

# HARMONICGUARD<sup>®</sup> *ACTIVE*

## HarmonicGuard<sup>®</sup> Series Bus-Applied Active Harmonic Filter Quick Start Unit Software Setup



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<b>Revision</b>	<b>Description</b>	<b>Date</b>
A	Release	10/29/13
B	Update Screens	10/16/14
C	Update Screens	06/01/16



# HGA Quick Start Unit Software Setup

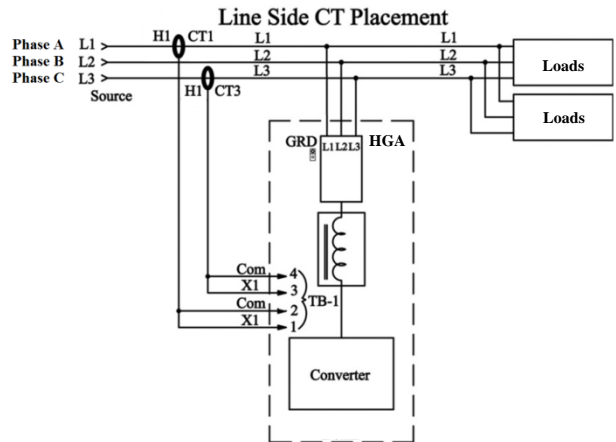
<p><b>NOTE: Full User Manual</b></p> <p>For the full user manual and other supporting documentation please go to:</p> <p><a href="http://www.transcoil.com">http://www.transcoil.com</a></p>	 <p><a href="http://www.transcoil.com">http://www.transcoil.com</a></p>
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<p><b>Warning</b></p> 	<p>Be sure to read, understand, and follow all safety instructions.</p>
<p><b>Warning</b></p> 	<p>Only qualified electricians should carry out all electrical installation and maintenance work on the HarmonicGuard Active (HGA) filter.</p>
<p><b>Warning</b></p> 	<p>All wiring must be in accordance with the National Electrical Code (NEC) and/or any other codes that apply to the installation site.</p>
<p><b>Warning</b></p> 	<p>Disconnect all power before working on the equipment. Do not attempt any work on a powered HGA filter.</p>
<p><b>Warning</b></p> 	<p>The HGA filter, drive, motor, and other connected equipment must be properly grounded.</p>
<p><b>Warning</b></p> 	<p>The HGA filter may receive power from two or more sources. Three-phase power is connected to the main input terminals of the HGA filter. All of these sources of power must be disconnected before working on the HGA filter.</p>
<p><b>Warning</b></p> 	<p>After switching off the power, always allow 5 minutes for the capacitors in the HGA filter and in the drive to discharge before working on the HGA filter, the drive, the motor, or the connecting wiring. It is good practice to check with a voltmeter to make sure that all sources of power have been disconnected and that all capacitors have discharged before beginning work.</p>

**1) Verify unit external connections**

**NOTE:** If unit is configured for load side operation reference the User Manual for Load Side CT Placement diagram.

- Phase A, B, C power connection, with positive A-B-C phase rotation expected
- CT H1 Terminal is pointing toward the source
- CT feedback on phases A & C to TB-1
- Leave CT shorting bars in place on TB-1
- With the HGA circuit breaker open, energize the source to the HGA
- Close the HGA circuit breaker
- Fans and HMI should come on in < 5 seconds
- HMI will start on Home screen
- Load(s) have an integral 5% line reactance or equivalent DC bus choke



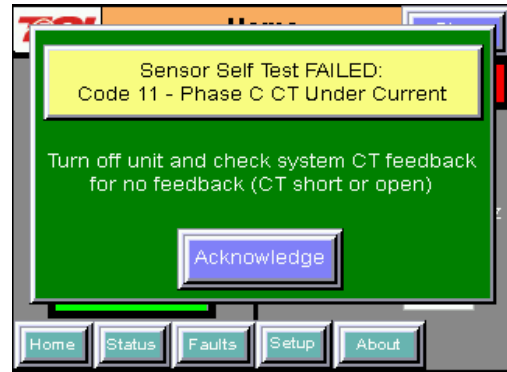
**Warning**



Hazardous voltages are present when unit is energized

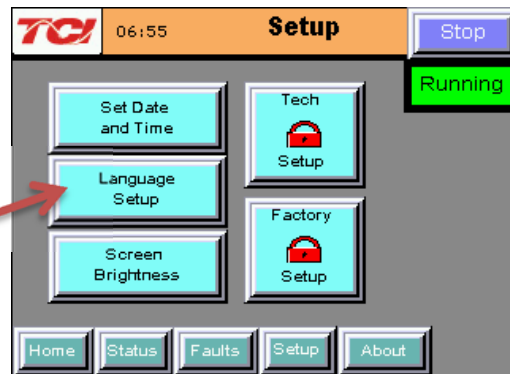
**NOTE: Built In Sensor Wiring Error Detection**

- The active filter has an automatic sensor wiring error detection algorithm built into the controls.
- If a sensor wiring error is detected please reference the Sensor Error Auto Detection section.



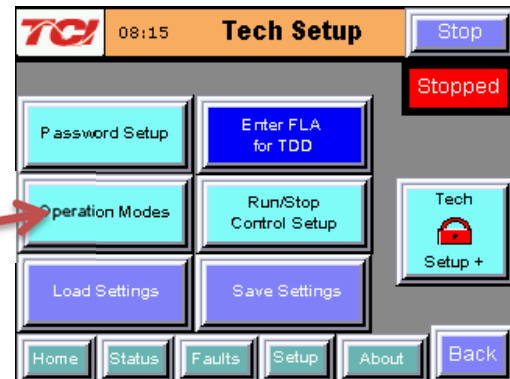
**NOTE: Language Selection and Date / Time**

- The active filter supports several languages including English, French and Spanish.
- Press "Setup" to navigate to Setup screen and press the "Language Setup" button.
- Select language setting from the language setup pop-up screen.
- Press the "Set Date and Time" button to change the configured system time.

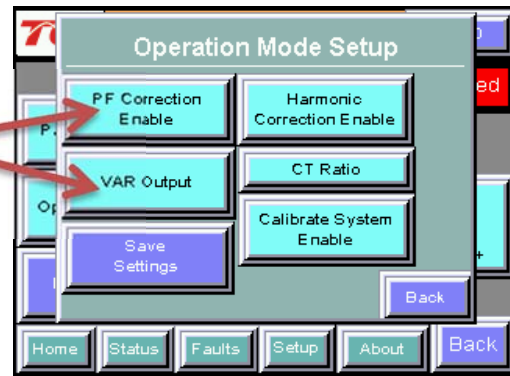


**2) Converter check – 1**

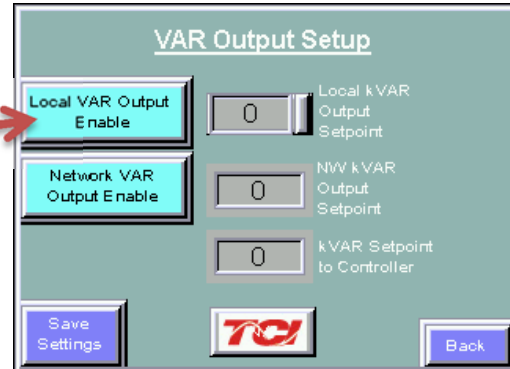
- Press "Setup" to navigate to Setup screen
- Next select "Tech Setup" and enter the password: **08252014**
- Select the "Operation Modes" button



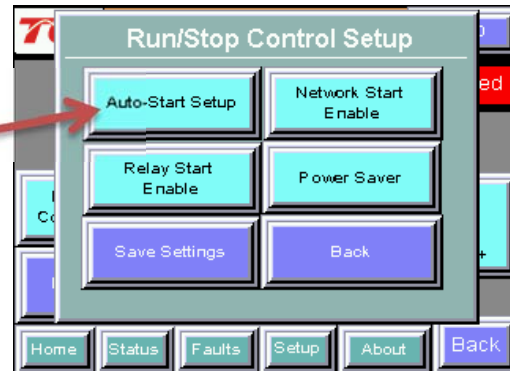
- On the “Operation Mode Setup” screen ensure “PF Correction Enable” and “Harmonic Correction Enable” buttons are OFF (Blue). If buttons are green press to toggle off
- Select the “CT Ratio” button and enter CT ratio to match the external current transformers wired to the unit. Select the “Back” button



