# DS215TCCAG1BZZ01

## TCCA Control and Analog I/O Board

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|---|---|
| **BRAND** | GE Vernova |
| **DOCUMENT SCOPE** | Selected OEM-authored product-family reference |
| **IDENTIFICATION** | Use the exact ordering reference DS215TCCAG1BZZ01 for nameplate comparison. |
| **REPLACEMENT CHECK** | Confirm hardware revision, firmware, rack or cabinet position, terminal assignments and field wiring. |
| **APPLICATION NOTE** | TCCA Control and Analog I/O Board for installed industrial automation and control-system service. |
| **SOURCE** | https://www.vogi-interl.com/upload/7959/ge-ds200sdccg1agd-808908.pdf |

**USE NOTE**

This concise Apter Power edition preserves searchable text and selected technical context. Confirm the installed nameplate and the latest OEM documentation before replacement.

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GEI-100029C
(Supersedes GEI-100029B)

GE Motors & Industrial Systems

# DRIVE CONTROL CARD

# DS215SDCCG_A_ _

*These instructions do not purport to cover all details or variations in equipment, nor to provide every possible contingency to be met during installation, operation, and maintenance. If further information is desired or if particular problems arise that are not covered sufficiently for the purchaser's purpose, the matter should be referred to GE Motors & Industrial Systems.*

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## SAFETY SYMBOL LEGEND

**WARNING** — Indicates a procedure, practice, condition, or statement that, if not strictly observed, could result in personal injury or death.

**CAUTION** — Indicates a procedure, practice, condition, or statement that, if not strictly observed, could result in damage to or destruction of equipment

**NOTE** Indicates an essential or important procedure, practice, condition, or statement.

## FUNCTIONAL DESCRIPTION

**WARNING**

**This equipment contains a potential hazard of electric shock or burn. Only adequately trained persons who are thoroughly familiar with the equipment and the instructions should install or maintain this equipment.**

### INTRODUCTION

*This instruction book addresses only drive applications of the DS215SDCCG_A_ _ card (SDCC).* The SDCC contains the primary control circuitry and software for a drive or exciter. The SDCC consists of three 16-bit microprocessors and associated circuits coupled via dual-ported RAM. (Dual-ported RAM [DPR] is RAM configured as memory arrays that can be independently and simultaneously accessed by two microprocessors.)

The SDCC also includes interface circuitry that connects with other boards to form various types of ac and dc motor drives. The interface circuitry controls and processes drive and motor signals, and customer I/O. (The interface circuitry and three main microprocessors are used for other functions in TC2000 applications.) The SDCC's three main microprocessors are:

- Drive Control Processor (DCP). An 80C186 microcontroller (U1) with numerous built-in peripheral functions and uses both digital and analog I/O.

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These functions include address decoding for chip selects, wait-state generators, an interrupt controller, timer/counters, and the direct memory access (DMA) controller. DCP software consists of user interfaces, outer regulating loops (such as speed and position), and system level functions.

- Motor Control Processor (MCP). An 80C196 microcontroller (U21) with high-speed I/O, conventional digital I/O, analog I/O, timer/counters, and a watchdog timer. MCP software consists of inner loops such as current regulators, and motor/technology specific functions such as dc phase control, ac motion control, and ac general purpose.
- Co-motor Processor (CMP). A TMS320C25 digital signal processor (U35) that performs math-intensive functions for motor control algorithms too complex for the MCP. The SDCC uses this processor and its associated circuitry only when the drive requires the additional processing capability. The CMP interfaces only to its EPROM and MCP/CMP dual-ported RAM.

The DS215SDCC card includes onboard software stored in five memory chips: four EPROMs (U11, U12, U22, and U23) that contain configuration data programmed at the factory and one EEPROM (U9) that contains field-adjustable parameters. These memory chips are contained in sockets on the SDCC.

When ordering replacement boards, note that the DS200SDCC card does not include the five memory chips mentioned above (the sockets are empty).

**NOTE**

*When replacing a DCC, specify a DS215SDCC card as a replacement to ensure that the five memory chips are included.*

## CARD GROUPS

There are currently three group numbers of the SDCC available (G2 versions were never manufactured). The variations between the groups are as follows:

- DS200SDCCG1A_ _: Used in AC2000, DC2000, and EX2000 drive applications
- DS200SDCCG3A_ _: Variation of SDCC that has reduced functionality (used in DC1000 drives)
- DS200SDCCG4A_ _: Used in TC2000 turbine applications (same as G1A except with enlarged EE parameter storage area and different firmware)

## CARD CONNECTIONS

The SDCC interfaces with the other boards of the controller and external signals via eight connectors (designated _PL). See Figure 3 for an SDCC layout diagram showing the locations of the connectors and Tables 3 – 9 for the pin signals of each connector. Connectors to other boards are as follows:

- 1PL – I/O between the Power Supply/Interface Board (DS200IMCP, DCI, SDCI, or DCFB) and the SDCC
- 2PL – ±5, 15, and 24 V dc inputs from the Power Supply/Interface Board to the SDCC
- 3PL – SDCC outputs to the LAN Communications Card (DS215SLCC)
- 6PL – I/O between the Drive Terminal Board (531X305NTB) or Simple Drive Terminal Board (DS200STBA) and the SDCC
- 7PL – I/O between the Signal Processor Card (531X309SPC) or Multibridge Signal Processing Card (DS200SPCB) and the SDCC (not present on SDCCG3s)
- 8PL – I/O between the Drive Terminal Board (531X305NTB) or Simple Drive Terminal Board (DS200STBA) and the SDCC
- 9PL – Not Used (not present on SDCCG3s)
- 11PL – SDCC outputs to meters (not present on SDCCG3s)

## AUXILIARY BOARD MOUNTING PROVISIONS

The SDCC has mounting provisions for other auxiliary boards and modules. The following boards can be mounted on the SDCC:

- DS215SLCC or 531X306LCC LAN Communications Card
- 531X309SPC Signal Processor Card
- DS200SPCB Multibridge Signal Processor Card

## LED DISPLAY

A bank of 10 diagnostic LEDs is provided on the SDCC and displays fault codes in either **BCD** (binary coded decimal) or **binary** form, depending on the fault number (see Figure 3 for location). The LEDs indicate faults in a blinking mode as follows: