 Inverting	No
35 V2 Monitor[V]	0.00V
46 V2 Inverting	No
50 I2 Monitor[mA]	0.00mA
65 P1 Define	FX
66 P2 Define	RX
67 P3 Define	BX
68 P4 Define	RST
69 P5 Define	Speed-L
70 P6 Define	Speed-M
71 P7 Define	Speed-H
72 P8 Define	None
73 P9 Define	None
87 DI NC/NO Sel	b 000 0000
90 DI Status	b 000 0000

Group - Outputs - OUT

1 AO1 Mode	Frequency
2 AO1 Gain	100.0%
3 AO1 Bias	0.0 %
4 AO1 Filter	5ms
6 AO1 Monitor	0.0%
7 AO2 Mode	Frequency
8 AO2 Gain	100.0%
9 AO2 Bias	0.0 %
10 AO2 Filter	5ms
12 AO2 Monitor	0.0%
31 Relay 1	Trip
32 Relay 2	Run
33 Relay 3	None
34 Relay 4	None
35 Relay 5	None
41 DO Status	b 00 0000
50 DO On Delay	0.00sec
51 DO Off Delay	0.00sec
52 DO NC/NO Sel	b 00 0000

Jump = fast access to parameters

Parameters & values depend upon configurations & options involved.

Group - Communication - COM

Default Parameters Shown	
1 Station ID	1
2 485 Protocol	Modbus RTU
3 485 Baud Rate	9600 bps
4 485 Mode	D8 / PN / S1

Group - Proportional Integral Derivative - PID

Default Parameters Shown	
1 PID Select	No
4 Ref Value	0 pid
5 Fdb Value	0 pid
10 Ref 1 Source	Keypad
11 Ref 1 Setpoint	15000 pid
20 Fdb Source	V1
25 P-Gain 1	50.00%
26 I-Time 1	10.0 sec

Group - Application 1 – AP1

Default Parameters Shown	
7 PID Sleep 1 DT	20.0 sec
8 PID Sleep 1 Freq	0.00 Hz
9 PID WakeUp 1 DT	20.0 sec
10 PID WakeUp 1 Dev	% value

Group - Application 2 – AP2

Default Parameters Shown	
15 Pump Clean 1	0 = None
16 Pump Clean 2	0 = None
22 Pump Clean Acc Tim	10.0 sec
23 Pump Clean Dec Tim	10.0 sec

Group - Protection - PRT

Default Parameters Shown	
4 Load Duty	0 = normal duty
5 Phase Loss Chk	b00 bit
8 RST Restart	b00 bit
9 Retry Number	0
10 Retry Delay	5.0 sec
21 Overload Trip	120%
22 Overload Time	60.0 sec

LCD Keypad Menu - CNF

Default Parameters Shown	
2 LCD Contrast	Brightness
20 AnyTime Parameters	0
21 Monitor Line 1	
22 Monitor Line 2	
23 Monitor Line 3	
40 Para Init / factory default	0
41 Changed Parameters	0
43 Macro Selection	0
44 Erase Trip History	0
46 Parameter read	0
47 Parameter write	0

For more information, please refer to the WDFC Product Manual at wwec.co/WDFC_Manual

