

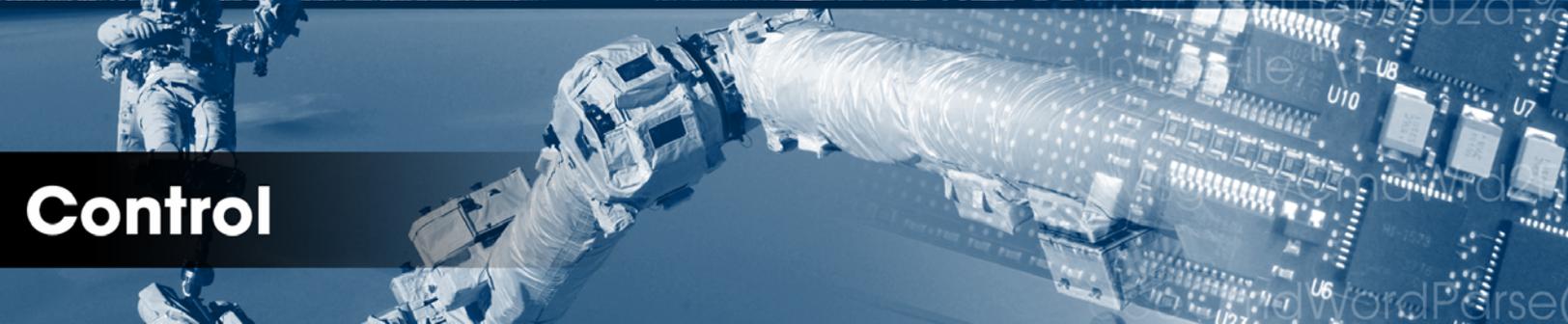
Product Catalog



Connectivity



Power



Control



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Connectivity



Data Bus and Network Solutions Experts

DDC is the world leader in the design and manufacture of data bus and networking technology, offering a broad array of field proven standard and built-to-spec subsystem and box level solutions, circuit card assemblies, hybrid components, multi-chip modules, and software for aerospace, defense and space applications. DDC's market leading processor based data bus solutions enable efficient avionics and vetronics systems design and upgrades by providing seamless connectivity with MIL-STD-1553/1760, ARINC 429, Fibre Channel, Ethernet, and other protocols.

- Maximize system performance with the most advanced data bus components
- Utilize the most compact cards to optimize SWaP constrained systems
- Access and test avionics systems from anywhere on an Ethernet network computer
- Minimize development time with advanced software tools and automated code generation

More Efficiency

- Optimize SWaP
 - Multi-protocol and high channel cards
 - The industry's smallest components, like the Nano-ACE®
- Save Time
 - BusTrACER®... save time with one-click code generation
 - Common API... save time using the same software for test and embedded
 - Ethernet Attached Tester... access data from MIL-STD-1553, ARINC 429 and other protocols via Ethernet
 - Value-added integrated solutions from custom hybrids and ASICs to fully optimized LRUs.

More Reliability

- Boards based on ASICs instead of FPGAs... higher MTBF
- ASIC's with more than 200 million hours of in-service history enables DO-254 Design Assurance Level (DAL) A
- Rugged boards, components and box solutions engineered for harsh environments, including solutions for space flight applications

More Performance

- Advanced MIL-STD-1553 solutions provide fast access time, low CPU utilization and low power
- Smart protocol converter enables system upgrades by bridging legacy and emerging data bus and network protocols
- Processor-based modules that convert messages in real-time between Ethernet, MIL-STD-1553, and ARINC 429, as well as function as a standalone computer
- SWAP-optimized, scalable compact computer solutions with best-in-class performance from Intel's® embedded computer architecture

Data Bus



MIL-STD-1553/1760 | ARINC 429/717 | Ethernet | Fibre Channel

As the leading global supplier of data bus components, boards, modules, computers, and software solutions for the military and commercial aerospace markets, DDC's data bus networking solutions encompass the full range of data interface protocols to support the real-time processing demands of field-critical data networking between systems and subsystems on the platform. These products represent a wide and flexible array of performance and cost optimized solutions, enabling DDC to support multi-generational programs.

Whether employed in increased bandwidth, high-speed serial communications, or traditional avionics and ground support applications, DDC's data bus solutions fulfill the expanse of military, civil aerospace, and space requirements including reliability, determinism, low CPU utilization, real-time performance, and ruggedness within harsh environments. Our use of in-house intellectual property ensures superior multi-generational support, independent of the life cycles of commercial devices. Moreover, we maintain software compatibility between product generations to protect our customers' investments in software development, system testing, and end-product qualification.

MIL-STD-1553

DDC, the world leader in MIL-STD-1553 technology, provides the broadest selection of quality MIL-STD-1553 rugged embedded and lab grade computers, boards, components and software to meet your data conversion and data interface needs. Our 1553 data bus board solutions are integral elements of military, aerospace, and industrial applications. Our extensive line of military and space grade components provide MIL-STD-1553 interface solutions for microprocessors, PCI buses, and simple systems. Our 1553 data bus solutions are designed into almost every aircraft, helicopter, unmanned vehicle, missile programs, and space system that utilizes MIL-STD-1553.

ARINC 429

DDC has a wide assortment of quality ARINC 429 embedded and lab grade boards, LRUs, and components, to serve your data conversion and data interface needs. DDC's ARINC 429 components ensure the accurate and reliable transfer of flight-critical data. Our 429 interfaces support data bus development, validation, and the transfer of flight-critical data aboard commercial aerospace platforms.

Ethernet

DDC offers convenient solutions to convert MIL-STD-1553, ARINC 429, and Ethernet protocol in any direction, in real-time, without a host computer, enabling seamless and cost saving multi-protocol connectivity for test and embedded applications.

Fibre Channel

DDC's line of Fibre Channel network access controllers, switches and accessories support the real-time processing demands of field-critical data networking between sensors, computer nodes, data storage, displays, and weapons for air, sea, and ground military vehicles.

Form Factors, Software, & Drivers

DDC supplies MIL-STD-1553 and ARINC 429 board level products in a variety of form factors including USB, PCI-Express, PCMCIA, ExpressCard, AMC, PMC, XMC, PCI-104, PC/104-Plus, PC/104, PCI, cPCI, VME, and ISAbus boards. Our laboratory simulation and in-flight products include multi-function and single-function for system integration and production test environments. Our extensive line of military and space grade components provide MIL-STD-1553 interface solutions for microprocessors and simple systems. Our software is supplied in the form of menus, libraries, and drivers. We also offer additional system level software to expand our data networking range of options.

Transformers, Couplers & Cables

DDC offers a broad line of high reliability data bus transformers, couplers and cables, optimized for use within military, commercial and space applications.

| Boards — MIL-STD-1553 | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|-------------------|----------------|-----|----|-----|----|----------|--------|--------|------------|------------------|-------------------|-------------------|----------|----------|-----------|---------------------|-------------|------|------------|------|-------------------|-------------------|
| Product Number | Max # of Channels | | | | | | | | | | | Optional Software | | | | I/O | | Environment | | | Page | | |
| | 1553 | | 429 | | 717 | | Ethernet | CANbus | RS-232 | RS-422/485 | Digital Discrete | Avionics Discrete | EBR/MMSI 1563 Hub | dataSIMS | LabVIEW® | BustRACE® | Commercial Avionics | Front | Rear | Air Cooled | | Rugged Air Cooled | Conduction Cooled |
| | Single-Function | Multi-Function | Rx | Tx | Rx | Tx | | | | | | | | | | | | | | | | | |
| PCI-Express | | | | | | | | | | | | | | | | | | | | | | | |
| BU-67X06K | 4 | 4 | | | | | | | | 8 | 8 | | ■ | ■ | ■ | | ■ | | ■ | | | 9 | |
| Mini-PCIe | | | | | | | | | | | | | | | | | | | | | | | |
| BU-67114Hx | 2 | | | | | | | | | | | | ■ | ■ | ■ | | ■ | | | | ■ | 10 | |
| ExpressCard | | | | | | | | | | | | | | | | | | | | | | | |
| BU-67101Q | 2 | | | | | | | | | 2 | 2 | | ■ | ■ | ■ | | ■ | | ■ | | | 10 | |
| XMC | | | | | | | | | | | | | | | | | | | | | | | |
| BU-67112Y/Z | 8 | | | | | | | | | | 16 | | ■ | ■ | ■ | | ■ | ■ | | ■ | ■ | 11 | |
| BU-67118Z | 4 | | 20 | 20 | 2 | 2 | | 2 | 8 | 8 | 10 | 10 | ■ | ■ | ■ | ■ | | ■ | | ■ | ■ | | |
| PMC | | | | | | | | | | | | | | | | | | | | | | | |
| BU-67X10F/M | 8 | 4 | | | | | | | | 8 | 16 | | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | 11 | |
| BU-67118M | 4 | | 20 | 20 | 2 | 2 | | 2 | 8 | 8 | | 10 | ■ | ■ | ■ | ■ | | ■ | | ■ | ■ | 12 | |
| BU-65596/7F/M | 4 | | | | | | | | | | | 16 | ■ | ■ | ■ | | ■ | ■ | | ■ | ■ | 12 | |
| BU-67107F/M | 4 | | 16 | 6 | | | | | 2 | 2 | 6 | | ■ | ■ | ■ | ■ | | ■ | ■ | | ■ | ⌘ | |
| BU-65580Mx | 1 | | | | | | | | | | 8 | | 4 | ■ | ■ | ■ | | ■ | | ■ | ■ | ⌘ | |
| BU-65578F/M | 8 | | | | | | | | | 8 | 8 | | ■ | ■ | ■ | | ■ | ■ | | ■ | ■ | ⌘ | |
| USB | | | | | | | | | | | | | | | | | | | | | | | |
| BU-67X02/3U | 2 | 1 | 4 | 2 | | | | | | 8 | | | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | | 13 | |
| BU-67211UX | 2 | 2 | 8 | 8 | 2 | 2 | | 2 | 4 | 4 | 2 | 2 | ■ | ■ | ■ | ■ | ■ | | ■ | | | 13 | |
| BU-67102Ux1 | 2 | | 4 | 2 | | | | | | | 8 | | ■ | ■ | ■ | ■ | ■ | | ■ | | ■ | ⌘ | |
| BU-67113Ux | 2 | | | | | | | | | 8 | | | ■ | ■ | ■ | | ■ | | | | ■ | 13 | |
| PCI | | | | | | | | | | | | | | | | | | | | | | | |
| BU-67107i | 4 | | 16 | 4 | | | | | 2 | 2 | 6 | | ■ | ■ | ■ | ■ | ■ | | ■ | | | 14 | |
| BU-67X10i | 8 | 4 | | | | | | | | | 8 | 8 | ■ | ■ | ■ | | ■ | | ■ | | | 14 | |
| BU-67301i | 1 | | | | | | | | | | 8 | | ■ | ■ | ■ | | ■ | | ■ | | | ⌘ | |
| BU-65569i | 4 | | | | | | | | | | | | ■ | ■ | ■ | | ■ | | ■ | | | ⌘ | |
| PC/104-Plus, PCI-104 | | | | | | | | | | | | | | | | | | | | | | | |
| BU-67104/5C | 4 | | | | | | | | | | 5 | | ■ | ■ | ■ | | | | | | ■ | ■ | 14 |
| BU-67108/9C | 2 | | 16 | 8 | | | | | | | 9 | 8 | ■ | ■ | ■ | ■ | | | | | ■ | ■ | 14 |
| BU-65577/8C | 4 | | | | | | | | | | 5 | | ■ | ■ | ■ | | | | | | ■ | ■ | ⌘ |
| BU-65590/1C | 2 | | 16 | 8 | | | | | | | 9 | 8 | ■ | ■ | ■ | ■ | | | | | ■ | ■ | ⌘ |
| cPCI / PXI | | | | | | | | | | | | | | | | | | | | | | | |
| BU-67107T | 4 | | 16 | 4 | | | | | 2 | 2 | 6 | | ■ | ■ | ■ | ■ | ■ | | ■ | | ■ | | 15 |
| BU-67X10T | 8 | 4 | | | | | | | | | 8 | 8 | ■ | ■ | ■ | | ■ | | ■ | | | | 15 |
| BU-65569T/Bx | 4 | | | | | | | | | | | | ■ | ■ | ■ | | ■ | ■ | | | | ⌘ | |
| AMC | | | | | | | | | | | | | | | | | | | | | | | |
| BU-65590A | 4 | | 8 | 4 | | | | | 2 | 2 | 6 | | ■ | ■ | ■ | ■ | | | | | | ⌘ | |
| PCMCIA | | | | | | | | | | | | | | | | | | | | | | | |
| BU-65553 | 1 | | | | | | | | | | | | | ■ | ■ | | | | | | | ⌘ | |
| PC/104 | | | | | | | | | | | | | | | | | | | | | | | |
| BU-65567/8 | 4 | | | | | | | | | | | | | | | | | | | | | ⌘ | |

⌘- Visit www.ddc-web.com/1553/boards for complete product information.

| Boards — ARINC 429/717 | | | | | | | | | | | | | | | | | |
|------------------------|-------------------|----|-----|----|--------|------------------|-------------------|----------|----------|-----------|---------------------|-------|-------------|------------|-------------------|------|-------------------|
| Product Number | Max # of Channels | | | | | | Optional Software | | | | I/O | | Environment | | | Page | |
| | 429 | | 717 | | CANbus | Digital Discrete | Avionics Discrete | dataSIMS | LabVIEW® | BustRACE® | Commercial Avionics | Front | Rear | Air Cooled | Rugged Air Cooled | | Conduction Cooled |
| | Rx | Tx | Rx | Tx | | | | | | | | | | | | | |
| PCI-Express | | | | | | | | | | | | | | | | | |
| DD-40000K | 36 | 36 | 2 | 2 | | | 16 | ■ | ■ | ■ | | ■ | | ■ | | | 9 |
| Mini-PCIe | | | | | | | | | | | | | | | | | |
| DD-40001H060 | 6 | 4 | 2 | 2 | | | | ■ | ■ | ■ | | ■ | | | ■ | | 10 |
| XMC | | | | | | | | | | | | | | | | | |
| DD-40002Z | 16 | 16 | 1 | 1 | 1 | 8 | | ■ | ■ | ■ | | | ■ | ■ | | ■ | 11 |
| PMC | | | | | | | | | | | | | | | | | |
| DD-40002M | 16 | 16 | 1 | 1 | 1 | 8 | | ■ | ■ | ■ | | | ■ | ■ | | ■ | 12 |
| DD-40100F | 36 | 36 | 2 | 2 | | | 16 | ■ | ■ | | ■ | ■ | | ■ | | | 12 |
| PCI | | | | | | | | | | | | | | | | | |
| DD-40100i | 36 | 36 | 2 | 2 | | | 16 | ■ | ■ | | ■ | ■ | | ■ | | | 14 |
| cPCI / PXI | | | | | | | | | | | | | | | | | |
| DD-40100T | 36 | 36 | 2 | 2 | | | 16 | ■ | ■ | | ■ | ■ | | ■ | | | 15 |
| PCMCIA | | | | | | | | | | | | | | | | | |
| DD-42912/24M3 | 4 | 4 | | | | 2 | | ■ | | | ■ | | | | | | ⌘ |

⌘- Visit www.ddc-web.com/429/boards for complete product information.

| Components — MIL-STD-1553 | | | | | | | | | | | | | | | | | | | | |
|---|------------------|---------------|-------------|----------|-----|----|----|---------------------|-----------|-----|------|---------------|---------|-----|-----------|-----------|-----|------------------------|-------------|------|
| Product | Product Number | 1553 Function | | | | | | Subsystem Interface | | | | | Package | | | | | Temperature Range (°C) | | Page |
| | | Transceiver | Transformer | Protocol | RAM | BC | RT | MT | Local Bus | PCI | PCIe | Simple System | SPI | BGA | Flat Pack | Gull Wing | DIP | LPCC/QFN | Operating | |
| Fully Integrated 1553 Package (includes Protocol, Transceivers, and Transformers) | | | | | | | | | | | | | | | | | | | | |
| Total-AceXtreme® | BU-67301B | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | ■ | | | | | -55 to +125 | -65 to +150 | 16 |
| Total-ACE® | BU-6X8X3T/U/H/I8 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | ■ | | | | | | -55 to +125 | -65 to +150 | |
| Plastic Multi-Chip 1553 Module (includes Protocol and Transceivers) | | | | | | | | | | | | | | | | | | | | |
| Nano-ACE | BU-67753LC | ■ | | ■ | ■ | ■ | ■ | ■ | | | | ■ | | | | | ■ | -55 to +125 | -65 to +150 | 16 |
| Nano-ACE BC | BU-67833LC | ■ | | ■ | ■ | ■ | ■ | ■ | | | | ■ | | | | | ■ | -55 to +125 | -65 to +150 | 16 |
| PCI-Express AceXtreme® | BU-67302B0C0L | ■ | | ■ | ■ | ■ | ■ | ■ | | ■ | | | ■ | | | | | -40 to +85 | -65 to +150 | 16 |
| Micro-ACE-TE | BU-64X4BX-E02 | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | | ■ | | | | | | -55 to +125 | -65 to +150 | 17 |
| Micro-ACE® | BU-61XX0B3 | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | | | ■ | | | | | -40 to +85 | -65 to +150 | 17 |
| PCI Micro-ACE-TE | BU-65XX3BX-E02 | ■ | | ■ | ■ | ■ | ■ | ■ | | ■ | | | ■ | | | | | -55 to +125 | -65 to +150 | 17 |
| Ceramic Hybrid 1553 Terminal (includes Protocol and Transceivers) | | | | | | | | | | | | | | | | | | | | |
| Mini-ACE® Mark3 | BU-64XX3 | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | | | ■ | ■ | | | | -55 to +125 | -65 to +150 | 17 |
| PCI Mini-ACE Mark3 | BU-65XX3 | ■ | | ■ | ■ | ■ | ■ | ■ | | ■ | | | ■ | ■ | | | | -55 to +125 | -65 to +150 | 17 |
| Enhanced Mini-ACE | BU-61XXX | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | | | ■ | ■ | | | | -55 to +125 | -65 to +150 | 17 |
| PCI Enhanced Mini-ACE | BU-62XXX | ■ | | ■ | ■ | ■ | ■ | ■ | | ■ | | | ■ | ■ | | | | -55 to +125 | -65 to +150 | 17 |
| Mini-ACE® | BU-65178 | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | | | ■ | ■ | | | | -55 to +125 | -65 to +150 | ⌘ |
| SSRT Mark3 | BU-64703 | ■ | | ■ | ■ | ■ | ■ | ■ | | ■ | | | ■ | ■ | | | | -55 to +125 | -65 to +150 | ⌘ |
| SSRT | BU-6170X | ■ | | ■ | ■ | ■ | ■ | ■ | | ■ | | | ■ | ■ | | | | -55 to +125 | -65 to +150 | ⌘ |
| ACE | BU-6158X | ■ | | ■ | ■ | ■ | ■ | ■ | | ■ | | | ■ | ■ | | | | -55 to +125 | -65 to +150 | ⌘ |
| Radiation Tolerant 1553 Physical Layer for Space (includes Transceivers and Transformers) | | | | | | | | | | | | | | | | | | | | |
| SPACE-PHY | BU-67402Fx0HL | ■ | ■ | | | | | | | | | | ■ | ■ | | | | -55 to +125 | -65 to +150 | 17 |
| Radiation Tolerant Fully Integrated 1553 Package for Space (includes Protocol, Transceivers, and Transformers) | | | | | | | | | | | | | | | | | | | | |
| Total-Space ACE | BU-67521 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | ■ | ■ | | | | -55 to +125 | -65 to +150 | 18 |
| Total-Space RT | BU-67502 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | ■ | ■ | | | | -55 to +125 | -65 to +150 | 18 |
| Radiation Tolerant 1553 Space Terminals (includes Protocol and Transceivers) | | | | | | | | | | | | | | | | | | | | |
| SP'ACE RT II | BU-63705 | ■ | | ■ | | ■ | | ■ | | | | | ■ | ■ | ■ | | | -55 to +125 | -65 to +150 | 18 |
| SP'ACE II BC/RT/MT | BU-63825 | ■ | | ■ | ■ | ■ | ■ | ■ | | | | | ■ | ■ | ■ | | | -55 to +125 | -65 to +150 | |
| 1553 IP | | | | | | | | | | | | | | | | | | | | |
| ACE Flex-Core | BU-692X0IX | | | | | | | | | | | | | | | | | — | — | ⌘ |
| SSRT-Core | BU-69210i1 | | | | | | | | | | | | | | | | | — | — | ⌘ |

⌘- Visit www.ddc-web.com/1553/components for complete product information.

Components — MIL-STD-1553

| Product | Product Number | 1553 Function | | Supply Voltages | | Package | | | | Turns Ratio | | Temperature Range (°C) | | Page |
|---|-----------------|---------------|-------------|-----------------|----|-----------|-----------|-----|----------|----------------|---------------------|------------------------|-------------|------|
| | | Transceiver | Transformer | Digital | | Flat Pack | Gull Lead | DIP | LPCC/QFN | Direct Coupled | Transformer Coupled | Operating | Storage | |
| | | | | 3.3V | 5V | | | | | | | | | |
| 1553 Transceivers | | | | | | | | | | | | | | |
| Single 5V Transceiver | BU-63155 | ■ | | | ■ | | | | ■ | 1:2.5 | 1:2.07 | -55 to +125 | -65 to +150 | 19 |
| Dual 3.3V Transceiver | BU-67401L | ■ | | ■ | | | | | ■ | 1:2.65 | 1:1.79 | -55 to +125 | -65 to +150 | 19 |
| Dual 5V Transceiver | BU-63152 | ■ | | | ■ | | | ■ | | 1:2.5 | 1:1.79 | -55 to +85 | -65 to +150 | 19 |
| | BU-631X7 | ■ | | | ■ | ■ | | ■ | | 1:1.25 | 1:1.79 | -55 to +125 | -65 to +150 | 20 |
| Single 3.3V Transceiver and Transformer | NHI-15LV901 | ■ | ■ | ■ | | | | | ■ | 1:3.54 | 1:2.5 | -55 to +125 | -65 to +150 | 20 |
| Dual 5V Transceiver | NHI-1567 | ■ | | | ■ | ■ | | ■ | | 1:3.54 | 1:2.5 | -55 to +125 | -65 to +150 | 20 |
| Dual 5V Transceiver | NHI-1565ESOIC-1 | ■ | | | ■ | | | ■ | | 1:3.54 | 1:2.5 | -55 to +125 | -65 to +150 | 20 |
| Dual 5V Transceiver | NHI-1565CSP | ■ | | | ■ | | | | ■ | 1:3.54 | 1:2.5 | -55 to +125 | -65 to +150 | 20 |

☞ Visit www.ddc-web.com/1553/components for complete product information.

Components — ARINC 429

| Product Number | 429 Functions | | | | | | | | Supply Voltages | | | Package | | | | Temperature Range (°C) | | Page | | | |
|--------------------|---------------|----|------|----|--------------------|------------------------|--------------------------|-----------|------------------|---------|----|-------------|------|------|------|------------------------|-----------|------|------------|-------------|----|
| | Channels | | FIFO | | Label Filter Depth | Integrated Line Driver | Integrated Line Receiver | Test Mode | Tri State Output | Digital | | Line Driver | TQFP | PQFP | SOIC | TSSOP | Operating | | Storage | | |
| | TX | RX | TX | RX | | | | | | 3.3V | 5V | | | | | | | | | | |
| Controllers | | | | | | | | | | | | | | | | | | | | | |
| DD-00429 | 2 | 4 | 32 | 32 | 128 | | | ■ | | | ■ | | ■ | ■ | | | | | -40 to +85 | -85 to +125 | 21 |
| DD-42900 | 2 | 4 | 32 | 32 | 128 | | | ■ | ■ | | | | | | | | | | -40 to +85 | -85 to +125 | 21 |

☞ Visit www.ddc-web.com/429/components for complete product information.

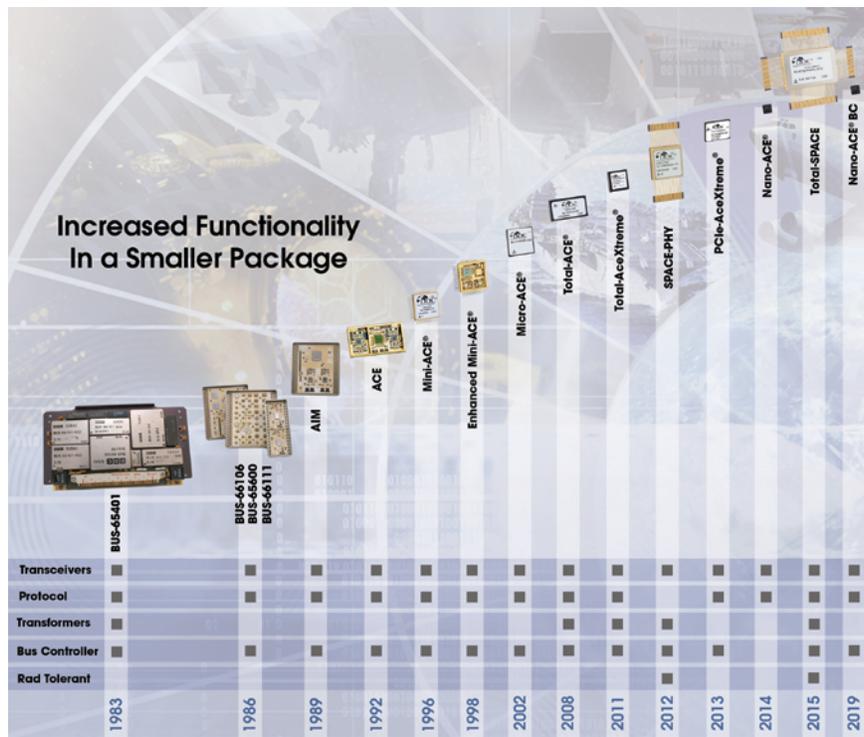
Transformers, Couplers & Cables — MIL-STD-1553

| Product Number | # of Channel Configurations | | | Coupling Ratio | | Transceiver Voltage | | | | Mounting | | | Series Type | | | | Page | | |
|------------------------------------|-----------------------------|---------|---|----------------|-------------|---------------------|---|----|----|--------------|-----------|-----|-------------|--------|---------------|----------|------|----|----|
| | Single | Dual | | Direct | Transformer | 3.3 | 5 | 12 | 15 | Through Hole | Flat Pack | SMT | GPL | Legacy | High Perform. | Hermetic | | | |
| | Side by Side | Stacked | | | | | | | | | | | | | | | | | |
| Single Channel Transformers | | | | | | | | | | | | | | | | | | | |
| B-22XX | ■ | | | ■ | ■ | | ■ | ■ | ■ | ■ | | | ■ | | | | | | 22 |
| B-23XX | ■ | | | ■ | ■ | | ■ | ■ | ■ | ■ | | | ■ | | | | | | 22 |
| B-32XX | ■ | | | ■ | ■ | | ■ | ■ | ■ | ■ | | | ■ | | | | | | 22 |
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| MLP-2XXX | ■ | | | ■ | ■ | | ■ | ■ | ■ | ■ | | | ■ | | | | | ■ | 22 |
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| Dual Channel Transformers | | | | | | | | | | | | | | | | | | | |
| DLVB-4XXX | | ■ | | | ■ | | ■ | | | | | | ■ | | ■ | | | | 20 |
| DSS-1XXX | | ■ | | | ■ | | ■ | ■ | ■ | ■ | | | ■ | | ■ | | | | 20 |
| DSS-2XXX | | ■ | | | ■ | | ■ | ■ | ■ | ■ | | | ■ | | | | | ■ | 23 |
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| Couplers | | | | | | | | | | | | | | | | | | | |
| BXC/DB Series | Box Couplers | | | | | | | | | | | | | | | | | 24 | |
| DB Space Coupler Series | Space Grade Couplers | | | | | | | | | | | | | | | | | 24 | |
| DB In-Line Coupler Series | In-line Couplers | | | | | | | | | | | | | | | | | 24 | |
| Cables | | | | | | | | | | | | | | | | | | | |
| DBC Accessories Series | Cables & Accessories | | | | | | | | | | | | | | | | | 24 | |

☞ Visit www.ddc-web.com/magnetics/1553 for complete product information.

| System Level Software | | | | |
|--|--|--|--|--|
| | dataSIMS Avionics Data Bus Test & Analysis Software | LabVIEW® Support Package Easy & Efficient LabVIEW Development Software | BusTrACer® Data Bus Analyzer & Monitor Software | Commercial Avionics Utilities Data Bus Analyzer & Data Loader Software |
| Product Number | BU-694X4DS | BU-69093 | BU-69066 | DD-42999SX |
| Supported Protocols | MIL-STD-1553 / ARINC 429 / Other I/O | MIL-STD-1553 / ARINC 429 | MIL-STD-1553 | ARINC 429 |
| MIL-STD-1553 Monitoring and Generation | ■ | ■ | ■ | |
| ARINC 429 Transmit and Receive | ■ | ■ | | ■ |
| Integrate | | | | |
| Synchro/Digital/Ethernet Protocol Support | ■ | ■ | | |
| ICD Database Import Capability | ■ | | | |
| Code Generation | | | ■ | |
| Open Plug-In Based Architecture | ■ | | | |
| Analyze | | | | |
| Engineering Unit Conversion | ■ | | | ■ |
| Data Triggering | ■ | ■ | ■ | ■ |
| Data Filtering | ■ | ■ | ■ | ■ |
| Visualize | | | | |
| Real-Time Data Display | ■ | ■ | | ■ |
| Report Generation | ■ | | | |
| Drag and Drop Dashboard Creation (Graphs, Knobs, LEDs) | ■ | | | |
| Simulate | | | | |
| MIL-STD-1553 Reconstruction | ■ | ■ | ■ | |
| ARINC 429 Reconstruction | ■ | ■ | | ■ |
| ARINC 615 Data Loader | | | | ■ |
| Error Injection | ■ | | ■ | |
| More Product Info | | | | |
| Website page | www.ddc-web.com/datasims | www.ddc-web.com/labview | www.ddc-web.com/bustracer | www.ddc-web.com/arincsw |
| Page | 25 | 25 | 25 | 25 |

History of Innovation



Avionics Interface Computer (AIC)

Compact Rugged Version



MIL-STD-1553

ARINC 429

MIL-STD-1760

ARINC 429

ARINC 717

DISCRETE

CANbus



ACEXTREME®

Model: BU-67125W

Features

- Intel Atom Processor
- 4GB DDR3 Memory
- 2x 10/100/1000 Ethernet Networking
- Solid-State Drive 64GB to 512GB Storage
- Supported with (2) Mini-PCIe Sites and Optional Expansion Slots (contact factory)
- Ruggedized Module Qualified for Rugged Air & Ground Environments
- 3 Modes of Operation
 - Remote Access
 - Protocol Conversion
 - Standalone

Applications

- Military Aerospace
 - Fixed Wing
 - Rotary
- Commercial Aerospace
 - Fixed Wing
 - Rotary
- UAVs
- Ground Vehicles

Complete Info: www.ddc-web.com/BU-67125W

Lab Version



ETHERNET

MIL-STD-1553

ARINC 429

ARINC 717

DISCRETE

ACEXTREME®



Model: BU-67121W

Features

- Programmable Protocol Converter
 - Intel Atom E3845 Quad Core 1.91GHz Processor
 - 2 GB DDR3L SDRAM
 - 30 GByte SSD
 - 2 PMC and 2 Mini-PCIe Expansion Slots
 - 10/100/1000 Base-T Ethernet, USB 2.0, RS-232
 - Linux Operating System
 - Lab Grade, Rack-Mountable Chassis
 - Architecture Supports a Variety of I/O Options and Avionic Interfaces

Applications

- Systems Integration Labs
- Simulators
- Production Test Stands
- System Troubleshooting
- Software Development
- Data Recording
- MIL-STD-1553/429 Test and Simulation
- 3 Modes of Operation
 - Remote Access
 - Protocol Conversion
 - Standalone Modular

Complete Info: www.ddc-web.com/BU-67121W

Rugged Version



MIL-STD-1553

ARINC 429

MIL-STD-1760

ARINC 429

ARINC 717

DISCRETE

CANbus



ACEXTREME®

Model: BU-67124W

Features

- Scalable Processing from Intel Core i5 to i7 Dual or Quad Core Processor
- Dual Gigabit Ethernet Interfaces for Network Connectivity and Bridging to 1553 and ARINC 429
- Many Configuration Options Supported with (1) XMC Site and (2) Mini-PCIe Sites
- Ruggedized Module Qualified for Rugged Air and Ground Environments

Applications

- Military Aerospace
 - Fixed Wing
 - Rotary
- Commercial Aerospace
 - Fixed Wing
 - Rotary
- UAVs
- Ground Vehicles

Complete Info: www.ddc-web.com/BU-67124W

AIC — 3 Modes of Operation

Available for:

- Compact Avionics Interface Computer (C-AIC)
- Avionics Interface Computer (AIC) - Lab Version

Remote Access Mode

Uses Ethernet as a virtual backplane between applications running on a host computer and 1553/429 Interfaces located within the AIC. The AIC Utilizes network connectivity to allow physical separation between the computer and the avionics interfaces.

Protocol Conversion Mode

Features the BU-69094S1 Bridging SDK (software development kit) running on the processor within the AIC. The bridging SDK allows users to easily create embedded software on the AIC that will autonomously forward data between MIL-STD-1553, ARINC 429, and Ethernet interfaces

Standalone Mode

Allows the AIC to operate as a user programmable computer system. Software Development Kits (SDKs) are provided for MIL-STD-1553 and ARINC 429 to facilitate the development of applications requiring communication on these avionics I/Os

Intel, the Intel logo, the Intel Inside logo and Intel Atom are trademarks of Intel Corporation in the U.S. and/or other countries.

AceXtreme® Bridge Device



Model: BU-67119W, BU-67116W, BU-67115W

Features

- Channels:
 - 2 10/100/1000 Ethernet
 - 2 Dual Redundant 1553/1760
 - 6 Prog. Rx/Tx ARINC 429
- Up to 12 Discrete I/Os
- 28Vdc Input Power, per MIL-STD-704 and MIL-STD-1275
- Low Power 1GHz Intel Atom Processor
- 8 GBytes SSD
- Bridge Between Ethernet, MIL-STD-1553, and/or ARINC 429
- Remote Access to 429 or 1553 Data via Ethernet

Applications

- Upgrade & Retrofit
- Protocol Conversion
- Mission Computers
- Displays
- Test & Systems Integration
- Situational Awareness
- Simulators
- Data Loading
- Data Monitoring

Complete Info: www.ddc-web.com/BU-6711XW

Data Bus Network Testers



MIL-STD-1553

Model: DBT100A, DBT300

Features

- One-person operation for quick, easy testing
- Lightweight and portable
- Detects shorts, opens, shorts-to-shield, crossovers, phasing errors
- Measures resistance, insertion and return loss
- Digital read out for resistance, insertion and return loss
- Separate remote transmitter unit
- Pass/Fail indicators
- Uses 9V batteries

Applications

- MIL-STD-1553B Data Bus Network Testing
- Troubleshooting

Complete Info: www.ddc-web.com/DBT

PCI-Express



Model: BU-67106K, BU-67206K

Features

- Channels:
 - 4 Dual Redundant MIL-STD-1553
- BC/Multi-RT/Monitor Per Channel*
- Test and Simulation Toolkit*
- 8 User-Programmable Digital & Avionics Discrete I/O
- IRIG-B Time Code Input/Output
- IRIG-106 Chapter 10 Monitor
- 48-bit/100ns Time Stamp
- Time Tag Clock Input/Output
- Variable Voltage Amplitude
- Programmable Bus Coupling and Termination*
- RoHS Compliant

Applications

- New Product Development
- Simulation
- Systems Integration
- Bus or Network Analysis
- Production Test
- System Troubleshooting
- Data Recording
- Automatic Test Applications
- Data Monitoring

*Multi-Function 206K Series

Complete Info: www.ddc-web.com/BU-67206K



Model: DD-40000K

Features

- Channels:
 - 6, 10, 18, or 36 Prog. Tx/Rx ARINC 429
 - Up to 2 Prog. Tx/Rx ARINC 717
- Up to 16 Avionics Discrete I/O
- IRIG-B Input/Output
- Variable Output Voltage on 8 Channels
- Voltage Monitoring with Scope View on 8 Channels
- 48-bit/100ns Time Tag
- Prog. Speed Per Channel (500bps - 200Kbps)
- RoHS Compliant

Applications

- Systems Integration Labs
- Simulators
- Production Test Stands
- Automated Test
- Commercial Aerospace
- New Product Development
- System Troubleshooting
- Portable Testers
- Flight Line Diagnostics
- Flight Testing
- Software Development
- Data Loading
- Data Monitoring
- Bus Debugging & Diagnostics

Complete Info: www.ddc-web.com/DD-40000K

Mini-PCle



MIL-STD-1553

DISCRETE

Total-ACE^{XTREME}

Model: BU-67114Hx

Features

- MIL-STD-1553 Miniature Size PCI-Express Board
- 30mm x 50.95mm x 4.7mm (1.18in. x 2.01in. x 0.185in.)
- Very High Reliability (MTBF)
- Ultra Low Power
- Comprehensive Built-In Self Tests
- 2 Dual Redundant MIL-STD-1553 Channels
- MIL-STD-1553 BC or Multi-RT with Concurrent Bus Monitor
- RoHS Compliant

Applications

- Rugged Small Embedded Systems
- Laptops or Tablets
- Bus Troubleshooting
- Diagnostic Systems
- Hand Held Test Equipment
- Small Displays

Complete Info: www.ddc-web.com/BU-67114Hx

ExpressCard



MIL-STD-1553

DISCRETE

ACE^{XTREME}

Model: BU-67101Q

Features

- Channels:
 - 2 Dual Redundant MIL-STD-1553
- 2 User-Programmable Digital Discrete I/O
- 2 User-Programmable Avionics Discrete (+35V) I/O
- IRIG-B Time Code Input/Output
- IRIG-106 Chapter 10 Monitor
- 48-bit/100 ns Time Stamp
- Time Tag Clock Input
- RoHS Compliant

Applications

- Box-Level Troubleshooting
- Simulation
- Portable Test Equipment
- Flight Line and Diagnostic Testing
- Software Development
- System Integration
- Automatic Test Applications (ATP)

Complete Info: www.ddc-web.com/BU-67101Q

ARINC 429

ARINC 717

DISCRETE

ACE^{XTREME}

Model: DD-40001H060

Features

- ARINC 429/717 Miniature Size PCI-Express Board
- 30mm x 50.95mm x 4.7mm (1.18in. x 2.01in. x 0.185in.)
- Very High Reliability (MTBF)
- Low Power
- 6 ARINC 429 Channels
 - (2) ARINC 429 Receive Ch.
 - (4) Transmit/Receive (Tx/Rx) ARINC 429 Ch, (2) can be Programmed as Tx/Rx ARINC 717
- RoHS Compliant

Applications

- Rugged Small Embedded Systems
- Laptops or Tablets
- Bus Troubleshooting
- Diagnostic Systems
- Hand Held Test Equipment
- Small Displays

Complete Info: www.ddc-web.com/DD-40001H

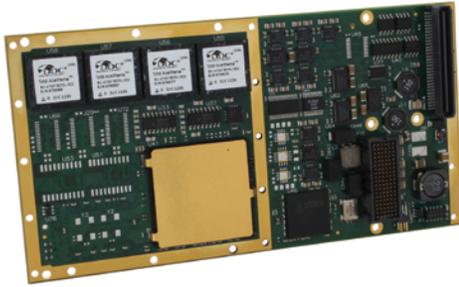
Did You Know?

DDC offers licensing options for MIL-STD-1553 and ARINC 429 software solutions.

