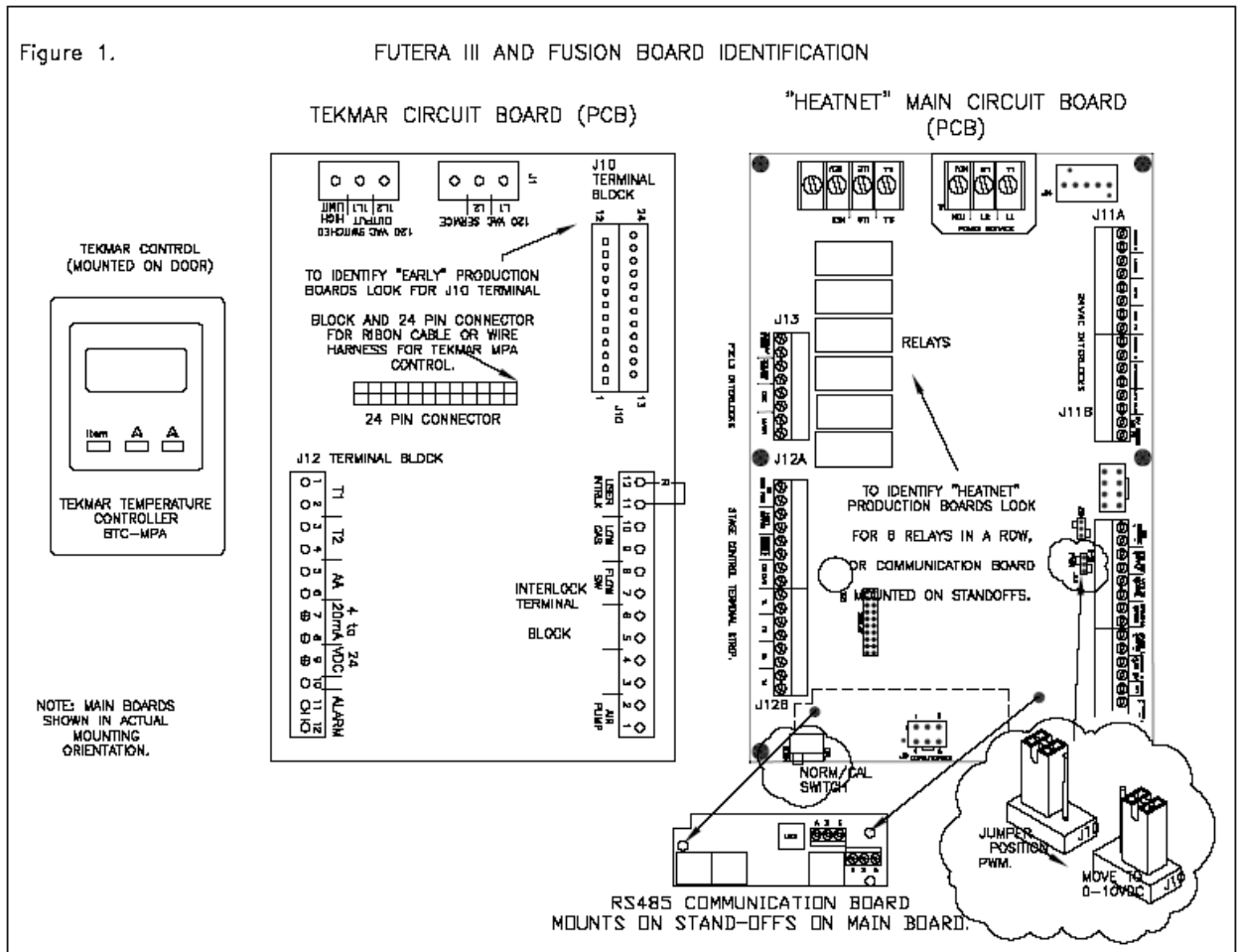


Variable Frequency Drive (VFD) (KB Electronics to AC Tech) Field Conversion Kit With Tekmar Control #3321-1001

INTRODUCTION: This instruction describes the procedure to replace Variable Frequency Drive (VFD) from KB Electronics to AC Tech on Futera III Series with Tekmar MPA Control platform. This instruction applies to Futera III and Futera Fusion model 500-2000 MBH.

