

# IntelliCI™ – 030F0239

## VARIABLE SPEED DRIVE – 600W INVERTER

### DUAL VOLTAGE (115/220 VAC) – 50/60 Hz



Tecumseh

#### GENERAL DATA

Part Number	030F0239
Inverter Drawing	DGMX0086
Wiring Diagram Drawing	DEMXX0056
Installation Instructions	600A1572
Compressors Compatibility	VTC1424U-MD5C
Agency Approvals	UL approved (Pending)

#### APPLICATION DATA

Rated Input Voltage Range	115 – 127 VAC / 220 – 240 VAC
Operating Input Voltage Range <sup>1</sup>	90 – 130 VAC / 175 – 260 VAC
Line Frequency	50 / 60 Hz
Maximum Input Power	600 W
Power Factor Corrector	N/A
Compressor Speed Range	2500 – 4500 rpm
Operating Ambient Temperature Range	-10 to +43 °C (+14 to +109 °F)
Storage Ambient Temperature Range	-20 to +85 °C (-4 to +185 °F)
Operating and Storage Ambient Humidity	Less than 90% (non-condensing)
Cooling Requirements <sup>2</sup>	Fan cooling 3 m/s

<sup>1</sup> Compressor may have limited starting performance at the supply voltage ranges: 90-100V and 175-190V. Compressor may not reach the maximum cooling capacity at 175-180V supply voltage range.

<sup>2</sup> See "Installation Instructions" for additional assembly details.

#### DESIGN INFORMATION

Absolute Dimensions (H x W x L)	159.3 x 69.6 x 140.6 mm
Weight	0.85 kg
Mounting Location	Remote assembly
Compressor Cable Length	0.8 – 1.0 m
Housing Material	Lexan 503R
Line Input Mating Connector / Wire Gauge	Needle type terminal / 16AWG / 105°C / 600V
TAL™ Control Input Mating Connector / Wire Gauge	Needle type terminal / 18AWG / 105°C / 600V
Thermal Switch Enable Mating Connector <sup>3</sup>	Molex 50-57-9402
Speed Input Mating Connector	Molex 50-57-9402
RoHS Conformity	2011/65/EU

<sup>3</sup> Minimum wire gauge specification.

#### INVERTER PROTECTIONS

Input Overvoltage Trip	140 / 265 VAC
Input Overvoltage Resume	130 / 260 VAC
Input Undervoltage Trip	85 / 170 VAC
Input Undervoltage Resume	90 / 175 VAC

#### INVERTER INPUTS<sup>4</sup>

Speed Input High Level Voltage Range (Isolated)	5 – 12 V <sub>pk</sub> (Square Wave)
Speed Input Frequency Range	83 – 150 Hz
TAL™ Control Input Voltage Range (Isolated)	90 – 260 VAC
External Thermal Switch (Isolated)	Closed = Output Enabled / Open = Output Disabled