- 3 Flexible licensing options to fit ALL needs:
 - USB Dongle — for ultimate mobility
 - Node Locked — secure and dongle-free, ideal for dedicated computers and secure labs
 - Network License — offers distributed networking flexibility across multiple labs
- Available for all DDC data bus analysis software packages
 - *dataSIMS*
 - BusTrACer®
 - ARINC Data Bus Analyzer
 - LabVIEW® Support Package
- Security of 12 or 24 month maintenance contracts

(See page 25)

XMC



MIL-STD-1553

MIL-STD-1760

ARINC 429

ARINC 717

DISCRETE

RS-422/485

RS-232

CANBUS 2.0

Total-ACE XTREME

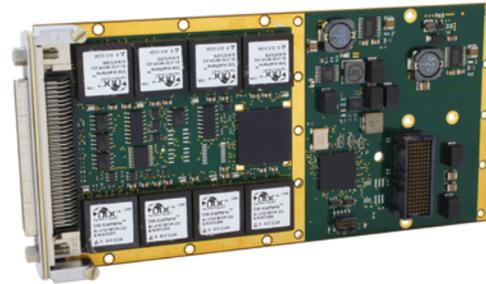
Model: BU-67118Z

Features

- Up to 4 Dual-Redundant MIL-STD-1553 Channels
 - Supports MIL-STD-1553A/B, MIL-STD-1760, and MacAir
 - BC Disable for RT Only
 - Tx Inhibit for MT Only
- Up to 20 Programmable Tx/Rx ARINC 429 Channels
- Up to 2 Programmable Tx/Rx ARINC 717 Channels
- Up to 2 CANbus 2.0/ARINC 835 Channels
- Up to 8 Programmable RS-232/422/485 Channels
- Up to 10 Avionics/Digital Discrete I/O

Applications

- Mission Computers
- Displays and LRUs
- Digital Data Recorders
- Radar Systems/Situational Awareness
- Commercial Aerospace
- Flyable Avionics/UAVs
- Data Loading
- Data Monitoring
- Ground Vehicles

Complete Info: www.ddc-web.com/BU-67118x

MIL-STD-1553

MIL-STD-1760

DISCRETE

Total-ACE XTREME

Model: BU-67112Y, BU-67112Z

Features

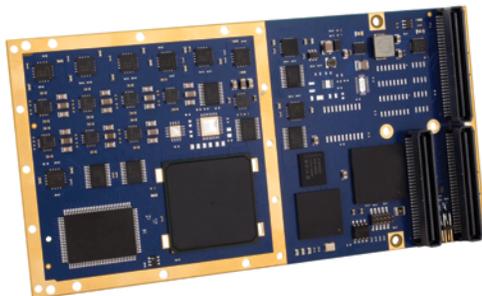
- Low 1553 Transceiver Power
- High MTBF for Rugged Environments
- Front or Rear I/O
- 8 Dual-Redundant MIL-STD-1553 Channels
 - BC/MT or Multi-RT/MT per Ch
 - Supports MIL-STD-1553A/B, MIL-STD-1760, and MacAir
- 16 Avionics Digital I/O
- IRIG-106 Chapter 10 Monitor
- 48-bit/100ns Time Stamp
- IRIG-B & Time Tag Clock Input

Applications

- Mission Computers
- Displays and LRUs
- Digital Data Recorders
- Radar Systems/Situational Awareness
- Commercial Aerospace
- Flyable Avionics/UAVs
- Data Loading
- Data Monitoring
- Ground Vehicles

Complete Info: www.ddc-web.com/BU-67112

PMC



ARINC 429

ARINC 717

DISCRETE

CANBUS

Model: DD-40002Z

Features

- 16 Rx Only ARINC 429 Channels
- 16 Prog. Tx/Rx ARINC 429 Channels
 - Up to 1 Prog. Tx/Rx ARINC 717 Channel
 - Up to 1 CANbus 2.0/ARINC 485 Channel
 - Up to 8 Avionics Discrete I/Os
 - IRIG-B Input & Output
- 3V or 5V Configurations
- 48-bit/100ns Time Tag
- Programmable Speed Per Channel (500bps - 200Kbps)
- DMA Engine for Ultra Low CPU

Applications

- Commercial Aerospace
- In-Flight Entertainment
- Mission Computers
- Digital Data Recorders
- Data Loading
- Data Monitoring

Complete Info: www.ddc-web.com/DD-40002X

MIL-STD-1553

MIL-STD-1760

DISCRETE

ACE XTREME

Model: BU-67110F/M, BU-67210F/M

Features

- 8 Dual Redundant 1553 Channels
- BC/Multi-RT/Monitor Per Channel*
- Error Injection*
- Test and Simulation Toolkit*
- Up to 8 Digital Discrete I/O
- Up to 16 Avionics Discrete I/O
- IRIG-B Time Code Input/Output
- 48-bit/100ns Time Stamp

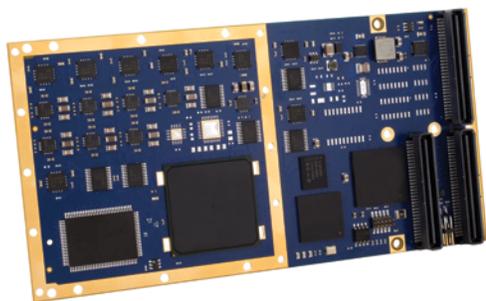
*Multi-Function 210F/M Series

Applications

- Mission Computers
- Displays
- Digital Data Recorders
- Radar Systems/Situational Awareness
- Systems Integration Labs
- Simulators
- Production Test Labs
- Box-Level Testing and Debugging
- Software Development

Complete Info: www.ddc-web.com/BU-67210FM

PMC



- ARINC 429
- ARINC 717
- DISCRETE
- CANBUS

Model: DD-4002M

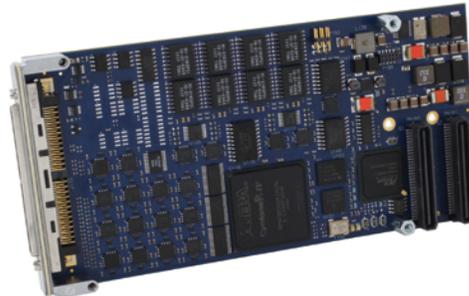
Features

- 16 Rx Only ARINC 429 Channels
- 16 Prog. Tx/Rx ARINC 429 Channels
 - Up to 1 Prog. Tx/Rx ARINC 717 Channel
 - Up to 1 CANbus 2.0/ARINC 485 Channel
 - Up to 8 Avionics Discrete I/Os - IRIG-B Input & Output
- 3V or 5V Configurations
- 48-bit/100ns Time Tag
- Programmable Speed Per Channel (500bps - 200Kbps)
- DMA Engine for Ultra Low CPU

Applications

- Commercial Aerospace
- In-Flight Entertainment
- Mission Computers
- Digital Data Recorders
- Data Loading
- Data Monitoring

Complete Info: www.ddc-web.com/DD-4002X



- ARINC 429
- ARINC 717



Model: DD-40100F

Features

- Channels:
 - 6, 10, 18, or 36 Prog. Tx/Rx ARINC 429
 - Up to 2 Prog. Tx/Rx ARINC 717
- Up to 16 Avionics Discrete I/O
- IRIG-B Input/Output
- Variable Output Voltage on 8 Channels
- Voltage Monitoring with Scope View on 8 Channels
- 48-bit/100 ns Time Tag
- Prog. Speed Per Channel (500bps - 200Kbps)
- RoHS Compliant

Applications

- Systems Integration Labs
- Simulators
- Production Test Stands
- Automated Test
- Commercial Aerospace
- New Product Development
- System Troubleshooting
- Portable Testers
- Flight Line Diagnostics
- Flight Testing
- Software Development
- Data Loading
- Data Monitoring
- Bus Debugging & Diagnostics

Complete Info: www.ddc-web.com/DD-40100F



- MIL-STD-1553
- MIL-STD-1760
- DISCRETE



Model: BU-65596F/M, BU-65597F/M

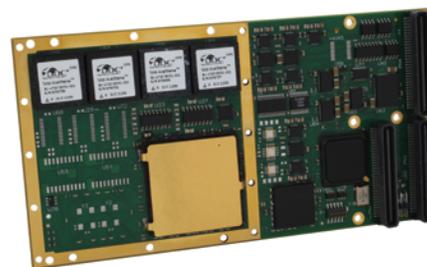
Features

- 4 Dual Redundant MIL-STD-1553 Channels
 - BC, RT, MT, or RT/MT Operation
 - Supports MIL-STD-1553A/B and MIL-STD-1760
 - Transformer and/or Direct Coupled
- High MTBF - Rugged Environments
- Up to 16 Avionics Discrete I/O
- Front or Rear I/O
- Shock & Vibration per VITA-47 Class V3
- Conforms to ANSI VITA 20-20005 CCPMC Spec
- RoHS Compliant

Applications

- Mission Computers
- Displays
- Digital Data Recorders
- Radar Systems/Situational Awareness
- Communication Radios
- Ground Maintenance
- Commercial Aerospace

Complete Info: www.ddc-web.com/BU-65596FM



- MIL-STD-1553
- MIL-STD-1760
- ARINC 429
- ARINC 717
- DISCRETE
- RS-422/485
- RS-232
- CANBUS 2.0



Model: BU-67118M

Features

- Up to 4 Dual-Redundant MIL-STD-1553 Channels
 - Supports MIL-STD-1553A/B, MIL-STD-1760, and MacAir
 - BC Disable for RT Only
 - Tx Inhibit for MT Only
- Up to 20 Programmable Tx/Rx ARINC 429 Channels
- Up to 2 Programmable Tx/Rx ARINC 717 Channels
- Up to 2 CANbus 2.0/ARINC 835 Channels
- Up to 8 Programmable RS-232/422/485 Channels
- Up to 10 Avionics/Digital Discrete I/O

Applications

- Mission Computers
- Displays and LRUs
- Digital Data Recorders
- Radar Systems/Situational Awareness
- Commercial Aerospace
- Flyable Avionics/UAVs
- Data Loading
- Data Monitoring
- Ground Vehicles

Complete Info: www.ddc-web.com/BU-67118x

USB



BU-67X02U



BU-67103U

MIL-STD-1553

ARINC 429

DISCRETE

ACEXTREME®

Model: BU-67102U, BU-67202U, BU-67103U

Features

- Channels:
 - 2 Dual Redundant MIL-STD-1553
 - 4 Receive & 2 Transmit ARINC 429/575
- 8 User-Programmable Digital Discrete I/O
- IRIG-B Time Code Input
- IRIG-106 Chapter 10 Monitor
- 48-bit / 100ns Time Stamp
- 1 Pulse per Second Output

Applications

- Box-Level Troubleshooting
- Simulation
- Portable Test Equipment
- Flight Line and Diagnostic Testing
- Software Development
- Systems Integration
- Automatic Test Applications (ATP)

Complete Info: www.ddc-web.com/BU-67102U

MIL-STD-1553

ARINC 429

ARINC 717

DISCRETE

RS-422/485

RS-232

CANBUS 2.0

ACEXTREME®

Model: BU-67211UX

Features

- Channels:
 - 2 Dual Redundant MIL-STD-1553
 - 8 Rx/Tx ARINC 429
 - 2 Rx/Tx ARINC 717
 - 2 CANbus 2.0
 - 4 RS-232/422/485 Serial I/O
- Standard Twinax MIL-STD-1553 Connectors
- 2 Digital and 2 Avionics-Level Discrete I/O
- Multi-Function: BC+Multi-RT+ Monitor Operation
- Test and Simulation Toolkit

Applications

- New Product Development
- Simulation
- Systems Integration Labs
- Bus or Network Analysis
- Production Test Stands
- System Troubleshooting

Complete Info: www.ddc-web.com/BU-67211UX

MIL-STD-1553

DISCRETE

Total-ACEXTREME®



Model: BU-67113Ux

Features

- Miniature Size USB to 1553 Board
- 49.94mm x 63.50mm x 10.46mm (1.966in. x 2.50in. x 0.41in.)
- Very High Reliability (MTBF)
- Ultra Low Power
- Comprehensive Built-In Self Tests
- 2 Dual Redundant MIL-STD-1553 Channels
- RoHS Compliant

Applications

- Rugged Small Embedded Systems
- Laptops or Tablets
- Bus Troubleshooting
- Diagnostic Systems
- Hand Held Test Equipment
- Small Displays

Complete Info: www.ddc-web.com/BU-67113Ux

Did You Know?

DDC is able to provide DO-254 compliant designs for devices ranging from ASICs to fully integrated sub-system solutions.

The DO-254 standard was formally recognized by the FAA in 2005 via AC 20-152 as a means of compliance for the design of complex electronic hardware in airborne systems. Complex electronic hardware includes devices like Field Programmable Gate Arrays (FPGAs), Programmable Logic Devices (PLDs), and Application Specific Integrated Circuits (ASICs). The DO-254 standard is the counterpart to the well-established software standard RTCA DO-178B/EUROCAE ED-12B.

DDC offers DO-254 certifiable MIL-STD-1553 interfaces, such as the ACE family of products which have extensive in-service history, and that are supported by detailed documentation packages, as well as DDC's proven performance, experience, and reliability.

PCI



MIL-STD-1553

MIL-STD-1760

ARINC 429

DISCRETE

RS-422/485

RS-232

ACEXTREME®

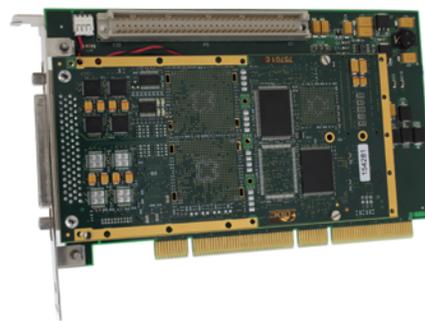
Model: BU-67107i

Features

- Channels:
 - 4 Dual Redundant MIL-STD-1553
 - 16 Receive & 4 Transmit 429
 - 2 RS-232 & 2 RS-422/485
- BC/Multi-RT/Monitor Per Channel
- Test and Simulation Toolkit
- ARINC 429 Only Model Available
- Up to 6 Digital Discrete I/O
- IRIG-B Time Code Input
- 48-bit/100ns Time Stamp

Applications

- Commercial Aerospace
- Systems Integration Labs
- Simulators
- Production Test Labs
- Box-Level Testing and Debugging
- Software Development

Complete Info: www.ddc-web.com/BU-67107i

MIL-STD-1553

MIL-STD-1760

DISCRETE

ACEXTREME®

Model: BU-67110i, BU-67210i

Features

- Channels:
 - 8 Dual Redundant MIL-STD-1553
- BC/Multi-RT/Monitor Per Channel*
- Test and Simulation Toolkit*
- Up to 8 Digital Discrete I/O
- Up to 8 Avionics Discrete I/O
- IRIG-B Time Code Input/Output
- 48-bit/100ns Time Stamp

Applications

- Commercial Aerospace
- Systems Integration Labs
- Simulators
- Production Test Labs
- Box-Level Testing and Debugging
- Software Development

*Multi-Function 210i Series

Complete Info: www.ddc-web.com/BU-67210i

ARINC 429

ARINC 717



Model: DD-40100i

Features

- Channels:
 - 6, 10, 18, or 36 Prog. Tx/Rx ARINC 429
 - Up to 2 Prog. Tx/Rx ARINC 717
- Up to 16 Avionics Discrete I/O
- IRIG-B Input/Output
- Variable Output Voltage on 8 Channels
- Voltage Monitoring with Scope View on 8 Channels
- 48-bit/100 ns Time Tag
- Prog. Speed Per Channel (500bps - 200Kbps)
- RoHS Compliant

Applications

- Systems Integration Labs
- Simulators
- Production Test Stands
- Automated Test
- Commercial Aerospace
- New Product Development
- System Troubleshooting
- Portable Testers
- Flight Line Diagnostics
- Flight Testing
- Software Development
- Data Loading
- Data Monitoring
- Bus Debugging & Diagnostics

Complete Info: www.ddc-web.com/DD-40100i

PC/104-PLUS, PCI-104



MIL-STD-1553

MIL-STD-1760

ARINC 429

ACEXTREME®

Model: BU-67104/5C, BU-67108/9C

Features

- Channels:
 - 4 Dual Redundant MIL-STD-1553
 - 16 Receive & 8 Transmit 429*
- Up to 9 Digital Discrete I/O
- Up to 8 Avionics Discrete I/O
- IRIG-B Time Code Input/Output
- 48-bit/100ns Time Stamp
- +5V only operation
- 104/5C Series = MIL-STD-1553 only
- *108/9C Series = Multi-I/O

Applications

- Digital Flight Data Recorders
- Telemetry/Instrumentation Recorders
- Mission Computers
- Small Avionics Displays
- Line Replaceable Units (LRUs)
- Radar Systems/Situational Awareness
- Munitions
- Ground Vehicles
- Avionics Labs

Complete Info: www.ddc-web.com/BU-67104C
www.ddc-web.com/BU-67108C

cPCI/PXI



MIL-STD-1553

MIL-STD-1760

ARINC 429

DISCRETE

RS-422/485

RS-232

ACEXTREME®

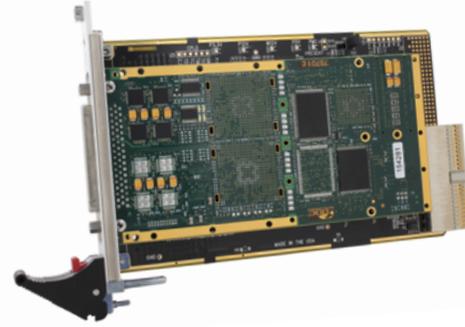
Model: BU-67107T

Features

- Channels:
 - 4 Dual Redundant MIL-STD-1553
 - 16 Receive & 4 Transmit 429
 - 2 RS-232 & 2 RS-422/485
- BC/Multi-RT/Monitor Per Channel
- Test and Simulation Toolkit
- Up to 6 Digital Discrete I/O
- IRIG-B Time Code Input
- 48-bit/100ns Time Stamp

Applications

- Commercial Aerospace
- Systems Integration Labs
- Simulators
- Production Test Labs
- Box-Level Testing and Debugging
- Software Development

Complete Info: www.ddc-web.com/BU-67107IT

MIL-STD-1553

MIL-STD-1760

DISCRETE

ACEXTREME®

Model: BU-67110T, BU-67210T

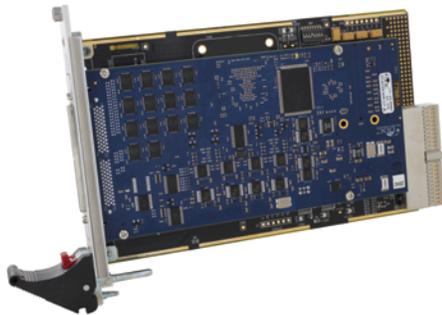
Features

- Channels:
 - 8 Dual Redundant MIL-STD-1553
- BC/Multi-RT/Monitor Per Channel*
- Test and Simulation Toolkit*
- Up to 8 Digital Discrete I/O
- Up to 8 Avionics Discrete I/O
- IRIG-B Time Code Input/Output
- 48-bit/100ns Time Stamp

Applications

- Commercial Aerospace
- Systems Integration Labs
- Simulators
- Production Test Labs
- Box-Level Testing and Debugging
- Software Development

*Multi-Function 210T Series

Complete Info: www.ddc-web.com/BU-67210IT

ARINC 429

ARINC 717



Model: DD-40100T

Features

- Channels:
 - 6, 10, 18, or 36 Prog. Tx/Rx ARINC 429
 - Up to 2 Prog. Tx/Rx ARINC 717
- Up to 16 Avionics Discrete I/O
- IRIG-B Input/Output
- Variable Output Voltage on 8 Channels
- Voltage Monitoring with Scope View on 8 Channels
- 48-bit/100ns Time Tag
- Prog. Speed Per Channel (500bps - 200Kbps)
- RoHS Compliant

Applications

- Systems Integration Labs
- Simulators
- Production Test Stands
- Automated Test
- Commercial Aerospace
- New Product Development
- System Troubleshooting
- Portable Testers
- Flight Line Diagnostics
- Flight Testing
- Software Development
- Data Loading
- Data Monitoring
- Bus Debugging & Diagnostics

Complete Info: www.ddc-web.com/DD-40100T

Did You Know?

To help our customers save time and money when developing systems, DDC created a common Application Programming Interface (API) for our test and embedded cards.

This common API allows engineers to reuse the same program that they have written for the hardware in their test application, with the hardware in their embedded application, saving considerable effort and time.