Please refer to *Figure 1* to identify the control platform:

Figure 1. Control Platforms



PARTS: Futera III Series with Tekmar MPA Control platform will require the field retrofit kit 3321-1001 which includes all the parts listed in *Table 1*.

Table 1. Parts List

Part #	Description	Qty
15-0231	VFD AC Tech SM010S-523 1 HP, 120V	1
48-0619	Fuse 20A 600V Bussmann KTK-20	1
48-0640	Fuse Block 30A, 600V, 1 Pole BM6031B	1
16-0032	Ferrite Core 6.55mm dia.	1
40-0131	Wire Harness VFD to Blower	1
44-0015	14 ga. Black Wire	5 ft
44-0016	14 ga. White Wire	5 ft
48-0074	Spade Terminal	4
48-0066	Quick Connect Terminals (1250 to 2000 sizes only)	4
42-0508.1	Wiring Diagram	1
82-0315	Field Conversion Instruction Sheet	1

PROCEDURE:

WARNING: Disconnect all power sources to boiler before performing any electrical connections. Label each wire to be serviced before disconnecting. Wiring errors can cause improper or dangerous boiler operation. Confirm proper operation after servicing. Close the external manual gas valve on all boilers. Failure to follow this warning could result in severe property damage, severe personal injury, or death.

Phase 1 - Wiring

1. Disconnect all electrical connections from the KB Electronic VFD. Remove the KB drive and the blower harness from the system.
2. Install the new AC Tech drive 15-0231 where the KB drive was previously located.
3. Connect harness 40-0131 between the AC Tech drive and the blower motor. Clamp the Ferrite Core 16-0032 firmly around the Red, White and Black wire on harness 40-0131. Do not clamp around the outer gray jacket and shield wire.
Note: For best results, choose a location that is as close to the VFD as possible.
4. Fuse & Power Wire:
Mount the fuse block 48-0640 in the control panel and install the fuses 48-0619. Connect the fuse in series between the VFD power wire (Black) and Terminal L1 on the AC Tech Drive as describe in diagram (42-0508.1). Connect the Neutral and Ground wire to the VFD.
5. Signal Wires:
Connect the signal wires (harness 40-0121) to Terminal 2 and 5 on the AC Tech VFD. Please refer to the diagram (42-0508.1).

Phase 2 – Programming & Initializing the VFD

1. Turn the Power OFF at the boiler' switch.
2. Remove the Blue Jumper between Terminal 1 and 11 on the AC Tech Drive.
3. Turn the boiler ON at the boiler' switch.
4. Press the “Mode” button on the AC Tech Drive. The drive will now require a password.
5. Use the Arrow Keys on the AC Tech Drive to enter the password value of “523” then press “Mode”. The parameters of the drive will be accessible at this point.
6. Use the Arrow Keys on the AC Tech Drive to scroll to P45. Press “Mode” and use the Arrow Keys to enter the model value for P45 as listed below on *Table 2*. Press “Mode” again to save the value.
7. Use the Arrow Keys on the AC Tech Drive to scroll to P46. Press “Mode” and use the Arrow Keys to enter the table value for P46 as listed below on *Table 2*. Press “Mode” again to save the value.
8. Turn the boiler OFF and reinstall the jumper wire between Terminal 1 and 11 of the AC Tech VFD.
9. AC Tech Drive is now ready for operation!

