# GE Service Manual

DS200IPCSG1ABB

## 1. Description

DS200IPCSG1ABB Technical Specifications

## 2. Specifications

| Specification | Value |
|---|---|
| Board | **Manufacturer GE General Electric** |
| IGBT | **Module Manufacturer Mitsubishi** |
| Series | **Mark V** |
| Part | **Number DS200IPCSG1ABB** |
| Product | **Type Board w/ CM300DY-24H** |
| Weight | **Less than 5 lbs before packaging** |
| Dimensions | **(with IGBT) W5.25 x L3.25 x H2.5 (inches)** |
| About | **the DS200IPCSG1ABB** |
| This | **DS200IPCSG1ABB printed circuit board was originally manufactured for General Electric's Mark V Turbine Control System Series. The Mark V Series in which this DS200IPCSG1ABB product offering is situated has specific applications in the management and control systems of popular wind, steam and gas turbine automated drive assemblies.** |

## 3. Product Information

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This DS200IPCSG1ABB printed circuit board product offering is truly better-definable by its official functional product description as a Snubber Board, as it appears in pertinent Mark V Series and General Electric instructional manual materials.

This DS200IPCSG1ABB PCB is not the original Snubber Board released for use in the Mark V Series automated drive assembly; that is the DS200IPCSG1 parent Snubber Board missing this DS200IPCSG1ABB product's three significant revisions.

Hardware Tips and Specifications

The GE IGBT P3 Snubber Board DS200IPCDG1ABB is a vital component designed to provide protection and optimize the performance of Insulated Gate Bipolar Transistors (IGBTs). This board plays a crucial role in mitigating voltage spikes and minimizing stress on the IGBTs during their switching operations.

This board is equipped with one ribbon cable connector at location PL, which facilitates seamless integration into the system. To ensure a precise adjustment of the IGBT, the board incorporates large screws that can be fine-tuned using a screwdriver. It is somewhat surprising that this DS200IPCSG1ABB printed circuit board is not credited as owning any sort of special Mark V Series assembly type, given its mounting strategy's incorporation of a solid metal backplane into its assembly.

This backplane is permeated in four separate locations by factory-drilled insulated holes included for safe and convenient DS200IPCSG1ABB installation. Given the DS200IPCSG1ABB products' base circuit board's small stature, its assembly seems to no incorporate many Mark V Series-standardized hardware components such as integrated circuits and capacitors, although several diodes are visible in the assembly of this DS200IPCSG1ABB product for voltage-suppression purposes.

As a critical component in power electronic systems, the DS200IPCD Snubber Board undergoes stringent testing and quality control measures during its manufacturing process to meet the highest industry standards. Its reliable performance, combined with effective snubber protection, ensures the safe and efficient operation of the Insulated Gate Bipolar Transistors, contributing to the overall reliability and longevity of the industrial systems in which it is utilized.

Please note that new DS200IPCDG1ABB boards from the manufacturer will not come with a reinstalled CM300DY-24H power semiconductor module as found in our photos. The CM300DY-24H module consists of two IGBT chips integrated into a single package. Each IGBT chip is complemented by a freewheeling diode, making the module a "half-bridge" configuration. This configuration allows for effective control of the current flow in both directions, enabling efficient switching and reducing power losses during operation.

Before making any final purchase decision on this DS200IPCSG1ABB product, it is crucial to understand that its thrice-revised nature alters it from its originally-introduced performance specifications and basic dimensions. This DS200IPCSG1ABB product possesses two functional styles of product revision and a singular artwork configuration revision, rated at grades of A, B, and B respectively by the original manufacturer.

While the DS200IPCSG1ABB  model can still be found, the documentation regarding how the model operates or how it will be installed within the Mark VI cabinet is limited due to being out of production. There are six screws visible on this model, which are used for adjusting the hardware of the connected IGBT model; to adjust the screws, a screwdriver is required. The screws that will be used to adjust the IGBT hardware are labeled as:

C2E-1-A

C2E1-B

C2E-2-B

C2E-2-A

C1-A

C1-B

Please make sure when adjusting the screws, extreme caution must be taken as the screws could potentially snap and would then need to be replaced. As with many other models produced by General Electric, the DS200IPCSG1A model will also be connected to a power source; when the model is connected to a power source and the unit needs to be repaired or replaced power must be removed, not removing the power supply could rest in injury or in some extreme cases death. It should also be noted that when adjusting the screws on the IPCS model, power should be removed to prevent shock.