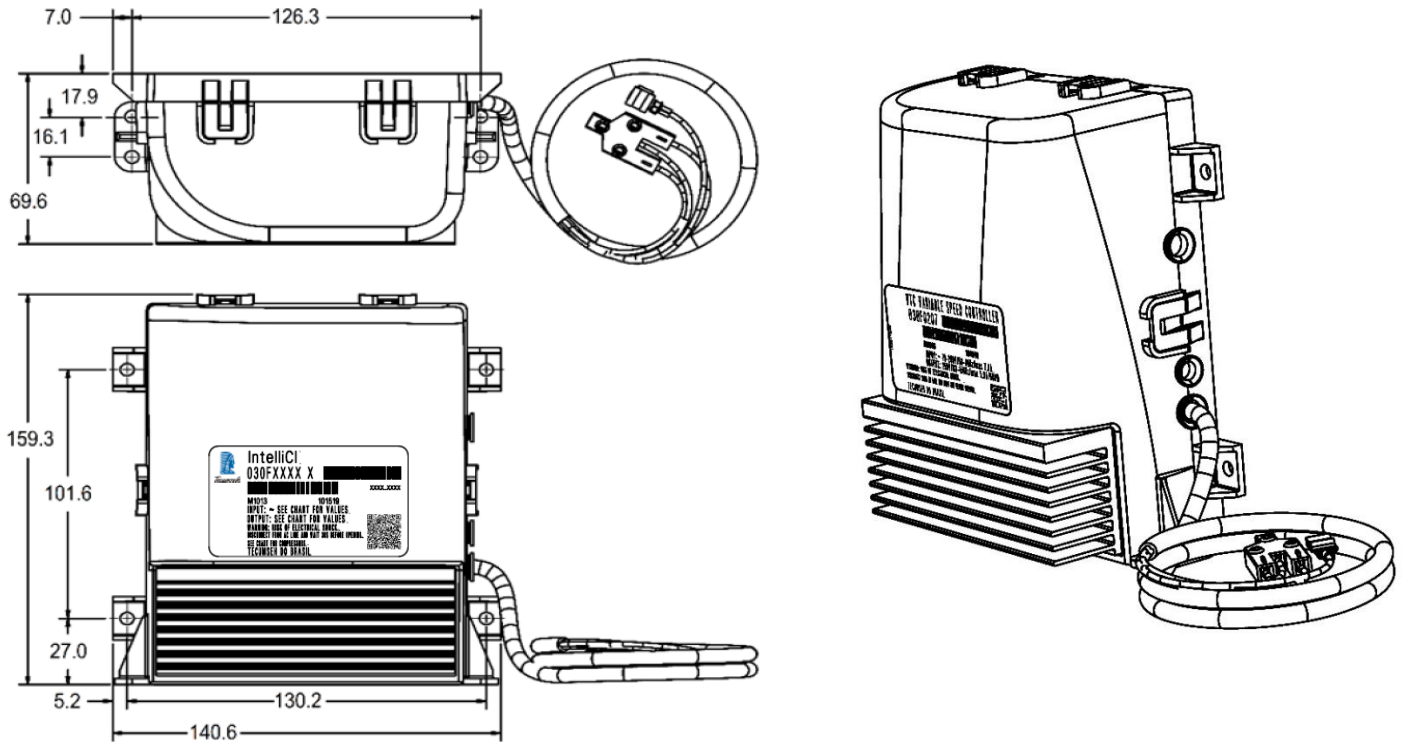
<sup>4</sup> See "Inverter Interfaces" Section for more details.

IntelliCI™



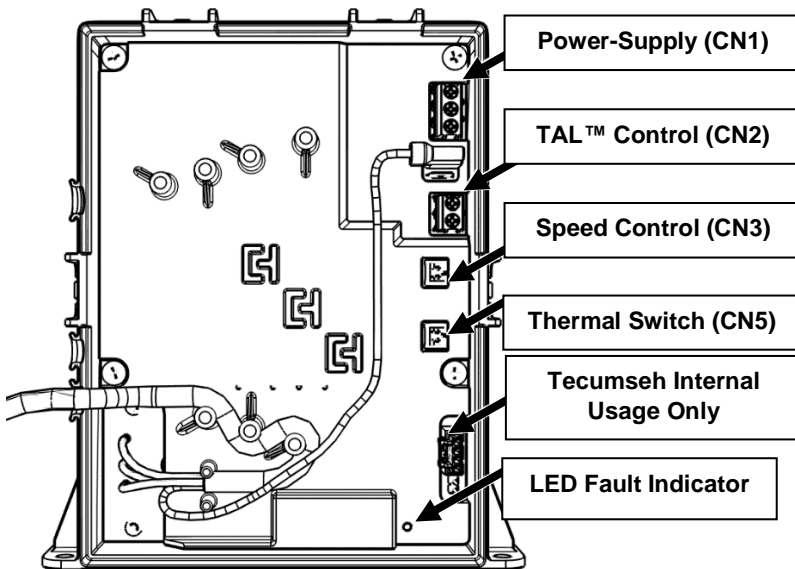
THE TECUMSEH VARIABLE SPEED DRIVE MUST BE USED ONLY WITH THE APPROPRIATE  
TECUMSEH VARIABLE SPEED COMPRESSOR.

## INVERTER DIMENSIONS



Note: Dimensions in millimeters and only for reference. Refer to DGMX0086.

