AAC1
SMALL SYSTEM
CONTROL CONSOLE

ACC1-50
Small System Console

Titus

Table of Contents

Safety Precautions

PLEASE READ AND SAVE THE FOLLOWING
IMPORTANT SAFETY INFORMATION REGARDING THE
ACC1 PRIOR TO UNIT OPERATION.

To reduce the risk of fire, electrical shock or injury to persons, observe the following:

- Installation work and electrical wiring for the control console and other clean system equipment must be done by a qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction

- When cutting or drilling into a wall or ceiling, do not damage electrical wiring or other hidden utilities

- Service to the control console cannot be performed in the field. Return equipment still under warranty to Titus.

- Before trying to remove the control console from the clean system it controls, switch power off for the entire clean system at service panel and lock service panel to prevent power from being switched on accidentally, and follow proper procedures as necessary

- Use this unit only in the manner intended by the manufacturer. If you have questions, please contact Titus.

Overview

The Titus Control Console combines intelligent speed control with industry standard MODBUS® networking. The versatile design allows control of an array of Titus fan filter units with the installed universal control cards.

The console combines a user interface with MODBUS master capability so no additional networking components are needed and no MODBUS knowledge is necessary to install a network. Once the console has automatically scanned the network, only a few simple configuration selections are required.

Control Console Models

Titus Series Control Console		
Model No.	Addresses	No. of Fan Filter Units
ACC!-25	25	Up to 25
ACC1-125	125	Up to 125

Main Functions

- Controller module status monitoring

- Standby (set-back / hi-lo) function

- Monitoring of fault contacts or pressure switches

- Individual set point / speed adjustment

- Global set point / speed adjustment

Features

- 7-Segment LED control console display

- Dual rotary dials for easy option selection and system adjustments

- "Set Speed Memory" resets to last setting under power loss

- Global standby feature

- Pre-programmed user access levels and pass-codes to prevent tampering or accidental system changes

Benefits

- Quick and easy system air balancing of Titus Fan Filter Units

- Global standby feature for energy savings

- Simple set-up and wall-mount Control Console installation

- No installer configuration required

SPECIFICATIONS

Electrical Specifications

- Supply Voltage: 6-12 Vdc

- Typical Supply Current: 90 mA

- Network Transceivers: 2-wire, 1/8 Unit Load Type

- Operating Temperature: 0-40° Celsius (32-104°F) DC

- Power Connector: 2.1 mm DC Power Jack MODBUS

- Network: RJ45 Socket

Installation

The control console can be wall mounted in the cleanroom or at a remote location; however, the maximum recommended distance from the beginning to the end of the daisy chain should not exceed 800 linear feet.

Network Wiring

Cabling shall be provided and installed by others.

Plenum rated CAT5 cabling is recommended and network cable requirements should be specified based on the following:

A network is constructed by simply daisy-chaining Titus fan filter units via the universal control card or network control card of each fan filter unit. Specific network wiring information can be found in the istallation and operation manual for the speicfc unit type.

Network cable requirements should be based on:

- Distance Between Nodes

- Total Network Length

- Noisy Electrical Environment

- Environmental Conditions

- Mechanical Issues

All unit control cards must be pre-set with a unique address within the range of the ACC1
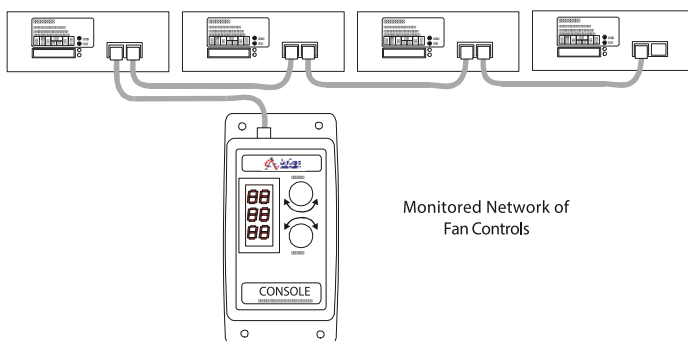
DC power to the console can be provided via:

