

DigiDrive® DC

A microprocessor-based DC Drive

DigiDrive® DC

DigiDrive® DC is a microprocessor-based Drive and process control subsystem incorporating TMEIC advanced control technology with a dedicated I/O system. It has been designed for medium to large complexity SCR Bridges with advanced control requirements, high speed of response, expanded diagnostic capability and various I/O interfaces are beyond the capability of conventional analog control.

AMI offers a fully integrated DC Drive package that lets you improve drive system reliability and performance while reducing total installed cost and disruption to production. A complete system approach, combining field engineering expertise with exceptional drives and control products.

Fully engineered drive solutions for coordinated drive and complex control applications that can substantially improve the quality and efficiency of your processes.

DigiDrive® DC Family

- ▶ 50HP–6000HP (6-pulse)
- ▶ Higher horsepower available in 12 pulse versions
- ▶ Regenerative and Non-Regenerative
- ▶ Series/parallel power converter arrangements and MG-Set systems also available

Features and Benefits

- ▶ Configured and monitored with the TMdrive® Navigator, the common tool for all TMEIC
- ▶ TMdrive® Products
- ▶ Ease of use, high-performance trending and other diagnostic functions

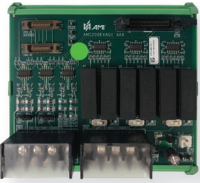
The controller has flash memory and real time clock. It also has a numerous industrial communication capability including:

- ▶ Profibus-DP®
- ▶ DeviceNet®
- ▶ ControlNet®
- ▶ TCNETIO®
- ▶ Industrial Ethernet
 - EGD (Global Data)™
 - Modbus TCP™
 - EthernetIP®
 - Profinet®



AXIO I/O Interface Card

- ▶ Provides digital inputs & outputs in conjunction with the Control Board
- ▶ Transforms external contacts into digital inputs that are sent to the Control Board
- ▶ Provides SPDT relays controlled by the digital outputs coming from the Control Board
- ▶ Includes Encoder Input and RTD PT100 circuitry that will interact directly with the Control Board
- ▶ Optional EXD Extended Digital I/O card with (6) Digital Inputs (110 Vac / 24 Vdc) and (4) Digital Outputs - relay, SPDT NO and NC
- ▶ Optional EXA Extended Analog I/O card with (2) Analog Inputs - configurable (+/-10V, 4-20mA or +/-150V). and (3) Analog outputs - conditioned-isolated and configurable (+/-10V & 4-20mA)



Standard Keypad



- ▶ Dedicated drive control buttons for manual operation of the drive
- ▶ Indicating status led and display
- ▶ Full access to all parameters and variables
- ▶ Ethernet Tool Port connectivity

SmartDisplay™



Monitoring and Local Control Screen

- ▶ Graphic Touch Screen with bargmeter, start/stop local control, trends, IO monitoring, event viewer and diagnostic information
- ▶ Wifi interface for access via a remote device (smartphone or tablet)
- ▶ Trace back data downloading capability
- ▶ Live trend of drive variables with adjustable time interval and amplitude scale
- ▶ Active faults, permissives and alarms report related to the drive. Parameter help related to the faults can be displayed
- ▶ Control block diagram with live data animation of the main variables
- ▶ Webserver capability

| NO. | FAULT NUMBER | FAULT BIT NAME | FAULT DESCRIPTION | OCCURRED DATE AND TIME | TRACEBACK BANK NO. | DOWNLOAD TREND |
|-----|--------------|----------------|-------------------|--------------------------|--------------------|----------------|
| 1 | 82 | OSSL | Over-speed | 18/05/2020 02:33:10 p.m. | 2 | [Download] |
| 2 | 82 | OSSL | Over-speed | 16/05/2020 02:33:10 p.m. | 1 | [Download] |
| 3 | 82 | OSSL | Over-speed | 14/05/2020 02:33:10 p.m. | 7 | [Download] |
| 4 | 82 | OSSL | Over-speed | 11/05/2020 02:33:10 p.m. | 5 | [Download] |
| 5 | 82 | OSSL | Over-speed | 04/05/2020 02:33:10 p.m. | 5 | [Download] |
| 6 | 82 | OSSL | Over-speed | 30/04/2020 02:33:10 p.m. | 4 | [Download] |
| 7 | 82 | OSSL | Over-speed | 23/04/2020 02:33:10 p.m. | 3 | [Download] |
| 8 | 82 | OSSL | Over-speed | 18/04/2020 02:33:10 p.m. | 0 | [Download] |

Failure history report screen

| NAME | COUNT | UNIT | LAST RESET TIME |
|--------------------------------|--------|-------|--------------------------|
| Effective Electrical Energy | N>NNNN | kWh | 18/05/2020 02:33:10 p.m. |
| Apparent Electrical Energy | N>NNNN | kVh | 18/05/2020 02:33:10 p.m. |
| Control Power Supply On Line | N>NNNN | hour | 18/05/2020 02:33:10 p.m. |
| Operator Time | N>NNNN | hour | 18/05/2020 02:33:10 p.m. |
| No. of Times of Contactor Oper | N>NNNN | count | 18/05/2020 02:33:10 p.m. |
| No. of Times of BLF Off | N>NNNN | count | 18/05/2020 02:33:10 p.m. |
| No. of Times of I/O Off | N>NNNN | count | 18/05/2020 02:33:10 p.m. |
| No. of Times of READY Off | N>NNNN | count | 18/05/2020 02:33:10 p.m. |