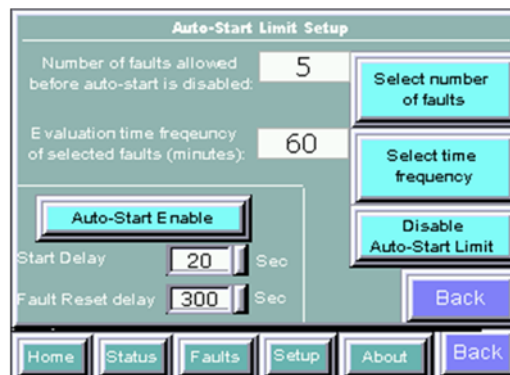
- Next select the “VAR Output” button and ensure the “Local VAR Output Enable” and “Network VAR Output Enable” are OFF (Blue). If buttons are green press to toggle off
- Select the “Back” buttons to return to the “Tech Setup” screen



- On this pop-up screen ensure the “Auto Start En” button is OFF (Blue). If button is ON (Green), press to toggle off.

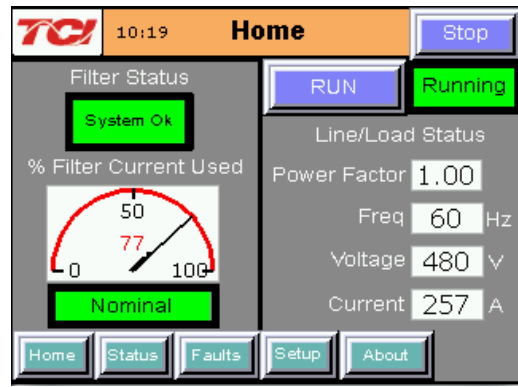


- Navigate back to “Tech Setup” screen
- Now select “Save Settings”
- Press “Home” to navigate to Home screen



**3) Home screen check**

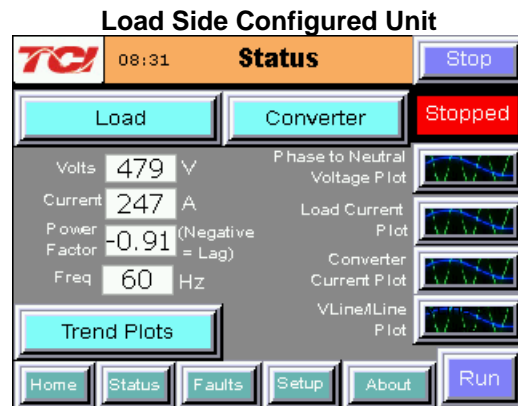
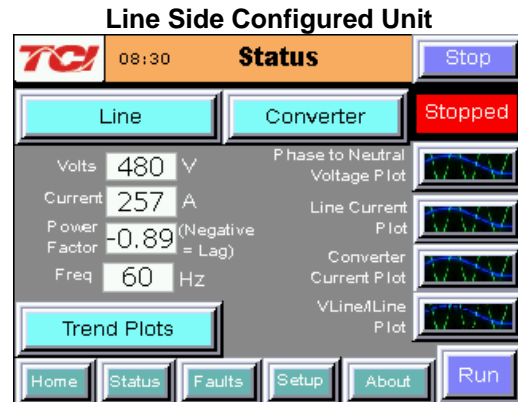
- Compare “Freq” to expected line frequency
- Compare “Voltage” to expected line voltage
- “Current” expected to be zero because unit is not running and CT inputs are shorted
- If status indicates a Fault, press “Stop” button to reset condition



**4) Status screen check**

**Note:** The Line/Load button and Line/Load Current Plot will say “Line” if a master/ line side unit, or say “Load” if it is a slave/load side unit.