DS200IPCSG1ABB Product Number Breakdown

The DS200IPCSG1ABB functional product number, as mentioned above, is a strong source of supplementary hardware specifications for this particular DS200IPCSG1A device. The DS200IPCSG1A functional product number designates the DS200IPCSG1ABB PCB's:

normal style of Mark V Series assembly

domestic location of original manufacture

ICPS functional abbreviation

Mark V Series Group One membership

A-rated functional product revision

Part Number: DS200IPCSG1ABB

Manufacturer: General Electric

Series: Drive Control

Product Type: Insulated Gate Bipolar Transistor Snubber Card

Power Requirements: +5 V dc, 6 A

Number of relay channels: 12

Power supply voltage: 28 V dc

Mounting: DIN-rail mounting

Technology: Surface mount

Operating temperature: -30 to +65 degrees Celsius

Size: 15.9 cm high x 17.8 cm

Repair: 3-7 Day

Availability: In Stock

Country of Manufacturer: United States

Manual: GEH-6120

Functional Description

DS200IPCSG1ABB is an IGBT P3 snubber board developed by GE under the Drive Control system. It is a part of the Mark V Series used in GE Drive Control Systems. An Insulated Gate Bipolar Transistor P3 snubber card is a type of electronic circuit board designed to reduce voltage spikes and switching noise in power electronics applications. They are commonly used in high voltage and high current applications such as motor drives, renewable energy systems, and industrial automation. However, they can generate voltage spikes and electromagnetic interference (EMI) during switching, which can damage the IGBT itself or other components in the circuit.

A snubber circuit is used to reduce these voltage spikes and EMI by providing a path for the high-frequency energy to dissipate. The P3 snubber card is specifically designed to be used with P3 modules, which are a popular choice for high-power applications. The snubber card contains a series of capacitors and resistors that work together to reduce voltage spikes and EMI during IGBT switching. By using a snubber card, the overall system reliability and performance can be improved, reducing the risk of damage to components and improving system efficiency.

Features

Connectors and Screws: The Board has a single 4-pin connector as well as seven screws for adjusting the insulated bipolar transistor.

Adjustment Screws: C2E-1-A and C2E1-B are the adjustment screws. C2E-2-A and C2E-2-B, as well as C1-A and C1-B. When using a screwdriver to make the adjustment, you must be cautious. Because of the voltage present in the drive and on the board, you must ensure that power is turned off before making any adjustments.

Product Attributes

Snubber Circuit: The board may feature a snubber circuit, which is a passive electronic circuit designed to dampen the voltage spikes that can occur when an switches on or off. This helps to protect the IGBT from damage and improves its overall performance.

Low Inductance: The board may have low inductance, which can help to reduce the level of electromagnetic interference (EMI) generated by the IGBT during operation.

Compact Size: The board may be designed to be compact, allowing it to be easily mounted on a circuit board or within an electrical enclosure.

High Reliability: The board may be designed to operate reliably in harsh industrial environments, with features such as conformal coating to protect against moisture, dust, and other contaminants.

RoHS Compliance: The board may be manufactured in compliance with the Restriction of Hazardous Substances (RoHS) directive, which limits the use of certain hazardous materials in electronic products.

Temperature Range: The board may be designed to operate within a specific temperature range, typically between -40 to 85 degrees Celsius, to ensure reliable performance in various industrial environments.

Characteristics

Noise and Spike Prevention: It is responsible for preventing voltage spikes and reducing noise on the power supply line, which can cause damage to the drive control system.

Power Consumption: This product requires a power supply voltage of 28V dc, and has a power requirement of +5V dc and 6A.

Channels and Mounting: Features 12 relay channels, which allow for precise control of various components within the drive control system. This product also utilizes surface mount technology and is designed for DIN-rail mounting, making it easy to install and use.

Operating Range: With an operating temperature range of -30 to +65 degrees Celsius, this IGBT Snubber Card can operate in a wide variety of environments.

Dimensions: It has a size of 15.9 cm high x 17.8 cm, making it a compact and efficient solution for drive control systems that require reliable and high-performance components.

Stage Link

Coaxial Connection: The Stage Link is made up of a coax cable with BNC connectors on both ends. It connects the ARCNET interface card in the I to C sections of the Control Panel. The ARCNET interface card acts as a high impedance source, allowing the I to communicate over the Stage Link.

Hardware Requirements: A T type BNC connector is required for connection to the Stage Link hardware. This device also allows the Stage Link to connect to additional processors on the network. Due to design parameters, the cable of the last I on the link must be terminated with a 93 ohm termination resistor on the open connection of the T type BNC connector.

Primary Controllers

Redundant Architecture: R, S, and T are physically separate and independent modules containing all control and protection hardware and software. A failure in any of the three controllers is automatically diagnosed and displayed as an alarm message at the card level. While the turbine is running, maintenance personnel can turn off the appropriate controller and replace the defective card. Redundant sensors are used in control and trip protection systems to provide a fault-tolerant design for the entire system. Diagnostics can now distinguish between redundant sensor failures and electronics failures.

Voting Mechanisms: In the control, three basic types of voting are used. At the start of each computing time frame, each controller reads its sensors independently and exchanges this data with the data from the other two controllers. In each controller, the median value of each analog input is calculated and then used as the controller's control parameter. For each analog input to each controller, diagnostic algorithms monitor a predefined deadband, and if one of the analog inputs deviates from this deadband, a diagnostic alarm is triggered to alert maintenance personnel.