DE-3000

Engine/Compressor Monitoring System

COMS Kit Installation Manual

ALTRONIC

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1.0 Overview

WARNING! Failure to properly follow these instructions may cause damage to the DE-3000 system.

This kit blocks operator access to the DE-3000 keypad and prevents unauthorized modifications to the DE-3000 control system. It also enables advanced ACM-4000 features, such as data-logging and trending, to be used on the DE-3000.

The DE-3000 must have the following firmware:

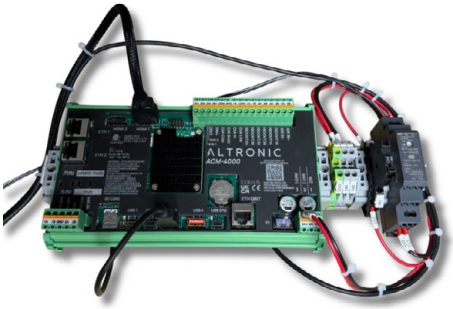
- Display: 11/05/19
- Terminal Boards: 3/16/17

NOTES:

- Altronic recommends contacting the distributor to install the security kit if a firmware update is also needed, as the process requires specialized software and cables.
- The ACM-4000 ships with the latest MDI release, which has Modbus TCP capability.
- The default DE-3000 AWI is pre-installed.
- The ACM-4000 has the following default communication settings:
  - **GBIT Port IP Address:** 98.102.65.175
  - **RS-485 Port 1 Baud Rate:** 38400
  - The default DE-3000 AWI is configured to communicate at Node Address 1.

2.0 Kit Contents

DE-3000 COMS Kit.....620024



The DE-3000 COMS Kit contains:

- **ACM-4000 with 7" Display Kit**
  - ×1 – ACM-4000 and Power Supply on Magnet-Mounted DIN-Rail
  - ×1 – 7" Display
  - ×1 – Cable Kit with 6' USB Cable, 6' HDMI Cable, and Power Cable
  - ×1 – Mounting Template (see page 20)
  - ×4 – Mounting Screws
  - ×4 – Nuts
- **DE-3000 Keypad Lockout Kit**
  - ×1 – Security Plate for DE-3000
  - ×4 – Security Plate Spanner Screws
  - ×4 – Nylon Washers
  - ×1 – Spanner Bit

3.0 Installing the DE-3000 Security Kit

1. Shut down the compressor package.
2. Press the **Menu button** on the DE-3000 keypad to open the menu.
3. Select **Communications**, and configure the following settings (see *Figure 1*):
   a. **Node:** 1
   b. **Port 1:** ASCII
   c. **Port 3:** Modbus 38.4 (this is 38,400 baud rate and RS-485 communication)

Figure 1

4. Power down the panel system.
5. Choose a suitable mounting location for the ACM-4000 inside the panel to stick the magnet-mount DIN rail.

6. Choose a suitable mounting location for the new 7" display. The display fits in the same cutout as the standard DE-3000 Flex Panel expansion cutout.
7. **For non-replacement installations:** Print the mounting template on page 20, then use it to cut the appropriate holes. Use the included mounting screws and nuts to mount the display.
8. Wire 24+ VDC into terminal 100 and COM into terminal 102 on the DIN-rail. See *Figure 2*.

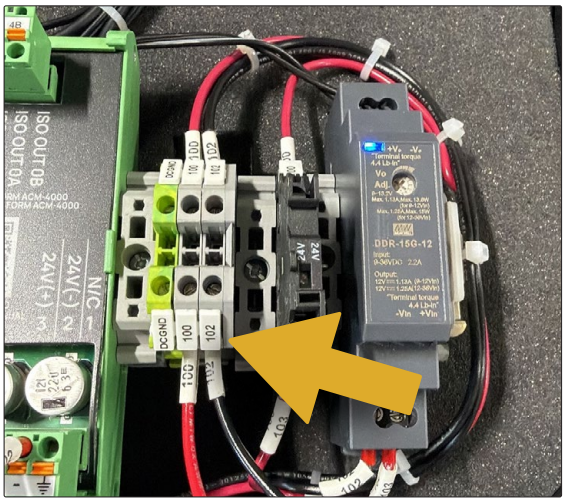


Figure 2

9. Wire the RS-485 port 1 on the ACM-4000 to the RS-485 port on the DE-3000 power supply board. See *Figure 3*.

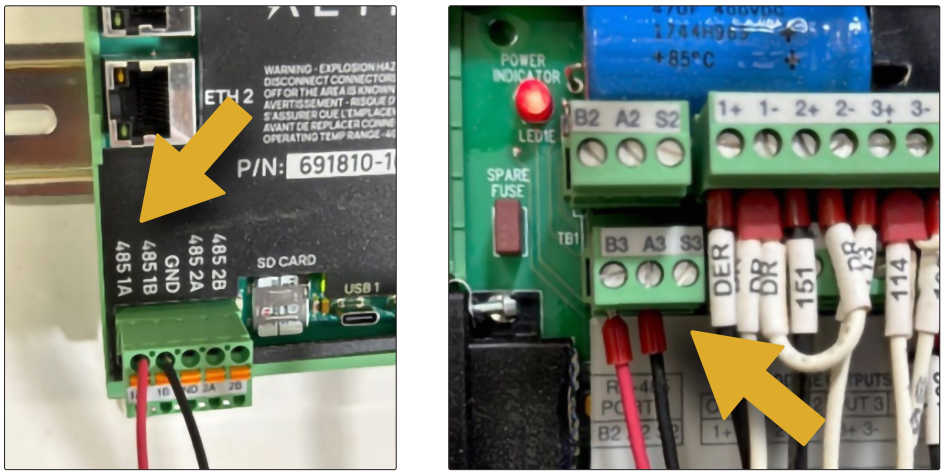


Figure 3

10. Connect the HDMI cable to the display and the HDMI 1 port on the ACM-4000. Connect the USB cable to the display and the USB 3 port on the ACM-4000. See *Figure 4*.

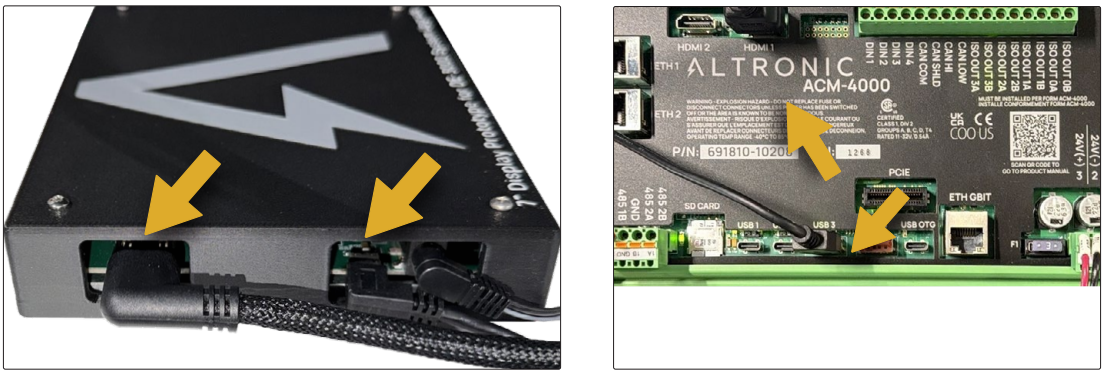


Figure 4

11. Plug the power connector into the DC port on the display and wire back into the 12 VDC power supply on the DIN-rail. See *Figure 2* and *Figure 4*. **NOTE:** The black wire with the white stripe connects to $+V_O$ and the solid black wire connects to $-V_O$.
12. Power the panel. Check for lights on the ACM-4000.

4.0 Configuring the DE-3000 AWI on the ACM-4000 (Optional)

NOTE: This section is only necessary if you wish to modify the DE-3000 AWI to match your own system.

4.1 Connecting to the ACM-4000

1. The ACM-4000 comes pre-configured with a base 60-channel AWI program installed for the DE-3000. Upon powering up, communication should be successful.
2. Set your computer to a static IP address of **98.102.65.200** **NOTE:** Please refer to IP Address Instructions for additional instructions.
3. Connect a standard Ethernet cable to your PC and the ETH GBIT port on the ACM-4000.
4. On your computer, open a web browser and enter the ACM-4000 IP address in the address bar: **98.102.65.175:3000/awi**
NOTE: We recommend using Chrome or Firefox for best results.
5. You will now see the default DE-3000 AWI on your PC. See *Figure 5*.