- Press “Status” to navigate to Status screen
- Compare “Volts” to expected line voltage
- Compare “Freq” to expected line frequency
- “Current” expected to be zero if unit is not running and CT inputs are shorted



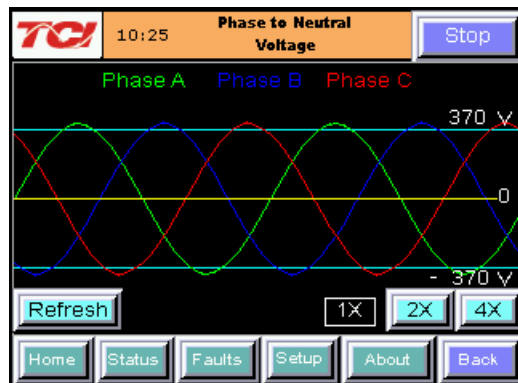
**5) Phase rotation check**

- Press “Phase to Neutral Voltage Plot” button
- Check that the current peaks follow the following sequence from left to right: Phase A (Green), Phase B (Blue), Phase C (Red)
- Equipment is phase rotation sensitive, if phase rotation is incorrect, power down unit and rewire to adjust phase rotation by swapping two incoming phase connections

**Warning**



Improper operation will occur if input voltage phase rotation is incorrect.



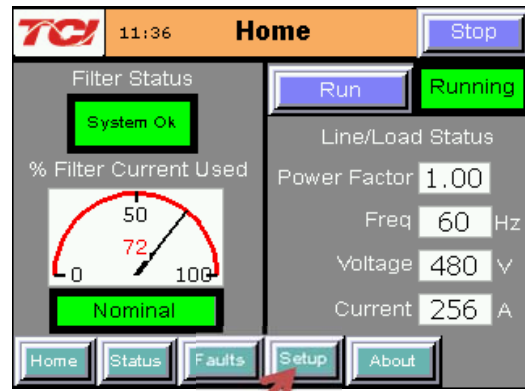


**6) Running Converter**

Press "Setup" to navigate to the setup screen  
 Select the "Tech Setup" button and enter the password:



**08252014**

- Select the "Next" button from the splash screen
- Select the "Operation Modes" button
- On the "Operation Mode Setup" screen ensure "PF Correction Enable" and "Harmonic Correction Enable" buttons are OFF (Blue). If buttons are green press to toggle off TODO and VAR output off.
- Select the "VAR Output" button and ensure the "Local VAR Output Enable" and "Network VAR Output Enable" are OFF (Blue). Select the "Back" buttons to go back to "Tech Setup" screen
- Select the "Home" button from navigation bar
- Select the "Run" button to start unit operation




**7) Remove CT shorting bars**

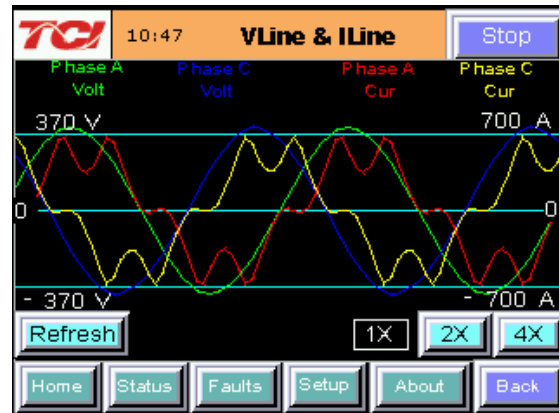
- Press "Stop" to turn off unit
- Disconnect power from cabinet
- Turn off the built in door breaker AND
- Turn off the upstream feeder breaker
- Open the cabinet door and remove shorting bars from CTs connected to TB-1


<b>Warning</b> 	Lethal voltages may be present. Wait 5 minutes for DC bus voltage to drop to safe levels.
<b>Warning</b> 	Check for voltage in cabinet with a DMM before working inside cabinet.