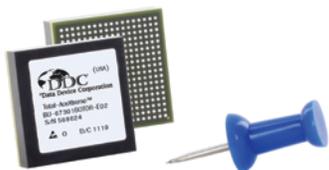
Additionally, DDC's BusTrACer™ Graphical Monitor/Generator Software offers an automated source code generation feature, allowing you to output ANSI 'C' source code of your setup file in minutes. It will detect which board is connected and generate a C file for the appropriate SDK. (See page 25)

Total-AceXtreme®

MIL-STD-1553

DISCRETE

MIL-STD-1760

Total-ACE^{XTREME}**Model: BU-67301B****Features**

- Fully Integrated 1553 Terminal & Transformer in a BGA Package
 - 324 Ball BGA 16mm x 16mm (0.63in. x 0.63in.)
 - Protocol, 2Mb RAM, Transceivers & Transformers
- Ultra Low Transceiver Power
- Built-In Self Test & JTAG Support
- 1 Dual Redundant 1553 Channel
- BC or Multi-RT with Bus Monitor
- Temp Range: -40°C to +125°C
- Access Time as low as 12.5ns
- User Selectable & Flexible PCI or Generic Processor Interface

Applications

- Mission Computers
- Data Recorders
- LRUs
- Radios/Modems
- Displays
- Ground Vehicles
- Radar Systems/Situational Awareness
- Small Form Factor Boards
- Commercial Aerospace

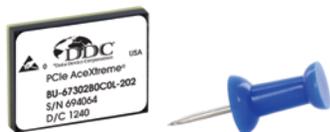
Evaluation Card and SDK
www.ddc-web.com/BU-67301i

Complete Info: www.ddc-web.com/BU-67301B

PCI-Express AceXtreme®

MIL-STD-1553

MIL-STD-1760

ACE^{XTREME}**Model: BU-67302B0C0L****Features**

- Protocol, RAM, and Transceivers in a Single Package
 - 234 Ball JEDEC Standard Size Fine Pitch Ball Grid Array
 - 0.8 mm Ball Pitch
- Ultra Low Transceiver Power
- High Performance PCI-Express X1 Serial Host Interface
 - DMA Engine with 264 MB/sec Burst Transfer Rate
- 1 Dual Redundant 1553 Channel
- BC or Multi-RT with Bus Monitor
- 2Mb (64K x 36) RAM
- Temp Range: -40°C to +85°C

Applications

- Mission Computers
- Digital Data Recorders
- Radios/Modems
- Displays and LRUs
- Ground Vehicles
- Radar Systems/Situational Awareness
- Small Form Factor Boards
- Commercial Aerospace

Complete Info: www.ddc-web.com/BU-67302B

Total-ACE®

MIL-STD-1553

MIL-STD-1760

CERTIFIABLE TO
DO-254
 HARDWARE GUIDELINES

**Model: BU-6X8X3T/U/H/i8****Features**

- Fully Integrated 1553 Terminal & Transformer in a BGA Package
- Small 312 Ball BGA Package 27.9mm x 15.2mm (1.1in x 0.6in)
- 0.185in Max Height
- 1 Dual Redundant 1553 Channel
- BC, RT, MT or RT/MT Functionality
- Temp Range: -40°C to +125°C
- 4K x 16 RAM up to 64K x 16 RAM
- +3.3V Only Operation
- Generic Processor or PCI Interface

Applications

- Mission Computers
- Data Recorders
- LRUs
- Displays
- Ground Vehicles
- Commercial Aerospace

Complete Info: www.ddc-web.com/BU-64843T

Nano-ACE®

MIL-STD-1553

MIL-STD-1760

**Model: BU-67753LC, BU-67833LC****Features**

- Protocol, RAM, and Dual Low Power Transceivers in a Single Package
 - 48 Pin QFN Package
- 1 Dual Redundant 1553 Channel
- BC, RT, MT or RT/MT Operation
- 4K x 16, 4K x 17, or 32K x 17 RAM
- Optional RAM Parity
- 50MHz 4-Wire Serial Peripheral Interface (SPI) to the Host Processor
- Autonomous Self-Test
- Ultra Low Transceiver Power
- +3.3V Only Operation
- Temp Range: -55°C to +125°C

Applications

- Displays
- Simple Systems
- Radios/Modems
- Stores Management

Complete Info: www.ddc-web.com/BU-67743LC

Micro-ACE® Series



MIL-STD-1553

MIL-STD-1760



Model: BU-61XX0B3, BU-64X4XBX-E02, BU-65XX3BX-E02

Features

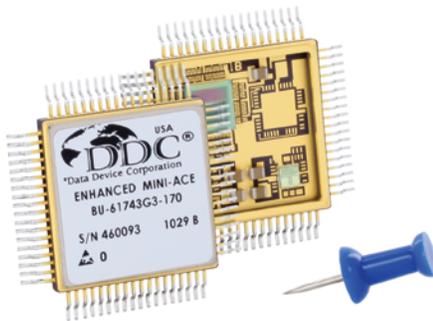
- MIL-STD-1553 terminal with 1553 protocol, memory, and either 3.3V or 5V transceiver, in a small plastic BGA
- 128-Ball Plastic BGA Package (BU-61XX0B3)
- 324-Ball Thermally Enhanced (TE) Package (BU-64X4X/BU-65XX3)
- Supports 1553A/B Notice 2, McAir, STANAG 3838 Protocols
- Compatible with Mini-ACE and ACE Generations
- Temp Range: -40°C to +85°C (-40°C to +125°C Micro-ACE-TE)
- Generic Processor or PCI Interface

Applications

- Mission Computers
- Data Recorders
- LRUs
- Displays
- Ground Vehicles
- Commercial Aerospace

Complete Info: www.ddc-web.com/BU-64X4X
www.ddc-web.com/BU-61XX0

Enhanced Mini-ACE® Series



MIL-STD-1553

MIL-STD-1760

Model: BU-61XXX, BU-62XXX

Features

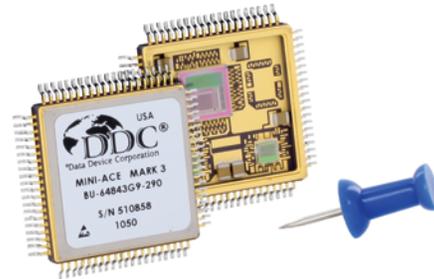
- Fully Integrated 1553A/B Notice 2, McAir, STANAG 3838 Protocols
- 1 inch square Ceramic Flat Pack or Gull Wing
- Enhanced Mini-ACE Architecture
- 5V or 3.3V Logic
- Temp Range: -55°C to +150°C
- Generic Processor or PCI Interface
- For Simple System RT (BU-64170X) visit: www.ddc-web.com/BU-6170X

Applications

- Mission Computers
- Data Recorders
- LRUs
- Displays
- Ground Vehicles
- Commercial Aerospace

Complete Info: www.ddc-web.com/BU-61XX3

Mini-ACE® Mark3 Series



MIL-STD-1553

MIL-STD-1760



Model: BU-64XX3, BU-65XX3

Features

- World's only 3.3V Only or 5V Only Terminal (No other power supplies required)
- Smallest CQFP
22.35mm x 22.35mm x 3.3mm (0.88in. x 0.88in. x 0.130in.)
- Supports 1553A/B Notice 2, McAir, STANAG 3838 Protocols
- Highly Flexible Host Side Interface
- Generic Processor or PCI Interface
- Temp Range: -55°C to +125°C
- For Simple System RT (BU-64703) visit: www.ddc-web.com/BU-64703

Applications

- Mission Computers
- Data Recorders
- LRUs
- Displays
- Ground Vehicles
- Commercial Aerospace

Complete Info: www.ddc-web.com/BU-64XX3

SPACE-PHY



MIL-STD-1553



Model: BU-67402F30HL, BU-67402F80HL

Features

- Dual-Redundant, Side-by-Side, MIL-STD-1553 Transceiver/Transformer Combo
 - Ceramic Flatpack Package - 25.4mm x 25.4mm x 6.35mm (1in. x 1in. x 0.25in.)
- 5V and 3.3V
- Temp Range: -55°C to +125°C
- Radiation Specifications:
 - Total Dose: 100krad (5V Version), 300krads (3.3V version)
 - Latchup Immunity Minimum LET Threshold: 85.4 MeV-cm²/mg
- MIL-PRF-38534

Applications

- Launch Vehicles
- Military Satellites
- Research Satellites
- International Space Station
- Commercial Telecommunication Satellites

See Page 62 for all DDC Rad-Hard solutions

Complete Info: www.ddc-web.com/BU-67402F

Total-Space ACE

MIL-STD-1553
Rad-Hard



Model: BU-67521

Features

- Fully Integrated 1553 Terminal & Transformer in a Single Package
 - Ceramic Flatpack Package
 - 41.4mm x 28.7mm x 6.35mm (1.63in. x 1.13in. x 0.25in.)
- 3.3V (Only) Input Power
- 1 Dual Redundant 1553 Channel
- BC, RT, MT or RT/MT Functionality
- Temp Range: -55°C to +125°C
- Radiation Specifications:
 - Total Dose: 300krad
 - Latchup Immune: 75MeV

Applications

- Launch Vehicles
- Military Satellites
- Research Satellites
- International Space Station
- Commercial Telecommunication Satellites

See Page 62 for all DDC Rad-Hard solutions

Complete Info: www.ddc-web.com/BU-67521

Total-Space RT

MIL-STD-1553
Rad-Hard



Model: BU-67502

Features

- Complete Integrated Remote Terminal Including: Dual Low-Power Transceivers/Complete RT Protocol
- 3.3V (Only) Input Power
- Direct Interface to Systems With No Processor
- Radiation-Tolerant to 300krad
- Space-Qualified
- High Reliability Screening Available
- Temp Range: -55°C to +125°C

Applications

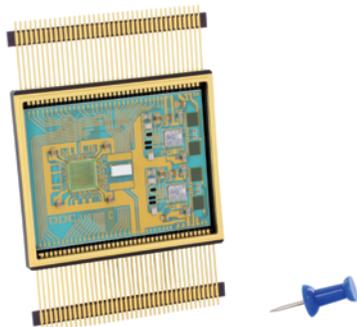
- Launch Vehicles
- Military Satellites
- Research Satellites
- International Space Station
- Commercial Telecommunication Satellites

See Page 62 for all DDC Rad-Hard solutions

Complete Info: www.ddc-web.com/BU-67502

SP'ACE RT II

MIL-STD-1553
Rad-Hard



Model: BU-63705

Features

- Complete Integrated Remote Terminal Including: Dual Low-Power Transceivers/Complete RT Protocol
- 5V (Only), +5/-15V, or +5/-12V Input Power
- Direct Interface to Systems With No Processor
- Radiation-Tolerant to 300krad
- Space-Qualified
- High Reliability Screening Available
- Temp Range: -55°C to +125°C

Applications

- Launch Vehicles
- Satellites
- International Space Station

See Page 62 for all DDC Rad-Hard solutions

Complete Info: www.ddc-web.com/BU-63705

SP'ACE II BC/RT/MT

MIL-STD-1553
Rad-Hard



Model: BU-63825

Features

- Complete Integrated BC/RT/MT Terminal Including: Dual Low-Power Transceivers/Complete Protocol
- 5V (Only), +5/-15V, or +5/-12V Input Power
- Radiation-Tolerant to 1mrad Available
- Flexible Processor/Memory Interface
- 16K x 16 Internal RAM
- Automatic BC Retries
- Programmable BC Gap Times
- BC Frame Auto-Repeat
- Flexible RT Data Buffering
- Temp Range: -55°C to +125°C

Applications

- Launch Vehicles
- Satellites
- International Space Station

See Page 62 for all DDC Rad-Hard solutions

Complete Info: www.ddc-web.com/BU-63825

Single/Dual 5V Transceivers

MIL-STD-1553



BU-63155

BU-63152

Model: BU-63155, BU-63152

Features

Single 5V Transceiver (BU-63155)

- World's Smallest 5V MIL-STD-1553 Transceiver
- Temp Range: -55°C to +125°C
- 7mm x 7mm x 1mm (0.28in. x 0.28in. x 0.040in.)
- Requires +5V Power Supply
- 32-Pad LPCC Package
- Low Power Consumption

Dual 5V Transceiver (BU-63152)

- Requires 5V Power Supply
- Temp Range: -55°C to +85°C
- Harris I/O Compatibility
- Conforms Fully to MIL-STD-1553A/B, and 1760
- Low Power Consumption

Applications

- Military
- Commercial Aerospace
- Industrial

Complete Info: www.ddc-web.com/BU-63155
www.ddc-web.com/BU-63152

Did You Know?

DDC maintains on site capability to perform hermeticity testing in accordance with the requirements of MIL-STD-38534 Class K.

DDC is certified by the United States Defense Logistics Agency (DLA) to perform hermeticity testing in accordance with MIL-STD-883 Test Method 1014.17, using the Oneida Research Services HSHLD[®] Model 310 high sensitivity helium leak detection system, a quadrupole mass spectrometer system for high sensitivity helium leak rate measurement, to qualify DDC products to the latest, tighter leak rate requirements of MIL-STD-883, method 1014. The low measured leak rates required in MIL-STD-883, method 1014 are not currently possible with traditional helium leak detectors.

Dual 3.3V Transceiver

MIL-STD-1553



Model: BU-67401L

Features

- World's Lowest Power MIL-STD-1553 Transceiver
- Temp Range: -55°C to +125°C
- 7mm x 7mm (0.28in. x 0.28in.)
- Requires 3.3V Power Supply
- Small 48-Pad LPCC Package
- MIL-STD-1553A/B, MIL-STD-1760, and MacAir Compatible Transceiver

Applications

- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Displays
- Ground Vehicles
- Commercial Aerospace
- Radar Systems/Situational Awareness

Complete Info: www.ddc-web.com/BU-67401L

Did You Know?

DDC is certified by the United States Defense Logistics Agency (DLA) to perform automated die bonding in accordance with the requirements of MIL-PRF-38534.

DDC employs state of the art die bonding equipment with an accuracy of 7µm on die as small 0.17mm at a rate of 20 die per minute.

The Datacon 2200 evo high-accuracy multi-chip die bonder provides the ultimate flexibility for die attach as well as for flip chip applications. Equipped with integrated dispenser, 300mm (12in) wafer handling, automatic tool changer, and application specific tooling, the Datacon 2200 evo is prepared for present and future processes and products.

Transceivers

Single 3.3V Transceiver



MIL-STD-1553

MIL-STD-1760

Model: NHi-15LV901


Features

- 3.3V Transceiver & Transformer
- Compliant with MIL-STD-1553 and MIL-STD-1760
- NHI Proprietary Transceiver ASIC
- Pulse 1553 Dual Ratio Transformer
- Short Circuit Tolerant
- Low Dissipation Power
- Superior Noise Filter

Applications

- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Displays
- Ground Vehicles
- Commercial Aerospace
- Radar Systems/Situational Awareness

 Complete Info: www.ddc-web.com/NHi-15LV901

Dual 5V Transceiver



MIL-STD-1553

MIL-STD-1760

Model: NHi-1567


Features

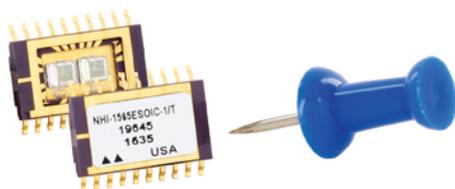
- Fully Compliant MIL-STD-1553 A&B, MIL-STD-1760, and MacAir Dual Transceivers
- Single 5V $\pm 10\%$ Supply
- 0.95 Watts Max Power Dissipation at 100% Duty Cycle
- Output Driver Withstands Short Circuit Fault Indefinitely with Built-In Shutdown/Recovery Circuit
- Proprietary Monolithic Design Provides Superior Reliability, Noise Performance, and Thermal Impedance

Applications

- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Displays
- Ground Vehicles
- Commercial Aerospace
- Radar Systems/Situational Awareness

 Complete Info: www.ddc-web.com/NHi-1567

Dual 3.3V/5V Transceivers



MIL-STD-1553

MIL-STD-1760

Model: NHi-1565ESOIC-1


Features

- MIL-STD-1553, MIL-STD-1760 Dual Transceivers in a Ceramic SOIC Package
- Single Supply 5V or 3.3V
- Output Driver Withstands Short Circuit Fault
- Proprietary Monolithic Design Provides Outstanding Thermal Impedance Characteristics
- Superior Noise Performance

Applications

- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Displays
- Ground Vehicles
- Commercial Aerospace
- Radar Systems/Situational Awareness

 Complete Info: www.ddc-web.com/NHi-1565SOIC


MIL-STD-1553

MIL-STD-1760

Model: NHi-1565CSP


Features

- Smallest Available MIL-STD-1553 A&B, MIL-STD-1760 Dual Transceivers
- Dimensions: 7mm x 7mm x 2mm
- Single Supply 5V or 3.3V
- 1.5 Watts Max Power Dissipation
- Output Driver Withstands Short Circuit Fault
- Proprietary Monolithic Design Provides Outstanding Thermal Impedance Characteristics
- Superior Noise Performance
- Drop-In Replacement for Holt Devices

Applications

- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Displays
- Ground Vehicles
- Commercial Aerospace
- Radar Systems/Situational Awareness

 Complete Info: www.ddc-web.com/NHi-1565CSP

ARINC 429 Controllers



ARINC 429



Model: DD-00429

Features

- ARINC 429 Microprocessor Interface
 - Provides a Complete and Flexible Interface Between a Microprocessor and an ARINC 429 Data Bus
- 128 x 32 Shared RAM Interface
- Label and Destination Decoding and Sorting
- Two 32 x 32 Transmit FIFOs
- Four 32 x 32 Receive FIFOs
- Built-in Fault Detection
- Temp Range: -55°C to +85°C
- Free "C" Library Software

Applications

- Military
- Commercial Aerospace
- Industrial

Complete Info: www.ddc-web.com/DD-00429

Did You Know?

DDC is certified by the United States Defense Logistics Agency (DLA) to perform real time radiographic inspection in place of traditional wet film radiographic inspection.

Real time radiographic inspection is especially useful for multi-chip modules (MCMs) employing flip chip technology while providing an easy to handle, digital output.



ARINC 429



Model: DD-42900

Features

- ARINC 429 Microprocessor Interface
 - Provides a Complete and Flexible Interface Between a Microprocessor and an ARINC 429 Data Bus
- 128 x 32 Shared RAM Interface
- Label and Destination Decoding and Sorting
- Two 32 x 32 Transmit FIFO's
- Four 32 x 32 Receive FIFO's
- Built-in Fault Detection
- Temp Range: -40°C to +85°C
- Free "C" Library Software
- Interfaces Easily to 8- or 16-bit Microprocessors

Applications

- Military
- Commercial Aerospace
- Industrial

Complete Info: www.ddc-web.com/DD-42900

Did You Know?

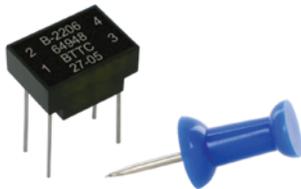
DDC MIL-STD-1553 components have been in service since the early 1980's. DDC MIL-STD-1553 ASICS have achieved over 1 billion hours of in-service history on the world's leading aerospace platforms including:

- Airbus A350-XWB
- F-16 Falcon
- B-1 Bomber
- F-35 Lightning (JSF)
- AH-64 Apache attack helicopter
- M1A2 Abrams
- Space Shuttle
- EuroFighter
- International Space Station
- New Horizons Space Craft
- Boeing 767 Tanker Aircraft
- F-15 Eagle
- F-22 Raptor
- Rafale
- Tornado

Single Channel MIL-STD-1553 Transformers

QPL B-2200/2300/3200 Series

MIL-STD-1553



Model: B-22XX, B-23XX, B-32XX

Features

- Low-Profile, MIL-STD-1553 Pulse Transformers
- Fully Qualified to DESC Specification No. 21038/27
- For use with MIL-STD-1553A/B, MacAir A-5690, A-5232, and A-4905
- 5V, 12V, and 15V Ratios
- Temp Range: -55°C to +130°C
- Built and Tested to MIL-PRF-21038 Level M and Level T
- Listed on QPL-21038
- Qualification Validated Annually
- Multi-tapped to Accommodate Existing System Configurations

Applications

- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Radar Systems/Situational Awareness
- Displays
- Ground Vehicles
- Commercial Aerospace
- Space Flight

Complete Info: www.ddc-web.com/B-22XX

MLP-2000 Series

MIL-STD-1553



Model: MLP-2XXX, MLP-3XXX

Features

- Miniature, Low-Profile 0.815" Maximum Height Surface Mount Transformer
- 3.3V, 5V, and 15V Ratios
- For use with MIL-STD-1553A/B, MacAir A-5690, A-5232, and A-4905
- Withstands Conventional IR/Convection Reflow Process
- Temp Range: -55°C to +130°C
- Built and Tested to MIL-PRF-21038 and MIL-STD-202
- RoHS Compliant

Applications

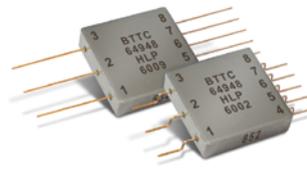
- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Radar Systems/Situational Awareness
- Displays
- Ground Vehicles
- Commercial Aerospace
- Space Flight

Complete Info: www.ddc-web.com/MLP-2000

HLP-6000 Series

MIL-STD-1553

MIL-PRF-981



Model: HLP-60XX

Features

- Hermetically Sealed, Ultra-Low Profile 0.175" Maximum Height, Surface Mount Flat Pack
- 3.3V, 5V, 12V, and 15V Ratios
- For use with MIL-STD-1553A/B, MacAir A-5690, A-5232, and A-4905
- Temp Range: -55°C to +130°C
- Built and Tested to MIL-PRF-21038 and MIL-STD-202
- Designed to Meet ESDS Test, MIL-STD-883, Method 3015.3 Category B

Applications

- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Radar Systems/Situational Awareness
- Displays
- Ground Vehicles
- Commercial Aerospace
- Space Flight

See Page 62 for all DDC Rad-Hard solutions

Complete Info: www.ddc-web.com/HLP-6000

Dual Channel 1553 Transformer

DHP-6000 Series

MIL-STD-1553

MIL-PRF-981



Model: DHP-60XX

Features

- Hermetically Sealed, Ultra-Low Profile 0.175" Maximum Height, Surface Mount Flat Pack MIL-STD-1553 Transformer
- 3.3V, 5V, 12V, and 15V Ratios
- For use with MIL-STD-1553A/B, MacAir A-5690, A-5232, and A-4905
- Temp Range: -55°C to +130°C
- Built and Tested to MIL-PRF-21038 and MIL-STD-202
- Designed to Meet ESDS Test, MIL-STD-883, Method 3015.3 Category B

Applications

- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Radar Systems/Situational Awareness
- Displays
- Ground Vehicles
- Commercial Aerospace
- Space Flight

See Page 62 for all DDC Rad-Hard solutions

Complete Info: www.ddc-web.com/DHP-6000

Dual Channel MIL-STD-1553 Transformers

DSS-2000 Series

MIL-STD-1553



Model: DSS-2XXX

Features

- Dual Side-By-Side Pulse Transformers
- 0.130" Overall Height
- Built and Tested to MIL-PRF-21038 and MIL-STD-202 Level M and Level T
- 3.3V, 5V, 12V, and 15V Ratios
- For use with MIL-STD-1553A/B, MacAir A-5690, A-5232, and A-4905
- Temp Range: -55°C to +130°C
- Peak Reflow Temperature +225°C