1. Power Supply module connected to the DC power jack,

2. Battery Pack (4 AA batteries), or

3. MODBUS network cable via ACM1008 module connected to the network.
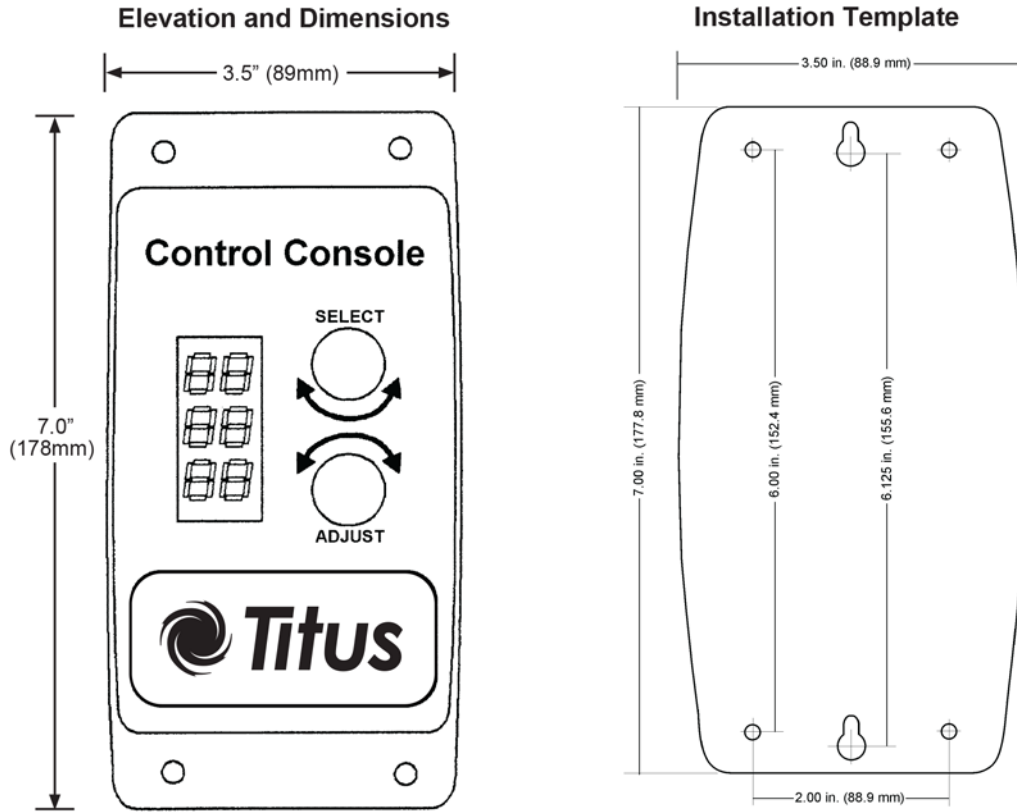
Once the control console has been connected to at least one fan filter unit, power can be applied. The control console will automatically scan the network.

Each fan filter unit should be given a unique address within the control console's available address range (determined by model number.) The addresses do not need to be contiguous, but contiguous addressing will make operator functions easier.

If power is turned off & on to any module or console in the network, its functionality and settings will be immediately restored to the same state before power loss.

Monitored Network of
Fan Controls

CONSOLE

Installation (continued)

Elevation and Dimensions

3.5" (89mm)

Control Console

SELECT

ADJUST

7.0"
(178mm)

Titus

Installation Template

3.50 in. (88.9 mm)

7.00 in. (177.8 mm)

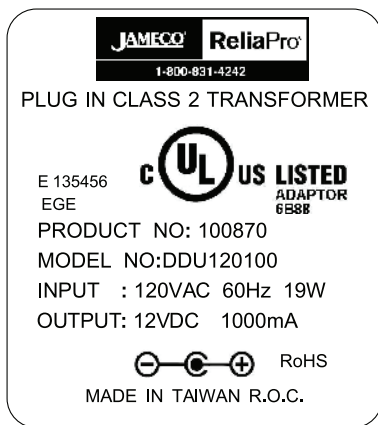6.00 in. (152.4 mm)

6.125 in. (155.6 mm)
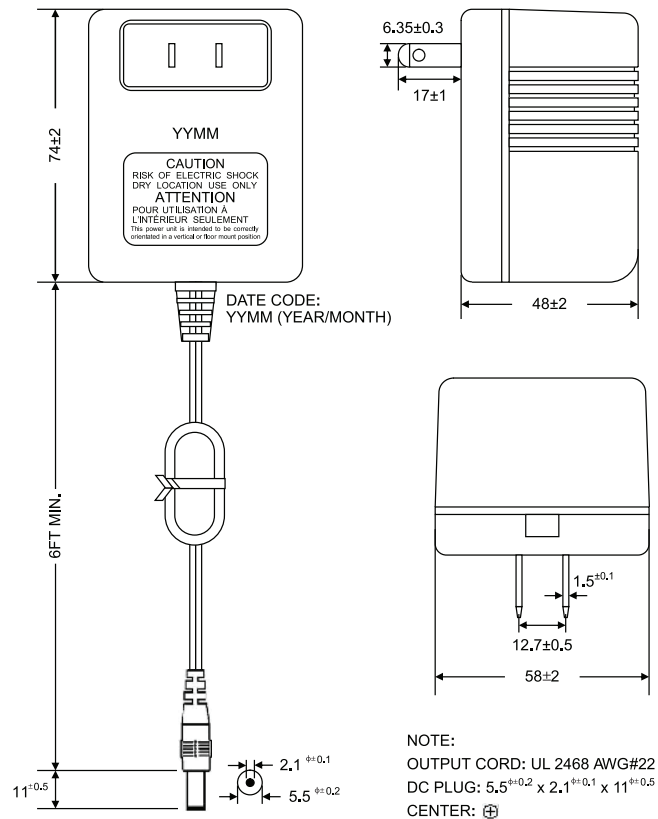
2.00 in. (88.9 mm)

Installation (continued)

Control Console Power Connections

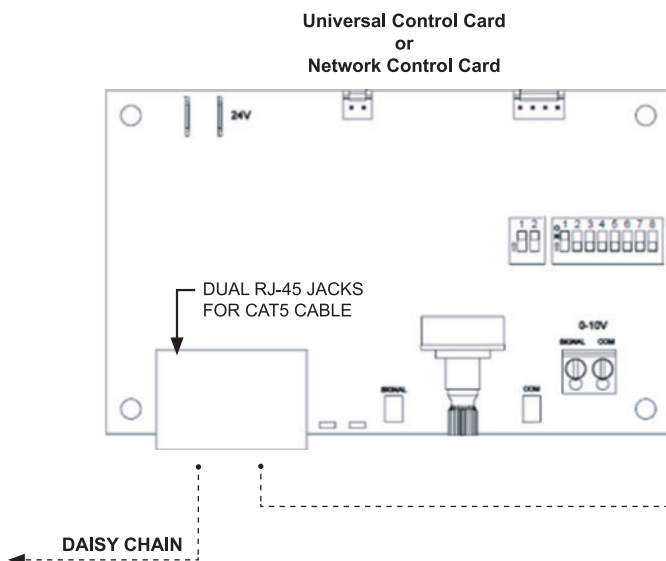The control console can be powered a plug-in style wall adapter, or a dedicated circuit board.

1. Plug in wall adapter: P/N: 64114-001
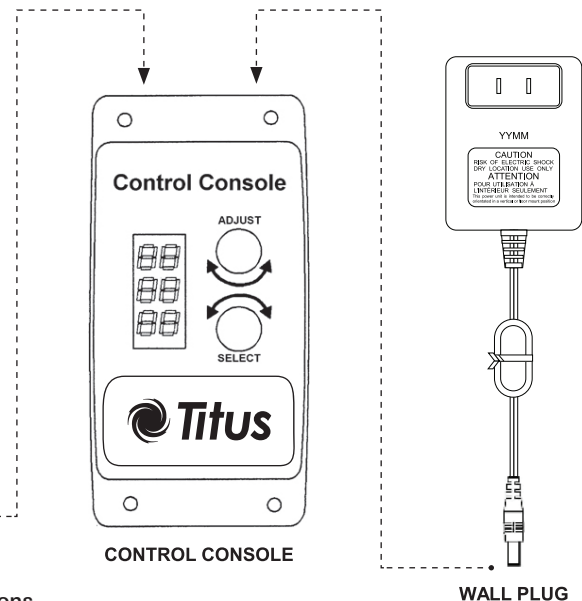
2. Dedicated circuit board: P/N: 63973

Unit Label

NOTE:
OUTPUT CORD: UL 2468 AWG#22
DC PLUG: $5.5^{\phi\pm0.2}$ x $2.1^{\phi\pm0.1}$ x $11^{\phi\pm0.5}$
CENTER: ⊕

Wall Plug Dimensional Information

Control Connections

CONTROL CONSOLE

**WALL PLUG**

Installation (continued)

SPECIFICATIONS

- Output: 12VDC at 1 Amp
- AC Input Range: 14-28VAC
- DC Input Range: 18-40VDC
- Fault Protected
- Short-Circuit Protected
- Internally Current-Limited to 1.2A Installation
- LED Power Indication
- Simple Connections
- RJ45 for network
- ¼ " Quick Connect for Transformer
- Open-frame PCB with Standoffs
- 0-40°C Operating Temperature
- Surge Protection for Power and Data Lines
- Dimensions: 2.20"(56mm) x 3.00"(76.3) x 1.45" (36.90)

The ACM1008 should be used with a transformer which is suitable for the environment and end application. Transformers smaller than 12VA can be used provided that the 1 Amp load is reduced proportionally. Check the jumpers behind the RJ45 connectors to be sure power is going to the proper cable direction. Remove (flag) the 0.1" jumper by the port you want to disable power (where there is more than one ACM1008, ensure that each cable segment has only one power source).

The Green LED on each port connector will illuminate when power is applied. If it does not, check for shorts in the CAT5 cabling and measure the 24VAC input power.

The 0V power connection is normally linked to the mounting posts for grounding. Cut JP3 to isolate the 0V power connection from ground. This may be necessary to eliminate ground-loop currents in some installations where multiple power supplies are used.

ACM1008 Jumpers
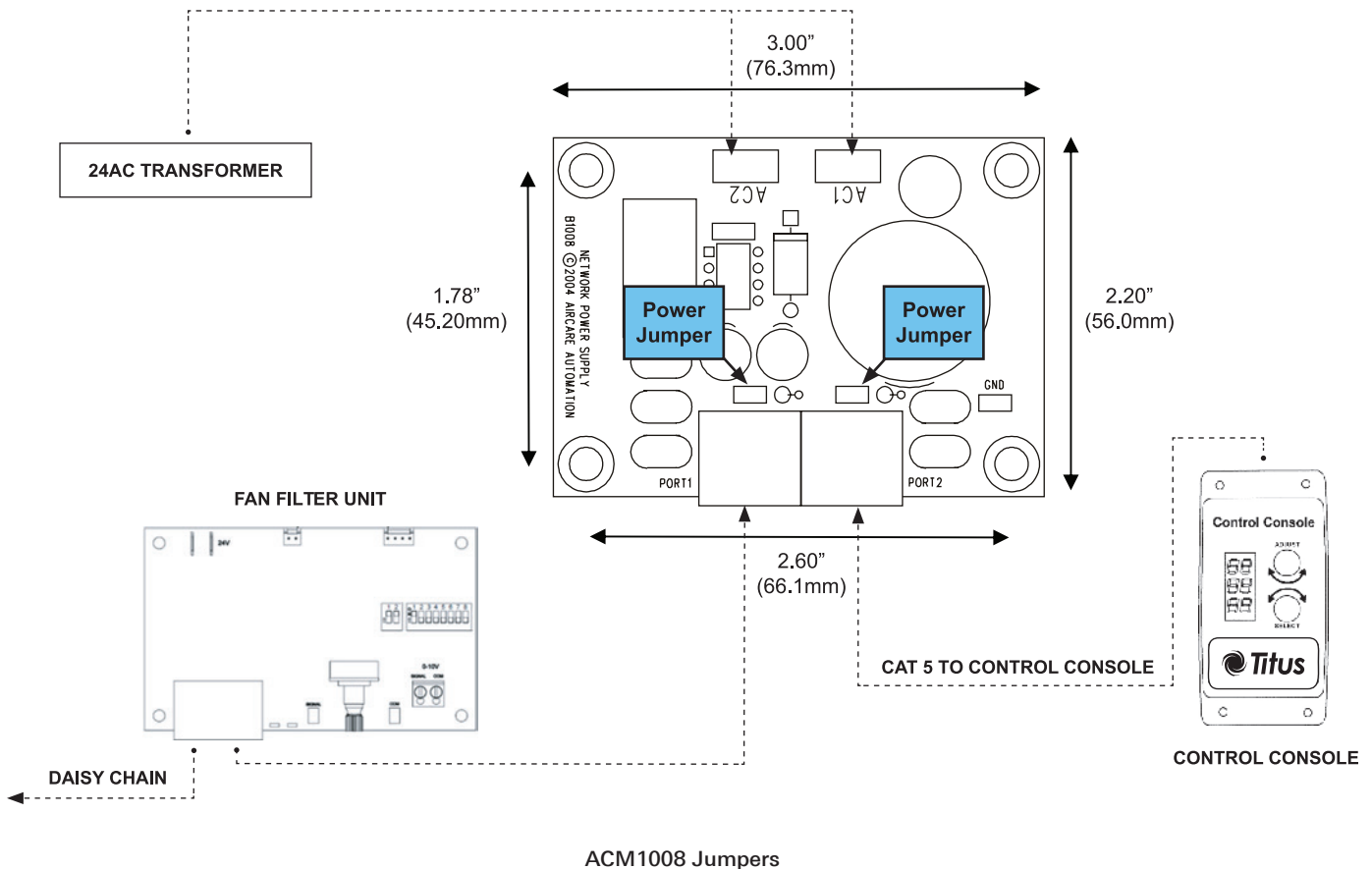
Control Console Operation

FRONT PANEL FEATURES

Address Display

Addresses 1 – 99 are displayed as '01' – '99' in the address display Address 100 is displayed as alternating '1' and '00' Addresses 101 and above are displayed as alternating '1' and '01' – '25'
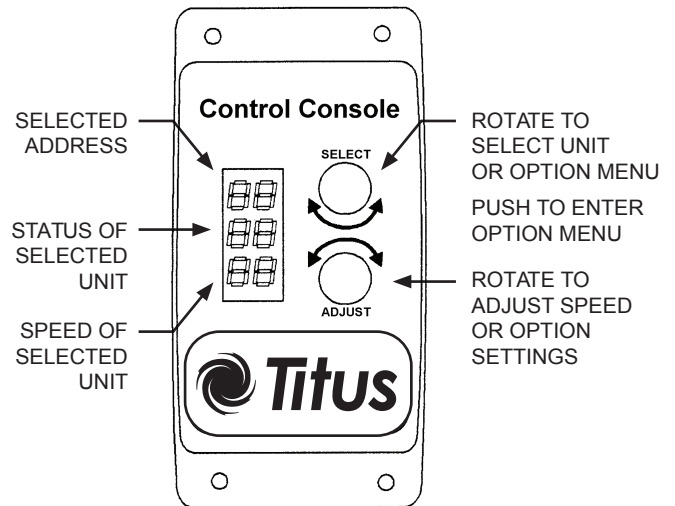
Set Point Display

Set point is displayed as a percentage of motor speed; '00' – '99' and 'ON' = 100%
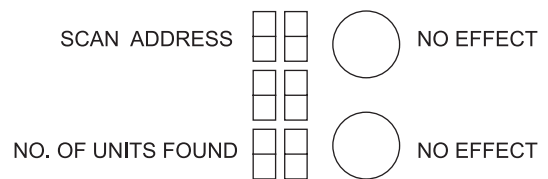
Power On

At power-on, the control console displays a series of parameters including model number on the three LED displays for about one second. The control console then cycles all segments in display to confirm that the display is functional. Once display cycling is complete, the control console then scans all addresses valid for that model (25 or 125.)

If no fan filter unit is detected, the control console beeps then repeats the scan sequence until at least one unit is found.

When finished, the control console will display the maximum number of units possible in the top display top, and the total number of units found in bottom display.

SELECTED ADDRESS

STATUS OF SELECTED UNIT

SPEED OF SELECTED UNIT

ROTATE TO SELECT UNIT OR OPTION MENU

PUSH TO ENTER OPTION MENU

ROTATE TO ADJUST SPEED OR OPTION SETTINGS

Control Console

SELECT

ADJUST

Panel Features

SCAN ADDRESS

NO. OF UNITS FOUND

NO EFFECT

NO EFFECT

Front Panel Functions During Power-On

Control Console Operation (continued)

Standby/Monitor Mode

The control console immediately enters standby monitor mode at the conclusion of power-on scanning. The control console remains in standby monitor mode until one of the two dials are rotated. If the dials are not adjusted for a period of 30 seconds, the control console will revert to standby monitor mode.

In standby monitor mode, the control console repeatedly polls all units detected during power-on scanning. Unused motor addresses are skipped, but the highest address must be within range of the control console model settings (25 or 125.)

The following information is shown:

Address Display:

- MODBUS address of each unit

Status Display:

- 'PG' for pressure switch good
- 'PF' for pressure switch fault
- ' ' if no pressure switch is enabled
- 'LO' if network is in standby (setback) mode

Set Speed Display:

- Set speed of operation in percent of full motor speed

    o Value read from MODBUS register 2

Note: If no response is received, the middle and lower LED shall display '—'.
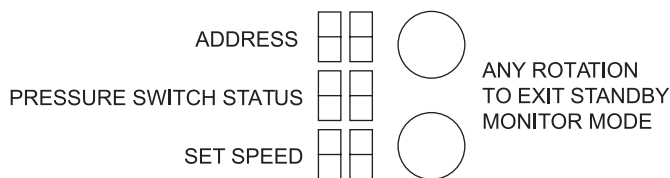
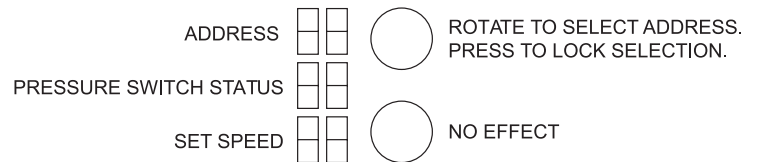**Standby Monitor Mode Front Panel Functions**

User Mode

If any dial activity is detected, the control console leaves standby monitor mode and enters user mode. In this mode, any unit can be selected by rotating the Select Dial.

Note: If the Select dial is moved past the valid address range, the select display shows "OP." Pushing the Select dial enters the Option Menu.

In user mode, the user can:

1. Select a unit with the select knob,

2. Adjust the set point of a unit with the adjust knob, and

3. Go into the options mode using the select knob.

Note: If 'LO' is shown in the Status Display, the network is in standby mode and set points cannot be adjusted.

User Mode Front Panel Functions

Control Console Operation (continued)

Option Mode

To enter options mode, rotate select dial counter-clockwise until 'OP' is displayed in the Address Display. Then press the Select Dial to activate options mode. Entering options mode will allow a user to perform the following functions:

- Change the access level by entering pass-codes (A1/A2/A3/A4)

- Select High Speed (normal) or Low Speed (Global set back)

- Adjust the Low Speed set back

- Select whether pressure switches are present or not

- Set the speed for every node simultaneously

To restrict access to functions other than monitoring, the control console implements access levels. Level A1 carries the greatest privileges.

