The Application Note is pertinent to our CTIU and Mentor II/Quantum III Family

Creating a PopUp Fault Screen
With the CTIU Operator Interface Unit

It is often desirable to offer a special Fault Screen on an HMI Operator Interface Unit that just pops up upon a Drive Fault. This application note will outline a procedure to allow you to create a Fault Screen such as the one shown below on our CTIU multi-line units:

In order to create a Fault screen, you will need the CTIU Configuration program.

The CTIU configurator can be downloaded from our website at or by clicking on the link below:

http://www.emersonct.com/download_usa/software_drives.htm

The CTIU has the ability to create Alarm screens, which appear in the event of a Drive Fault.
An ALARM screen can be setup by selecting ALARMS under the Edit pull down menu:

This will cause the following setup screen to appear:

The configurator is looking for a location in the drive that becomes a 1 when an Alarm is to be displayed. Unfortunately, both MentorII/QuantumIII creates a 1 when the Drive is Healthy at parameter #10.12. We need the opposite.
Creating a Drive Tripped or Drive Faulted bit

The easiest method would be to use an un-used output (if you have one). Check to see if you have any wire on terminal T2-17 or T2-18 of your MDA 2B board.

For example, let's say that you did not need the standard drive output that is provided on terminal T2-17, which is typically used to indicate an alarm condition via Timed Overcurrent parameter #10.13.

All we would need to do is make parameter #9.19 monitor the Drive Healthy bit (#10.12) and invert it by setting #9.20=1. If ST3 is being used, you can select ST4. Setting parameter #9.21 to 10.12 and changing 9.22 to a 1 can accomplish this.

In this manner, the CTIU could be looking at #9.03 (or #9.04) for indication when then Drive has faulted.

Once you've decided on a method to create the Drive Faulted bit, you are ready to make the ALARM setup assignments
On my setup I was not using terminal T2-17 so I used the method as described in the first example. Therefore, the CTIU Alarm page will be activated by parameter #9.03 in the Mentor/Quantum drives.

Once we have setup the ALARM register, we can now create the ALARM or Fault Screen itself.
One could now create a screen similar to that shown below:

 Perhaps Flash this line for more attention
Now as far as displaying a phrase for the Drive Fault, we could create a specific phrase for each of the Drive Faults. Listed below are only some of them:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>HF</td>
<td>Hardware fault</td>
</tr>
<tr>
<td>Phs</td>
<td>Phase Sequence</td>
</tr>
<tr>
<td>ET</td>
<td>External trip</td>
</tr>
<tr>
<td>EPS</td>
<td>External power supply</td>
</tr>
<tr>
<td>CL</td>
<td>Current (control) loop open circuit signal lost</td>
</tr>
<tr>
<td>Scl</td>
<td>Serial communications interface loss</td>
</tr>
<tr>
<td>FOC</td>
<td>Field overcurrent</td>
</tr>
<tr>
<td>Oh</td>
<td>Drive over temperature</td>
</tr>
<tr>
<td>Fdo</td>
<td>Field on</td>
</tr>
<tr>
<td>Fbr</td>
<td>Feedback reversal</td>
</tr>
<tr>
<td>ThS</td>
<td>Thermal short circuit</td>
</tr>
<tr>
<td>Fdl</td>
<td>Field loss</td>
</tr>
<tr>
<td>Fbl</td>
<td>Feedback loss</td>
</tr>
<tr>
<td>SL</td>
<td>Supply loss (AC line loss)</td>
</tr>
<tr>
<td>AOC</td>
<td>Armature overcurrent</td>
</tr>
<tr>
<td>It</td>
<td>I X T trip (timed overcurrent)</td>
</tr>
<tr>
<td>th</td>
<td>Motor over temperature</td>
</tr>
<tr>
<td>Pc1</td>
<td>Processor 1 watchdog</td>
</tr>
<tr>
<td>Ps</td>
<td>Power supply (10V supply overload)</td>
</tr>
<tr>
<td>AOP</td>
<td>Armature open circuit</td>
</tr>
<tr>
<td>Pc2</td>
<td>Processor 2 watchdog (MD29)</td>
</tr>
<tr>
<td>EEF</td>
<td>EEPROM failure</td>
</tr>
<tr>
<td>A29</td>
<td>Unknown error</td>
</tr>
<tr>
<td>40</td>
<td>Parameter does not exist</td>
</tr>
<tr>
<td>41</td>
<td>Parameter read only</td>
</tr>
<tr>
<td>42</td>
<td>Parameter write only</td>
</tr>
<tr>
<td>43</td>
<td>Parameter value over range</td>
</tr>
<tr>
<td>44</td>
<td>Virtual access failed</td>
</tr>
<tr>
<td>45</td>
<td>MD29 stack overflow</td>
</tr>
<tr>
<td>46</td>
<td>MD29 Internal error</td>
</tr>
<tr>
<td>47</td>
<td>MD29 Internal error</td>
</tr>
<tr>
<td>48</td>
<td>MD29 Internal error</td>
</tr>
<tr>
<td>49</td>
<td>Wrong system loaded</td>
</tr>
<tr>
<td>50</td>
<td>Math faults e.g. divide by zero</td>
</tr>
<tr>
<td>51</td>
<td>Array index out of range</td>
</tr>
<tr>
<td>52</td>
<td>Reserved</td>
</tr>
<tr>
<td>53</td>
<td>DPL program incompatible</td>
</tr>
<tr>
<td>54</td>
<td>MD29 DPL overload</td>
</tr>
<tr>
<td>55</td>
<td>RS485 trip – Mode 3</td>
</tr>
<tr>
<td>56</td>
<td>Reserved</td>
</tr>
<tr>
<td>57</td>
<td>Illegal OSCall</td>
</tr>
<tr>
<td>58</td>
<td>MD29 Internal error</td>
</tr>
<tr>
<td>59</td>
<td>MD29 internal error</td>
</tr>
<tr>
<td>60-69</td>
<td>CTNet trip codes (MD29AN only)</td>
</tr>
</tbody>
</table>
040 : Unknown Error
041 : Param. doesn't exist
042 : Parameter Read only
043 : Parameter Write only
044 : Par value over range
045 : Virtual access fault
046 : MD29 Stack Overflow
047 : MD29 Internal Error
048 : MD29 Internal Error
049 : Wrong system loaded
050 : Math err in program
051 : Array index fault
052 : Reserved
053 : Program incompatible
054 : MD29 DPL Overload
055 : RS485 trip- Mode 3
056 : Reserved
057 : IOLINK has failed
058 : MD29 Internal Error
059 : MD29 Internal Error
060 : CTNet trip code
061 : CTNet trip code
062 : CTNet trip code
063 : CTNet trip code
064 : CTNet trip code
065 : CTNet trip code
066 : CTNet trip code
067 : CTNet trip code
068 : CTNet trip code
069 : CTNet trip code
100 : Hardware Fault
101 : Phase Sequence
102 : External Trip
103 : 24v Supply Overload
104 : mA Signal Loss
105 : Serial Comms Loss
106 : Field Overcurrent
107 : Drive Overtemp Trip
108 : Field is still on!
109 : Feedback Reversed
110 : Thermistor Short
118 : Loss of Field
119 : Loss of Feedback
120 : AC Line Loss
121 : Arm Overcurrent Trip
122 : Timed Overcurrent
123 : Motor Overtemp Trip
124 : Drive Watchdog Trip
125 : +10v Supply Overload
126 : Open Motor Circuit
131 : MD29 Watchdog Trip
132 : EEprom Failure

