# GE Service Manual

DS3800XTFP1E1C

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About the DS3800XTFP1E1C

The DS3800XTFP1E1C and other circuit boards in the Speedtronic Mark IV line by General Electric are used to control and run gas and steam turbines. A gas or steam turbine uses a large internal combustion engine to mix fuel and air to cause a contained explosion. This explosion creates a series of gases that are under a lot of pressure and force their way out of the engine causing the turbine to move at high speed generating a great deal of energy. The energy created by the moving turbine is then harnessed and used for a multitude of other purposes.

The DS3800XTFP1E1C is a fan out card from General Electric for their Mark IV Speedtronic Line. A fan-out card has eight red plastic rectangles. Each rectangle has twelve circular ports. The rectangles are known as logic gates. The logic gates allow for a certain number of gate inputs to be connected directly without any additional wiring or interfacing circuitry. Each logic gate has its own letter labels reading JS, JT, JY, JX (Sense), JR, JQ, JP, JN (Sense). The part number (DS3800XTFP1E1C) is printed below the bottom set of logic gates. The DS3800XTFP1E1C has a small white plastic male terminal port with six metal prongs. The DS3800XTFP1E1C has four large pre-drilled holes in each corner and two small pre-drilled holes along the bottom edge to secure the DS3800XTFP1E1C in place.

Part Number: DS3800XTFP1E1C

Manufacturer: General Electric

Series: Mark IV

Product Type: Thyristor Fan Out Board

Input Signal: 4-20 mA / 0-10 V DC

Output Signal: 0-10 V DC

Max Output Channels: 6-12 outputs

Power Supply: 110-240 V AC / 24 V DC

Weight: 1.5 - 3.0 kg / 2 lbs

Operating Temperature: -30 to 55 degrees Celsius

Size: 8.25 cm high x 4.18 cm

Availability: In Stock

Country of Origin: United States

Functional Description

The DS3800XTFP1E1C is a Thyristor Fan Out Board manufactured and designed by General Electric as part of the Mark IV Series used in GE Speedtronic Gas Turbine Control Systems. A Turbine Control Thyristor Fan Out Board is an essential component in turbine control systems, primarily used to manage and distribute control signals to various parts of the system. In modern turbine control systems, these boards are crucial for ensuring the accurate operation of high-power devices, such as thyristors. Thyristors are semiconductor devices designed to regulate and control the flow of electricity in high-power applications, like turbines. These devices help in managing parameters such as speed, torque, and load, by controlling the electrical current passing through the turbine’s motor.

Functions of Thyristor Fan Out Board

The main function of the Thyristor Fan Out Board is to take an incoming control signal from the central turbine control unit and distribute it to multiple outputs. This distribution ensures that the system’s components receive the correct signals for optimal operation. Given that turbines often have numerous interconnected parts, each requiring specific control signals, the fan-out board plays a key role in centralizing the management of these signals, ensuring that all parts of the system are properly synchronized.

Core Functions:

Signal Distribution: The primary function of the Thyristor Fan Out Board is to distribute a single control signal from the turbine’s central control unit to multiple thyristors or output channels. These thyristors are responsible for regulating electrical power to various components of the turbine system. By splitting the control signal, the board ensures that the necessary electrical power is efficiently directed to the right parts of the turbine, allowing the system to operate harmoniously.

Power Regulation: The Thyristor Fan Out Board aids in regulating the power flow to different sections of the turbine, such as motors, generators, and other power systems. As the control signal is sent to the thyristors, it determines the power level to be supplied to these parts of the system. This ensures that each component receives the appropriate amount of power to maintain optimal performance, preventing overloads and ensuring efficient energy usage.

Signal Integrity and Synchronization: The board maintains the integrity of the control signal while distributing it to multiple outputs. It ensures that the signal is consistently delivered with accuracy, preventing delays or disruptions in the transmission. This is essential for the synchronized operation of the turbine’s components. Proper synchronization is necessary to maintain consistent load, speed, and performance across the turbine system, reducing wear and tear and improving system longevity.

Overcurrent Protection: Another important function of the Thyristor Fan Out Board is to provide overcurrent protection. This feature helps safeguard the turbine’s electrical components by preventing excessive current from damaging the system. If the current exceeds the designated threshold, the board can shut off the power supply or activate protective mechanisms to prevent further damage.