Common Parameters

Group Name	Description See drive manual for complete configuration capabilities NOTE: Press [ESC] key to escape from a Group	Default Value	Value Range	New Value
99 Macro	Select in Easy Start Menu: 0 -Basic Macro simplifies setup and support - do not change	0		
CNF-61	Easy Start Settings: 0 = Disabled ; 1 = Enabled	1	0-1	
CNF-40	CNF-40 = 1 Defaults ALL Groups in VFD: 0 = No ; see manual for full selection chart	0	0-15	
Restarting the VFD will activate Easy Start On. Set KEYPAD values as follows:				
DRV-01	Cmd Frequency: set by the keypad	Hz	Low/High Freq	
DRV-06	Command Source: 0 = Keypad; 1 = FX/RX1; 2 = FX/RX2; 3 = Int 485; 4 = Field bus	1	0-5	
DRV-07	Frequency Setting Method: 0 = Keypad; 2 = V1; 4 = V2; 5 = I2; 6 = Int485; 8 = FldBus	0	0-11	
BAS-10	Base frequency: 0 = 60Hz ; 1 = 50Hz (input power freq)	0		
DRV-14	Motor HP size / capacity			
BAS-11	Pole Number = motor pole number (Ex: 2-pole = 3600rpm; 4-pole = 1800rpm; 6-pole = 1200rpm)	4	2~48	
BAS-13	Rated Curr = Set to motor rated current			
BAS-15	Motor rated voltage			
BAS-19	VFD AC input power voltage			
PRT-08	Select start at trip reset: Set Bit 00 or 11	b00	b00-b11	
PRT-09	Restart number of attempts	0	0-9	
DRV	Drive Group			
DRV01	Cmd Frequency: set by the keypad	Hz	Low/High Freq	
DRV02	Keypad - VFD Run Direction: 0= Reverse ; 1 = Forward	Fwd	Fwd/Rev	
DRV03	Accel Time in seconds (default values change on larger HP units)	20.0	0.0-600.0	
DRV04	Decel Time in seconds (default values change on larger HP units)	30.0	0.0-600.0	
DRV06	Command Source: 0 = Keypad; 1 = FX/RX1; 2 = FX/RX2; 3 = Int 485; 4 = Field bus	1	0-5	
DRV07	Frequency Setting Method: 0 = Keypad; 2 = V1; 4 = V2; 5 = I2; 6 = Int485; 8 = FldBus	0	0-11	
DRV09	Control Mode: 0 = V/F; 1 = Slip Comp; 2= Resv; 3 = IM Sensorless; 4 = PM Sensorless	0	0-4	
DRV14	Motor HP size / capacity		.5-800	
DRV15	Torque Boost: 0 = Manual ; 1 = Auto 1 ; 2 = Auto 2	0	0-2	
DRV18	Base Frequency: VFD output frequency when running at rated voltage	60.00	30-400hz	
DRV19	Start frequency: frequency VFD starts voltage output	0.50	0.01-10.00hz	
DRV20	Maximum Frequency in Hz: set upper & lower frequency limits	60.00	4.00-500.00Hz	
DRV21	Displayed units: Hz/RPM Select: 0=Hz Display and 1 = RPM Display	0	0-1	
DRV30	kW/HP Unit Selection: 0 = kW ; 1 = HP	1	0-1	
BAS	Basic Group			
BAS07	V/F Pattern: 0 = Linear; 1 = Square; 2 = User V/F; 3 = Square 2	0	0-3	
BAS09	Time scale for Acc/Dec Ramps: 0 = 0.01 sec ; 1 = 0.1 sec ; 2 = 1 sec	0	0-2	
BAS10	Base frequency: 0 = 60Hz ; 1 = 50Hz (input power freq)	0	0-1	
BAS11	Motor pole number (total poles - NOT pole pairs): Ex: 4-pole = 1800rpm motor	4	2~48	
BAS13	Rated Current: Motor nameplate Full Load Amps			
BAS14	Motor No Load Current in Amps (typical value of 20-30% of FLA) 25% of FLA is common			
BAS15	Motor rated voltage		230/460v	
BAS19	VFD AC input power voltage		230/460v	
BAS20	Auto tuning: 0=None; 1=All Rotation; 2= All Static; 3= Rotate Lsigma; 6=Static	0	0~6	

Note: Shaded areas above denote most frequently used parameters

Common Parameters (continued)