**8) Current polarity #1**

- Power up unit
- From Home screen press "Run" to turn on unit
- Press "Status" to navigate to Status screen
- Select "VLine/ILine" screen
- Note: Lightly loaded conditions (less than 20% CT rating) will not have enough current to show up on ILine plot
- Check that Phase A to Neutral voltage peak lines up with Phase A current (use zoom if necessary)
- Check that Phase C to Neutral voltage peak lines up with Phase C current
- Power system down and check CT installation location and orientation if Phase A plots differ significantly from Phase C plots

<b>Warning</b> 	Open circuit CT outputs can result in high voltages and damage to equipment.
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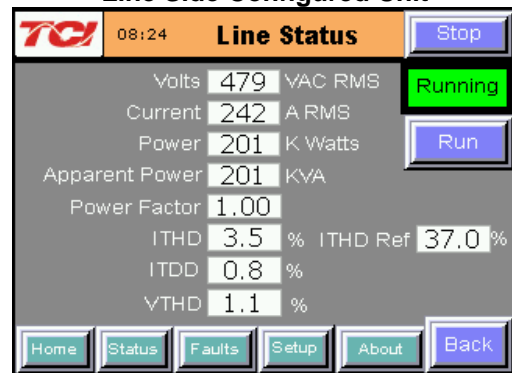
<p><b>Warning</b></p> 	<p>Wiring the CT incorrectly can lead to improper operation, which includes unit operating in limit and/or contributing to rather than correcting harmonics.</p>
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**NOTE:** If using a Line Side (master) unit the screen title will say “Line Status” and if using a Load Side (slave) unit the screen title will say “Load Status”.  
**Also:** See notes under each screen.

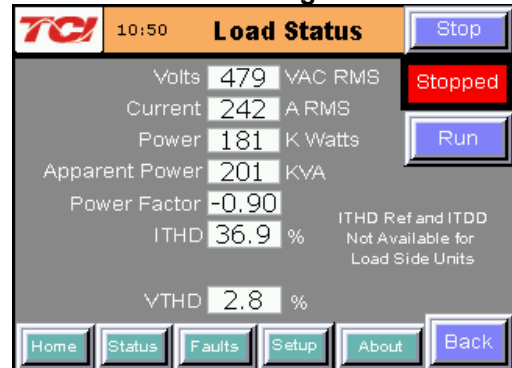
**9) Current polarity #2**

- Navigate to Status screen
- Depending on unit configuration select either the “Line” or “Load” button
- Verify that the fields match expected values for the power system
- If they do not, verify correct CT installation

**NOTE:** If secondary CT current is less than 1A ITHD will be unavailable



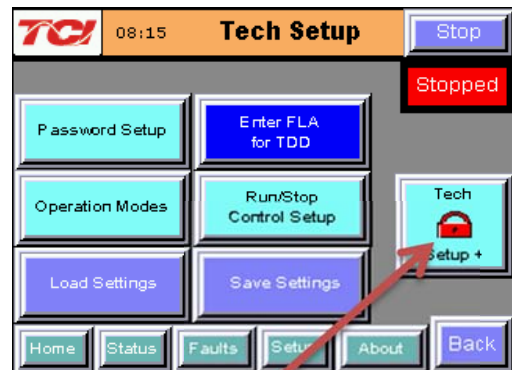
**NOTE:** If system voltage is not 480 VTHD will be unavailable. If CT secondary feedback current less than 1 Amp, ITHD and ITHD Ref will be unavailable



**NOTE:** If system voltage is not 480 VTHD will be unavailable. Load Side units do not report ITDD or ITHD Ref. If CT secondary feedback current less than 1 Amp ITHD will be unavailable.

