Modulating Induced Draft System
with VSUB 8/12/16/20 Blower, CPC-3 Controller
and 460 volt VFD

PROJECT:_____

LEGEND:

– – – – –	LOW VOLTAGE / DC CONTROL WIRING
———	230 VAC SUPPLY / LOAD WIRING
———	460 VAC SUPPLY / LOAD WIRING
▬▬▬	VFD COMMUNICATIONS CABLE

FIGURE 8052018 11/18/04

10' (3m) COMMUNICATIONS CABLE PROVIDED WITH EACH VFD

WARNINGS:

1. Improper wiring to the transducer will destroy the transducer. Use caution to ensure that the wiring to the transducer is correct before activating the CPC-3 controller.

2. Verify that the input power voltage matches the VFD's nameplate rating before applying power. Improper supply voltage to the VFD could damage the VFD.

3. Verify that the blower (VSUB 8/12/16/20) is wired for the output voltage from the VFD. If not correct, severe damage to the blower and/or the VFD could result.

4. When the system is completely installed, perform the safety interlock and operational test as outlined in the installation manuals. Failure to do these tests could result in an unsafe and/or incorrectly operating system.

CAUTIONS:

1. All wiring must be in metal conduit (best) or shielded cable.

2. Route transducer wiring in metal conduit or use Belden Shield Cable #9939 or equivalent. Make sure the transducer wiring does not contain or cross line voltage wiring or undesired transducer performance may result.

3. Do not run the VFD's input power and output power wiring in the same conduit. Undesired VFD operation could result.

NOTES:

1. If the provided 10-foot, 10-wire VFD control cable is not long enough to meet the application needs, use caution to ensure that the connections from the VFD to the CPC-3 controller are correctly located. MB to MB, MC to MC, etc. In addition, reference the Wire Length Table.

2. Use caulking to seal the electrical box cover to the electrical box, and to seal the conduit holes to hole plugs.

3. If required, non-fused disconnects are to be supplied by the installer.

INDUCER TRANSDUCER BOX

WARNING:
Improper wiring to this transducer will destroy the transducer. Use caution to ensure that the wiring to the transducer is correct before activating the CPC-3 Controller.

R B G

Route transducer wiring in metal conduit or use Belden Shield Cable #9939 or equivalent. Make sure the transducer wiring does not contain or cross line voltage wiring or undesired transducer performance may result.

The low voltage VFD communication wiring is to be routed in metal conduit. If longer wiring is desired, see the wire length table below for maximum wire lengths.

Wire Gage	Max. Distance
12 AWG	900' (274m)
14 AWG	600' (183m)
16 AWG	390' (119m)
18 AWG	220' (67m)
20 AWG	165' (50m)
22 AWG	110' (34m)

ENLARGED VIEW

BLACK VIOLET ORANGE BLUE GRN/YEL YELLOW WHT/RED RED WHT/BRN GRAY

INDUCER MANUAL MODE PROVING SWITCH

COMMON   N/O

460 VAC / 3Ø / 60 HZ

TJERNLUND DRIVE MODEL
VFD- _ _ _ _ _ _ _ 4C3
"4" means "460 VAC"
"C" means "Closed Loop"
"3" means "CPC-3 Control"

GND L1 L2/N L3 NC NC L L

VFD CONTROL BOX

Terminal	Color
MB	BLACK
MC	VIOLET
M1	ORANGE
M2	BLUE
S1	GRN/YEL
S2	YELLOW
SC	WHT/RED
S3	RED
D–	WHT/BRN
D+	GRAY

M1 M2 M3 MGND S1 S2 F1 F2

Wiring is to be in dedicated metal conduit.
Max. length: 100' (30m) @ 460 VAC

CPC-3 CONTROLLER CIRCUIT BOARD

INDUCER MOTOR ROTATION SELECTOR

COMBUSTION AIR MOTOR ROTATION SELECTOR

CPC-3 TJERNLUND PRODUCTS, INC.

INDUCER TERMINAL STRIP

COMBUSTION AIR TERMINAL STRIP

DIGITAL I/O

ALARM   REMOTE ALARM PORT

RESET SWITCH

MICROCONTROLLERS

CONTROLLER DISPLAY

KEYPAD CONNECTORS

BOARD ALARM

AUX. CONTROL

AUXILIARY DEVICE PORT

EXP1 EXP2 EXP3   EXP-4E SIGNAL PORTS

ANALOG AND DIGITAL POWER SUPPLIES

#1   #2   #3   #4   CALL RETURN JUMPERS

MAIN   AC POWER

ON OFF   L N   L N   L N   L N

A B 1 2 3 4   A B 1 2 3 4   A B 1 2 3 4   A B 1 2 3 4

MAIN AC POWER TERMINAL

EXP4-E POWER TERMINALS

APPLIANCE 1 PORT   APPLIANCE 2 PORT   APPLIANCE 3 PORT   APPLIANCE 4 PORT

4 x 4 WEATHERPROOF BOX AND WHIP

VSUB BLOWER

MOTOR

RED   ORANGE   BLUE   GREEN   BLACK   BLACK   BLACK   RED

MOTOR LIMIT

GROUND

MOTOR WINDINGS

MOTOR HEATER TSTAT   INCLUDED CABLE

ARCTIC-DUTY MOTOR HEATER
(15 WATTS FOR VSUB8,12,16 & 30 WATTS FOR VSUB20)