Group Name	Description See drive manual for complete configuration capabilities NOTE: Press [ESC] key to escape from a Group	Default Value	Value Range	New Value
ADV	Advanced Group			
ADV01	Acc Pattern: 0=Linear and 1 = S-Curve	0	0-1	
ADV02	Decel Pattern: 0=Linear and 1 = S-Curve	0	0-1	
ADV08	Stop mode: 0 = Decel; 1 = DC Brake; 2 = Free Run; 3 = Resv; 4 = Power braking	0	0-4	
ADV09	Run Prevent: 0 = None; 1 = FWD Prevent; 2 = REV Prevent	0	0-2	
ADV24	Frequency limit: 0= No and 1 = Yes; must enable to set ADV25 & ADV26	0	0-1	
ADV25	Frequency low limit: 0.0 to high limit	0.50	0-400 Hz	
ADV26	Frequency high limit: minimum frequency to maximum frequency	60.00	0.1-400 Hz	
ADV64	Cooling fan control: 0 = During Run; 1 = Always On; 2 = Temp Control	0	0-2	
CON	Control Group			
CON-04	Carrier Frequency Select in kHz	3kHz	1.0-15.0kHz	
IN	Input Terminal Group (most inputs can be set to values 0-55 as needed - details in manual)			
IN65	P1 Define Digital input 1: 0 = None; 1 = FX; 2 = RX; 3 = RST; 4 = Ext Trip; 5 = BX; 6 = Jog	1	0-55	
IN66	P2 Define Digital input 2: 7 = Speed-Low; 8 = Speed-Medium; 9 = Speed-High; 15 = Run Enable	2	0-55	
IN67	P3 Define Digital input 3: 16 = 3-wire; 17 = 2nd Source; 19 = Up; 20 = Down; 22 = UP/DN Clear	5	0-55	
IN68	P4 Define Digital input 4: 25 = Open Loop; 26 = PID Gain 2; 27 = PID Ref Change; 29 = Interlock 1	3	0-55	
IN69	P5 Define Digital input 5: 30 = Interlock 2; 34 = Pre-Excite; 35 = Timer In; 38 = FWD Jog; 39 = REV Jog	7	0-55	
IN70	P6 Define: Digital input 6: 40 = Fire Mode; 43 = Time Event Enable; 44 = Pre-heat; 46 = Pump Clean	8	0-55	
IN71	P7 Define: Digital input 7: 49 = Sleep Wake Change; 50 = PID Step Ref-L; 51 = PID Step Ref-M; 52 = Step-H	9	0-55	
IN87	Digital Inputs: Normally Open / Normally Closed selection: 0 = NO ; 1 = NC; Inputs 1-7	b0000000	b000000-111111	
IN90	Digital Input status: troubleshooting tool: 0 = OFF and 1 = ON (dependent upon NO/ NC contact)	0	0-1	
OUT	Output Terminal Group (most outputs can be set to values 0-58 as needed - details in manual)			
OUT01	AO1 assignment: 0 = Freq; 1 = Out Amps; 2 = Out Volt; 3 = DC Bus; 4 = Out Pwr; 7 = Target Freq	0	0-12	
OUT07	AO2 assignment: 8 = Ramp Freq; 9 = PID Value; 10 = PID Fdk Value; 11 = PID Output; 12 = Const %	0	0-12	
OUT31	Relay 1: 0 = None; 1 = FDT1; 5 = OL; 6 = IOL; 7 = Under Load; 9 = Stall; 10 = OV; 11 = UV	23	0-58	
OUT32	Relay 2: 12 = Over heat; 13 = Lost Cmd; 14 = Run; 15 = Stop; 16 = Steady; 20 = Ready; 21 = MMC	14	0-58	
OUT33	Relay 3: 22 = Timer Out; 23 = Trip; 25 = DB Warn % ED; 26 = On/Off Control; 27 = Fire Mode	0	0-58	
OUT34	Relay 4: 28 = Pipe broken; 29 = Damper Err; 30 = Lubrication; 31 = Pump Clean; 32 = Cap warning	0	0-58	
OUT35	Relay 5: 35 = Fan Exchange; 36 = AUTO; 37 = HAND; 38 = TO; 41 = Broken belt; 42 = Brake Cntrl	0	0-58	
OUT36	Q1 Open Collector Output Define: 0 = None (selections same as Relay outputs)	0	0-58	
OUT41	Digital Output status: troubleshooting tool: 0 = OFF and 1 = ON	b0000	b00-11 status	
OUT 52	Digital Output Normally Open / Normally Closed selection: 0 = NO ; 1 = NC; Relays 1-5	b00000	b00000-11111	

Note: Shaded areas above denote most frequently used parameters

Common Parameters (continued)