## INPUT CONNECTORS AND FAULT BLINK CODE



Start-up Failure .....	1 Flash
Undervoltage .....	2 Flashes
Overvoltage .....	3 Flashes
Overcurrent .....	4 Flashes
Inverter Overtemperature .....	5 Flashes
Locked Rotor .....	6 Flashes
External Thermal Switch .....	7 Flashes
Phase Loss .....	8 Flashes

## INVERTER INTERFACES

### Tecumseh Adaptive Logic (TAL™)

Tecumseh offers an adaptive speed control solution embedded in IntelliCI™ Tecumseh Variable Speed Drive which can determine the best rotation according to the thermal load and ambient temperature variation without any additional changes to the refrigeration system.

The TAL™ Control interface connector (CN2) is controlled by an “On/Off” thermostat<sup>1</sup>. Ideally designed for quick and direct replacement of fixed speed compressors without any system changes or parameters tuning.

Some of the TAL™ features are:

- Rapid temperature pull-down
- Rapid temperature recovery after energy faults
- Thermal load temperature maintenance
- Robustness against ambient temperature variation
- Self-adapting refrigeration capacity algorithm

### Frequency Input

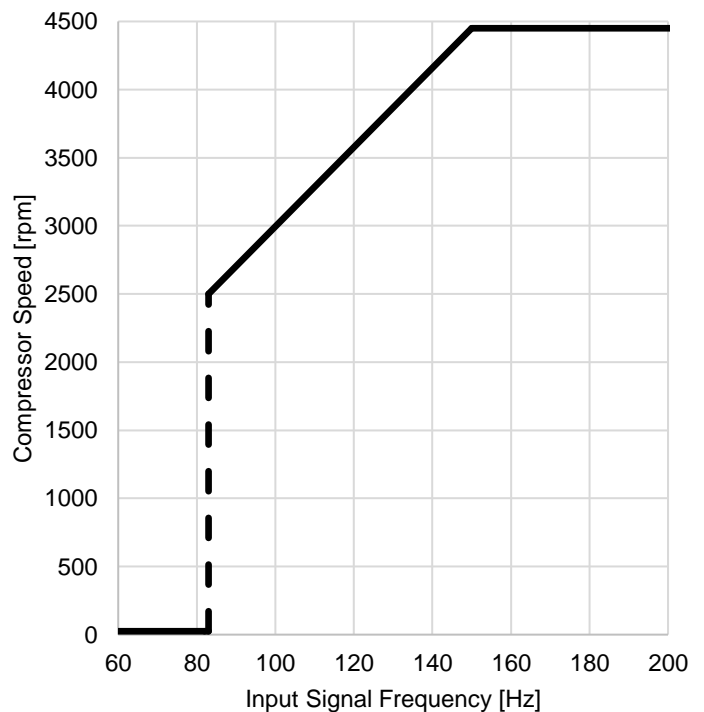
It is possible to control the compressor’s speed by interfacing the frequency input of the IntelliCI™ Tecumseh Variable Speed Drive with electronic thermostats or refrigeration system control devices<sup>2</sup>.

This isolated frequency input connector (CN3) makes the integration of Tecumseh inverters with several electronic temperature control devices easy.

The external device should generate a square wave, minimum 5V<sub>pk</sub> and maximum 12V<sub>pk</sub> to control the compressor’s speed.

To run the compressor properly, the frequency input should be in the range of 83 to 150Hz. This means that the compressor speed range goes from 2500 to 4500rpm. To stop the compressor the input frequency should be lower than 78Hz, according to the figure beside.

When using the frequency input, the TAL™ algorithm is disabled (CN2 inactive).



