

	Internal Acceptance Test (IAT) procedure		Factory Acceptance Test (FAT) procedure		Commissioning procedure
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Indicate scope of work by placing a tick in one of the boxes above.

# Test Procedure

## Part No. 46003xx

Change History					
Rev	Date	Description	By	Review	Appr
03	04.01.2024	Updated terminal numbers	FO	FO	FO
02	14.12.2022	Updated with Pitch & Roll	FO	FO	MRE
01	08.01.2021	Created Procedure	TBH	FO	SEG

<b>Part No.:</b>	
<b>Order No.:</b>	
<b>Test date:</b>	
<b>Performed by:</b>	

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### Preparation

#### Special tools / instruments / testing aids

- Multimeter
- Power supply 240VAC, 1 phase

### Acceptance Criteria

Acceptance criteria for tests, if detailed, are indicated in the Specification Sections (Annex A) applicable to the systems being tested. Unless indicated otherwise, acceptance criteria will be specified with the individual system, equipment, component, or device.

Non-conformities to be recorded in the punch list, categorized and treated as agreed in the start-up meeting.

## Functional test (1/5) Control Cabinet

**Purpose:** To verify system functionality.

**Reference documents:**

- Relevant vendor documentation
- Requirement specifications (specific system limits)

Item	Description	Test results	Remarks
1	Terminal X1:1-9  Main Power Supply Emergency Power Supply Uninterrupted Power Supply  Measure no contact between Line and Neutral input to check for short circuit.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
2	Terminal X1:1-9  Main Power Supply Emergency Power Supply Uninterrupted Power Supply  Perform insulation test, measure no contact between Line and Protective Earth and, Neutral and Protective Earth.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
3	Apply power to the system	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
4	Complete Programming Guide (TTD6968)	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
5	On HMI go to "Setup"-tab and enable all lights.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
6	Test Main Power supply circuit breaker Alarm  HMI Alarm Screen Trip circuit breaker and verify alarm text.  Verify power supply switchover to Emergency Power Supply.  Reset Main Power Supply circuit breaker.  Verify power supply switchover to Main Power supply	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
7	Test Emergency Power Supply Circuit Breaker Alarm  HMI Alarm Screen Trip circuit breaker and verify alarm text.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	

8	Test Uninterrupted Power Supply circuit breaker Alarm  HMI Alarm Screen Trip circuit breaker and verify alarm text.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
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## Functional Test Circle & H

**Purpose:** To verify system functionality.

**Reference documents:**

- Relevant vendor documentation
- Requirement specifications (specific system limits)

Item	Description	Test results	Remarks
1	Connect C-Module power to X6: Red-1, Black-2 & Red-3, Black-4 & Yellow/Green-PE. Connect Communication Cable to X7: Brown-1, White-2 & Brown-3, White-4	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
2	Connect H-Module power to X6: Red-5, Black-6 & Red-7, Black-8 & Yellow/Green to PE. Connect Communication Cable to X7: Brown-5, White-6 & Brown-7, White-8	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
3	System On button.  Test on/off control by pressing command button to toggle on/off.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
4	Measure 24VDC between: X6: 1&2, 3&4, 5&6, 7&8. To ensure power goes to the lights.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
5	Bright button.  Test bright mode on/off control by pressing command button to toggle on/off.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
6	Test Remote on/off. Measure 0VDC between X3: 2&30 Briefly connect X3: 1&12 Measure 24VDC between X3:2&30	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
7	Test Remote Dim/Bright. Measure 0VDC between X3: 2&31 Briefly connect X3: 1&13 Measure 24VDC between X3: 2&31	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	

Comments: Non-conformity to be recorded in the punch list, categorized and treated as agreed in the start-up meeting.

## Functional test (3/5) Status Lights

**Purpose:** To verify system functionality.

**Reference documents:**

- Relevant vendor documentation
- Requirement specifications (specific system limits)

Item	Description	Test results	Remarks
1	Remove alarm signal latch on X5.2: 4, 5, 6, 7 and 8 if installed. Install F&G latch on both: X3:19-20 volt free X3:16-17 24vdc  Connect Status Lights (4 pcs)	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
2	Apply power to the system	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
3	Program the electronic circuit breaker.(-CB1) Set channel 1 to 10A. Press the channel LED button for 1 second to store the new current value, repeat on channel 2, 3 and 4.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
4	Test local ON activation (ON Button)  Hold for 2 seconds to toggle ON on/off.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
5	Verify light is on.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
6	Test local DIM activation (DIM Button)  Hold for 2 seconds to toggle DIM on/off.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
7	Test remote ON activation signal.  X3:14 ON activation. X3:36 ON activation status  Apply 24vdc from X3:1 and X3:14 to activate. Measure 24vdc between X3:2 and X3:36.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
8	Test remote DIM activation signal.  X3:15 DIM activation. X3:37 DIM activation status  Apply 24vdc to X3:1 and X3:15 to activate.	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	