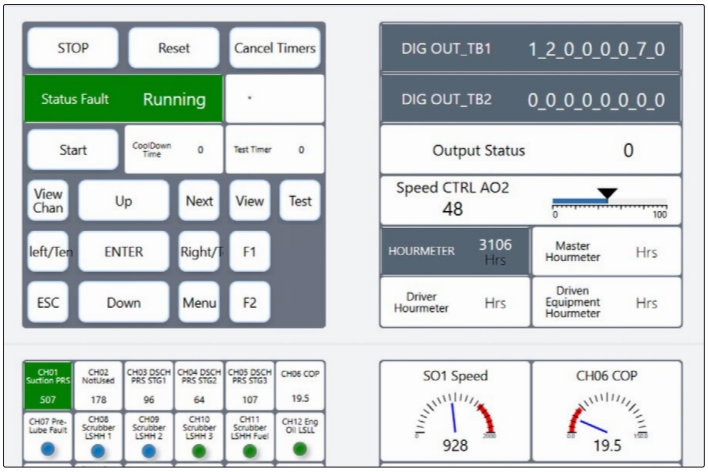


Figure 5

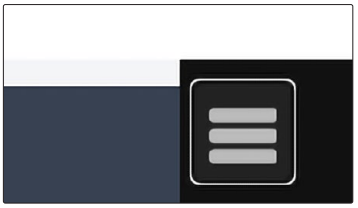


Figure 6

4.2 Modifying the Default DE-3000 AWI

1. Scroll to the bottom of the screen and click the **MDI Configuration Menu button** in the bottom-right corner to open the MDI Configuration interface. See *Figure 6*.
2. The MDI Configuration interface shows the Devices screen by default. Click the blue DE-3000 device summary card to open the device settings. See *Figure 7*.

Figure 7

3. In the Device Settings dialog, click the **Download AWI button** and save the DE-3000 AWI device profile to your computer. See *Figure 8* and *Figure 9*.

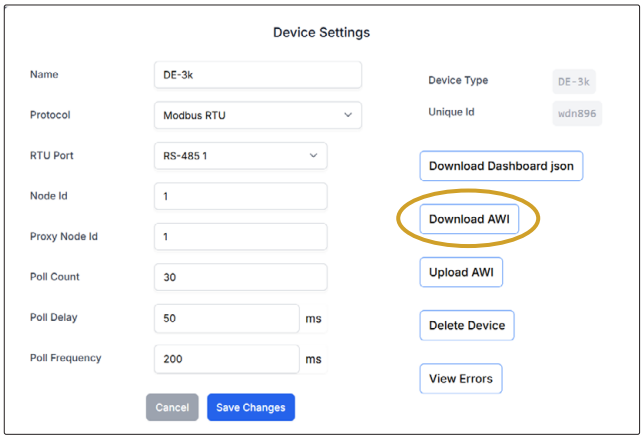


Figure 8

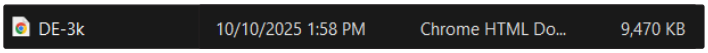


Figure 9

4. Locate the downloaded AWI file, and double-click to open it in a new web browser tab.
5. Change the connection settings to match those shown in *Figure 10*.

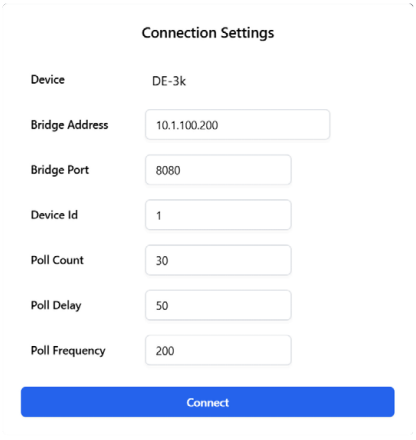


Figure 10

Figure 11

6. Click the **Connect button** to open the DE-3000 device profile in the AWI Application. The dashboard view is open by default. See *Figure 11*.
7. Each block of the DE-3000 AWI dashboard, except the keypad block in the top-left corner, can be edited to match your specific DE-3000 system.

8. **IMPORTANT:** Before editing the dashboard, please review the next section, **4.2.1 Overview of the DE-3000 Dashboard Blocks**, for general information about each block. Then, continue to section **4.2.3 Editing the DE-3000 Dashboard Blocks on page 9** for instructions on editing your AWI dashboard.

4.2.1 Overview of the DE-3000 Dashboard Blocks

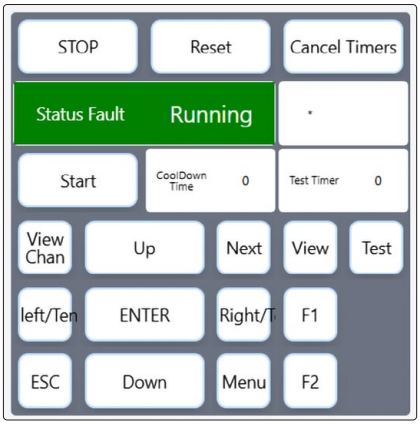


Figure 12

4.2.1.1 Keypad Block Overview

The keypad block is standard interfacing and has the following features:

1. **Stop Button:** Stops the compressor package.
2. **Reset Button:** Clears faults and resets timers (warm-up or running state). **NOTE:** Do not use if the DE-3000 is configured as OEM start. This will lock the system, similar to the Reset Button on the DE-3000 Display.
3. **Cancel Timers Button:** Cancels startup timers.
4. **Status Fault:** This will provide the current status and change colors.
   a. Green = Running state.
   b. Yellow = Timer active.
   c. Red = Fault. **NOTE:** When editing your dashboard blocks, it is recommended to begin any custom channel labels with the channel number; the channel number that the fault occurred on will display. See *Figure 15*.
5. **Fault High/Low:** When the status is fault, "High" or "Low" displays in the field to the right of the Status Fault. See *Figure 15*.
6. **Start Button:** Clears faults and places the unit into the auto start mode. This mimics the remote reset (Terminals RR).
7. **Cooldown Time:** Displays the amount of cooldown time remaining. The field is yellow when the cooldown timer is active. **NOTE:** To access the cooldown feature, press F2, F1, then Enter.
8. **Test Timer:** Displays the amount of time remaining. The field is blue when the test timer is active.
9. **Remaining Buttons:** All other buttons mimic the standard DE-3000 display.

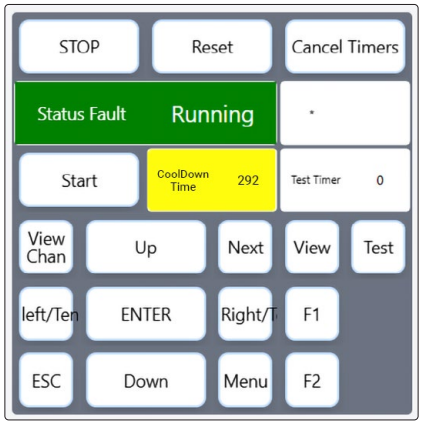


Figure 13

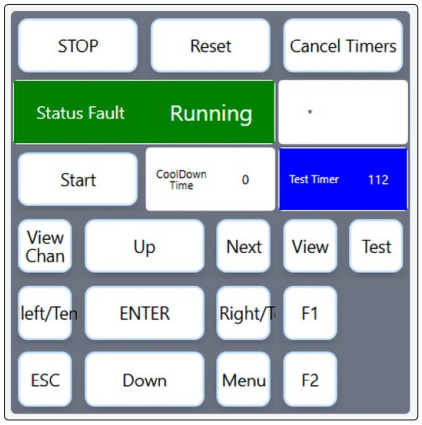


Figure 14

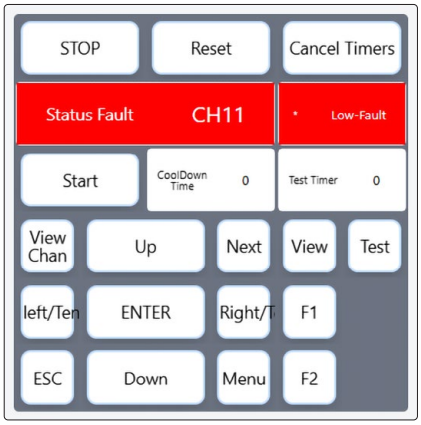


Figure 15

4.2.1.2 Output Status Block

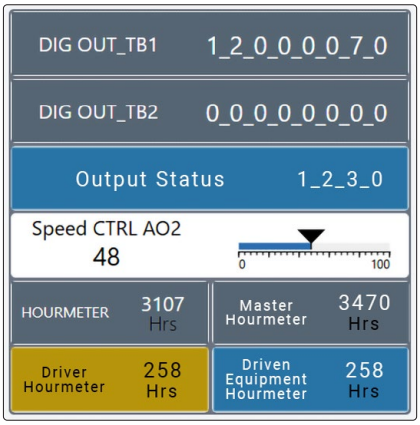


Figure 16

This block contains the output status and hour meters:

1. **First Section:** Displays the status of all digital outputs on the primary terminal board. 0 indicates off. A number greater than 0 indicates the number of the output that is on. In the example in *Figure 16*, outputs 1, 2, and 7 are on. All others are off.
2. **Second Section:** Displays the status of all digital outputs on the expansion board (terminal board #2). If you do not have an expansion board, you will be able to delete this section; refer to section **4.2.3 Editing the DE-3000 Dashboard Blocks on page 9** for instructions.
3. **Third Section:** Shows the status of the outputs on the power supply board. The same method applies. In the example in *Figure 16*, outputs 1, 2, and 3 are on, and output 4 is off.
4. **Fourth Section:** AO2, the default setting, is generally used for linear speed control to the driver. This can be changed to another AO output, or an additional AO output can be added elsewhere.
5. **Fifth Section (Hour Meters):**
   a. **Hourmeter:** The original 16-bit hour meter. It can only be reset inside the DE-3000 software.
   b. **Master / Driver / Driven Equipment Hourmeter**: These settings were introduced in late 2019 at customer request. They are 32-bit hour meters. They cannot be reset with software; they can only be reset inside the menu/keypad environment. For more information, please refer to the DE-3000 Operating Instructions, DE-3000 OI.

NOTE: The hour meter elements can be deleted if you do not wish to use them.

4.2.1.3 Input Monitoring Block – Channels 1 – 30

This block is the primary terminal board. It is pre-configured for a standard DE-3000 FLEX panel (5800-333-XX). Channels 27 and 28 are set for the Lube Prox feature. See *Figure 17*.

NOTE: If there is a blue LED in this block, there is a mismatch between the DE-3000 AWI and DE-3000 program settings.

4.2.1.4 RPM and Pressure Monitoring Block

This block contains RPM and Pressure channels. It is pre-configured for a standard DE-3000 FLEX panel (5800-333-XX). See *Figure 18*.

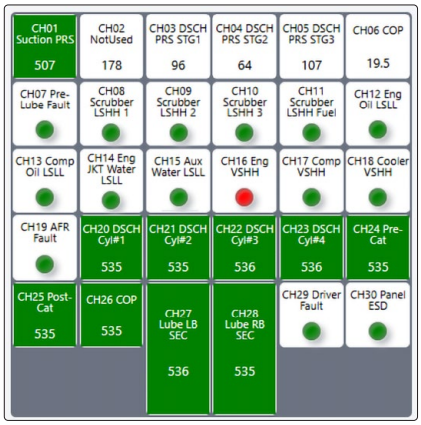


Figure 17

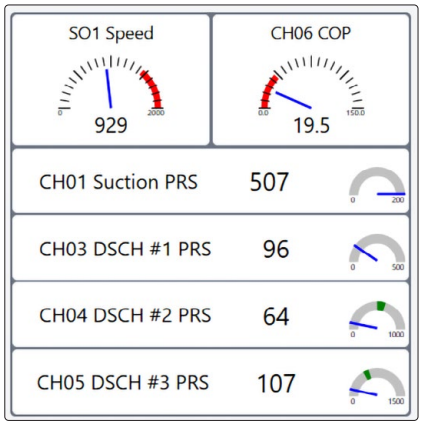


Figure 18

4.2.1.5 Input Monitoring Block – Channels 31 – 60

This block is the secondary terminal board. It is pre-configured for a standard 30-point expansion board. See *Figure 19*.

4.2.1.6 Temperature Monitoring Block

This block contains temperature channels. See *Figure 20*.

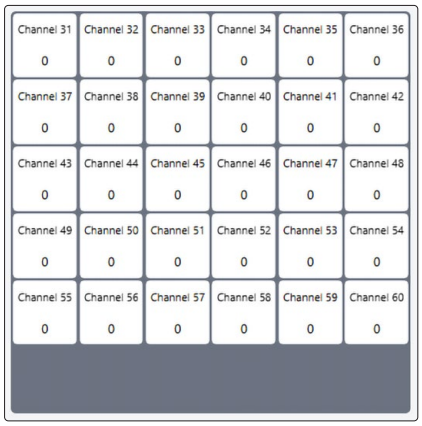


Figure 19

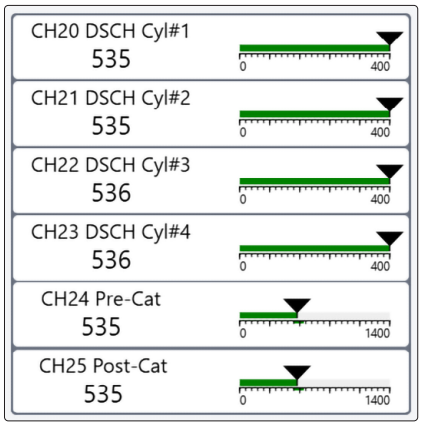


Figure 20

4.2.1.7 Control (PID) Setpoint and Tuning Block

This block contains PID analog tuning channels. Adjustment is available for each standard PID loop available for setpoint, proportional, integral, and derivative. The output is displayed as a percent. See *Figure 21*.

NOTES:

- Altronic does not recommend editing the channels in this block; however, you can change the label of the PID setpoint to reflect the actual function, such as a suction control valve or recycle valve. Refer to section **4.2.3 Editing the DE-3000 Dashboard Blocks on page 9** for instructions.
- This block could be deleted to prevent operators from tuning the PID loops, if desired.

4.2.1.8 Additional Temperature Monitoring Block

This block is set up for additional temperature channels. See *Figure 22*.

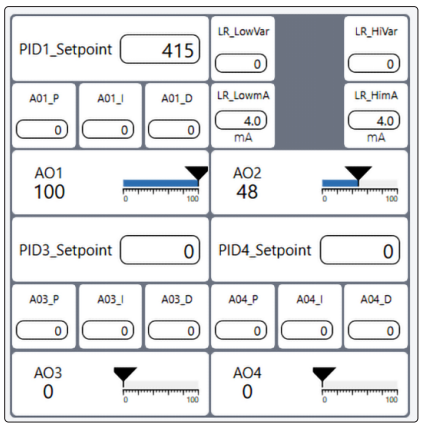


Figure 21

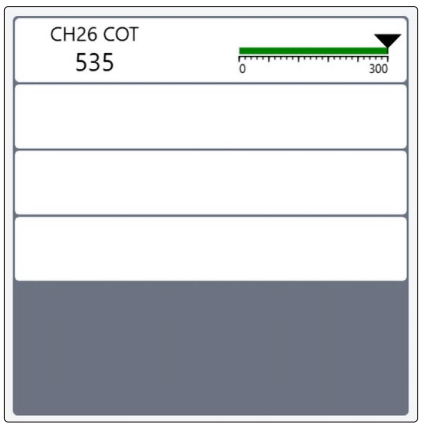


Figure 22

4.2.2 Preset Block Color Coding

Color coding for all digital-in (discrete) channel inputs is pre-configured so that the default DE-3000 AWI can support a wide range of customizable configurations. See *Figure 23*. LEDs provide users with a quick view of each channel's current status: red indicates a faulted channel and green indicates normal operation. The same color coding is applied to pressure and temperature channels to show when the current value falls within user-defined range limits. Because of this universal behavior, the red and green indicators should be disregarded unless the channel is configured as a digital input.

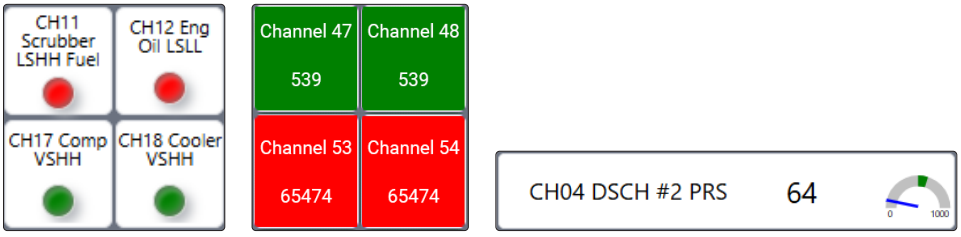


Figure 23

NOTE: If you see blue LEDs in the primary terminal board block, it likely indicates a mismatch between the AWI and your DE-3000 settings (for example, the element was configured as a discrete channel in the AWI but configured as an analog channel in your DE-3000). If this happens, you will need to edit the AWI to match your DE-3000 setup.

4.2.3 Editing the DE-3000 Dashboard Blocks

IMPORTANT NOTE: In full-screen view, you will see blank block areas to the right of the default dashboard blocks. To keep the dashboard layout scaling correctly inside the 7" display, the blank blocks must not be populated. See *Figure 24*.

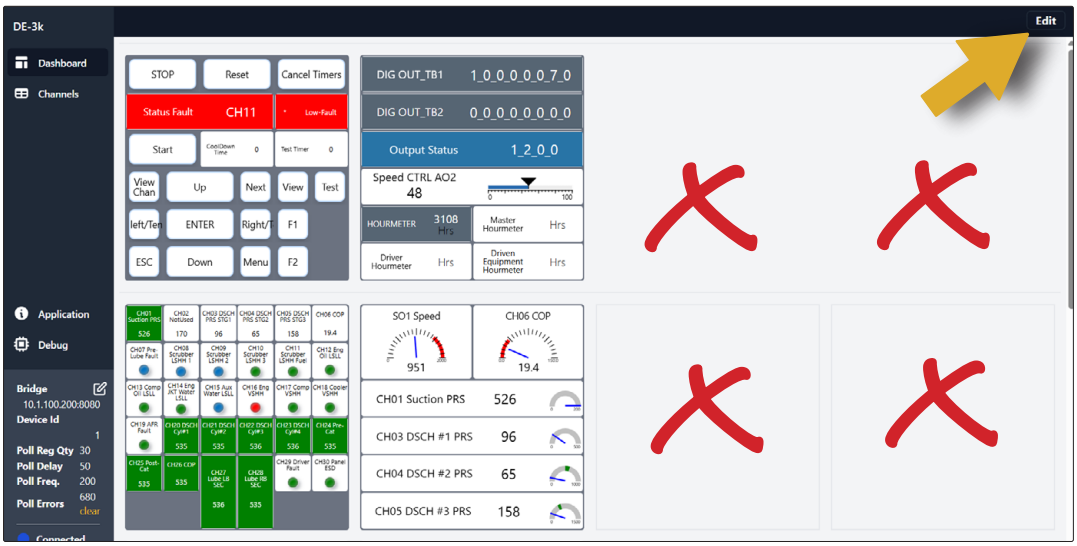


Figure 24

As noted previously, the ACM-4000 ships loaded with the default DE-3000 AWI (the base standard program). You can edit the default AWI to match your DE-3000 system. To begin editing the dashboard blocks:

1. With your downloaded DE-3000 AWI file open in your web browser, click the **Edit button** in the top-right corner (see *Figure 24*) to open the dashboard-edit view.
2. In the dashboard-edit view, each block has six buttons at the top, which you can use to begin editing the dashboard (see *Figure 25*):
   a. **Move Left** and **Right Buttons:** Move to the selected block left or right.
   b. **Insert Block Button:** Insert a blank block space to the right of the selected block.
   c. **Color Palette Button:** Change the outline color of the selected block. The default color is gray.
   d. **Duplicate Button:** Duplicates the entire selected block to the right.
   e. **Delete Button:** Deletes the entire selected block.

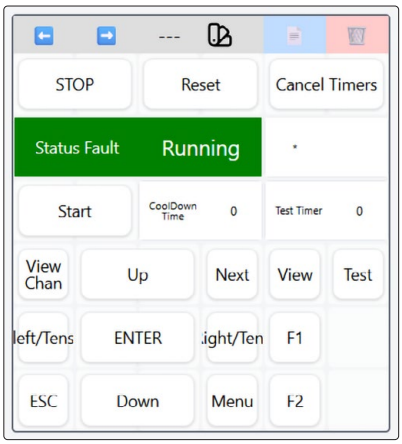


Figure 25

NOTE: If you make a mistake while editing and cannot resolve the issue, simply close the web browser tab without saving your changes to the AWI dashboard. Reopen the default AWI file and begin editing again.

3. Elements inside each block can be edited, moved, resized, or deleted.

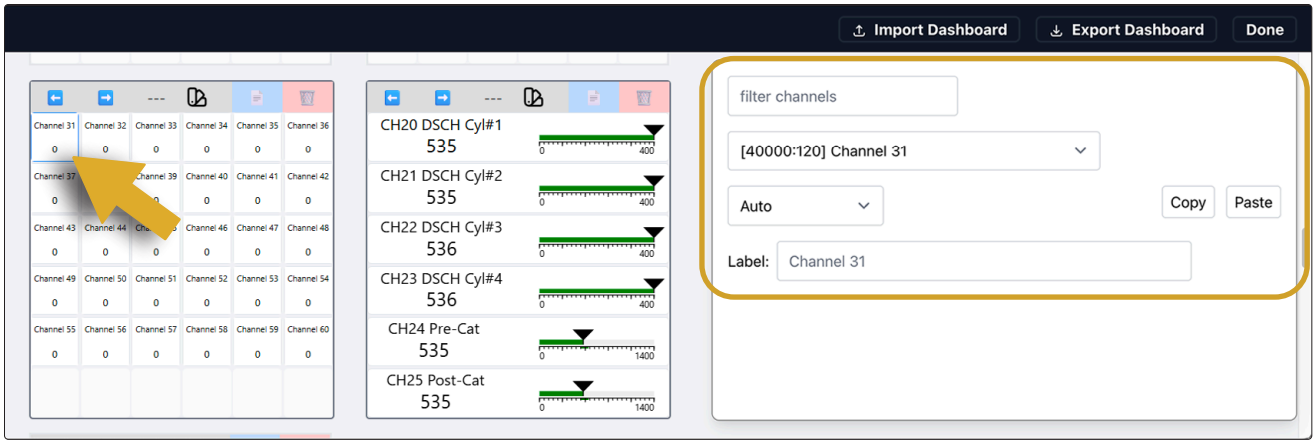


Figure 26

4. **Editing channel details:** Click the center of an element to select it. The element's outline turns blue, and the channel details are displayed on the right side of the screen. See *Figure 26*. The channel details may be changed to match your DE-3000 setup:
   a. **Channel Filter Field:** Filter by a selected channel.
   b. **Channel Dropdown List:** Change the selected channel.
   c. **Element Type Dropdown List:** Change the element type to Auto, AWI File Button, Label, Gauge – Linear, Gauge – Radial, LED, or Trend. Auto is typically used when the element is a pressure, temperature, or variable value.
   d. **Copy and Paste Buttons (Auto, Gauge, LED, and Trend Elements):** Copy the element type, display minimum and maximum, and color ranges (when applicable), and paste them into another element.
   e. **Label Field:** Edit the label for the element. The default label is the register name.
   f. **Display Min / Display Max Fields (Gauge and Trend Elements Only):** Edit the minimum and maximum values for the element. See *Figure 27*.
   g. **Color Ranges Button (Gauges Only):** Click to open the Color Ranges dialog to edit the color ranges for the gauge (see *Figure 27* and *Figure 28*):
      i. Edit the **From** and **To values**, or the colors for each row as needed.
      ii. Click **Add Row** to add a new color range for the gauge. **NOTE:** The AWI Application accepts a wide range of colors. If the color you enter is not recognized, the range will display in black.
   h. **Filename Field:** Edit the name of the associated file for the AWI File Button element type.
5. **Moving an element:** Click in the center of an element and drag to move it within the same block. Please note, it is possible to drag an element on top of another element, so drag carefully.
6. **Resizing an element:** Move your mouse cursor to the bottom-right corner of the element. When the mouse cursor changes to a double arrow, click and drag to resize the element.
7. **Deleting an element:** Click an element and press the **Delete key** on your keyboard to delete it. **NOTE:** Clicking the **Delete button** will delete the entire block.

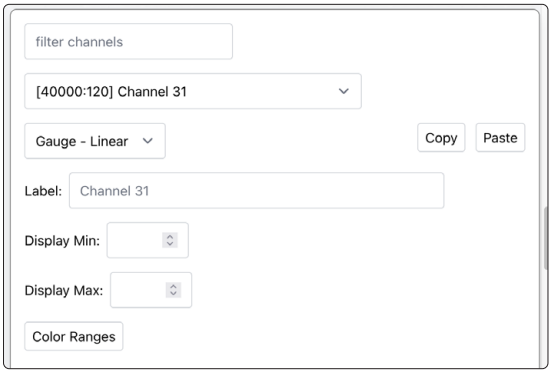


Figure 27

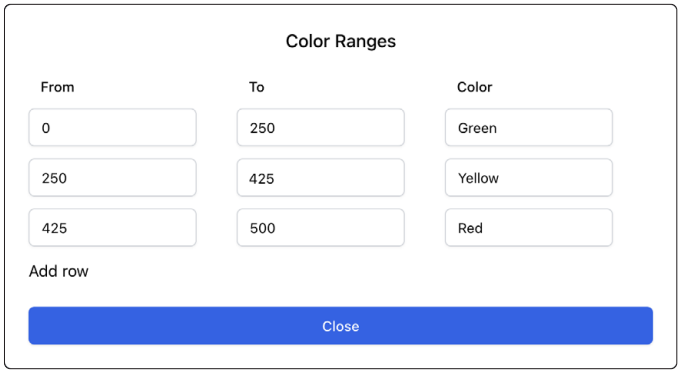


Figure 28

DASHBOARD EDITING TIPS:

- The majority of the edits you will need to make will probably be to change the channel labels to match them to your DE-3000 setup.
- You may also need to change a selected channel, the order of the channels in a block, or the element type for a particular channel to match your DE-3000 configuration.
- You should not need to make many, if any, changes to the keypad block, as it's standard for most setups. If you wish, you can click the **Color Palette Button** to change the outline color for the block.

Example 1: Deleting and Resizing an Element

In example 1 shown below, the DE-3000 does not have a second terminal board, so we want to delete the digital output status, the DIG OUT_TB2 element in the output status block.

1. Click the center of the element you want to delete. In the example in *Figure 29*, the **DIG OUT_TB2** element outline is blue to indicate it is selected.
2. Press the **Delete key** on your keyboard to delete the element. In *Figure 30*, the **DIG OUT_TB2** element has been deleted.
3. Move your mouse cursor to the bottom-right corner of the element you wish to resize, and click and drag to resize it. In *Figure 31*, the output status for the primary terminal board has been resized to fill the empty space.

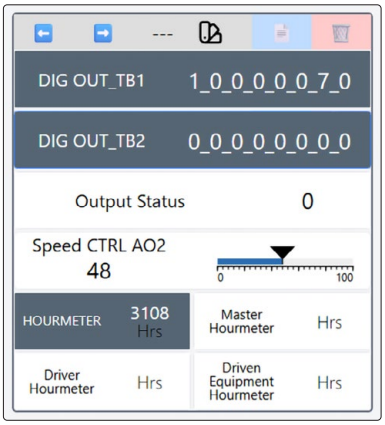


Figure 29

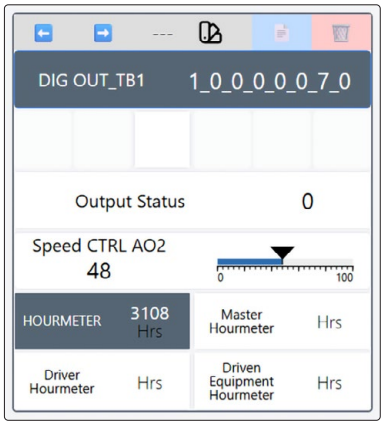


Figure 30

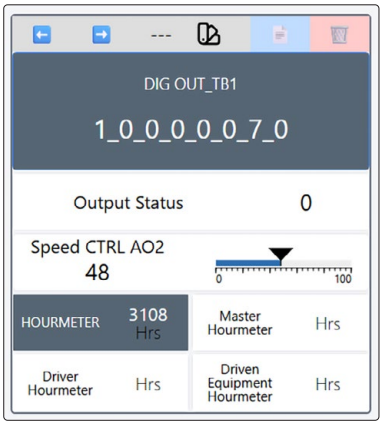


Figure 31

Example 2: Editing Channel Details

This example will focus on the input monitoring block for channels 1 – 30.

1. Click the center of the element you want to edit. In the example in *Figure 32*, the **CH01 Suction PRS** element is selected. The channel details, which are shown in *Figure 33*, appear on the right side of the screen.
2. Click the **Channel Dropdown List** to choose a different channel, if needed.
3. Click the **Element Type Dropdown List** to change the element type, if needed. Auto is generally used when the element is a pressure, temperature, or variable value.

4. In the **Label Field**, you can assign a custom name to match your DE-3000 setup. **TIP:** The Fault Status element in the keypad block only reports the channel number, so we recommend entering the channel number at the beginning of the custom name.

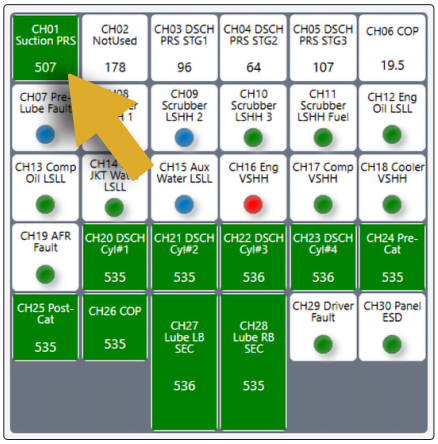


Figure 32

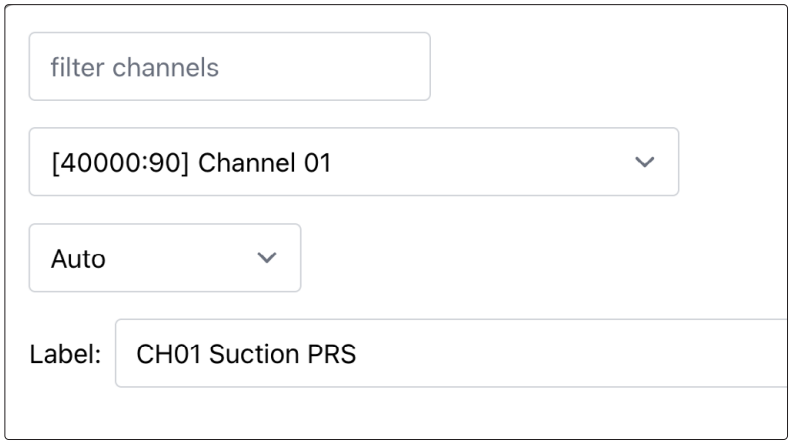


Figure 33

Example 3: Editing Gauges

This next example focuses on the RPM and pressure monitoring block. It is typically best to keep the layout of this block, but you may want to change the selected channel, adjust the channel order, change the gauge type, adjust the minimum or maximum values, or add color ranges:

1. Click to select the element you want to edit. In the example in *Figure 34*, Channel 1, which is set to a radial gauge, is selected.
2. Click the **Element Type Dropdown list** to change the gauge type from radial to linear, if desired.
3. In the **Display Min and Display Max fields**, you can adjust the minimum and maximum values for the gauge, as needed.
4. To add color ranges to the gauge, click the **Color Range button**, and enter the range limits and colors; see *Figure 35*. Also, see *Figure 36* showing the edited gauge.

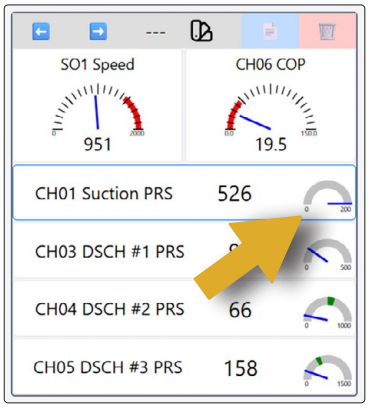


Figure 34

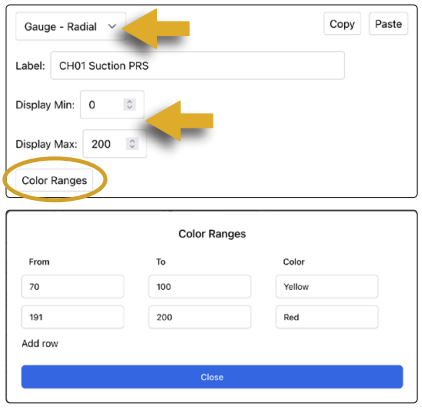


Figure 35

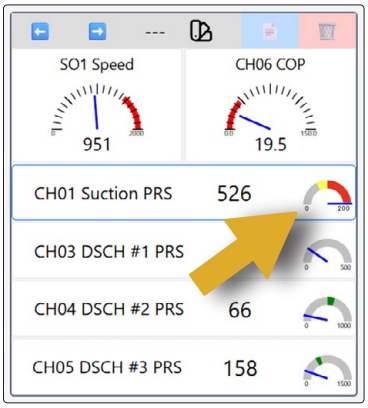


Figure 36

Example 4: Deleting a Block or Elements in a Block

This next example focuses on the input monitoring block for channels 31 – 60, which is the block for a secondary/expansion terminal board. See *Figure 37*.