### External Thermal Switch Input

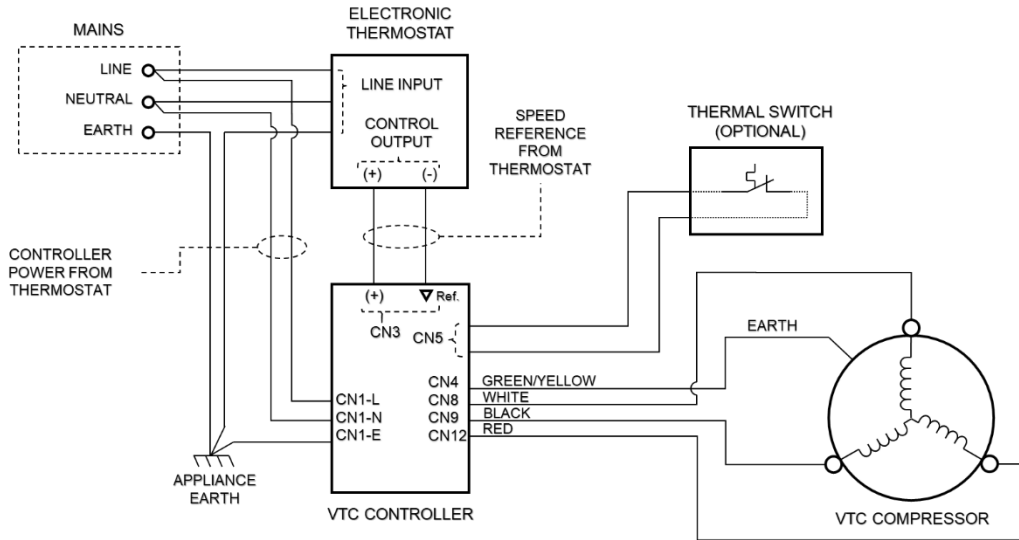
Tecumseh 030F0239 inverter has an optional external thermal switch input to enable or disable the inverter output as an additional system protection feature. The device comes with a jumper to close CN5 pins.

To use the functionality, a thermal switch must be connected in the CN5 terminal. To enable the compressor, the CN5 pins must be closed. If CN5 is opened, the inverter power output is turned-off, and the fault indicator LED will blink 7 times every 10 seconds.

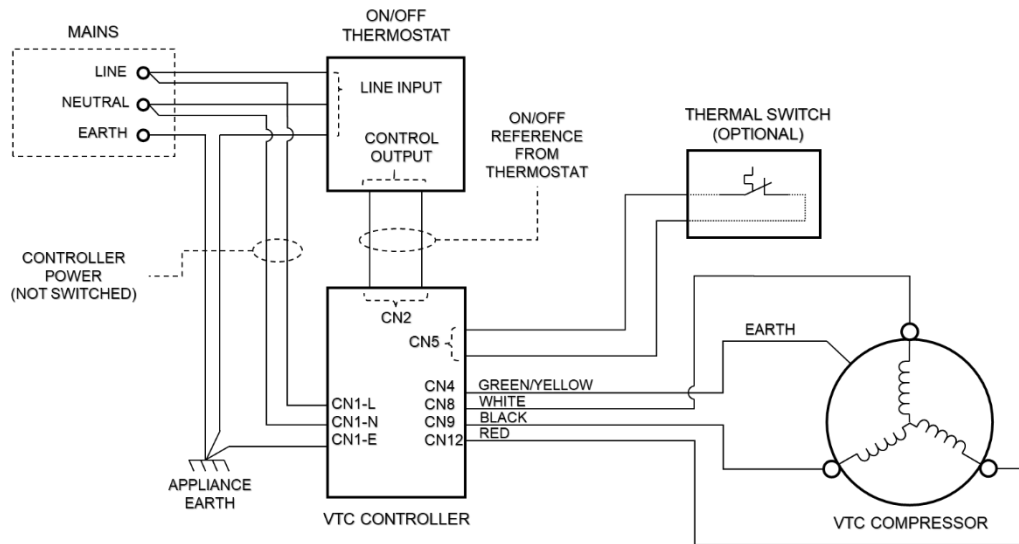
<sup>1</sup> For more details, see Section “Typical Wiring Diagram When Operating with “On/Off” Thermostat”.

<sup>2</sup> For more details, see Section “Typical Wiring Diagram When Operating with Variable Speed Thermostat”.

## TYPICAL WIRING DIAGRAM WHEN OPERATING WITH VARIABLE SPEED THERMOSTAT



## TYPICAL WIRING DIAGRAM WHEN OPERATING WITH ON/OFF THERMOSTAT



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