Group Name	Description See drive manual for complete configuration capabilities NOTE: Press [ESC] key to escape from a Group	Default Value	Value Range	New Value
COM	Communication Group			
AP	Application Group			
AP2-15	Pump Clean Mode 1; 0 = None; 1 = DI Dependent; 2 = Output Power; 3 = Output current	0	0-3	
AP2-16	Pump Clean Mode 2; 0 = None; 1 = Start; 2 = Stop; 3 = Start & Stop	0	0-3	
AP2-38	Decel Valve Freq: in Hertz	40.00	Low/High Freq	
AP2-39	Decel Valve Time: in seconds	0.0	6000.0	
AP3	Configures the time event related features: See manual		AP03 1-87	
PRT	Protection Group			
PRT04	Load Duty: 0 = Normal Duty; 1 = Heavy Duty	1	0-1	
PRT05	Input/output open phase protection: Bit low = Off ; Bit High = ON (see manual)	0	0-1	
PRT06	Open-phase input voltage band: adjustable (see manual)	40	1-100v	
PRT08	Select start at trip reset: Set Bit 00 or 11 (Caution - VFD may start automatically when enabled)	b00	b00-b11	
PRT09	Retry Number: Auto Restart number of attempts	0	0-10	
PRT10	Auto Restart delay time in seconds	0.0	0-60	
PRT20	Overload Trip Select: 0 = None; 1 = Free-Run; 2 = Decel	0	0-2	
PRT21	Overload Trip Level	120	30-150%	
PRT22	Overload Trip Time	60.0 sec	0-60.0 sec	
CNF	LCD Keypad Operations: Control Function Group:			
CNF10	VFD Software Version			
CNF20	Any Time Parameters: User display para - 0= Freq ; 1=Speed; 2=Out Curr; 6=DC Bus	0	0-19	
CNF21	Monitor Mode: user defined monitor items from CNF-21 - CNF-23	0	0-19	
CNF24	Monitor Mode: Enable to activate CNF-20-23: 0 = Disable ; 1 = Enable	0	0-1	
CNF40	Factory Default reset: 0 = No ; 1 = All Groups	0	0-15	
CNF41	Changed Parameter: 0 = Display all parameter ; 1 = Display only changed parameters	0	0-1	
CNF43	Macro Selection: 0=Basic (recommended for true factory default)	0	0-7	
CNF44	Erase trip history: 0 = No ; 1 = Yes	0	0-1	
CNF46	Parameter read: 1 = read (LCD Keypad)	0	0-1	
CNF47	Parameter write: 1 = write: VFD'S must be same FW Rev (LCD Keypad)	0	0-1	

Note: Shaded areas above denote most frequently used parameters

Section 13 - Product Warranty

Warranty Information

Fill in this warranty information form and keep this page for future reference or when warranty service may be required.

Product Name	WorldDrive	Date of Installation	
Model Name	WDFC BYPASS	Warranty Period	
Customer Info	Name (or company)		
	Address		
	Contact Info.		
Distributor Info	Name		
	Address		
	Contact info.		

Warranty Period and Policy Summary

Product warranty covers product malfunctions, under normal operating conditions, 24 months from the date of invoice.

WorldWide Electric Corporation warrants its products to be free from defects in materials or workmanship to the original purchaser. See Warranty Policy for complete details.

For this warranty to be effective, this product must be installed, used and maintained by the original purchaser in accordance with good industry standards. The warranty does not cover normal wear, tear, and erosion from use, misuse, abuse, corrosion or external power quality issues.

Disclaimer of Liability: Worldwide Electric Corporation (The Company) WorldWide Electric shall not be liable for any labor cost connected with the replacement of the equipment, the replacement of parts or adjustments to the equipment by the purchaser or their contractor without The Company's prior written approval. Downtime and production losses are not covered under this warranty.

Warranty Policy: Worldwide Electric Corporation (The Company) warrants its products to be free from defects in materials or workmanship to the original purchaser for a period of 24 months from date of sale (invoice)

For this warranty to be effective, this product must be installed, used and maintained by the original purchaser in accordance with good industry standards. The warranty does not cover normal wear, tear and erosion from use, misuse, abuse or corrosion.

In the event of failure, it shall be the responsibility of the original purchaser to notify The Company either in writing or by telephone to make arrangements for the correction of the problem. The purchaser shall be responsible for transportation charges connected with the return, exchange or repair of parts. Returns found defective upon inspection by our warranty department or authorized warranty service agent will be replaced free of charge.

The Company shall not be liable for any labor cost connected with the replacement of the equipment, the replacement of the parts or adjustments to the equipment by the purchaser or their contractor without The Company's prior written approval.

The Company, as the exclusive remedy under this warranty, shall, at its option, repair or replace defective items or, if agreed upon, refund the purchase price less reasonable allowance for depreciation in exchange for the product.

THE COMPANY MAKES NO OTHER WARRANTIES AND ALL IMPLIED OR EXPRESSED WARRANTIES AND REPRESENTATIONS, EXCEPT THAT OF TITLE, ARE DISCLAIMED. ALL IMPLIED WARRANTIES INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE OR USE BUT NOT LIMITED TO JUST THOSE THAT ARE DISCLAIMED. LIABILITY FOR CONSEQUENTIAL, INCIDENTAL OR SPECIAL DAMAGES AND LOSSES UNDER ANY AND ALL WARRANTIES WHETHER IN CONTRACT, TORT OR OTHERWISE, ARE EXCLUDED TO THE EXTENT EXCLUSION IS PERMITTED BY LAW.

All qualified returns will be subject to a 20% restocking fee (\$75 minimum).

