REVISION	
REV	DESCRIPTION
D	RELEASE/CHANGE PER ECO-R172706

TURBINE CONTROL BOARD SPECIFICATION
PB 540

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1. INTRODUCTION

1.1 Purpose

The purpose of this document is to provide the requirements for the Turbine Control Board.

1.2 Scope

This document provides the requirements for the Turbine Control Board used in the PB640, PB560, PB540, and PB520 devices.

1.3 REVISION HISTORY

Revision	Date	Author	Change Description
A	03/14/08	[redacted]	Initial Release
B	09 Sep 08	[redacted]	Add note on the IPC Class II/III requirement
C	03-Nov-08	[redacted]	Updated format to standard. Clarified requirements.
D	20-Jan-2009	[redacted]	Incorporate updates from Verification Review

1.4 Reference Documents

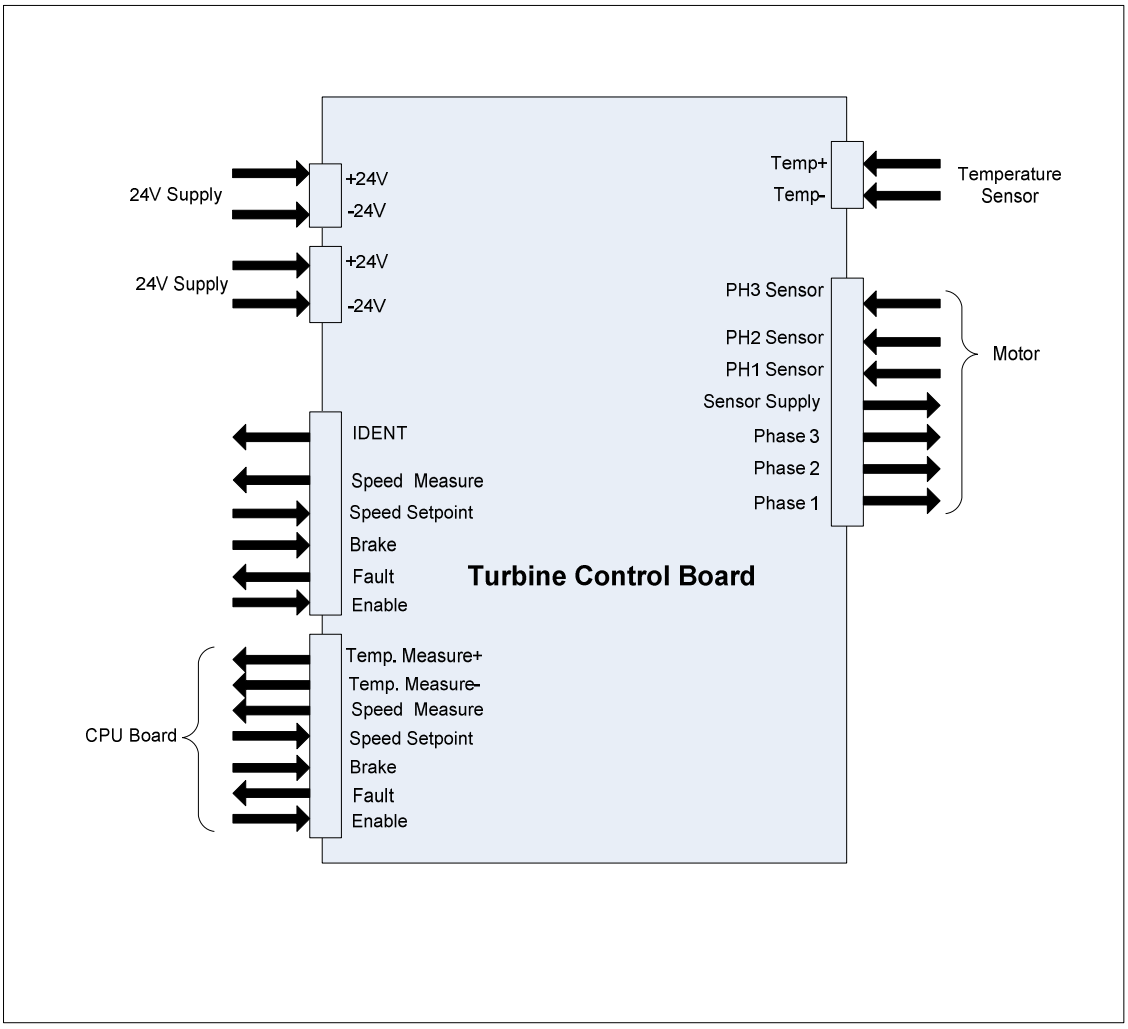
Reference	Part Number	Revision	Document Title
N/A	N/A	N/A	N/A

1.5 Definitions

Acronym	Definition
A	Ampere
PCBA	Printed Circuit Board Assembly
V	Volt
RPM	Revolutions per minute

2. OVERVIEW

The Turbine Control board controls speed of the turbine and provides a means to transfer measured feedback signals. The feedback signals consist of turbine speed and temperature. This board also measures the amount of current flowing across turbine motor windings. This board also provides a means of braking (stopping) the turbine.