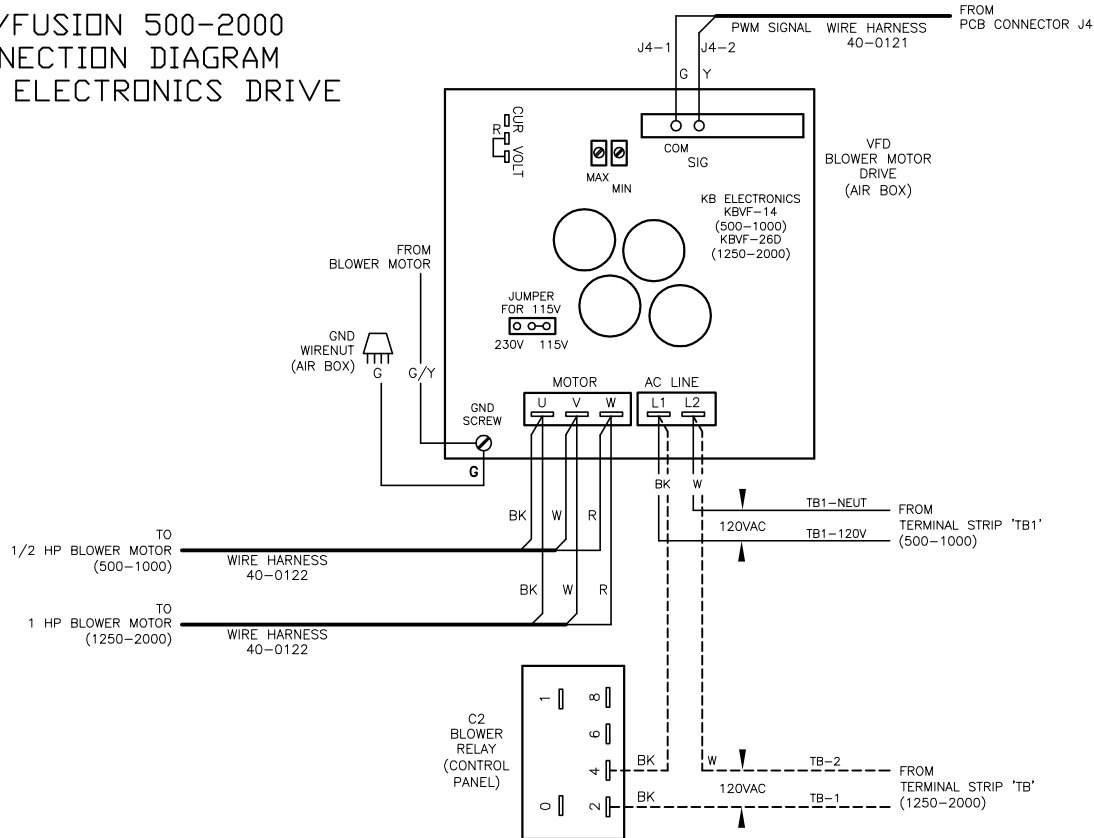
Table 2. AC Tech Minimum and Maximum Settings

Models	P45 (Minimum)	P46 (Maximum)
MB500, MW500, CB500, CW500	30	171
MB750, MW750, CB750, CW750	40	182
MB1000, MW1000, CB1000, CW1000	33	200
MB1250, MW1250, CB1250, CW1250	19	166
MB1500, MW1500, CB1500, CW1500	35	173
MB1750, MW1750, CB1750, CW1750	39.7	196
MB2000, MW2000, CB2000, CW2000	40	200