1. If you do not have an expansion board, you can delete the block by clicking the **Delete** button at the top of the block.
2. If you have a 15-channel expansion board, you can delete the elements that do not apply. Click in the center of any element and click the **Delete key** to delete it.
3. You can also edit elements as needed:
   a. Click the **Element Type Dropdown list** to select a different type, such as Auto or LED.
   b. Enter a custom name.

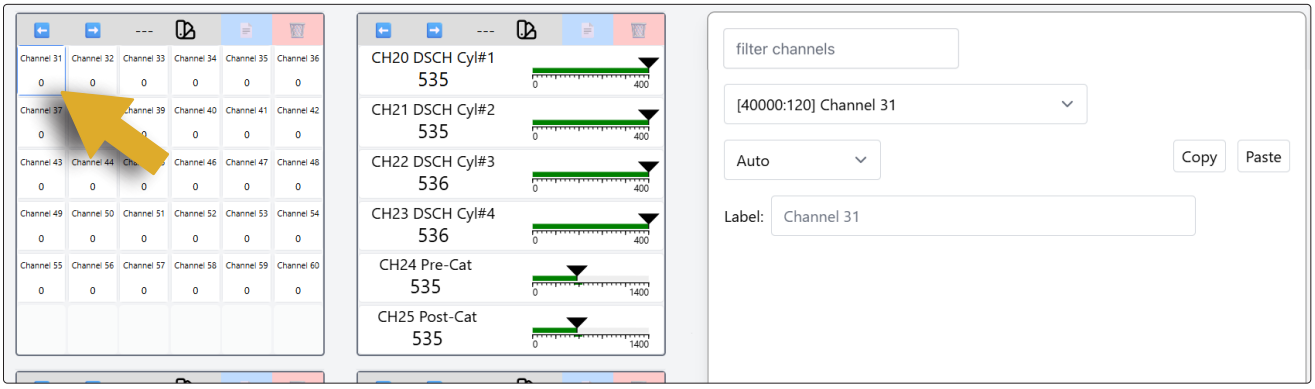


Figure 37

NOTE: These techniques can be applied to the remaining blocks. The basic overall flow is to keep all blocks on the far left as general and the blocks to the right as custom.

4.2.4 Saving Your Edited DE-3000 Dashboard

Once you have finished editing the DE-3000 dashboard to match your system setup, save the AWI file.

1. Click the **Application button** in the left sidebar. See *Figure 38*.
2. Name the file, enter a version number, and add any notes desired. **NOTE:** We recommend adding "standard" to the file name to identify that it contains your standard/master DE-3000 AWI device profile. Senior-level technicians can use this file to connect to the panel while on location to access all menu systems.

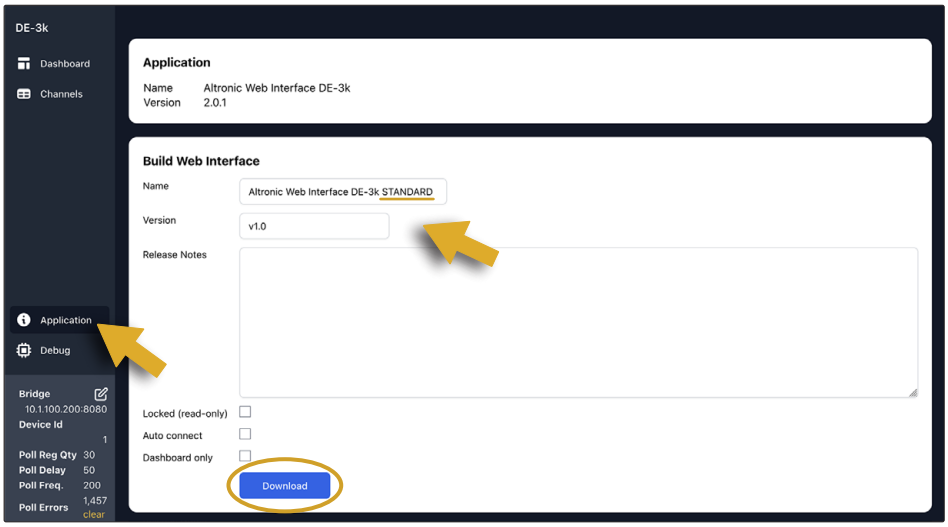


Figure 38

3. Click the **Download button** and select a location on your PC to save the AWI file.

4.2.5 Saving a Second "Security" Dashboard

To prevent operators from making unauthorized changes to the DE-3000, we recommend making additional changes to the "standard" DE-3000 dashboard and saving a second "security" DE-3000 AWI dashboard.

1. To create a locked-down security version of the dashboard, you can:
   a. Remove key function buttons, such as Menu, Next, and Enter, to prevent operators from editing or adjusting the DE-3000 AWI through the 7" display. *Figure 39* shows the default keypad block, and *Figure 40* shows the block with key function buttons removed.

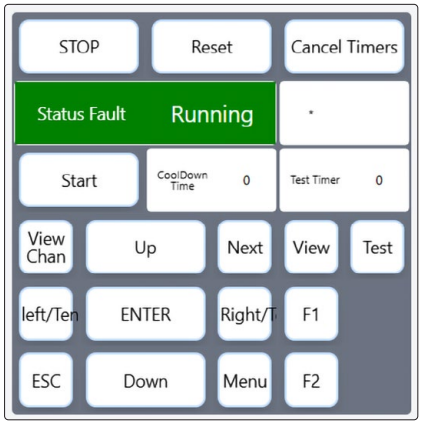


Figure 39

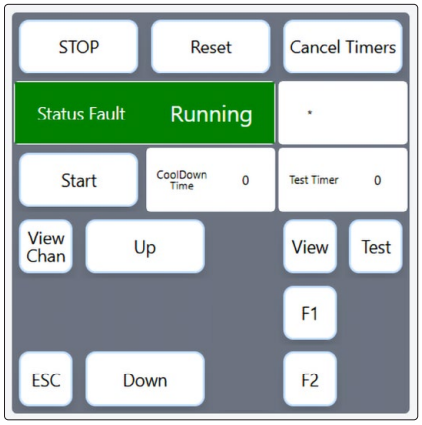


Figure 40

b. Remove the PID/linear analog tuning adjustments (*Figure 41* shows the default block and *Figure 42* shows the block with the tuning adjustments removed), or remove the entire control (PID) setpoint and tuning block.

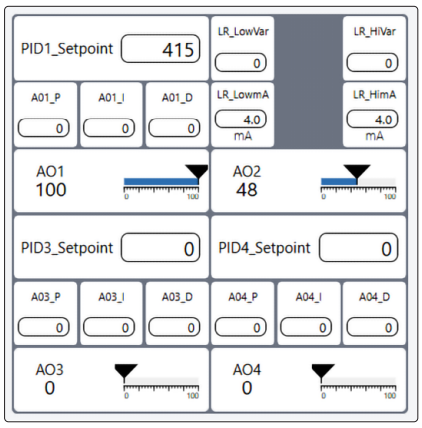


Figure 41

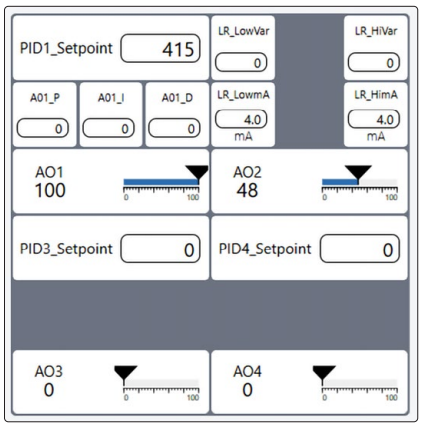


Figure 42

2. Once you have finished editing the security version of the dashboard, save a second AWI file:
   a. Click the **Application button** in the left sidebar. See *Figure 43*.
   b. Add "security" to the file name, enter a version number, and add any notes.
   c. Click the **Download button** and select a location on your PC to save the file.

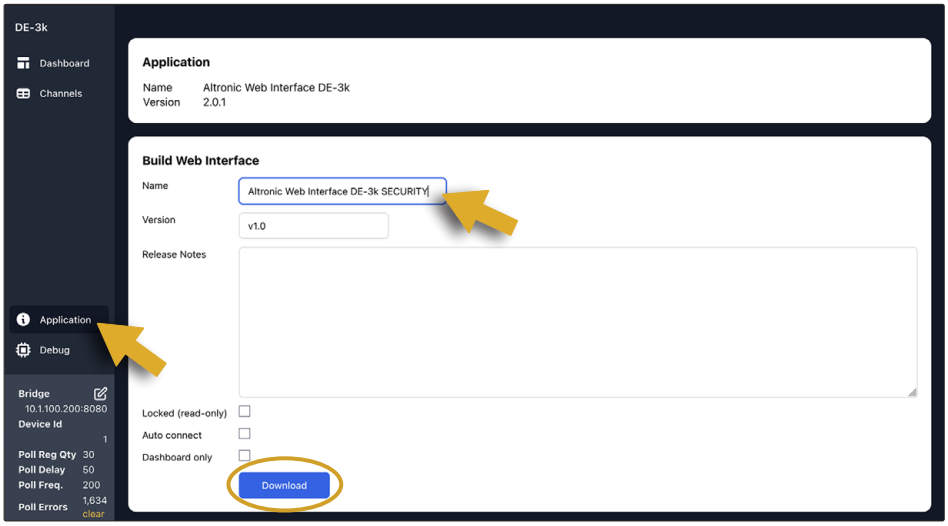


Figure 43

4.3 Programming the ACM-4000 with Your Edited DE-4000 AWI Device Profile

4.3.1 Uploading the Edited AWI Files

1. You will now have two edited DE-3000 AWI files saved to your PC: a “standard” DE-3000 device profile and a “security” DE-3000 device profile.
2. Open the ACM-4000 configuration IP address again in your web browser: **98.102.65.175:3000/awi**
3. Scroll to the bottom of the screen and click the **MDI Configuration Menu button** in the bottom-right corner to open the MDI Configuration interface.
4. On the Devices screen, click the DE-3000 device summary card to open the settings. See *Figure 44*.

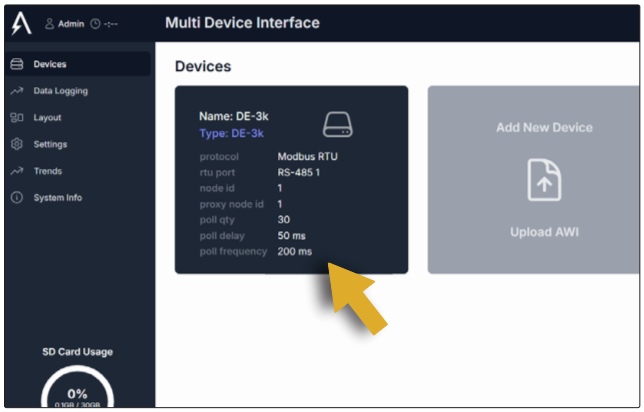


Figure 44

5. Click the **Upload AWI button**. See *Figure 45*. In the file selector, locate the saved AWI “security” file, and click the **Open button**.

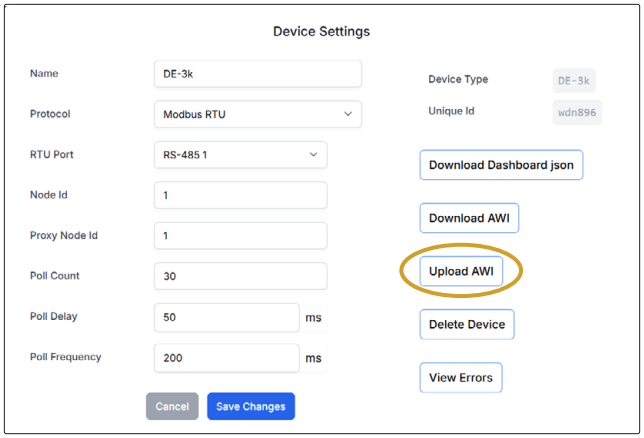


Figure 45

6. The AWI security file will replace the default DE-3000 AWI.
7. Click the DE-3000 device summary card a second time to edit the communication settings.
8. Change the settings indicated by the yellow arrows in *Figure 46* to match the settings shown in *Figure 47* and click the **Save Changes button**.

Figure 46

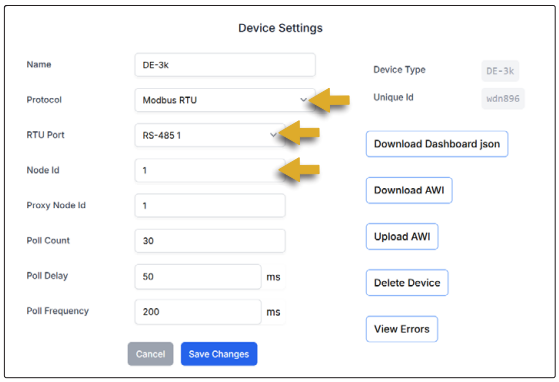


Figure 47

9. Programming is now complete.
10. **Next steps:**
    a. Continue to the next section to turn on data logging and configure trending for the DE-3000 (optional); **OR**
    b. Exit the MDI Configuration interface by clicking the **MDI Configuration Menu button** in the bottom-right corner of the screen.

NOTE: The security AWI is now loaded to prevent operators from making unwanted edits. Advanced users can use the non-security AWI from a laptop at any time to make full edits.

4.3.2 Enabling Data Logging (Optional)

1. In the MDI Configuration menu, click the **Data Logging button** in the navigation sidebar to open the Data Logging screen. See *Figure 48*.
2. Click the DE-3000 toggle to turn on data logging for the DE-3000.

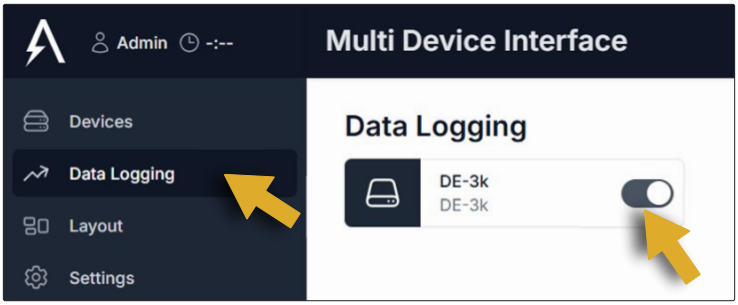


Figure 48

4.3.3 Configuring Trending (Optional)

1. In the MDI Configuration menu, click the **Trends button** in the navigation sidebar to open the Trends screen.

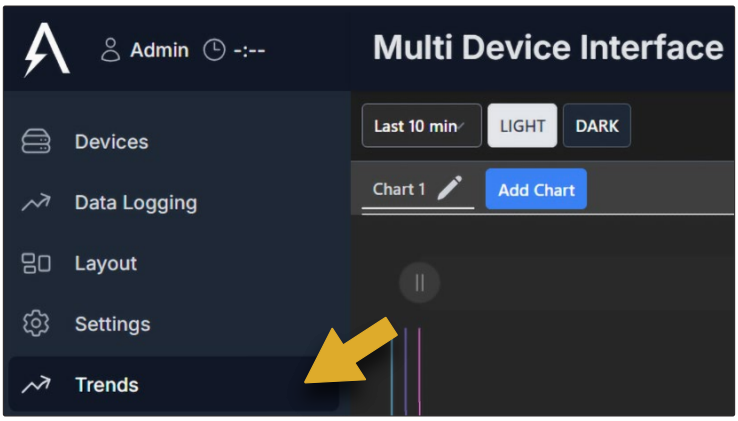


Figure 49

2. To rename a chart:
   a. Click the **edit icon** to the right of the chart name to rename it. See *Figure 50*.
   b. Click the **Save button**. See *Figure 51*.

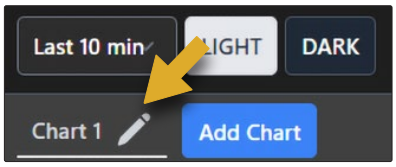


Figure 50

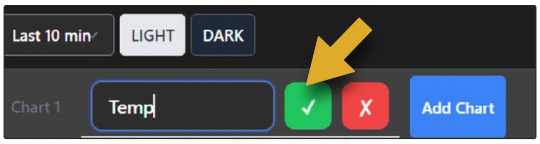


Figure 51

3. To add additional custom charts:
   a. Click the **Add Chart button**. See *Figure 52*.
   b. Select the device you want to trend from the Device dropdown list. Then choose the channel from the Add Series dropdown list and click the **Add button**. See *Figure 53*.