Drive General Information Screen






Main Variables Display

Power SCR Bridges

AMI bridges design process is user-centered with Innovative Design, every detail during each phase is analyzed to deliver usable and high reliable products. The main elements to comply in every design are:

- ▶ User friendly assembly and maintenance (EASY thyristor replacement)
- ▶ Modularity
- ▶ Performance
- ▶ Long life
- ▶ High power density

There are three bridge families, depending on the load ratings and the adaptability to the application:

| Features | TEM - Thyristor EASModubT | EB - Thyristor EASYBox | TEC - Thyristor EASYCabinet |
|-------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| |  |  |  |
| Current Capacity | Max. 150A @ 600V DC | Max. 2165A @ 600V DC Max. 1906A @ 750V DC | Max. 4227A @ 600V DC Max. 3800A @ 750V DC |
| Use | Field Exciters | Armature bridges Large Field Exciters | Armature bridges Up to 4 bridges in parallel 12, 18 and 24 pulse available |
| Cooling | Natural Convection | Natural Convection only TEB05 rest with DC Adjustable Speed Fans (MTBF 15Years) | Roof Mounted Adjustable Speed DC Fans (MTBF 15Years) |
| Snubbers | Integral Low Inductance Snubbers | Integral Low Inductance Snubbers | Integral Low Inductance Snubbers |
| Fabrication | Plastic Modules mounted in Hi Thermal Efficiency Black Anodize Aluminum Heat Sink | Press Pack Ceramic Case Semiconductors mounted in Hi Thermal Efficiency Black Anodize Aluminum Heat Sink. Self-Adjust Box Clamps for Semiconductor mounting and interconnecting. | Press Pack Ceramic Case Semiconductors mounted in Hi Thermal Efficiency Nickel Plated Cooper Heat Sinks. Four Points Pre-Load Bar Clamp (No Press or special instruments required to repair the module on site) |
| Fuses | Hi Speed Semiconductor Fuses with Disconnect | Hi Speed Semiconductor Fuses with blown fuse indicator TEB05 & TEB10 with AC and DC Fuse (Regen Models only) TEB20 & TEB30 with Leg Fuses | Hi Speed Semiconductor Leg Fuses |
| Feedback | Firing Board and Current Feedback incorporated in the module | AC and DC Current Feedback incorporated in the module | |
| Maintainability | Designed to replace the complete unit | Designed to repair in-situ | No Press or special instruments required to repair the module on site MTTR a Faulty Power Module (15 Min) |

Ratings

575 Vac Input / 600 Vdc Output. Suitable for operation at 230,380 and 460 V Systems.

| | Amperes @ OL | | | | HP | | | |
|---------------|--------------|------|------|------|------|------|------|------|
| | 100% | 150% | 175% | 200% | 100% | 150% | 175% | 200% |
| AMI-TEM-150-A | 150 | 97 | 83 | 73 | 115 | 74 | 64 | 56 |
| AMI-TEB-05-A | 218 | 141 | 121 | 106 | 167 | 108 | 92 | 81 |
| AMI-TEB-10-A | 761 | 492 | 422 | 369 | 581 | 376 | 322 | 282 |
| AMI-TEB-20-A | 1322 | 855 | 733 | 641 | 1010 | 653 | 560 | 490 |
| AMI-TEB-30-A | 2165 | 1400 | 1200 | 1050 | 1654 | 1070 | 917 | 802 |
| AMI-TEC-12-A | 2165 | 1400 | 1200 | 1050 | 1654 | 1070 | 917 | 802 |
| AMI-TEC-12E-A | 2600 | 1681 | 1441 | 1261 | 1987 | 1285 | 1101 | 963 |
| AMI-TEC-20-A | 3110 | 2011 | 1724 | 1508 | 2376 | 1537 | 1317 | 1152 |
| AMI-TEC-30-A | 4227 | 2733 | 2343 | 2050 | 3230 | 2089 | 1790 | 1566 |

690 Vac Input / 750 Vdc Output

| | Amperes @ OL | | | | HP | | | |
|---------------|--------------|------|------|------|------|------|------|------|
| | 100% | 150% | 175% | 200% | 100% | 150% | 175% | 200% |
| AMI-TEM-150-B | 150 | 97 | 83 | 73 | 143 | 93 | 79 | 69 |
| AMI-TEB-05-B | 205 | 133 | 114 | 99 | 196 | 127 | 109 | 95 |
| AMI-TEB-10-B | 614 | 397 | 340 | 298 | 586 | 379 | 325 | 284 |
| AMI-TEB-20-B | 850 | 550 | 471 | 412 | 812 | 525 | 450 | 394 |
| AMI-TEB-30-B | 1906 | 1233 | 1056 | 924 | 1820 | 1177 | 1009 | 883 |
| AMI-TEC-12-B | 1906 | 1233 | 1233 | 924 | 1820 | 1177 | 1009 | 883 |
| AMI-TEC-12E-B | 2426 | 1569 | 1345 | 1177 | 2317 | 1498 | 1284 | 1124 |
| AMI-TEC-15-B | 2696 | 1743 | 1494 | 1308 | 2575 | 1665 | 1427 | 1249 |
| AMI-TEC-20-B | 3800 | 2457 | 2106 | 1843 | 3629 | 2347 | 2012 | 1760 |

Core drives available for AMI-TEM and AMI-TEB sizes/ Additional configurations and options selectable.

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