All special order / special build products are non-cancellable and non-returnable.

Non-Warranty Service

A service fee will be incurred for malfunctions in the following cases:

- intentional abuse or negligence
- incoming power supply or quality problems or from other equipment being connected to the product
- acts of nature (fire, flood, earthquake, gas accidents, etc.)
- modifications or repair by unauthorized persons
- missing authentic Worldwide Electric rating plates

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Visit us at <http://www.worldwideelectric.com> for detailed service information.

Fire Mode Operation

This function is used to allow the inverter to ignore minor faults during emergency situations, such as fire, and provides continuous operation to protect other systems, such as ventilating fans. In Fire mode, the inverter continues to operate based on the Fire mode run direction and frequency set at PRT-46 and PRT-47.

NOTE:

- To enable Fire mode first enter password: 3473 at PRT-44
- Note: The VFD must be in test mode to set speed and direction before enabling
- Fire mode operation voids the product warranty.

Protection Group

Group	Number	Description	Parameter Setting	Setting Range	Unit
PRT	44	Fire mode password	3473	-	-
PRT	45	Fire mode setting	0: None	0 None 1 Fire Mode 2 Test Mode	- - -
PRT	46	Fire mode direction	0: Forward	0 Forward 1 Reverse	- -
PRT	47	Fire mode run frequency	60.00	0-max Freq	HZ
PRT	48	Fire mode operation count	0	-	-

Define Input/Outputs

Group	Number	Description	Parameter Setting	Setting Range	Unit
IN	65-71	Digital Input configuration	40: Fire Mode	0-55	-
OUT	31-35	Digital output configuration	27: Fire Mode	0-41	-
OUT	36	TR output configuration	27: Fire Mode	0-41	-

When the multi-function terminal configured for Fire mode is turned on, the inverter ignores all other commands and operates in the direction set at PRT-46 (Fire mode run direction) at the speed set at PRT-47 (Fire mode run frequency). In Fire mode, the inverter ignores any faults, other than 'ASHT,' 'Over Current 1,' 'Over Voltage,' 'Ground F,' and continues to operate. If any of the faults that can stop inverter operation occur, the inverter automatically performs a reset restart to continue the operation.

Damper Operation

During damper operation, one of the relay outputs OUT-31–35 (Relay 1–5) is set to '33 (Damper Control)' to output a signal based on the damper's operation status. One of the multifunction terminal inputs (IN-65–71) is set to '45 (Damper Open)' to receive the damper status input. When the inverter receives the run command it closes the relay output (Damper Control) and begins operating when both the run command and the damper open signal are turned on.

Damper Settings

Group	Number	Description	Parameter Setting	Setting Range	Unit
AP2	35	Damper Check Time	-	.1-600	sec
IN	65-71	Digital Input Define	P1-P7 Define	45 (Damper Open)	-
OUT	31-35	Digital Input Define	Relay 1-5	33 (Damper Control)	-

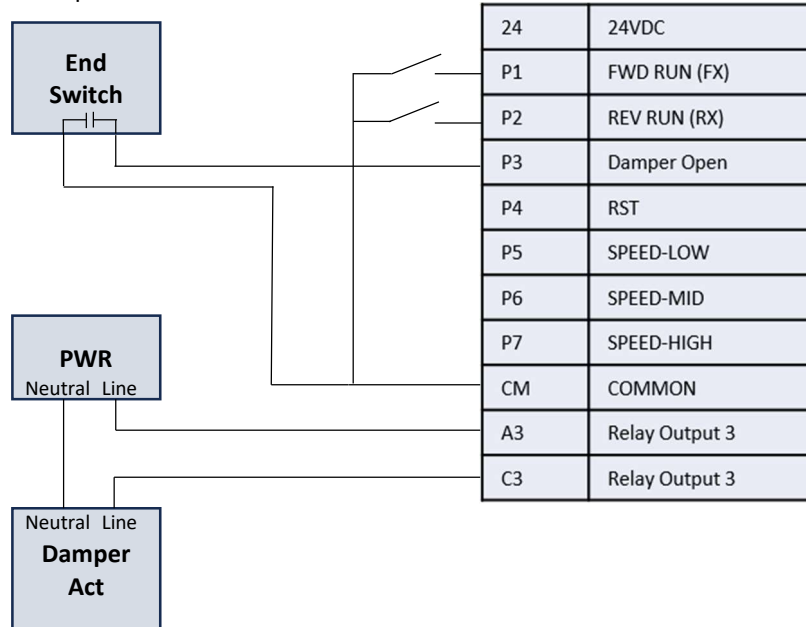
NOTE:

- Damper operation is one of the essential system features that are available in both HAND and AUTO modes.