3. ELECTRICAL REQUIREMENTS

3.1 Specifications

HWSTCB1 The Turbine Control Board shall provide a sequential drive signal to three phases of the turbine motor to drive the motor from 0 to 45000 rpm

HWSTCB2 The Turbine Control Board shall monitor motor position through the position sensor input signal.

HWSTCB3 The Turbine Control Board shall act as an interface for transferring the motor temperature signal to the CPU Board.

HWSTCB4 The Turbine Control Board shall provide a means to cut-off the turbine drive circuitry.

HWSTCB5 The Turbine Control Board shall provide a means of braking the turbine motor.

HWSTCB6 The inrush current of the Turbine Control Board shall be less than 4A.

HWSTCB7 The Turbine Control Board shall have an input of 24V +/- 1.2V and produce an output of 15.00V +/- 0.25V with a 3A capacity sourcing.

3.2 Interconnect

3.2.1 Power Supply Input Connector - 1 (J1)

Pin Number	Signal Name
1	- 24V Supply Input
2	+ 24V Supply Input

3.2.2 Turbine Control Connector -1 (J2)

Pin Number	Signal Name
1	GND
2	Enable
3	Fault/
4	Brake/
5	Speed – Setpoint
6	Speed - Measure
7	NC
8	NC
9	Temp. Measure -
10	Temp. Measure +

3.2.3 Temperature Sensor Connector (J3)

Pin Number	Signal Name
1	Temp -
2	Temp +

3.2.4 Motor Connection Connector (J6)

Pin Number	Signal Name
1	Phase 1
2	Phase 2
3	Phase 3
4	Sensor Supply
5	GND
6	PH1 Sensor

7	**PH2 Sensor**
8	**PH3 Sensor**

3.2.5 Power Supply Input Connector - 2 (J11)

Pin Number	Signal Name
1	**- 24V Supply Input**
2	**+ 24V Supply Input**

3.2.6 Turbine Control Connector -2 (J22)

Pin Number	Signal Name
1	**GND**
2	**Enable**
3	**Fault/**
4	**Brake/**
5	**Speed - Setpoint**
6	**Speed - Measure**
7	**NC**
8	**NC**
9	**IDENT**

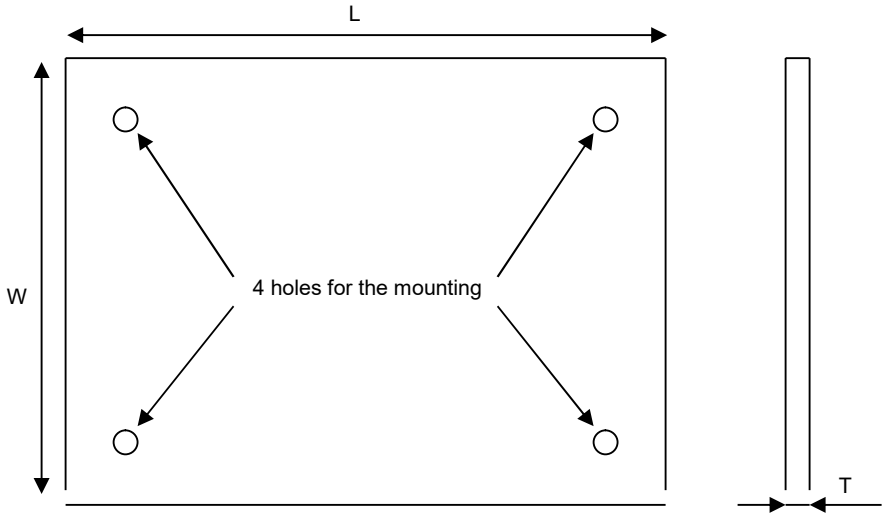
4. MECHANICAL REQUIREMENTS

4.1 Size

HWSTCB15 The length (L) of the PCBA shall be 92.5mm +/- 1mm

HWSTCB16 The width (W) of the PCBA shall be 72mm +/- 1mm

HWSTCB17 The thickness (T) of the PCBA shall be 1.60mm +/- 0.5mm



4.2 Mounting

HWSTCB18 4 holes Ø 3.5mm shall be plan to fix the Turbine Control board on the device.

4.3 Cooling

HWSTCB19 The hot components (IC6, D17, T2, T3, T4, T5, T6, T7, T9) shall be place on the back side of the PCBA to allow for cooling from the metal enclosure of the turbine box.

4.4 Fabrication

HWSTCB20 The Printed Circuit Board shall be fabricated per standard IPC-A-610D Class 3. Exception shall be listed on the fabrication drawings.

4.5 Protection

N/A.

4.6 Labeling

HWSTCB21 The PCBA shall be labeled with its Name, Part Number and Revision which is also human readable.

5. PACKAGING REQUIREMENTS

HWSTCB22 Packaging shall be designed to minimize the level of waste and waste disposal as per the European Directive on handling waste packaging.

Packaging shall be tested to the international standard ISTA2A.