Applications

- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Radar Systems/Situational Awareness
- Displays
- Ground Vehicles
- Commercial Aerospace
- Space Flight

Complete Info: www.ddc-web.com/DSS-2XXX

TSM-2000 Series

MIL-STD-1553



Model: TSM-2XXX

Features

- Twin Stacked Miniature Dual Pulse Transformers
- For use with MIL-STD-1553A/B, MacAir A-5690, A-5232, and A-4905
- Withstands Conventional IR/Convection Reflow Process
- Temp Range: -55°C to +130°C
- Built and Tested to MIL-PRF-21038 and MIL-STD-202
- 3.3V, 5V, 12V, and 15V Ratios
- RoHS Compliant

Applications

- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Radar Systems/Situational Awareness
- Displays
- Ground Vehicles
- Commercial Aerospace
- Space Flight

Complete Info: www.ddc-web.com/TSM-2XXX

DSS-3000 Series

MIL-STD-1553



Model: DSS-33XX

Features

- Smallest Dual Side-By-Side Pulse Transformers 0.400" x 0.675"
- Built and Tested to MIL-PRF-21038 and MIL-STD-202 Level M and Level T
- 3.3V, 5V, 12V, and 15V Ratios
- For use with MIL-STD-1553A/B, MacAir A-5690, A-5232, and A-4905
- Temp Range: -55°C to +130°C
- Peak Reflow Temperature +225°C
- RoHS Compliant

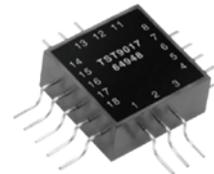
Applications

- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Radar Systems/Situational Awareness
- Displays
- Ground Vehicles
- Commercial Aerospace
- Space Flight

Complete Info: www.ddc-web.com/DSS-33XX

TST-9000 Series

MIL-STD-1553



Couplers — MIL-STD-1553

Box Couplers



MIL-STD-1553

Model: BXC/DB Series



Features

- Flange Mounted Box Couplers
- Full MIL-STD-1553 Compatibility
- Standard 1, 2, 3, 4, 5, 6 or 8 Stub Versions Available
- Custom Multi-Stub Designs Available
- Miniature / Low Profile Configurations and Mounting Options
- Connector Options Available including BJ-77, BJ-157, BJ-3150, PL75
- MIL-R-39007 Q.P.L Resistors
- Operating Temperature to 130°C

Applications

- Airborne Applications
- Ground Vehicle Applications
- Bench & Test Applications

Complete Info: www.ddc-web.com/BXC

In-line Couplers



MIL-STD-1553

Model: DB In-Line Coupler Series



Features

- In-Line Data Bus Couplers
- Full MIL-STD-1553 compatibility
- Standard 1, 2, 3, 4, 5, 6 or 8 Stub Versions Available
- Custom Multi-Stub Designs Available
- Miniature / Low Profile Configuration
- MIL-R-39007 Q.P.L Resistors
- Operating Temperature to 130°C

Applications

- Airborne Applications
- Ground Vehicle Applications
- Bench & Test Applications

Complete Info: www.ddc-web.com/DBxxxx

Space Grade Couplers



MIL-STD-1553

MIL-PRF-981



Model: DB Space Coupler Series



Features

- In-line or Flange Mounted
- Sole Source Supplier to SSQ-22676
- Harness Assemblies Options Available
- MIL-R-39007 Q.P.L Resistors
- Built per MIL-STD-981
- Testing to MIL-PRF-21038
- Meets NASA Outgassing Requirements
- Operating Temperature to 130°C

Applications

- Space Applications
- Satellites
- Launch Vehicles

See Page 62 for all DDC Rad-Hard solutions

Complete Info: www.ddc-web.com/SpaceBXC

Cables & Accessories



MIL-STD-1553

Model: DBC Accessories Series



Features

- **Cables**
- MIL-C-17/176-00002, Raychem 10613, other Wire Options Available
- Standard Cable Lengths: 36", 72", 120"
- Custom Lengths Available
- Connector Options Available including PL75, PL375, PL155, PL3155, Others Upon Request
- **Connectors, Terminators/Plugs, Jacks, Adapters & Dust Caps**
- All the Necessary Hardware to implement a 1553 Data Bus System

Applications

- Systems Development
- Bench Top Test
- Flight Line Maintenance

Complete Info: www.ddc-web.com/DBCxxx

System Level Software

dataSIMS

Avionics Data Bus Test and Analysis Software



MIL-STD-1553

ARINC 429

DISCRETE

SYNCHRO

User Defined

AFDX

ARINC 717

CANBUS

RS-422/485

RS-232

Model: BU-694X4DS

Features

- Accelerates development and deployment
- Eliminates cost of learning and maintaining separate software programs
- Easy-to-use and customize
- Supports all data protocols and I/O formats

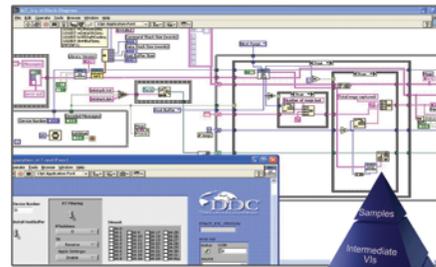
Applications

- New Product Development
- Systems Integration
- Bus or Network Analysis
- Production Testing
- Troubleshooting
- Data Recording
- Depot/Flight Line Testing
- Automatic Test

Complete Info: www.ddc-web.com/datasims

LabVIEW® Support Package

LabVIEW® & LabVIEW® Real-Time/LabWindows®



MIL-STD-1553

ARINC 429

DISCRETE

ARINC 717

CANBUS

RS-422/485

RS-232



Model: BU-69093

Features

- Simple interface for quick startup and easy programming
- Access real-time 1553/429 data using LabVIEW
- Easily integrate data from different types of instruments and sensors
- Create custom user interface from scratch or by modifying samples provided

Applications

- Box Level Testing
- Simulation
- Portable Test Equipment
- Flight Line Test and Diagnostic
- Software Development
- System Integration
- Debugging

Complete Info: www.ddc-web.com/labview

Protocol Analyzers

BusTrACer®

Data Bus Analyzer and Monitor Software



MIL-STD-1553

DISCRETE

Model: BU-69066

Features

- Generate or monitor live MIL-STD-1553 data without writing any code
- Saves time and reduces development costs
- Program in minutes with one-click ANSI 'C' application source code generation
- Rapid creation and setup of custom applications

Applications

- Software Development
- Box Level Testing
- Simulation
- Portable Test Equipment
- Flight Line Test and Diagnostic
- Systems Integration

Complete Info: www.ddc-web.com/bustracer

Commercial Avionics Utilities

Data Bus Analyzer and Data Loader Software



ARINC 429

ARINC 615

Model: DD-42999SX

Features

- Graphical ARINC 429 data bus analysis and simulation
- Advanced filtering, message scheduling, and triggering
- Graphical ARINC 615 data loader
- Software interface to load data to and from airborne computers

Applications

- Monitoring
- Analysis
- Simulation
- Airborne Computers
- Flight Data Acquisition Units

Complete Info: www.ddc-web.com/arincsw

Fibre Channel & High Speed Solutions



High Speed and High Reliability Data Networking

DDC developed its line of Fibre Channel network access controllers and switches to support the real-time processing demands of field-critical data networking between sensors, computer nodes, data storage, displays, and weapons for air, sea, and ground military vehicles. Fibre Channel's architecture is optimized to meet the performance, reliability, and demanding environmental requirements of embedded, real-time, military applications, and designed to endure the multi-decade life cycle demands of military/aerospace programs.

DDC's Fibre Channel product line includes the FibreACCESS® Network Access Controller (NAC) card and the FibreMATRIX® Switch, both specifically designed to support high-speed and high-reliability data networking applications. These products were developed using in-house intellectual property independent of the life cycles of commercial devices. Ruggedness options for DDC's Fibre Channel cards include a choice of air and conduction cooling, enabling operation over extended temperature ranges without the need for upscreening. The Fibre Channel cards come with software drivers for multiple operating systems, including VxWorks®, Windows®, and Linux®.

DDC supplies Fibre Channel PMC cards supporting MIL-STD-1760E Class I, aka "High-Speed 1760". The High-Speed 1760 cards also support the SAE 5725 Miniature Munitions Store Interface and SAE 5726 Interface for Micro Munitions (IMM) standards. These PMC cards are supplied for use in stores management systems, launchers, bomb racks, weapons, and test equipment. The cards enable the transmission and receipt of MIL-STD-1553 command and control messages, along with higher speed data transfers, including for program files, terrain maps, target templates, and digitized images and video.

North Hills high speed cable isolation transformers are ideally suited for isolation of high speed data transmission lines for speeds up to 3,200 MBaud. Isolation between primary and secondary of 1,500 Vrms offers excellent protection of the circuit and optimum damping of transients. Compact packaging provides for optimal circuit card configuration and space utilization. Additionally, these transformers are compliant with ANSI X3T11 FC-PH-3 (up to 1,062 MBaud), SMPTE 292M video data networks, and IEEE 1394b / AS5643 Firewire.

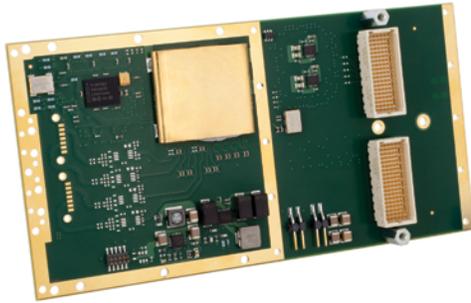
| Boards | | | | | | | | | | | | | | | |
|----------------------------|--------------------|----------------|---|-----------------------------|-----------|-------------|-----------|-------------|------------------|--------|----------------|--------|----------|------------|------|
| Product Number | Number of Channels | Gb/s Operation | | Class 2 & 3 Service Support | | | Interface | | Protocol Support | | | | | | Page |
| | | 1 | 2 | Broadcast | Multicast | Hunt Groups | Copper | Fiber Optic | ASM | TCP/IP | SCSI Initiator | UDP/IP | Raw Mode | FC-AE-1553 | |
| FibreACCESS® | | | | | | | | | | | | | | | |
| FC-75000 | 2 | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 27 |
| FC-75100 | 2 | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 27 |
| FC-75300 | 2 | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 27 |
| FC-75500 | 2 | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 27 |
| High Speed 1760 | | | | | | | | | | | | | | | |
| FC-752XX | 2 | ■ | | ■ | | | ■ | | | | | | | ■ | 27 |
| FC-75400 | 2 | ■ | | ■ | | | ■ | ■ | | | | | | ■ | 27 |
| FibreMATRIX® Switch | | | | | | | | | | | | | | | |
| FC-76000 | 16 | ■ | ■ | ■ | ■ | ■ | | ■ | | | | | | | 27 |

☞ Visit www.ddc-web.com/fc for complete product information.

| Transformers | | |
|--|--|------|
| Product Number | Description | Page |
| High Speed, Fibre Channel, FireWire & Ethernet Transformers | | |
| TGB-XXXX | Low-profile; Compliant with ANSI X3T11, Fibre Channel, FC-PH-3 | 28 |
| FWT-1394 | Military Qualified FireWire Transformer | |
| GEM-1000 | 10/100/1000 Base-T Single and Dual Port | |
| TFXXXX | Interface magnetics for high speed data bus applications | |
| Wideband/SMPTE | Signal Isolation / Balun | 29 |

FibreACCESS® XMC Controller

Fibre Channel



Model: FC-75500

Features

- XMC Board with x4 PCI Express Interface
- Dual-Channel Operation
- Conduction or Air Cooled PMC for Extended Temperature Operations
- 1 or 2Gb/s Operation
- Class 2 and 3 Service Including Broadcast and Multicast
- Memory-to-Memory Latency under 10µs
- ASM, TCP/IP, SCSI Initiator, Raw Mode, and FC-AE-1553 Protocols

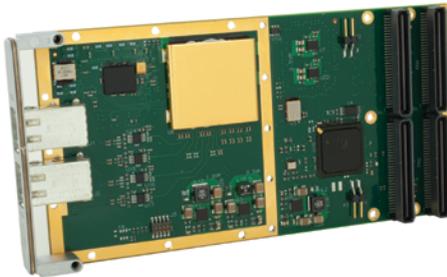
Applications

- Mission Computers
- Radar
- IFF
- Displays and Digital Maps
- FLIR/Night Vision
- File Servers
- Signal Processing Computers
- Test

Complete Info: www.ddc-web.com/FC-75500

High Speed 1760

Fibre Channel



Model: FC-75400

Features

- High-Speed 1760 PMC Card
- 66MHz/64-Bit PMC Board
- Two Independent Channels
 - Each can be FC-AE-1553 NC or NT
- NC: NC-to-NT/NT-to-NC Transfers, Mode Codes, & Broadcast
- NT: Multiple Subaddress Buffering Options, NC-to-NT/NT-to-NC Transfers, Mode Codes, & Broadcast
- Supports Large Transfers for Files and Images
- 3.3V, 64-bit, 66MHz PCI Initiator/Target

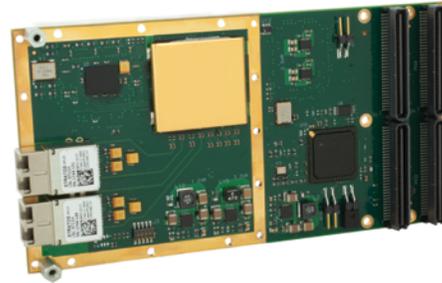
Applications

- Weapons Interfaces
- Stores Management Systems
- Launcher and Rack Interfaces
- Weapons Programmers
- Test Equipment
- Simulation

Complete Info: www.ddc-web.com/FC-75400

FibreACCESS® Network Controller

Fibre Channel



Model: FC-75300

Features

- 66MHz/64-Bit PMC Board
- Dual-Channel Operation
- Conduction or Air Cooled PMC for Extended Temperature Operations
- 1 or 2Gb/s Operation
- Class 2 and 3 Service Including Broadcast and Multicast
- Memory-to-Memory Latency under 20µs
- ASM, TCP/IP, SCSI Initiator and Raw Mode Protocols

Applications

- Mission Computers
- Radar
- IFF
- Displays and Digital Maps
- FLIR/Night Vision
- File Servers
- Signal Processing Computers
- Test

Complete Info: www.ddc-web.com/FC-75300

FibreMATRIX® Switch

Fibre Channel



Model: FC-76000

Features

- Conduction or Air Cooled VME64x Board
- 16 Optical Port
- 1 or 2Gb/s Data Rate per Port
- Ethernet and RS-232 Configuration Ports
- Class 2 and 3 Service Including 127 Priority Levels, Broadcast, Multicast, and Hunt Groups
- Supports Implicit or Explicit Fabric Login
- Maximum 2µs Port-to-Port Delay
- ELS Clock Sync Client and Server

Applications

- Military Programs
- Aerospace Programs
- Sensor Interfaces
- High Speed Networking
- Storage Networks
- Test Labs
- Video Transfer

Complete Info: www.ddc-web.com/FC-76000

High Speed, Fibre Channel, FireWire, & Ethernet Transformers

TGB Series

Fibre Channel



Model: TGB-XXXX

Features

- Twin Gigabit Ethernet/Fibre Channel Transformer
- Low Profile: 0.185" Maximum Height
- Weighs Less than 1.0 Gram
- Temp Range: -40°C to +85°C
- Compliant with ANSI X3T11, Fibre Channel, FC-PH-3
- IR/Convection Reflow Compatible

Applications

- Mission Computers
- Radar
- IFF
- Displays and Digital Maps
- FLIR/Night Vision
- File Servers
- Signal Processing Computers
- Test

Complete Info: www.ddc-web.com/TGB

High Speed Interface Solutions



Model: TFXXXX



Features

Transformers:

- Isolation/Circuit Protection
- Single/Dual Channel
- Ethernet/FireWire/SMPTE/Fibre Channel
- Up to 3.2Gb/s
- Low Profile: 0.18" Maximum Height
- Weighs Less than 1.0 Gram
- Temp Range: -55°C to +125°C

Applications

- Mission Computers
- Radar Systems
- Displays and Digital Maps
- FLIR/Night Vision
- Flight Mission Systems
- Avionics Flight Control Systems

Complete Info: www.ddc-web.com/TFXXXX

FireWire



Model: FWT-1394-X

Features

- Industry-Leading FireWire Transformer
- Meets IEEE 1394B & AS5643 Specifications
- Low Profile: 0.18" Maximum Height
- Weighs Less than 1.0 Gram
- Temp Range: -55°C to +125°C

Applications

- Mission Computers
- Radar
- IFF
- Displays and Digital Maps
- FLIR/Night Vision
- File Servers
- Signal Processing Computers
- Test

Complete Info: www.ddc-web.com/FWT

GEM Series

ETHERNET

AFDX



Model: GEM-1000

Features

- 10/100/1000 Base-T Single and Dual Port
- IEEE 802.3ab for 1000Base-T Compliant
- 350µH OCL with 8mA Bias Over Operating Temperature Range
- IPC-9503 Level 5A Compliant
- Temp Range: -55°C to +125°C Available

Applications

- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Radar Systems/Situational Awareness
- Displays
- Ground Vehicles
- Commercial Aerospace
- Space Flight
- Video Data

Complete Info: www.ddc-web.com/GEM

High Speed, Fibre Channel, FireWire, & Ethernet Transformers

Wideband Solutions



Model: Wideband

Features

Video Isolation:

- Humstoppers, Humbuckers
- Flat Frequency Performance
- Linear Phase Response
- Ultra-Wide Bandwidth

Instrumentation:

- Longitudinal Balance Bridges
- Common Mode Injectors
- Return Loss Bridges
- Signal Converters

Applications

- Ground Based Radar Systems
- Flight Systems Test
- UAV Flight Control Base Stations
- Instrumentation Bench Test

Baluns:

- High Frequency to 1.5GHz
- Low Insertion/Return Loss
- Custom - Wide Bandwidth
- SMPTE Applications

Isolation Transformers:

- RF Power Series
- Extended Video Series
- Coaxial Impedance Adaptors
- Video Splitter/Combiner



High Frequency SMD Balun



Model: SMB

Features

- Ideal for SMPTE 292M Video Data Networks
- Insertion Loss 1.2 dB Typical
- Return Loss >10dB from 5MHz to 1.2 GHz
- Rise and Fall Times Less than 200 ps
- Low Deterministic and Peak-to-Peak Jitter
- Bidirectional Signal Path
- Temp Range: -55°C to +125°C

Applications

- SMPTE 292 Video Networks
- SMPTE 424 Video Networks



Complete Info: www.ddc-web.com/wideband

Complete Info: www.ddc-web.com/SMB

SMPTE 292M Video Balun



Model: BTD

Features

- Ideal for SMPTE 292M Video Data Networks
- Insertion Loss 1.2 dB Typical
- Return Loss >10dB from 5MHz to 1.2 GHz
- Rise and Fall Times Less than 200 ps
- Low Deterministic and Peak-to-Peak Jitter
- Bidirectional Signal Path
- Temp Range: -55°C to +125°C

Applications

- SMPTE 292 Video Networks
- SMPTE 424 Video Networks



Did You Know?

DDC is expanding its capabilities with regards to compliance, and certification to, a growing list of NASA & IPC technical standards.

NASA-STD-8739.1B is the workmanship standard for polymeric application on electronic assemblies and establishes the requirements for staking, conformal coating, bonding, and encapsulation of components used in electronic hardware.

IPC J-STD-001ES is the workmanship standard that covers soldered electrical and electronic hardware assemblies used in space applications. It is an addendum to IPC J-STD-001E.

DDC process engineers and operators are continuously expanding their certification levels to better support critical missions where these standards are required.

Complete Info: www.ddc-web.com/BTD

Power



Smart Power Solutions

DDC offers proven Smart Power solutions that enable land, sea, air, and space vehicle systems the ability to utilize and distribute raw and conditioned power more efficiently and reliably. Power management via our Solid-State Power Controller (SSPC) technology, replaces electromechanical switches, relays, and circuit breakers enabling significant SWaP (space, weight, and power) savings along with dynamic, intelligent power control. Power conversion and conditioning via our power supply and power transformer technology provides high quality power in reliable, field-proven, standard and custom "fit and forget" designs for demanding civil aerospace, defense, and industrial applications.

Solid-State Power Controllers (SSPC)

DDC SSPC solutions provide higher efficiency power distribution and control, reducing fuel consumption, heat dissipation and simplifying integration. These systems enjoy the benefits of:

- Increased reliability and load protection
- Greater efficiency through automated load shedding
- Enhanced performance through operator control with programmable user interfaces
- Optimization through reduced size, weight, and power (SWaP) dissipation

Power Supplies

DDC Electronics, Ltd. (DDC EL) specializes in the design and manufacture of power supply solutions for extreme environments. With over 30 years of experience in the defense, aerospace and industrial sectors, which draws on the heritage of both Pascall Electronics and XCEL Power Systems, DDC EL is a trusted source for complete solutions in the design, development and manufacture of electronic power conversion products – from single converters to complex multi-function conversion systems. DDC EL products are a leading choice for power on In-Flight Entertainment & Connectivity (IFEC) and defense systems. There are more than 180,000 DDC EL power supply units installed on commercial aircraft, as well as a huge range of in-service products with ground, air and naval forces across the world.