Damper Operation Setting Details

Group	Description
AP-45 - Damper DT	Sets the damper open delay time. Detects the inverter run command or the damper open signal (whichever is received first) and outputs a damper error (Damper Err) if the other signal is not received until the time set at AP2-45 elapses.
IN 65-71 – Digital Inputs	Sets one of the multi-functional terminals to '45 (Damper Open)' to enable damper operation.
OUT 31-35 – Relay Outputs	Sets one of the relay outputs to '33 (Damper Control)' to provide a relay output when the inverter run command is turned on.

Example:



Group	Number	Description	Setting Range	Unit
AP2	35	Damper Check Time	.1-600	sec
IN	67	P3 Define	45 (Damper Open)	-
OUT	33	Relay Output 3 Define	33 (Damper Control)	-

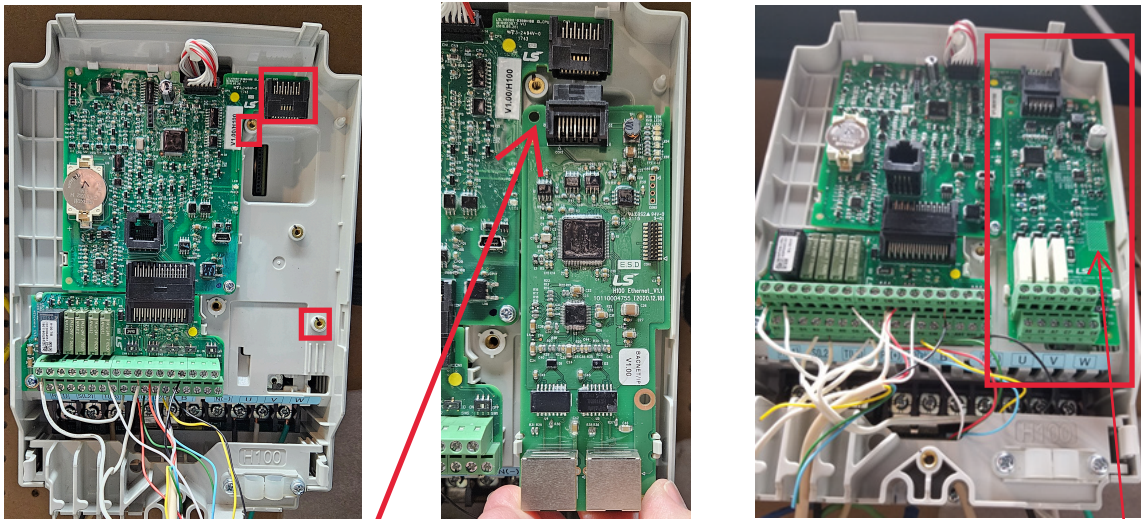
Installation of communication or I/O extension option cards

Safety Warning:

Turn off all power to the VFD and let the VFD bus capacitors drain to where the KEYPAD is de-energized. The equipment may hold charge long after the power supply has been turned off. Use a multimeter to make sure that there is no voltage before working on the VFD, motor or motor cable. Failure to heed warning could result in injury or death.

Notes:

1. WDFC can only hold **ONE** Option Module at a time.
Either a Serial Communication card **OR** the Extension I/O module but not both at the same time.
2. Option module installs on the right side of the chassis VFD as shown in photo. Both VFD front covers must be removed.



1. Slide card connector into VFD connector
2. Fasten with the mounting screws.

WDFCETH1 option card

1. Ethernet IP - protocol OR
2. Ethernet Modbus TCP/IP - protocol OR
3. BACnet/IP - protocol

At installation & startup, select desired protocol.
(Only **ONE**) It's not possible to support multiple protocols at the same time.
Daisy chain networking via dual ports.

WDFCEXIO option card installed right-side above U,V, W labels

- 2 - Digital Inputs: P8, P9
- 3 - Relay Outputs: A6, A7, A9
- 1 - Analog Input: V3 - *voltage or current*
- 1 - Analog Output: A03 - *voltage or current*



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Disclaimer of Liability: Worldwide Electric Corporation (The Company)

WorldWide Electric shall not be liable for any labor cost connected with the replacement of the equipment, the replacement of parts or adjustments to the equipment by the purchaser or their contractor without the Company's prior written approval.

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