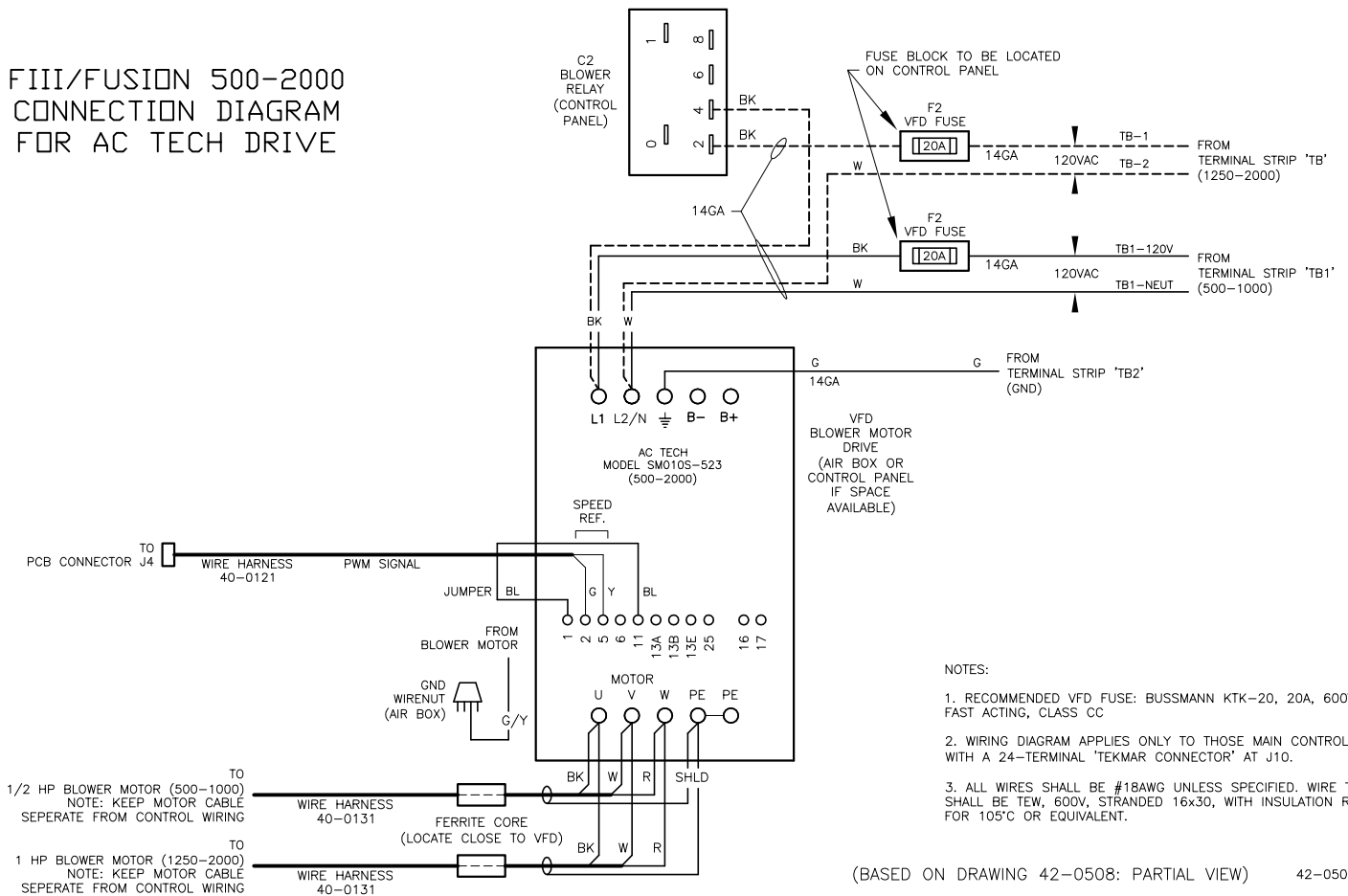
*** When changing P45 & P46 and the display shows CE, change P48 from 01 to 06.**

TEKMAR CONTROL PLATFORM

FIII/FUSION 500-2000 CONNECTION DIAGRAM FOR KB ELECTRONICS DRIVE



FIII/FUSION 500-2000 CONNECTION DIAGRAM FOR AC TECH DRIVE



NOTES:

1. RECOMMENDED VFD FUSE: BUSSMANN KTK-20, 20A, 600VAC, FAST ACTING, CLASS CC
2. WIRING DIAGRAM APPLIES ONLY TO THOSE MAIN CONTROL BOARDS WITH A 24-TERMINAL 'TEKMAR CONNECTOR' AT J10.
3. ALL WIRES SHALL BE #18AWG UNLESS SPECIFIED. WIRE TYPE SHALL BE TEW, 600V, STRANDED 16x30, WITH INSULATION RATED FOR 105°C OR EQUIVALENT.