Power Transformers

Beta power transformers & Inductors are designed and built to meet the rugged requirements of MIL-PRF-27 and MIL-STD-981 for use in high reliability military, aerospace and space applications.

- Small size uses less board space
- Ideal for military and space applications requiring electrical isolation or voltage transformation between components
- Trusted... more than 30 years of proven performance
- Custom designs available

Solid-State Power Controllers



Smart Power Management

DDC is the world leader in the design and manufacture of programmable solid-state power controllers (SSPC) for military vehicles, with more than 1 million nodes installed since 1988. In addition to distributing and controlling power with reduced SWaP, while protecting loads and wire harnesses with higher reliability and longer life, DDC SSPCs also enable smart power management that simplifies and automates vehicle power control while providing health and diagnostics data, allowing the operator to focus on their mission critical activities.

SSPCs replace traditional electromechanical relays and thermal circuit breakers in power distribution systems, offering more accurate trip protection with solid-state reliability, while reducing overall vehicle-level weight.

DDC is the leader in providing SSPCs for military ground vehicles, and provides innovative solutions for unmanned systems and defense aerospace. These products are used in the M2 Bradley Fighting Vehicles, M1 Abrams Main Battle Tank, M109A7 Paladin Howitzer, Oshkosh Defence's family of Joint Light Tactical Vehicles (JLTV), and other high performance/severe environment applications.

DDC's SSPCs support load status reporting and network control, and provide instant trip, true I²T wire protection, multiple value added options, and support multiple communications protocols. DDC offers SSPC modules that are rated up to 400A, and multi-channel boards that are rated up to 100A per channel. SSPCs offer reduced size and weight compared to electromechanical approaches, while also providing enhanced performance and functionality.

History of Innovation

| Year | Product Image | Key Innovations |
|-------|---------------|--|
| 1980s | SSPC Module | <ul style="list-style-type: none"> Solid State Protection Remote Control Controlled Rise/Fall Times |
| 1990s | SSPC Module | <ul style="list-style-type: none"> Programmable Trip Channel Paralleling Network Control |
| 2000s | SSPC Module | <ul style="list-style-type: none"> Increased Accuracy Load Health Monitoring Autonomous Alarms |
| 2010 | SSPC Module | <ul style="list-style-type: none"> Stand Alone Controller High Power Smart Point-of-Load Modules |
| 2011 | SSPC Module | <ul style="list-style-type: none"> High Power PDU's (Power Distribution Units) Improved Mission Safety & Longevity Reduced Weight and Space |
| 2013 | SSPC Module | <ul style="list-style-type: none"> Light Weight PDUs for Aerospace Standard LRM's (Line Replaceable Modules) |
| 2014 | SSPC Module | <ul style="list-style-type: none"> PDU's Engineered for Industrial and Commercial Vehicles Increased and Flexible Channel Count High Power 100 A Channels 32 Channel High Density Boards |
| 2015 | SSPC Module | <ul style="list-style-type: none"> Flight Safety-Critical PDU Redundancy & Fail-Safe Features Designed to meet DO-178 & DO-160 |
| 2017 | SSPC Module | <ul style="list-style-type: none"> Aircraft Mission Power Management Combined 115VAC/28VDC Power Distribution System Power Management Software Suite High Voltage 115VAC Boards |
| 2019 | SSPC Module | <ul style="list-style-type: none"> High Voltage DC Boards Applications: Aerospace, High Energy Weapons, Electric Propulsion |

More than 1,000,000 DDC SSPC nodes installed on Military Vehicles since 1988

Solid-State Power Controllers

DDC offers proven Smart Power solutions that enable land, sea, air, and space vehicle systems the ability to utilize and distribute raw and conditioned power more efficiently and reliably. Power management via our Solid-State Power Controller (SSPC) technology, replaces electromechanical switches, relays, and circuit breakers enabling significant SWaP savings along with dynamic, intelligent power control.

More Efficiency

- Network control... saves operator effort and time with centralized system management
- Vehicle health and diagnostics monitoring... eliminates need for unnecessary scheduled maintenance and provides fast identification of faults to be addressed
- Programmable power distribution... saves operator time by allowing power control of multiple loads with a single command
- Reduced size, weight, and power (SWaP)... saves fuel and extends mission range
 - 7x improvement in power/volume density
 - 5x improvement in power/weight density
 - 70% reduction in dissipated power

More Reliability

- Over 25x Improvement in MTBF... extends mission readiness, range, and effectiveness
 - No vibration-sensitive contacts or wearing parts to fail
- Reduced EMI from controlled switching time... promotes safe and reliable operation of other onboard electronics
- Low risk battle proven technology... High TRL solutions controlling more than 1,000,000 deployed nodes since 1988
- Instant trip, and true I²T wire protection... safeguards mission critical electronics

More Performance

- Programmable power distribution... reduces logistics costs through flexible software configuration of channels
 - Easily reconfigure trip levels and power up defaults to respond to ever changing mission parameters
 - Channel paralleling to support high current loads
- Faster response... at least 40 times faster fault clearance time (less than 1ms) allows operator to quickly bring vehicle electronics back on line to continue mission
- Vehicle health and diagnostics monitoring... quickly identifies potential faults to maintain peak vehicle operation
- Flexible architecture reduces total ownership cost through adaptability to new mission requirements
- Optimized custom solutions engineered for maximum performance to serve specific application needs

| Solid-State Power Controllers | | | | | | | | | | | | | | | | | | |
|--|---------|--------|-----------------------|-----------------|-----------------|-----------|-------------|---------|-----|-------------|--------------|----------------|---------------|-----------------------|--|---------------|------|--------------|
| Product Number | Package | | | | | | | Voltage | | Current (A) | Features | | | | | | Page | |
| | 20 Pin | Module | Circuit Card Assembly | IP-67 Enclosure | IP-65 Enclosure | Connector | Power Studs | DC | AC | | Programmable | EMI - Tolerant | EMI Reduction | Low Power Dissipation | I ² t & Instant Trip Protection | Channel Count | | High Voltage |
| Power System | | | | | | | | | | | | | | | | | | |
| RP-2A000000X | | ■ | | | ■ | ■ | | 28 | 115 | <1500 | ■ | ■ | | ■ | ■ | >150 | ■ | 34 |
| Power Distribution Units (PDUs) | | | | | | | | | | | | | | | | | | |
| RP-20S14 | | | | ■ | | | ■ | 28 | | 300 | ■ | | ■ | ■ | ■ | 4 | | 34 |
| RP-20S16 | | | | ■ | | | ■ | 28 | | 300 | ■ | | ■ | ■ | ■ | 8 | | 34 |
| RP-20S19 | | | | ■ | | | | 28 | | 200 | ■ | | ■ | ■ | ■ | 8 | | 34 |
| RP-2F241XXXX | | | | | ■ | | | 28 | | 260 | ■ | | ■ | ■ | ■ | 24 | | 34 |
| RP-20161XXDX1 | | | | ■ | | | ■ | 28 | | 238 | ■ | | ■ | ■ | ■ | 16 | | 35 |
| RP-20162XXXC1 | | | | ■ | | | ■ | 28 | | 238 | ■ | | ■ | ■ | ■ | 16 | | 35 |
| RP-20162XXXS1 | | | | | | | ■ | 28 | | 140 | ■ | | ■ | ■ | ■ | 16 | | 35 |
| RP-20321X | | | | | ■ | | ■ | 28 | | 120 | ■ | | ■ | ■ | ■ | 32 | | 35 |
| SSPC Modules | | | | | | | | | | | | | | | | | | |
| RP-20011601S0 | | ■ | | | | | ■ | 28 | | 3.5-35 | ■ | | | ■ | ■ | 1 | | 35 |
| RP-22XXX Series | ■ | ■ | | | | | ■ | 28 | | 35-150 | ■ | ■ | | | | 1 | | 35 |
| RP-21203XX | ■ | ■ | | | | | | 100 | | 1-3 | ■ | ■ | | | | 1 | | ☞ |
| RP-21209XX | ■ | ■ | | | | | | 100 | | 3-9 | ■ | ■ | | | | 1 | | ☞ |
| RP-21225XX | ■ | ■ | | | | | | 100 | | 9-25 | ■ | ■ | | | | 1 | | ☞ |
| SSPC Boards | | | | | | | | | | | | | | | | | | |
| RP-2341000NX | | | ■ | | | | ■ | 28 | | 400 | ■ | | ■ | ■ | ■ | 4 | | 36 |
| RP-26311000NX | | | ■ | | | | ■ | 28 | | 400 | ■ | | ■ | ■ | ■ | 4 | | 36 |
| RP-2630X00XNX | | | ■ | | | | ■ | 28 | | 300 | ■ | | ■ | ■ | ■ | 4 | | 37 |
| RP-266XX000N | | | ■ | | | | ■ | 28 | | 280 | ■ | | ■ | ■ | ■ | 32 | | 33 |
| RP-2621X00XNX | | | ■ | | | | ■ | 28 | | 238 | ■ | | ■ | ■ | ■ | 16 | | 37 |
| RP-2640X000NX | | | ■ | | | | ■ | 28 | | 200 | ■ | | ■ | ■ | ■ | 8 | | 37 |
| RP-26321000NX | | | ■ | | | | ■ | 28 | | 200 | ■ | | ■ | ■ | ■ | 2 | | 38 |
| RP-26231000N1 | | | ■ | | | | ■ | 28 | | 250 | ■ | | ■ | ■ | ■ | 20 | | 38 |
| RP-26200 | | | ■ | | | | ■ | 28 | | 238 | ■ | | ■ | ■ | ■ | 16 | | ☞ |
| RP-28001000N0 | | | ■ | | | | ■ | 270 | | 150 | ■ | | ■ | ■ | ■ | 12 | ■ | 38 |
| RP-27001X | | | ■ | | | | ■ | | 115 | 120 | ■ | | ■ | ■ | ■ | 10 | ■ | 38 |

☞ Visit www.ddc-web.com/sspc for complete product information.

SSPC Power System

Mission System PDU



Model: RP-2A00000X

Features

- 115VAC and 28VDC PDU System
- MIL-STD-704F, MIL-STD-1275E
- EMI MIL-STD461F, ENV DO-160G
- Supports 4 RP-2702X 115VAC SSPC and 4 RP-26622X 28VDC Boards
- Up to 6 115VAC Input Buses with 42 1 ϕ (or 14, 3 ϕ) Load Inputs
- Up to 8 28VDC Input Buses with 117 Load Outputs
- CANbus & RS-485 (future option) Communication Interfaces
- Supported by DDC's Power Management Controller Unit, Based on the BU-67125X Avionics Computer

Applications

- Aircraft Mission System Power Distribution
- Commercial & Military Aircraft

Complete Info: www.ddc-web.com/RP-2A00000x

8 Channel Small Form Factor



Model: RP-20S19

Features

- Nominal 28VDC Operation, MIL-STD-1275D, MIL-STD-461, MIL-STD-704F and MIL-STD-810 Compliant
- Ruggedized, IP-67 Rated Enclosure with Military Connectors
- Total Continuous Current of 200A
- 8 Independent Load Channels
- 25A Channels with 10:1 Programmability

Applications

- Military Land Vehicles
- Commercial Trucks
- Military & Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls

Complete Info: www.ddc-web.com/RP-20S19X

SSPC Power Distribution Units

4 Channel Small Form Factor



RP-20S14



RP-20S16



Model: RP-20S14, RP-20S16

Features

- Nominal 28VDC Operation, MIL-STD-1275D, MIL-STD-461, MIL-STD-704F and MIL-STD-810 Compliant
- Ruggedized, IP-67 Rated Enclosure with Military Connectors
- Total Continuous Current of 300A
- 4 Independent Load Channels
- 75A Channels with 3:1 Programmability

Applications

- Military Land Vehicles
- Commercial Trucks
- Military and Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls

Complete Info: www.ddc-web.com/RP-20S1XX

Flight Safety-Critical PDU



Model: RP-2F241XXXX

Features

- Nominal 28VDC Operation, MIL-STD-461, MIL-STD-810, DO-160G Compliant
- MIL-STD-1275E, MIL-STD-704 Compliant
- Total Continuous Current of 260A
- 24 Independent Load Channels
- Channels with 10:1 Current Programmability
- Redundant Channel Failsafe Mechanism
- Dual Redundant Host Controllers
- Dedicated Controller per ECB/ Load Channel
- Redundant Serial Interface

Applications

- Commercial & Military Aircraft
- Unmanned Aerial Vehicles

Complete Info: www.ddc-web.com/RP-2F241X

SSPC Power Distribution Units (PDUs)

16 Channel



Model: RP-20162XXXC1, RP-20161XXDX1, RP-20162XXXS1

Features

- Nominal 28VDC Operation, MIL-STD-1275D, MIL-STD-461, MIL-STD-810, and Def Stan 61-5 Compliant
- Ruggedized, IP-67 Rated Enclosure with Military Connectors
- Total Continuous Current of 238A
- 16 Independent Load Channels
- 8A, 10A, and 25A Channels with 10:1 Current Programmability
- Programmable Channel Trip
- Diagnostics: Load Voltage, Current, & Temperature Monitoring
- Controlled Rise/Fall Times
- Channel Paralleling for High Loads

Applications

- Military Land Vehicles
- Commercial Trucks
- Military and Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls

Complete Info: www.ddc-web.com/RP-2016

32 Channel, Light-Weight PDU



Model: RP-20321X

Features

- Nominal 28VDC Operation, MIL-STD-1275E, MIL-STD-704 Compliant
- Optimized Weight for Flight < 3lbs
- Total Continuous Current of 120A
- 32 Independent Load Channels
- 5A, 10A, and 20A Channels with 10:1 Current Programmability
- 1A, Low Side Channels
- Instant Trip and I²t Protection/ Thermal Memory
- Controlled Rise/Fall Times
- Channel Paralleling for High Loads

Applications

- Military Land Vehicles
- Commercial Trucks
- Military and Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls
- Commercial & Military Aircraft

Complete Info: www.ddc-web.com/RP-20321X

SSPC Modules

28V DC, Point-of-Load Module



Model: RP-20011601S0

Features

- Ruggedized Conduction Cooled
- Total Module Current of 35 Amps
- 3.5A - 35A Programmable Current
- Instant Trip and I²t Protection/ Thermal Memory
- Controlled Rise/Fall Times
- SAE J1939 Compatible CANbus Interface
- Measurement Accuracy Better Than 5%
- Low Power Dissipation

Applications

- Military Land Vehicles
- Weapon Systems
- Military and Commercial Ships
- Industrial Controls

Complete Info: www.ddc-web.com/RP-200116

Legacy Point-of-Load Modules



Model: RP-22XXX

Features

- Nominal 28VDC Operation
- Programmable Current Ranges
- EMI-Tolerant
- I²T and Instant Trip
- Opto-Isolated Control Circuitry
- MIL-STD-704 Compliant
- MIL-STD-1275B Compliant
- Status Outputs
- Circuit Breaker Emulation with Coordinated Tripping
- Thermal Memory
- No Thermal Derating
- Battle Short Input

Applications

- Military Land Vehicles
- Weapon Systems
- Military and Commercial Ships
- Industrial Controls

Complete Info: www.ddc-web.com/RP-22XXX

SSPC Boards

28V DC, 4 Channel, High Power



Model: RP-2341000NX

Features

- Nominal 28VDC Operation, MIL-STD-1275E and MIL-STD-704F Compliant
- Ruggedized Conduction Cooled
- Total Continuous Current of 400A
- 4 x 100 Amp Channels with 4:1 Programmability and Independent Inputs
- Controlled Rise/Fall Times
- Channel Paralleling up to 200A

Applications

- Military Land Vehicles
- Commercial Trucks
- Military and Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls

Complete Info: www.ddc-web.com/RP-23410

Did You Know?

DDC has an over 99% on-time delivery performance average.

Our long-term commitment to delivering quality products on-time, contributes to the success of our customers and the critical missions they serve. DDC is distinguished as the leader in the production of high reliability, SWaP-C optimized solutions. As recipient of numerous preferred supplier awards, DDC's manufacturing facilities ensure customer satisfaction by providing quality products, dependable processing, and superior designs, reflecting our quality certifications and our commitment to continuous improvement through quality control, process improvement, and unsurpassed customer service.

28V DC, 4 Channel, High Power



Model: RP-26311000NX

Features

- Nominal 28VDC Operation, MIL-STD-1275E and MIL-STD-704F Compliant
- Ruggedized Conduction Cooled
- Total Continuous Current of 400A
- 4 Independent Load Channels
- 100-Amp Channels with 4:1 Programmability
- Controlled Rise/Fall Times
- Channel Paralleling for High Loads

Applications

- Military Land Vehicles
- Commercial Trucks
- Military and Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls

Complete Info: www.ddc-web.com/RP-26311

Did You Know?

Data Device Corporation's field-proven Solid-State Power Controller technology is now optimized for airborne applications.

Aircraft require high reliability solutions, with minimal weight and footprints. DDC's power distribution units combine the reliability of smart power management with flight safety requirements, in a compact and light-weight package. (See pages 34, 35 & 38)

SSPC Boards

28V DC, 4 Channel, High Power



Model: RP-2630X00XNX

Features

- Nominal 28VDC Operation, MIL-STD-1275E and MIL-STD-704F Compliant
- MIL-STD-1275D Option
- Ruggedized Conduction Cooled
- Total Continuous Current of 300A
- 4 Independent Load Channels
- 75-Amp Channels with 3:1 Programmability
- Controlled Rise/Fall Times
- Channel Paralleling for High Loads

Applications

- Military Land Vehicles
- Commercial Trucks
- Primary Power Switching
 - Generators
 - Batteries
- Military and Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls

Complete Info: www.ddc-web.com/RP-26300

28V DC, 16 Channel



Model: RP-2621X00XNX

Features

- Nominal 28VDC Operation, MIL-STD-1275E, MIL-STD-704F, and Def Stan 61-5 Compliant
- MIL-STD-1275D option
- Ruggedized Conduction Cooled
- Total Continuous Current of 238A
- 16 Independent Load Channels
- 8A, 10A, and 25A Channels with 10:1 Current Programmability
- Instant Trip and I²t Protection/Thermal Memory
- Controlled Rise/Fall Times
- Channel Paralleling for High Loads

Applications

- Military Land Vehicles
- Commercial Trucks
- Military and Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls

Complete Info: www.ddc-web.com/RP-26200

28V DC, 32 Channel



Model: RP-266XX000N0

Features

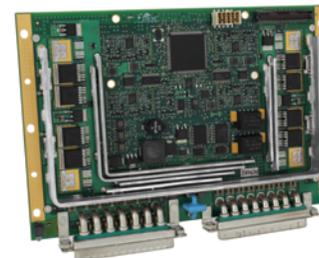
- Nominal 28VDC Operation, MIL-STD-1275E and MIL-STD-704F Compliant
- Split Input Bus
- Ruggedized Conduction Cooled
- Total Continuous Current of 280A
- 32 Independent Load Channels
- 10A Channels with 10:1 Current Programmability
- Instant Trip and I²t Protection/Thermal Memory
- Controlled Rise/Fall Times
- Channel Paralleling for High Loads

Applications

- Military Land Vehicles
- Commercial Trucks
- Military and Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls

Complete Info: www.ddc-web.com/RP-26611

28V DC, 8 Channel



Model: RP-2640X000NX

Features

- Nominal 28VDC Operation, MIL-STD-1275E, MIL-STD-704F, and Def Stan 61-5 Compliant
- MIL-STD-1275D Option
- Ruggedized Conduction Cooled
- Total Continuous Current of 200A
- 8 Independent Load Channels
- 25A Channels with 10:1 Current Programmability
- Instant Trip and I²t Protection/Thermal Memory
- Controlled Rise/Fall Times
- Channel Paralleling for High Loads

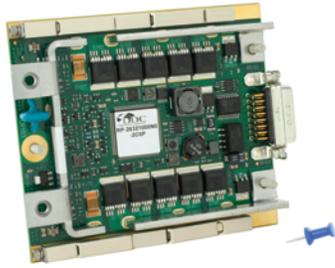
Applications

- Military Land Vehicles
- Commercial Trucks
- Military and Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls

Complete Info: www.ddc-web.com/RP-2640X

SSPC Boards

28V DC, 2 Channel, High Power



Model: RP-26321000NX

Features

- Nominal 28VDC Operation, MIL-STD-1275E and MIL-STD-704F Compliant
- Ruggedized Conduction Cooled
- Total Continuous Current of 200A
- 2 Independent Load Channels
- 100-Amp Channels with 4:1 Programmability
- Controlled Rise/Fall Times
- Channel Paralleling for High Loads
- Small Footprint: 114mm x 100mm x 25.42 (4.5in x 3.94in x 1in)

Applications

- Military Land Vehicles
- Commercial Trucks
- Military and Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls

Complete Info: www.ddc-web.com/RP-26321

28V DC LRM, 16 Channel



Model: RP-26231000N1

Features

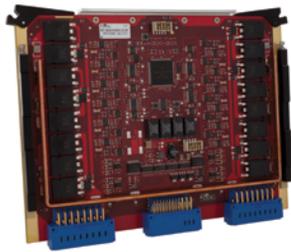
- Nominal 28VDC Operation, MIL-STD-1275E and MIL-STD-704F Compliant
- Field Replaceable Form Factor
- Ruggedized Conduction Cooled
- Total Continuous Current of 50A
- 16 Independent Load Channels, 20 Channel Option
- 8A, 10A, and 25A Channels with 10:1 Current Programmability
- Instant Trip and I²t Protection/Thermal Memory
- Controlled Rise/Fall Times
- Channel Paralleling for High Loads

Applications

- Military Land Vehicles
- Commercial Trucks
- Military & Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls

Complete Info: www.ddc-web.com/RP-262310

270V DC, 12 Channel



Model: RP-28001000N0

Features

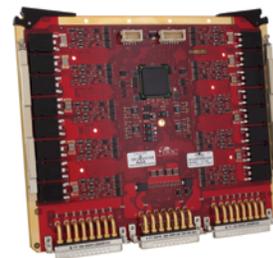
- Nominal 270VDC Operation, MIL-STD-1275E, MIL-STD-704F, and Def Stan 61-5 Compliant
- MIL-STD-1275D option
- Ruggedized Conduction Cooled
- Total Continuous Current of 238A
- 16 Independent Load Channels
- 8A, 10A, and 25A Channels with 10:1 Current Programmability
- Instant Trip and I²t Protection/Thermal Memory
- Controlled Rise/Fall Times
- Channel Paralleling for High Loads

Applications

- Military Land Vehicles
- Commercial Trucks
- Military and Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls

Complete Info: www.ddc-web.com/RP-28001X

115V AC, Multi-Channel



Model: RP-27001X

Features

- Nominal 115VAC Operation, MIL-STD-704F Compliant
- Ruggedized Conduction Cooled
- Total Continuous Current of 120A
- 10 Independent Load Channels
- 7.5A and 15A Channels with 10:1 Current Programmability
- Controlled Rise/Fall Times
- Channel Paralleling for High Current Loads
- Configurable for Three Phase (Wye/Delta) Operation
- Instant Trip and I²t Protection/Thermal Memory

Applications

- Commercial & Military Aircraft
- Unmanned Aerial Vehicles
- Military & Commercial Ships
- Weapon Systems
- Unmanned Vehicles
- Industrial Controls

Complete Info: www.ddc-web.com/RP-27001X

Power Supplies



DDC Electronics Ltd. (DDC EL)

DDC Electronics, Ltd. (DDC EL) specializes in the design and manufacture of power supply solutions for extreme environments. With over 30 years of experience in the defense, aerospace and industrial sectors, which draws on the heritage of both Pascall Electronics and XCEL Power Systems, DDC EL is a trusted source for complete solutions in the design, development and manufacture of electronic power conversion products – from single converters to complex multi-function conversion systems. DDC EL products are a leading choice for power on In-Flight Entertainment & Connectivity (IFEC) and defense systems. There are more than 180,000 DDC EL power supply units installed on commercial aircraft as well as a huge range of in-service products with ground, air and naval forces across the world. These units are powering state of the art electronic systems and are trusted by industry leaders to deliver reliable, proven performance in some of the most challenging environments to be found anywhere. Our power supply solutions are completely customizable and our specialty is working with challenging requirements. Wherever there is a demand for tight, unusual space envelopes, leading EMC performance, or anything in-between, DDC EL can provide solutions across a range of difficult applications.

IFEC Systems

DDC EL is a widely recognized leader within the aerospace industry for producing high performance and high reliability cabin and electronics bay power solutions. Our products are currently used in applications such as seat boxes, media file servers, Satcom antennas, passenger display screens, direct broadcast satellite TV, cellular phone communications & USB charging for portable electronic devices, with high power efficiency (>92%) and capacity. Our reliable, field-proven IFEC power solutions provide full conformance to RTCA-DO-160, Airbus & Boeing specifications.

Airborne Defense Systems

DDC EL has over 30 years of experience designing power conversion products for airborne applications. Our products are in service on many fighter aircraft platforms including: Hawk Trainers, F16, Jaguar, Tornado and EuroFighter Typhoon. We also provide solutions for the Nimrod MR2 and MR4 reconnaissance aircraft, Tiger helicopter, and Watchkeeper unmanned aircraft.

Maritime Defense Systems

DDC designs and manufactures power supply products for a wide variety of maritime applications, where robust, rugged construction is required to offer high reliability and protection from some of the most demanding environmental conditions, including salt fog, ice and total immersion. On-board military surface vessels we provide power for data networking and communications equipment, thermal imagers and electronic warfare systems, including radar control and weapons guidance.

Ground Defense Systems

DDC has been providing state of the art power conversion solutions for military ground equipment for over 30 years. Our products are in-service with ground forces across the world, providing high reliability power for secure communications, optical and infrared imaging, missile command and control systems, and mobile power conditioning solutions for both command center and remotely operated man-portable applications.

Frequency Generation

DDC EL is a specialist supplier of RF & microwave components, and sub-systems specifically for frequency generation.

With over 30 years designing and manufacturing for the main primes in the United States, Europe and Asia, the RF division has established DDC EL as a leading supplier of reliable products on programs with applications including radar, communications, air traffic control, ELINT, SIGINT, marine and weather radar.

The RF division has particular expertise in ultra low noise frequency sources including the company's industry leading ultra low noise VHF crystal oscillator range and customized low noise multi-channel fast switching synthesizers.

Design Capabilities

DDC's design capabilities include: AC to DC converters (single and three phase), DC to DC converters, and custom discrete designs (typical power range 10W to 4KW), incorporating advanced technology such as: insulated Metal Substrate (MS) thermal management, multiple outputs, active power factor correction, and battery/capacitor backup, for extreme applications including: high vibration/shock environments, motor controllers, wide temperature ranges (-55°C to +100°C), RTCA-DO-160 current harmonics, EMI filter design, DC - 13GHz operation, and compliance with military standards (MIL-STD-461, MIL-STD-704, MIL-STD-810, MIL-STD-1275, and Def-Stan 59-41).

Cabin Power Solutions



Model: 1-14683-R

Features

- 60V to 122Vrms 1Ø, 360Hz - 800Hz Voltage
- 280W Output Power
- 1 x 28V @ 10A Output, Current Limit Protected, Can be Provided Without for PED Power Solutions
- 200ms Hold-Up Capability
- Compliant to RTCA-DO-160G
- Convection Cooled Chassis
- Isolated RS-485 half-Duplex Serial Interface
- Meets Requirements of EU ROHS Directive 2011/65/EU

Applications

- USB PED Power Systems
- Connectivity Systems
- Display Power
- Lighting

Complete Info: www.ddc-web.com/114683

Frequency Generation Solutions



Model: Custom

Features

- Customized Low Noise Multi-Channel Fast Switching Synthesizers
- C, L, S, and X Band
- Marine X & S Band Radar Transponders
- OCXO and OCXOF Series:
 - Ultra Low Noise Crystal Oscillators
 - 40 - 160MHz
 - Guaranteed Noise Floors of -182dBc/Hz
- XMN and XMNP Series:
 - Ultra Low Noise Signal Sources
 - Integrated Multiplies Covering 200MHz - 3.0GHz

Applications

- Frequency and Timing Systems
- Lightweight UAV Radar
- Naval Radar
- EW/ECM Receivers
- MRI Scanner
- Missile Seeker
- AESA Fire Control Radar
- Ground Radar

Complete Info: www.ddc-web.com/FG

IFEC System Solutions



Model: Custom

Features

- Reliable, Field-Proven Custom "Fit and Forget" IFEC Solutions
- Line Replaceable Units, Integrated Assemblies, and Embedded Power Supplies
- Power Ranges from 10 Watts to Several Kilowatts
- Inputs of 115VAC, 28VDC, or Dual 115VAC/28VDC
- Additional Battery or Capacitor Backup Capability
- Full Conformance to RTCA-DO-160 Requirements, Airbus, and Boeing Specifications

Applications

- Crew Terminals
- Cell Phone Communications
- Satcom Antenna Control
- Video Display Unit
- Overhead Display Unit
- Wireless Access Point
- Cabin Lighting
- AC Power
- Portable Electronics Power
- Power Distribution Unit
- IFE Seat Display
- Seat Actuation
- External Camera System
- Flight Data Acquisition

Complete Info: www.ddc-web.com/IFEC

Defense System Solutions



Model: Custom

Features

- Airborne:
 - MIL-STD-704 Input Supply Transient Conditions
 - MIL-STD-461 EMC Requirements
 - DO-160 Civil Aircraft EMC
- Maritime:
 - MIL-STD-1399 Shipboard Power
 - STANAG 1008 NATO Power
 - MIL-STD-461 EMC Requirements
- Ground:
 - MIL-STD-1275 Input Supply Transient Conditions
 - DEF STAN 59-411 EMC to Land Class A Requirements
 - MIL-STD-810 Environmental

Applications

- Defensive Aids Sub System
- Cockpit Displays
- Airborne Radar Processing
- Helicopter Helmet Display
- UAV Radar
- Laser Targeting Power
- Data Network Tactical Comm
- Navy Warship ESM System
- Opto-Electronic Periscope
- Ship-to-Air Defense Weapons
- Subsea Electronics
- Ground-to-Air Defense
- Military Vehicle Power
- Optical Imaging/ Infrared

Complete Info: www.ddc-web.com/DDCEL/Defense

Power Magnetics & Transformers



Power Transformers, Switch Mode Transformers & Inductors

Beta specializes in providing power magnetics for high-reliability aerospace and military applications in accordance with MIL-PRF-27. Beta's Design Engineers ensure that EMI/RFI isolation, input/output voltages, and packages are optimized for superior performance and reliability. Through a collaborative process, Beta will tailor the design to meet your key requirements. Beta has decades of design experience with a multitude of topologies and applications. We have field components on applications such as aircraft cabin pressure control systems, engine control systems, cockpit displays, and power monitoring/conditioning systems. Our products have been successfully employed on hundreds of military and commercial platforms.

Power Transformers

Beta's power transformers are available in a variety of package configurations including: open frame, potted, pc-board mount and chassis mount. Power capabilities range from 1 to 500 VA at 50/60Hz, and from 1 to 2,500 VA at 360/400Hz, and Beta has designed a number of high precision current transformers for UAVs.

Switch Mode Transformers

Beta offers custom switch mode transformers in flyback, forward, push-pull, and full bridge topologies. Beta utilizes unique winding technologies to minimize parasitic losses. We have designs that will control secondary characteristics such as leakage inductance and inter-winding capacitance providing greater flexibility for design engineers. Power ranges from fractional wattage up to 2kVA, at frequencies up to 3MHz.

Inductors

Beta utilizes cutting-edge materials to produce a wide variety of inductors that require minimal board space while providing optimal performance. Applications include EMI filtering and output inductors for switch-mode power supplies.

| Power Magnetics & Transformers | | | | | | | | | | | | |
|---------------------------------|------------|--------------|---------------------|------|-------|------------|-------|---|----------------------|----------------------------|-----------------|------|
| Product Number | MIL-PRF-27 | Customizable | Operating Frequency | | | | Phase | | Electrical Isolation | High Performance Materials | Small Footprint | Page |
| | | | 50Hz | 60Hz | 400Hz | Up to 3MHz | 1 | 3 | | | | |
| Power Transformers | | | | | | | | | | | | |
| MPT-XX-X-XXX | ■ | ■ | | | ■ | | ■ | | ■ | ■ | ■ | 42 |
| Custom | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | 42 |
| Switch Mode Transformers | | | | | | | | | | | | |
| Custom | ■ | ■ | | | | ■ | ■ | | ■ | ■ | ■ | 42 |
| Power Inductors | | | | | | | | | | | | |
| Custom | ■ | ■ | ■ | ■ | ■ | ■ | | | ■ | ■ | | 42 |

🔗 Visit www.ddc-web.com/power-magnetics for complete product information.

Power Magnetics & Transformers

Power Transformers



MIL-PRF-27
MIL-PRF-981

Model: MPT-XX-X-XXX



Features

- MIL-PRF-27, QLP-DSCC Qualified
- Designation MIL-PRF-27/43-01 A/B Through MIL-PRF-27/44-46 A/B
- Temp Range: -55°C to +130°C
- Toroidal Construction for Minimal Size/EMI
- Extensive List of Standard Output Voltages
- Split Secondary Winding Available for Design Flexibility
- Available from 2.0VA to 9.0VA
- Standard Primary Voltage 115V, 26V Available

Applications

- Mission Computers
- Digital Data Reorders
- LRUs
- Radios/Modems
- Radar Systems/Situational Awareness
- Displays
- Ground Vehicles
- Commercial Aerospace
- Space Flight
- Power Supplies

Complete Info: www.ddc-web.com/MPT

Inductors



MIL-PRF-27
MIL-PRF-981

Model: Custom



Features

- Inductance up to 1H
- Current up to 25A
- Frequency Range from 50Hz/60Hz up to 2MHz
- MIL-PRF-27 Construction
- Isolation up to 2500V
- Operating Temperatures from -65°C to 170°C
- Surface Mount and Thru-Hole Configurations
- Custom Designed / Manufactured Inductors Available

Applications

- Input Filters
- Output Filters
- RF Filtration
- Common Mode Choke
- Differential Mode Choke
- Power Factor Correction

Complete Info: www.ddc-web.com/Inductors

Switch Mode Transformers



MIL-PRF-27
MIL-PRF-981

Model: Custom



Features

- Operating Frequency Up to 3MHz
- Low Profile Packages
- Custom Input & Output Windings
- Provides a Smaller, Lighter, and More Efficient Means for Converting Voltages
- Allows for a Wide Range of Voltages or Current Conversion, as Compared to Inductors
- MIL-PRF-27 Grade 6 Construction
- Isolation Up to 2500 Volts
- Available from 0.7 to 2kVA
- Custom Designed/Manufactured Transformers Available

Applications

- Power Supplies, AC-DC
- Power Supplies, DC-DC
- Power Over Ethernet
- Point of Load
- Gate Drive
- Current Transformers

Complete Info: www.ddc-web.com/SMT

Custom Power Magnetics



MIL-PRF-27
MIL-PRF-981

Model: Custom



Features

- Designed and Manufactured to Meet MIL-PRF-27, Class S, Grade 5 Requirements
- High Performance Materials Enable the Smallest Footprint and Volume
- Available from 1VA to 2.5kVA
- 50, 60, or 400Hz
- Single or Three Phase
- Custom Designed/Manufactured Transformers:
 - Single Phase or Three Phase
 - Up to 2000V, 100A, and 10 kW
 - Space Qualified, MIL-STD-981 / MIL-PRF-27

Applications

- Mission Computers
- Digital Data Reorders
- LRUs
- Radios/Modems
- Radar Systems/Situational Awareness
- Displays
- Ground Vehicles
- Commercial Aerospace
- Space Flight
- Power Supplies

Complete Info: www.ddc-web.com/CPM

Control



Compact and High Reliability Motion Control Solutions

DDC is a market leader in high reliability motor control and synchro/resolver positioning solutions for aerospace, military, space, and industrial environments. DDC's control products deliver high accuracy positioning and repeatability, while being cost effective solutions that provide much greater reliability, load protection and motion control capabilities.

- COTS/MOTS solutions for synchro/resolver, LVDT, RVDT, hall, MR feedback, and motor drive and control
- High accuracy position feedback
- High-performance position, torque, and speed controllers and drives for 3-phase brushless DC motors
- Optimized custom integrated high reliability motion control solutions

More Efficiency

- Low-cost, high-reliability BLDC motor controllers deliver high performance torque, speed and position control
- Integrated single-module solutions offer the highest power density available
- Synchro/Resolver converters can interface with Synchro, Resolver, LVDT, RVDT, MR, and Hall sensors
- Multi-channel Synchro/Resolver hybrids and cards help reduce overall design cost
- Portable USB Synchro/Resolver test system simplifies motion control testing
- Plug & play synchro/resolver boards for fast startup

More Reliability

- High MTBF increases system dependability and longevity
- Class H and K rad tolerant hybrids meet the extreme demands of space applications
- Field-proven Synchro/Resolver converters have years of service history to achieve high Technology Readiness Level (TRL)
- Rugged Synchro/Resolver hybrids are engineered for hermeticity, dust, fluid, shock, vibration and extreme temperatures, meeting MIL-PRF standards

More Performance

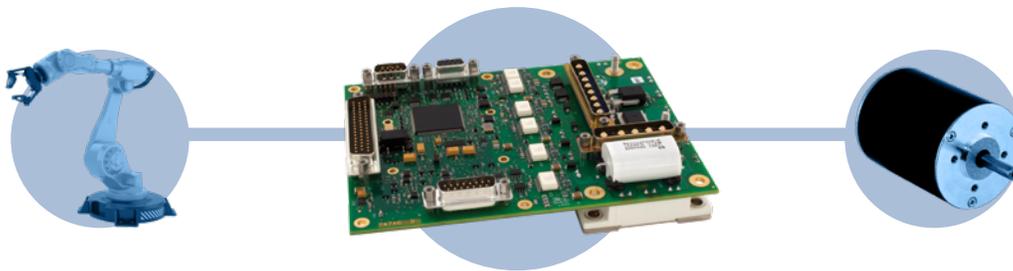
- Programmability allows common design to be used across multiple application platforms
- Complementary drives provide reduced power dissipation, along with a smooth transition through zero torque with no "dead zone" for critical applications
- Synchro/Resolver converters provide high precision accuracy, resolution and repeatability
- Synchro/Resolver converters provide a velocity output for speed monitoring and closed loop speed control
- Programmable PCIe, PCI, VME, PC-104, USB, PMC cards offer versatility in angle position indication and instrument grade accuracy for simulation
- Widest selection of accuracy and temperature options tailored to fit a vast range of applications

Motor Drives & Controllers



High Precision, Plug-in Modules and Space Grade Hybrids

DDC is the leading manufacturer of high reliability motor drives and controllers for brushed, brushless and induction motors ranging from 100VDC to 600VDC. Our optimized position, torque and speed control solutions are engineered for demanding environments... from military grade environmental cooling systems, turrets, and radars, to space grade actuators, solar arrays, and reaction wheels, to industrial grade valves, pumps and fans. With more than 55 years of field proven performance in the most critical applications, DDC is uniquely qualified to serve your motor drive and control needs.



Custom Motor Control LRUs

DDC designs compact and configurable Line Replaceable Unit (LRU) motor controllers, based upon customer defined requirements, for demanding high reliability aerospace applications, including those requiring DO-254/DO-178 certification. These motor control solutions are reconfigurable to meet current and future system requirements without the need for costly updates to hardware and packaging, allowing for system reuse and design flexibility, to satisfy numerous electro-mechanical actuation applications. Civil aerospace motor control applications include: pumps, fans, valve controls, winch and cargo loading systems, vacuum generation, compressors, seat control, waste compactors and air handling systems.

Configuration Capabilities:

Connectivity

- CANbus J1939 & CANopen
- RS-232/422/485
- Ethernet interface & software support
- Dedicated & general purpose isolated I/O connections
- MIL-STD-1553 interface options
- ARINC 429 interface options
- Proprietary protocol support

Power

- 28V – 600V & up to 20kW steady state
- Power conversion & conditioning
- Power factor correction (PFC)
- Quality conformance according to MIL-STD-461/1399/1275/704
- Designed to meet MIL-STD-461/464/810 & DO-160
- Smart power management with prognostics, diagnostics

Control

- 3-Phase motor control algorithms
- Torque, Speed or Position control
- Resolver, encoder & Hall Effect sensor support
- Optional sensorless operation
- Analog & Digital conversion
- Power control with utilization profiles

Visit the following page to complete your custom quote request: www.ddc-web.com/custom/mc/quote

For more information on DDC Custom Motor Control LRU Solutions, visit www.ddc-web.com/custom/mc/lru

Motor Controllers

Configurable Plug & Play



RS-422/485

RS-232

CANBUS 2.0



Model: PW-87XXXNXX0X

Features

- Position, Torque, & Speed Controller & Drive
- 600VDC Rating Available
- Up to 75A Output Current
- 4 Configurable Digital Inputs
- 3 Configurable Analog Inputs
- 3 Hall Effect Sensor Inputs
- Resolver Interface Options: 10-bit or 16-bit Resolution, Reference Oscillator
- 2 Digital Outputs
- 2 Solid-State Relay Outputs
- 2 Isolated Transistor Outputs
- 2 LEDs for Fault and Status Display

Applications

- Pump Motors
- Antenna and Radar Positioning
- Fan and Compressor Motor Controls
- Aircraft Landing Gear Control
- Actuator Systems
- Thrust Vector Position Control
- Motorized Valves
- Capstan Control
- Flight Control
- Gun Turrets

Complete Info: www.ddc-web.com/PW-870XX

DSP Speed/Torque Controllers



Models: PW-82560NX, PW-82562NX, PW-82564NX

Features

- Self-contained 3-Phase Motor Controller
- Multiple Voltage/Current Ratings: 100V/30A, 200V/10A, 400V/5A
- Up to 95% Duty Cycle Operation
- 7% Linearity, 3% Current Regulating Accuracy
- Programmable via Easy-to-Use GUI or Direct Control Interfaces
- Torque and Speed Control Modes
- 10kHz - 40kHz PWM Frequency
- Hall Effect or Sensorless Feedback
- CANbus and RS-422/RS-485 Control Interfaces

Applications

- Pump Control for Fuel Pumps
- Electric Actuators
- Electric Valve Control
- Industrial Robotics
- Antenna/Camera Position Control
- Gun Turrets
- Unmanned Vehicle Electric Drives and Thrusters
- Missile Fin Control
- Fans
- Ammunition Loaders

Evaluation Board Available,
See Page 54

Complete Info: www.ddc-web.com/PW-8256XNX

DSP Controller with Power Drive



Model: MC-5080

Features

- Position, Torque, & Speed Controller & Drive
- 80V/30A Voltage/Current Rating
- Motor Stall DSAT Protection
- Encoder Position Feedback
- CANopen Control Interface
- PI Gain Values and Capability to Tune Motor/Load Parameters & Closed Loop Bandwidth
- PWM Frequency 20kHz
- Acceleration & Deceleration Control for Speed Control
- Config. Digital & Analog Inputs
- -40°C to +105°C Operation

Applications

- Pump Control
- Electric Actuators
- Electric Valve Control
- Fuel Pumps
- Industrial Robotics
- Antenna/Camera Position Control
- Unmanned Vehicle Electric Drives and Thrusters
- Autonomous Guided Vehicles
- Medical Diagnostics Control

Complete Info: www.ddc-web.com/MC-5080

Did You Know?