**10) Final setup**

- Press “Setup” to navigate to setup screen
- Select the “Tech Setup” button and enter the password:  
**08252014**
- Select the next button from the splash screen
- Select the “Operation Modes” button

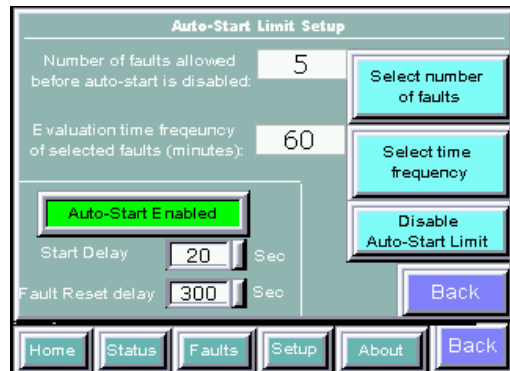
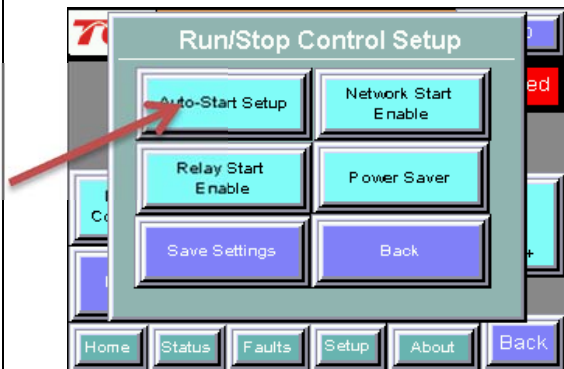
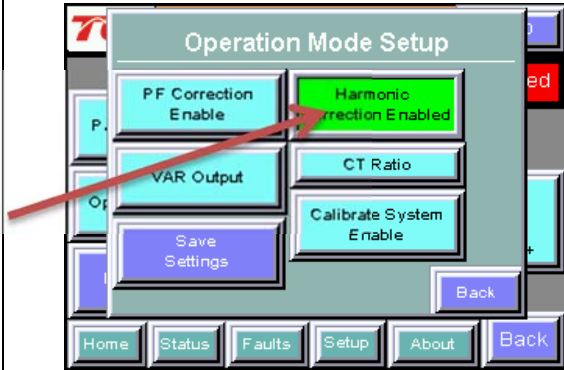



- On the "Operation Mode Setup" screen select the "Harmonic Correction Enable" button and ensure the button is ON (Green)

**NOTE:** If unit is sized with sufficient capacity to provide power factor correction, select the "PF Correction Enable" button and ensure the button is ON (Green)

- Select the "CT Ratio" button and confirm the configured CT ratio matches the external current transformers that are wired to the unit
- Select the "Back" button and then from "Tech Setup" screen select "Run/Stop Control Setup"

- Select "Auto-Start Setup"
- On this screen select the "Auto-Start Enable" button and ensure the button is ON (Green)
- Navigate back to the "Tech Setup" screen and select the "Save Settings" button
- Navigate to the "Home" screen and press the Run button. The unit will start to operate. With the Auto-Start option enabled the units will now automatically restart after future power on/off cycles of the unit or non-critical system faults**



<b>Warning</b> 	When Auto Start is enabled unit may operate without operator input.
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**11) Final check**

**NOTE:** If unit is configured for load side operation reference the User Manual for Load Side CT Placement diagram.

- Navigate to the Status screen
- Navigate to Line/Load status
- Note the corrected voltage, current, power and THD

TCI 08:24		<b>Line Status</b>	Stop
Volts	479	VAC RMS	Running
Current	242	A RMS	Run
Power	201	K Watts	
Apparent Power	201	KVA	
Power Factor	1.00		
ITHD	3.5	%	ITHD Ref 37.0 %
ITDD	0.8	%	
VTHD	1.1	%	
Home	Status	Faults	Setup
About	Back		

**Line Side**

TCI 11:20		<b>Load Status</b>	Stop
Volts	479	VAC RMS	Running
Current	245	A RMS	Run
Power	203	K Watts	
Apparent Power	203	KVA	
Power Factor	1.00		
ITHD	0.3	%	ITHD Ref and ITDD Not Available for Load Side Units
VTHD	1.1	%	
Home	Status	Faults	Setup
About	Back		

**Load Side**





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