However, to save you time I’ve already created a Fault List file that can be imported to save you all this time.
Place the cursor on the line where you want the Fault Phrase to appear then click on the Format Text Selector icon

Parameter #10.25 in the Mentor/Quantum drive will indicate the Fault Code of the last trip. We would want to decode that into a text phrase.
Now click "Edit Table"
Now click “Import table”

The Fault Trip list can be imported from a text file named **M2Q3trips.txt**

This should pull in a proper text phase for each M2/Q3 drive fault. Click Open after this.
Now your Fault Screen should look as shown below:
Remote Fault Reset

If you wish to reset the fault from the CTIU, this can be accomplished by assigning a key to write a “Reset” command to the Mentor/Quantum drive.
Double click on the selected key you choose for Reset.

Set up the key as follows:
**Testing**

Try the Remote Reset by depressing the F1 key.

If you wish to test this further, temporarily configure another function key, just as you did in the previous step. In the **Location** you must enter “10.35”, and in the **Value** enter “121”. This will cause the drive and your CTIU to display an **AOC trip** armature over current.

**After testing, remove the temporary function key that we assigned “121”. Confirm removal by pressing previously designated “trip button”, no trip should occur.**

**Embellishment**

A small but nice embellishment to the Fault screen would be to change the message about **“Depress F1 to Reset the Fault”**. This would be nicer if it would indicate to the user that his F1 closure had indeed reset the Fault. To accomplish this we could use the **FORMAT BIT STRING** function set to Drive Healthy Bit, and then scroll down to an un-assigned phrase.
Then click on “EDIT TOKENS”

Modify as follows:
By the way, to get this special character, go to EDIT and select INSERT SPECIAL CHARACTER.
Trip History Screen

A “Trip History Screen” will allow you to examine up to the past four trips that occurred in your drive. To accomplish this we need to create a new page. The page could look something like what is shown below.

One must return to the main menu by pressing “View” then “Menus”.

Create an additional screen by pressing, “Edit” on the tool bar, then “Insert Pages” then “OK.”
To configure each individual trip one must select the parameter in the drives history log. Place the cursor on the line where you want the Fault Phrase to appear then click on the Format Text Selector icon.
Enter in the Location #10.25. Select “Edit Table” to verify you trip table is selected. Then press “OK”. Repeat this step as above, changing the “Location” and the line location that you want the information to be seen at.

Parameter #10.25, #10.26, #10.27 and #10.28 are the location of the drive’s trip log. In this order we will see the most recent of the trips at the top, and at the bottom will be the fourth oldest in the drives records.

**Summary**

An example file for a CTIU110 is available from our website within the Application Note Area under Application Notes for DC Drives/Mentor II/Quantum III [CTAN249](mailto:). This application note outlined a method to accomplish the requirement using some internal programming. We could also have written a short program within the Math section of the CTIU. Note however that the CTIU50 does not support Math functions.

**Other applicable Application Notes**

CTAN245 Creating Power Up Splash Screen  
CTAN247 Creating a Fault History Screen  
CTAN248 Creating Unidrive PopUp Fault Screen using Maths  
CTAN138 Creating a Remote Run/Stop control

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Reference CTAN249 CTIU

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