	Measure 24vdc between X3:2 and X3:37.		
9	<p>Test alarm input signal from lamp</p> <p>Main Light 1          X5.2:4 24vdc alarm signal          Remove wire to activate alarm.          Measure alarm status between X3:2&amp;38</p> <p>Main Light 2          X5.2:5 24vdc alarm signal          Remove wire to activate alarm.          Measure alarm status between X3:2&amp;39</p> <p>Repeater Light 1          X5.2:6 24vdc alarm signal          Remove wire to activate alarm.          Measure alarm status between X3:2&amp;40</p> <p>Repeater Light 2          X5.2:7 24vdc alarm signal          Remove wire to activate alarm.          Measure alarm status between X3:2&amp;41</p>	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
10	<p>Test Fire &amp; Gas external system activation.          When deactivated X3:16,17 and X3:18,19 is latched.</p> <p><b>Volt free dry contact Test</b>          Latch X4:18,19          Signal contact X4:16,17          Check lights activate.</p> <p><b>24vdc from external source</b>          No latching required.          24VDC supply between X4:17,18          Check lights activate.          Reinstall latches if F&amp;GH not in use.</p>	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
11	<p>Test Pitch and Roll external system activation.          When deactivated X4:20,21 and X4:22,23 is latched.</p> <p><b>Volt free dry contact Test</b>          Latch X4:22,23</p>		

	<p>Signal contact X4:21,22          Check lights activate.</p> <p><b>24vdc from external source</b>          No latching required.          24VDC supply between          X4:21,22          Check lights activate.          Reinstall latches if P&amp;R not in          use.</p>		
12	<p>Install latch          X5.2: 5 &amp; 6 &amp; 7 &amp; 8</p>	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	

## Functional test (4/5) Standard Lights

**Purpose:** To verify system functionality.

**Reference documents:**

- 460A112033

**Note:**

Item	Description	Test results	Remarks
1	Test Perimeter Light 1 Circuit  HMI Control Screen Perimeter Light 1 button.  Hold command button 1 second toggle circuit on.  Measure 230V output on. X2:1&2  Measure 24vdc between X3:2 and -X3:24  Apply 24vdc from X3:1 to - X3:3 to toggle off lights.  Measure 24vdc between X3:2 and -X3:24	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
2	Test Perimeter Light 2 Circuit  HMI Control Screen Perimeter Light 2 button.  Hold command button 1 second toggle circuit on.  Measure 230V output on X2:3&4  Measure 24vdc between X3:2 and -X3:25  Apply 24vdc from X3:1 to -X3:4 to toggle off lights.  Measure 24vdc between X3:2 and -X3:25	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
3	Test Flood Light 1 Circuit  HMI Control Screen Flood Light 1 button.  Hold command button 1 second toggle circuit on.  Measure 230V output on X2:5&6	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	



	<p>Measure 24vdc between X3:2 and -X3:26</p> <p>Apply 24vdc from X3:1 to -X3:5 to toggle off lights.</p> <p>Measure 0vdc between X3:2 and -X3:26</p>		
4	<p>Test Flood Light 2 Circuit</p> <p>HMI Control Screen Flood Light 2 button.</p> <p>Hold command button 1 second toggle circuit on.</p> <p>Measure 230V output on X2:8&amp;9</p> <p>Measure 24vdc between X3:2 and -X3:27</p> <p>Apply 24vdc from X3:1 to -X3:6 to toggle circuit off.</p> <p>Measure 0vdc between X3:2 and -X3:27</p>	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
5	<p>Test Flood Dim Function</p> <p>Activate Floodlight 1&amp;2 for this test.</p> <p>HMI Control Screen Flood Light Dim button.</p> <p>Hold command button 1 second to toggle Dim on.</p> <p>Measure 24vdc between X3:2 and -X3:28</p> <p>Apply 24vdc from X3:1 to -X3:7 to toggle dim off.</p> <p>Measure 0vdc between X3:2 and -X3:28</p>	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
6	<p>Test Windsock Circuit</p> <p>HMI Control Screen Windsock button.</p> <p>Hold command button 1 second toggle circuit on.</p> <p>Measure 230V output on X2:9&amp;10</p> <p>Measure 24vdc between X3:2 and -X3:29</p>	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	

	<p>Apply 24vdc from X3:1 to -X3:8 to toggle off lights.</p> <p>Measure 24vdc between X3:2 and -X3:29</p>		
7	<p>Test Obstruction light Circuit</p> <p>HMI Control Screen Obstruction light button.</p> <p>Hold command button 1 second toggle circuit on.</p> <p>Measure 230V output on X2:11&amp;12</p> <p>Measure 24vdc between X3:2 and -X3:30</p> <p>Apply 24vdc from X3:1 to -X3:9 to toggle off lights.</p> <p>Measure 24vdc between X3:2 and -X3:30</p>	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
8	<p>Test Auxiliary light 1 Circuit</p> <p>HMI Control Screen Auxiliary light 1 button.</p> <p>Hold command button 1 second toggle circuit on.</p> <p>Measure 230V output on X2:13&amp;14</p> <p>Measure 24vdc between X3:2 and -X3:31</p> <p>Apply 24vdc from X3:1 to -X3:10 to toggle off lights.</p> <p>Measure 24vdc between X3:2 and -X3:31</p>	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
9	<p>Test Auxiliary light 2 Circuit</p> <p>HMI Control Screen Auxiliary light 2 button.</p> <p>Hold command button 1 second toggle circuit on.</p> <p>Measure 230V output on X2:15&amp;16</p> <p>Measure 24vdc between X3:2 and -X3:32</p> <p>Apply 24vdc from X3:1 to</p>	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	