To exit options mode press Select Dial or do not move either dial for 30 seconds.
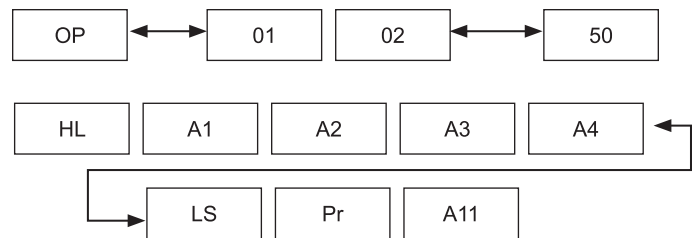
Adjusting Access Level:

1. Use the Select Dial to display the new access level desired

2. Press the Select Dial

    a. If new level has fewer privileges than current level, no pass code is needed; Set Speed Display (bottom) LEDs will scroll through its segments to confirm the change.

    b. If a pass code is needed, enter the pass code using the Adjust Dial. Using the Adjust Dial enter the first two digits of the pass code; press Adjust dial to lock in first two digits. Using the Adjust Dial enter the second two digits of the pass code, Press Adjust dial to lock in pass code. If pass code is correct the Set Speed Display (bottom) LEDs will scroll through its segments to confirm the change.

ADDRESS

PRESSURE SWITCH STATUS

SET SPEED

ROTATE TO SELECT ADDRESS.

ADJUST SET SPEED UP OR DOWN
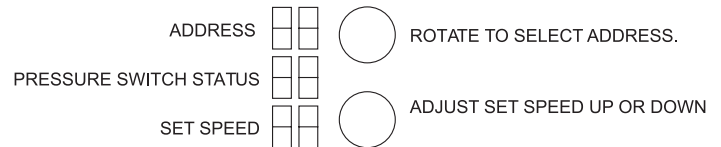
Option Mode Front Panel Functions

ROTATE SELECT DIAL TO DISPLAY "OP" ON TOP LED. PRESS SELECT DIAL TO ENTER OPTION MENU.

| OP | | 01 | 02 | | 50 |

| HL | A1 | A2 | A3 | A4 |

| LS | Pr | A11 |

ROTATE SELECT DIAL TO DISPLAY DESIRED OPTION IN THE CENTER LED. PUSH SELECT DIAL AGAIN TO EXIT OPTION MENU.

OPTION MENU NAVIGATION

Access Level	Pass Code	Description
A1	12 88	Operator can adjust configuration settings.
A2	25 75	Operator can use all functions for monitoring and control.
A3	49 51	Operator can monitor and adjust high/low settings.
A4	N/A	Operator can only monitor status of the network.

Selecting High or Low Speed (HL):

- This action requires access levels A1-A3

- Rotate the Select dial to display 'HL' in the Status Display (center) and press Select dial to lock in this option

- Rotate the Adjust dial to select 'HI' or ''LO'

- If 'HI' is selected the units shall run at their individually set speeds

- If 'LO' is selected, each unit will be set back by a global amount (see adjusting Low Speed below)

- If Low Speed is selected, this setting will remain in effect until High Speed is selected or the power is cycled

Adjusting Low Speed Set Back (LS)

- This action requires access levels A1-A2

- Use the Select dial to display the 'LS' menu option

- Rotate the Adjust Dial to vary the set-back percentage (0-99%)

    o This value is a percentage reduction from the set speed of each individual unit

- Press Adjust Dial to lock in set point

Selecting Pressure Switch (Pr)

- The Pressure switch option should be enabled if units have a pressure switch installed

    Rotate the Adjust dial to select:

        'NC': Normally closed (switch opens if there is a pressure fault)

        'NO': Normally open (switch closes if there is a pressure fault)

        ' ': No pressure switch

Global Speed Set (All)

- This is available only when operating at access level A1

- Rotate the Adjust Dial to set the desired speed

- Press the Adjust Dial to set every node to that speed

Soft Start (So)

- This is available only when operating at access level A1

- This adjusts the soft start setting for all units equipped with a Network Control Card (PSC units only)

- Rotate the Adjust Dial to set soft start value

        o Value can be adjusted in increments of '1' equal to a 5 second soft start

        o A value of '10' causes units with Network Control Cards to accelerate to full speed in about 50 seconds

        o A value of '00'disables the soft start featur

Notes

Notes

Notes

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