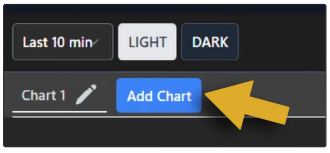


Figure 52

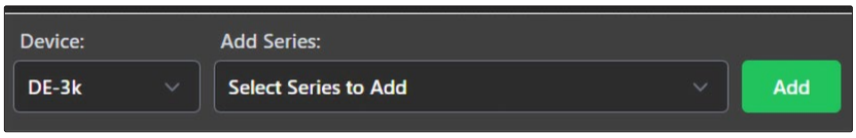


Figure 53

4. Color-matched buttons appear to the right of each channel. The button label automatically populates with the custom name assigned to the channel in the AWI dashboard, for example, CH01 Suction PRS. See *Figure 54*. Click the buttons to highlight a channel so that it stands out from the others, as needed.

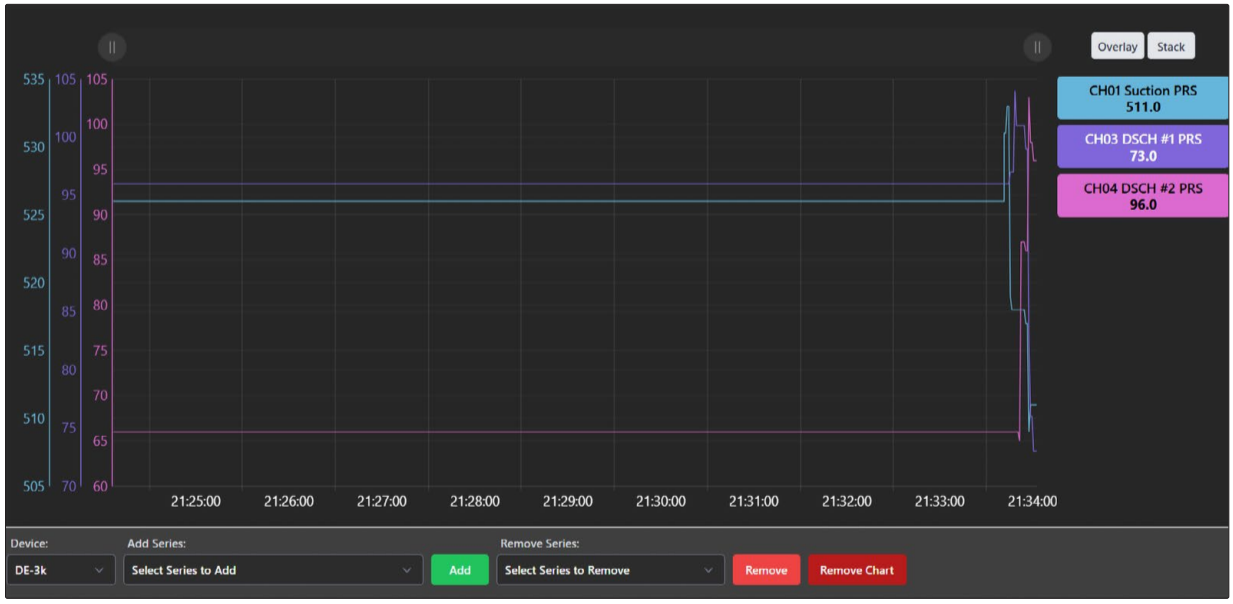


Figure 54

5. Chart data can be manipulated by stacking and overlaying. Data can also be exported by clicking the **Export button** at the top of the screen. See *Figure 55*.
6. If you are building this configuration from your PC, once complete, click the **Push button** at the top of the screen. This will load the chart into the ACM-4000 so it can be viewed on the 7" display. See *Figure 55*.

Figure 55

5.0 Installing the Security Plate Cover

Once the system is configured for your panel, it is time to install the security plate. This plate will block access to the keypad, but allow personnel to view the display screen.

1. The kit ships with a security plate, four security plate screws, and four nylon washers. See *Figure 56*.
2. Tape off the back side of the DE-3000 display to prevent the display from falling out during installation of the security plate. See *Figure 57*.

Figure 56

Figure 57

3. Remove the four front cover screws. See *Figure 58*.

4. Place the spacer washers over the screw holes. A small amount of grease can help to hold the washers in place. See *Figure 59*.

Figure 58

Figure 59

5. Use the four security plate screws to secure the security plate to the front cover. See *Figure 60*.

Figure 60

6.0 Mounting Template

For non-replacement installations, print the mounting template on the next page on 8.5"×11" paper.

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www.altronic-llc.com I sales@altronic-llc.com

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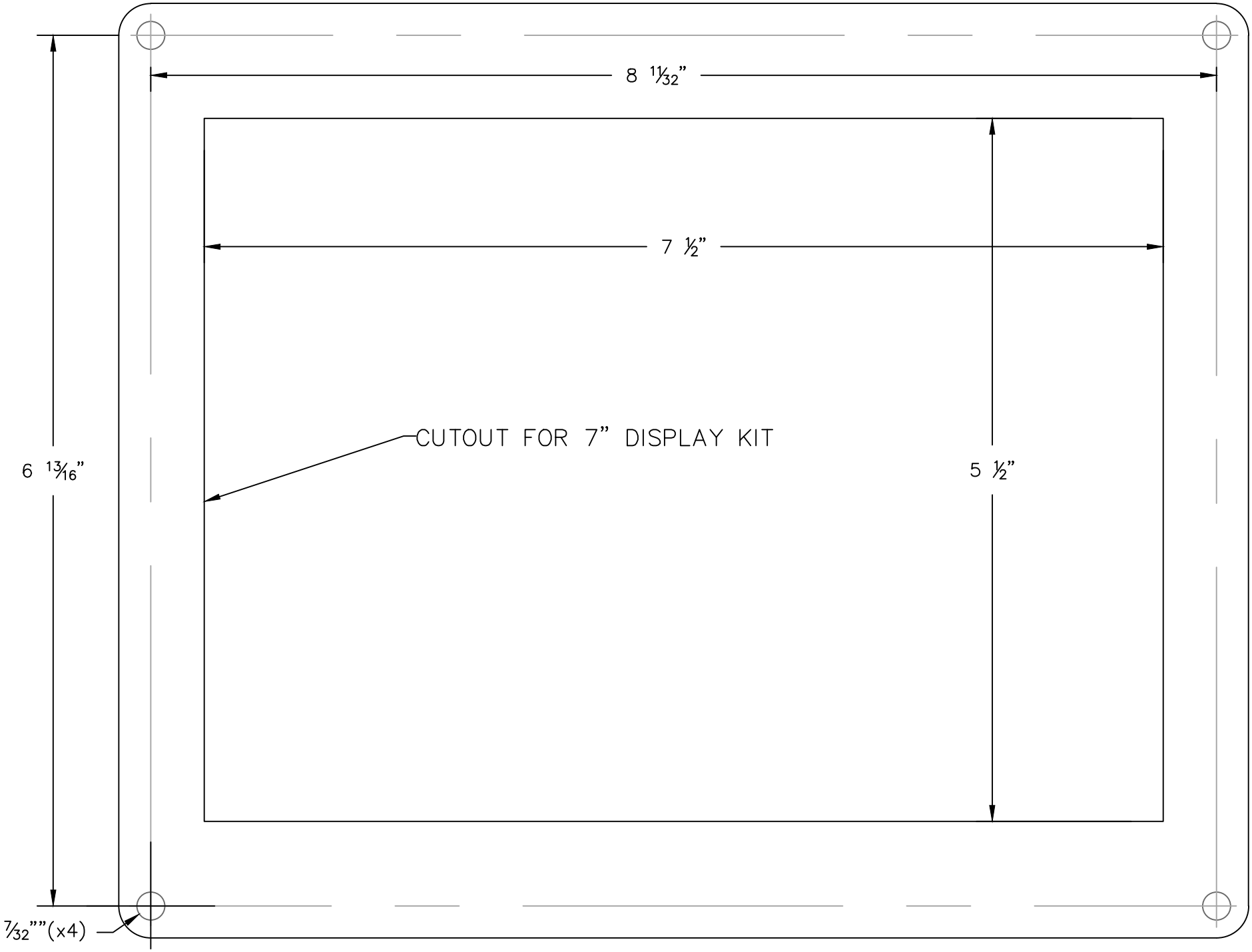
8 11/32"
7 1/2"
CUTOUT FOR 7" DISPLAY KIT
6 13/16"
5 1/2"
7/32""(x4)