	-X3:11 to toggle off lights.  Measure 24vdc between X3:2 and -X3:32		
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### Functional test (5/5) Alarms

**Purpose:** To verify system functionality.

**Reference documents:**

- 460A112034

Item	Description	Test results	Remarks
1	Test Perimeter Light 1 Circuit Breaker Alarm  HMI Alarm Screen  Trip circuit breaker F4 and verify alarm text and button color in controls-tab (on HMI)	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
2	Test Perimeter Light 2 Circuit Breaker Alarm  HMI Alarm Screen  Trip circuit breaker F5 and verify alarm text and button color in controls-tab (on HMI)	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
3	Test Flood light 1 Circuit Breaker Alarm  HMI Alarm Screen  Trip circuit breaker F6 and verify alarm text and button color in controls-tab (on HMI)	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
4	Test Flood light 2 Circuit Breaker Alarm  HMI Alarm Screen  Trip circuit breaker F7 and verify alarm text and button color in controls-tab (on HMI)	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
5	Test Windsock Circuit Breaker Alarm  HMI Alarm Screen  Trip circuit breaker F8 and verify alarm text and button color in controls-tab (on HMI)	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
6	Test Obstruction light Circuit Breaker Alarm  HMI Alarm Screen	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	

	Trip circuit breaker F9 and verify alarm text and button color in controls-tab (on HMI)		
7	<p>Test Auxiliary light 1 Circuit Breaker Alarm</p> <p>HMI Alarm Screen</p> <p>Trip circuit breaker F10 and verify alarm text and button color in controls-tab (on HMI)</p>	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
8	<p>Test Auxiliary light 2 Circuit Breaker Alarm</p> <p>HMI Alarm Screen</p> <p>Trip circuit breaker F11 and verify alarm text and button color in controls-tab (on HMI)</p>	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	
9	<p>Test Circle &amp;H Circuit Breaker Alarm</p> <p>HMI Alarm Screen</p> <p>Trip circuit breaker F12 and verify alarm text and button color in controls-tab (on HMI)</p>	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	

<p>10</p>	<p>Common Alarm</p> <p>For Info:          Alarm contact –X4:1,2,3(volt free)          (NC –X4:1,3, NO –X4:1,2) – R1</p> <p>Alarm reset Volt Free –X4:4,5 – R2</p> <p>Alarm reset 24V –X4:6,7 – R2</p> <p>(NO)Alarm present –X4:8,9 – R3</p> <p>Alarm acknowledge –X4:10,11 – R4</p> <p>Instructions:.</p> <ol style="list-style-type: none"> <li>1. Common Alarm signal is normally closed -X4:1, 3. – R1            LED on            Measure contact between X4:1 &amp; 2            Measure no contact between X4:1 &amp; 3</li> <li>2. Trip a circuit breaker to generate a system fault.</li> <li>3. Measure no contact between X4:1 &amp; 2            Measure contact between X4:1 &amp; 3</li> <li>4. Common Alarm signal is now open. –X4:1,3 – R1 LED off</li> <li>5. Alarm present will now close. – R3 LED on</li> <li>6. Reset tripped circuit breaker to remove system fault.</li> <li>7. Measure no contact between X4:8 &amp; 9 (Alarm Present)</li> <li>8. Volt Free Alarm reset (Latch X4:4&amp;5)            This will open Alarm present signal. – R3 LED off.</li> <li>9. Measure contact between X4:8 &amp; 9</li> <li>10. Alarm reset will simultaneously close Alarm acknowledge signal for 1 second. – R4 LED on for 1 second            Measure contact between X4:10 &amp; 11</li> </ol>	<p><input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA</p>	
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	<p>11. Remove latch volt free from X4:4&amp;5</p> <p>12. Repeat steps 2-7</p> <p>13. 24V Alarm reset</p> <p>(Connect wire1 between X3:1&amp;X4:6)        (Connect wire2 between X3:2&amp;X4:7)        This will open Alarm present signal. – R3 LED off</p> <p>14. Alarm reset will simultaneously close Alarm acknowledge signal for 1 second. – R4 LED on for 1 second</p>		
11	<p>On/Off</p> <p>Circle Power to panel to verify PLS/Touch Panel stored program.</p>	<input type="checkbox"/> P <input type="checkbox"/> F <input type="checkbox"/> NA	

P = Pass; F = Fail; NA = Not applicable

**Signatures:**

R. Stahl Tranberg		Date:	
		Date:	