DDC is able to provide DO-178 compliant software designs for fully integrated modules or black box solutions.

DO-178C, software considerations in airborne systems and equipment certification, is the primary document by which the certification authorities such as the FAA, EASA and Transport Canada approve all commercial software-based aerospace systems.

DDC supports Design Assurance Levels (DAL), A through E.

| Level | Failure Condition |
|-------|-------------------|
| A | Catastrophic |
| B | Hazardous |
| C | Major |
| D | Minor |
| E | No Safety Effect |

Motor Controllers

Evaluation Board



Model: PW-8256XEX

Features

- Includes DDC's PW-8256X Self-Contained 3-Phase Motor Controller
- 28VDC Bus Powered Version Available
- 10kHz - 40kHz PWM Frequency
- Serial Communication Interface
- Programmable Control Loop Parameters
- Compact Size
- Integrated Control and Power Stages with up to 30A Output Current Capability
- Digital or Analog Current Command Input Options

Applications

- Fans
- Compressors
- Pump Control
- Valve Control
- Electric Actuators
- Electric Valve Control
- Fuel Pumps
- Environmental Cooling Systems
- Industrial Robotics
- Antenna/Camera Position Control
- Gun Turrets
- UUV Electric Drive Systems
- Missile Fin Control

Complete Info: www.ddc-web.com/PW-8256XEX

Did You Know?

DDC is able to provide DO-160 compliant test services for devices ranging from ASICs to fully integrated black box solutions.

DO-160, environmental conditions and test procedures for airborne equipment, is a standard for the environmental testing of avionics hardware. It is published by the Radio Technical Commission for Aeronautics (RTCA) and supersedes DO-138.

The DO-160 document was first published on February 28, 1975 to specify test conditions for the design of avionics electronic hardware in airborne systems. Since then the standard has undergone subsequent revisions up through revision G.

DDC is continuously expanding the capabilities of its in-house environmental test & qualification lab, including an EMI/EMC test chamber accredited to ISO/IEC 17025. Operation to these standards are in accordance with ISO/IEC 17011, as mandated by the US Navy; NAVAIR Instruction 2400.1.

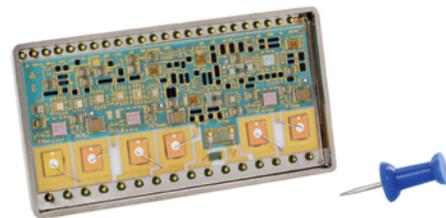
Did You Know?

DDC has certifications and qualifications in its global facilities that include; ISO-9001, AS9100, EN9100, JIS Q9100, MIL-PRF-38534 (Class D, G, H & K) and MIL-PRF-38535 (Class V & Q).

These facilities combine the precision of clean room manufacturing and environmental conditioning labs with the in-house support of design, process, and application engineering to closely monitor all phases of product fabrication.

Five decades of quality manufacturing and process control has earned DDC the time-honored trust and confidence of a global network of customers.

Torque Loop Controllers



Models: PW-82540NX, PW-82541N0, PW-82550NX, PW-82551N0

Features

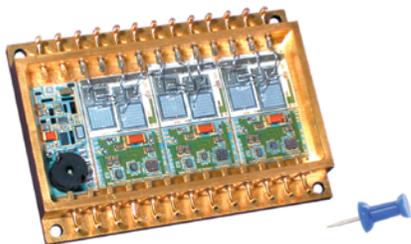
- Self-contained 3-Phase Motor Controller
- Operates as Current or Voltage Controller
- 1, 3, or 10A Output Current
- 1.5% Linearity
- 3% Current Regulating Accuracy
- User-Programmable Compensation
- 10kHz - 100kHz PWM Frequency
- Holding Torque through Zero Current
- Cycle-by-Cycle Current Limit

Applications

- Robotics
- Electromechanical Valve Assemblies
- Actuator Systems
- Antenna and Solar Radar Positioning
- Fan and Blower Motors for Environmental Conditioning
- Reaction Wheels
- Compressor Motors for Cryogenic Coolers

Complete Info: www.ddc-web.com/PW-825XXN

Motor Drives



Model: PWR-82331, PWR-82333, PWR-82335

Features

- 3-Phase BLDC Motor Drive Hybrid
- Small Size 76.2mm x 53.3mm x 9.91mm (3.0in x 2.1in x 0.39in)
- +200V and +500V Capability
- 30A Current Capability
- High-Efficiency MOSFET or IGBT Drive Stage
- Direct Drive from PWM
- Supports Switching Frequencies from DC to 50kHz
- 0.85°C/W θ_{j-c} Max
- Military Processing Available
- Operating Temperature: -55°C to +125°C

Applications

- Robotics
- Electromechanical Valve Assemblies
- Actuator Systems
- Antenna and Solar Radar Positioning
- Fan and Blower Motors for Environmental Conditioning
- Reaction Wheels
- Compressor Motors for Cryogenic Coolers

Complete Info: www.ddc-web.com/PWR-8233X



Model: PWR-82340, PWR-82342

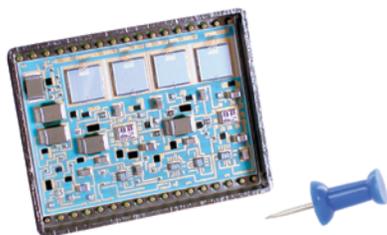
Features

- H-Bridge Motor Drive Hybrid
- Small Size 57.1mm x 53.3mm x 9.91mm (2.25in x 2.1in x 0.39in)
- +200V and +500V Capability
- 30A Current Capability
- High-Efficiency MOSFET or IGBT Drive Stage
- Direct Drive from PWM
- Drives Brush or Brushless DC Motors
- 0.85°C/W θ_{j-c} Max
- Military Processing Available
- Operating Temperature: -55°C to +125°C

Applications

- Robotics
- Electromechanical Valve Assemblies
- Actuator Systems
- Antenna and Solar Radar Positioning
- Fan and Blower Motors for Environmental Conditioning
- Reaction Wheels
- Compressor Motors for Cryogenic Coolers

Complete Info: www.ddc-web.com/PWR-8234X



Model: PWR-82341

Features

- H-Bridge Motor Drive Hybrid
- Small Size 45.7mm x 35.6mm x 6.35mm (1.8in x 1.4in x 0.25in)
- +100Vdc Rating
- 5A Current, 10A Peak Capability
- High-Efficiency MOSFET Drive Stage
- Direct Drive from PWM
- Drive Brushless DC or Brush Motors
- Operating Temperature: -55°C to +125°C

Applications

- Robotics
- Electromechanical Valve Assemblies
- Actuator Systems
- Antenna and Solar Radar Positioning
- Missile Fin Actuators
- Fan and Blower Motors for Environmental Conditioning
- Reaction Wheels
- Compressor Motors for Cryogenic Coolers

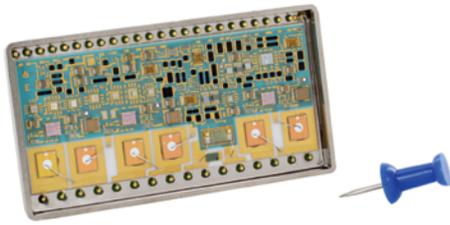
Complete Info: www.ddc-web.com/PWR-82341

Did You Know?

DDC has been recognized for our outstanding performance and customer service by the industry. The following is a listing of these awards.

- Raytheon:
 - 3 Star Supplier Excellence: 2012, 2011, 2010, 2009, 2008, 2007
 - 2007 Network Centric Systems 3 Star Supplier Excellence Award
- Lockheed Martin:
 - 2010 Platinum Level Preferred Supplier Award
 - 2006 STAR Supplier Award
- General Atomics Supplier Excellence: 2018, 2017, 2016, 2012, 2010
- Honeywell Sensor and Guidance Supplier Excellence Award
- L-3 Communication Systems West Platinum Level Supplier Award: 2011
- BAE 2015 #1 Supplier Award
- Northrop Grumman:
 - Aerospace Systems Gold Supplier: 2008
 - Aerospace Systems Silver Supplier: 2006, 2007

Space Grade Hybrids



Model: PW-82336

Features

- 3-Phase Motor Drive Hybrid
- Small Size 66mm x 35.6mm x 6.35mm (2.6in x 1.4in x 0.25in)
- 100VDC Rating
- 3A Continuous, 6A Peak Current Capability
- Designed to Meet the Following Radiation Levels
 - 100krad Total Dose
 - 36MeV SEU
- Operating Temperature: -55°C to +125°C

Applications

- Pump Control
- Electric Actuators
- Electric Valve Control
- Fuel Pumps
- Robotics
- Antenna/Camera Position Control
- Reaction Wheels

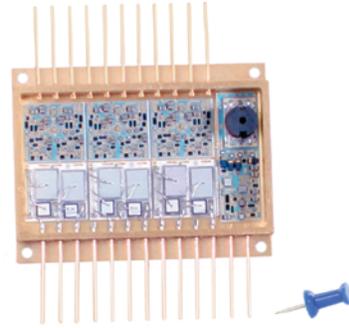
See Page 62 for all DDC Rad-Hard solutions

Complete Info: www.ddc-web.com/PWR-82336

Did You Know?

DDC's RAD-PAK® Solutions have been used in space-qualified products in the space industry for over two decades, and offer the following features:

- High radiation protection (TID 100krad for typical missions)
- RAD-PAK® reduces the number of electrons and protons inside the package (i.e., less total dose on the die)
- Up to 500x improvement for GEO missions
- Up to 10x improvement for LEO missions



Model: PWR-82332

Features

- 3-Phase Motor Drive Hybrid
- Small Size 76.2mm x 53.3mm x 10.2mm (3.0in x 2.3in x 0.40in)
- 400 VDC Rating
- 19A Continuous Current Capability
- Class K Processing
- SEU Immune for LET Level of 36 MeV/mg/cm²
- Can Withstand 10krad (Si) Total Dose Radiation
- Space Station Qualified
- High-Efficiency MOSFET Drive Stage
- Direct Drive for Commutation Logic

Applications

- Robotics
- Electromechanical Valve Assemblies
- Actuator Systems
- Antenna and Solar Radar Positioning
- Fan and Blower Motors for Environmental Conditioning
- Reaction Wheels
- Compressor Motors for Cryogenic Coolers

See Page 62 for all DDC Rad-Hard solutions

Complete Info: www.ddc-web.com/PWR-82332



Model: PW-82540R

Features

- Self-contained 3-Phase Motor Controller
- Controller for Current or Voltage
- 1, 3, or 10A Output Current
- 1.5% Linearity
- 3% Current Regulating Accuracy
- User-Programmable Compensation
- 10kHz - 100kHz PWM Frequency
- Designed to Meet the Following Radiation Levels
 - 100krad Total Dose
 - 36MeV SEU
- Operating Temperature: -55°C to +125°C

Applications

- Robotics
- Electromechanical Valve Assemblies
- Actuator Systems
- Antenna and Solar Radar Positioning
- Fan and Blower Motors for Environmental Conditioning
- Reaction Wheels
- Compressor Motors for Cryogenic Coolers

See Page 62 for all DDC Rad-Hard solutions

Complete Info: www.ddc-web.com/PW-82540R

Motion Feedback — Synchro/Resolver



Synchro, Resolver, LVDT, RVDT, Inductosyn, MR, and Hall Conversion Solutions

Since introducing the first Synchro converter module in 1968, DDC has served as the world leader in the design and manufacture of Synchro/Resolver-to-Digital and Digital-to-Synchro/Resolver components – offering the smallest, most accurate, widest temperature range data converters available. Additionally, DDC offers a complete line of Synchro/Resolver instrument-grade cards and test equipment including angle position indication and simulation, plus a variety of hardware and software to meet today's commercial, military, space, and COTS/MOTS requirements.

DDC's Synchro/Resolver-to-Digital (S/D or R/D) and Digital-to-Synchro/Resolver (D/S or D/R) microelectronic components are the smallest, most accurate converters available, and the building blocks for DDC's card-level products. Most of these single chip and hybrid converters are based on custom monolithic designs, and are the most reliable converters ever offered. Many products are available with MIL-PRF-38534 processing.

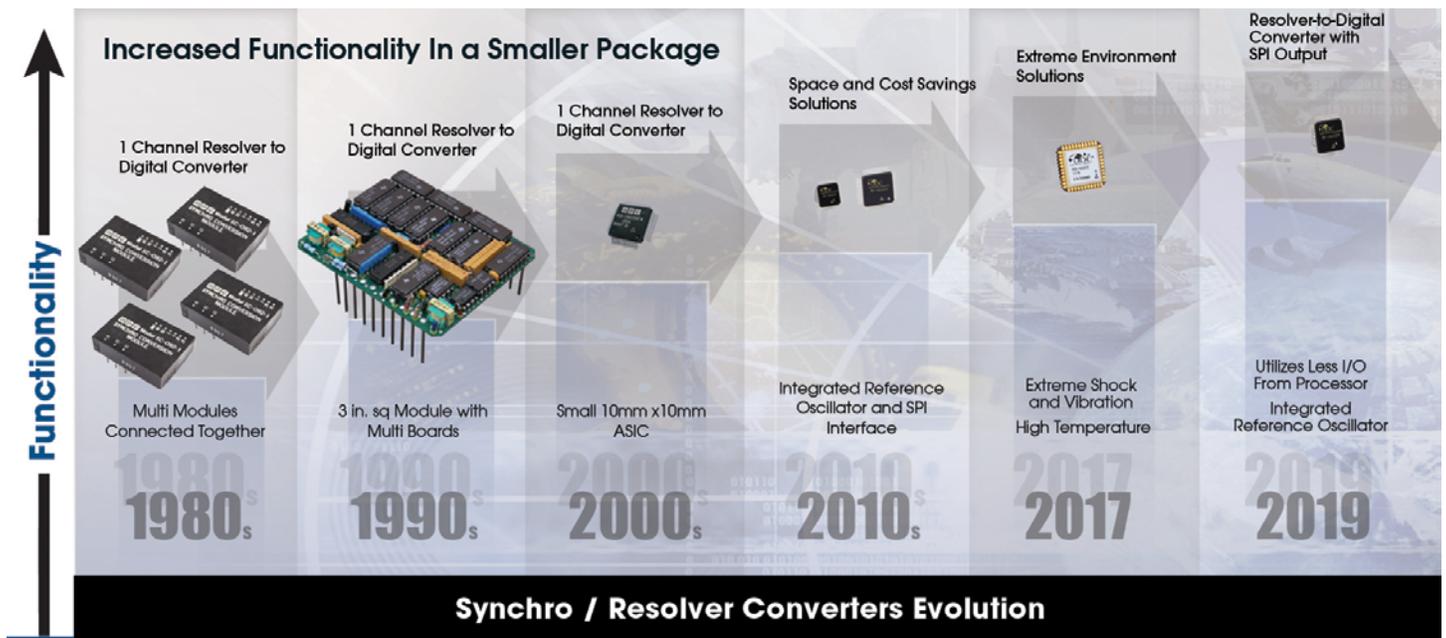
Military, commercial and industrial applications include gimbals, radar & navigation systems, fire control, flight control surfaces & instrumentation/simulators, motor/motion feedback controls & drives, and CNC & robotics systems.

Written by our expert staff, the Synchro/Resolver Conversion Handbook was the first integrated reference source on synchro/resolver data converters, and has served as a teaching aid for many engineers and operators over the years.

Form Factors, Software, & Drivers

DDC is a global leader in Synchro/Resolver Solutions. We offer a broad line of Synchro/Resolver instrument-grade cards including angle position indicators and simulators, plus supporting software to meet today's COTS/MOTS needs. Board form factors include PCI, PCIe, PMC, PC/104, cPCI, VME and USB with software support for Windows®, Linux®, LabVIEW®, and VxWorks®.

History of Innovation



| Boards | | | | | | | | | | | | | | | |
|--------------------------|---|-----------------|----------|-------------|------------------|----|-------|---|---|----|----|-------|----------|------------|------|
| Product Number | Basic Function | No. of Channels | | Accuracy To | Operating System | | | | | | | | Software | | Page |
| | | S/R to D | D to S/R | | Windows | | | | | | | | GUI/Menu | Lib/Driver | |
| | | | | | 2000 | XP | Vista | 7 | 8 | 10 | NT | Linux | | | |
| USB | | | | | | | | | | | | | | | |
| SB-3661XUX-3L0 | Portable USB Synchro/Resolver Interface Input Device | 2 | | 1 min | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 53 | |
| cPCI | | | | | | | | | | | | | | | |
| SB-36XXTX | Combo Card (API/SIM) | 3 - 9 | 6 | 2 min | | ■ | | ■ | ■ | ■ | | | ■ | 53 | |
| PMC | | | | | | | | | | | | | | | |
| SB-3641X | Resolver/Synchro-to-Digital Conversion (API) Input | 8 | | 1 min | ■ | ■ | | ■ | ■ | ■ | ■ | | ■ | 53 | |
| SB-3642X | Resolver/Synchro-to-Digital Conversion (API) Input | 8 | | 1 min | | | | ■ | ■ | ■ | ■ | | ■ | 53 | |
| SB-3644X | Resolver/Synchro-to-Digital Conversion (SIM) Output | 4 | | 1 min | | | | ■ | ■ | ■ | ■ | | ■ | 53 | |
| PCI | | | | | | | | | | | | | | | |
| SB-3624X | Resolver/Synchro-to-Digital Conversion (API) | 6 | | 1 min | ■ | ■ | | ■ | ■ | ■ | | | ■ | 54 | |
| SB-3620XIX | Combination S/R-to-Digital and Digital-to-S/R Converter | 2 | 2 | 1 min | ■ | ■ | | | | | ■ | | ■ | 54 | |
| PCI-Express | | | | | | | | | | | | | | | |
| SB-3623X | Digital-to-Resolver/Synchro Conversion (SIM) Output | | 6 | 30 sec | | ■ | ■ | ■ | ■ | ■ | | | ■ | 54 | |
| SB-3625XKX | Digital-to-Resolver/Synchro Conversion (SIM) Input | 4/8 | | 1 min | | ■ | | ■ | ■ | ■ | | | ■ | 54 | |
| PC/104 | | | | | | | | | | | | | | | |
| SB-36320CX | Digital-to-Resolver/Synchro Conversion (SIM) | | 2 | 1 min | | | | | | | | | | 55 | |
| SB-36330CX | Resolver/Synchro-to-Digital Conversion (API) | 4 | | 1 min | | | | | | | ■ | | | | |
| SB-36340CX | Transformer | | | | | | | | | | | | | | |
| SB-36350CX | Oscillator | | | | | | | | | | | | | | |
| VME | | | | | | | | | | | | | | | |
| SB-36110VX | 12-Channel Synchro/Resolver-to-Digital | 12 | | 1 min | | | | | | | | | ■ | 56 | |
| Evaluation Boards | | | | | | | | | | | | | | | |
| RD-19230EX-300 | Resolver/Synchro-to-Digital Conversion Development Kits (API) | 1 | | 2 min | | | | | | | | | | 56 | |
| RD-19240EX-300 | | 1 | | 8 min | | | | | | | | | | | |
| RD-19232EX-3L0 | | 1 | | 1 min | | | | | | | | | ■ | | |
| RD-19243EX-3L0 | | 1 | | 5.2 min | | | | | | | | | ■ | | |

| Components — Resolver, Synchro, LVDT, RVDT, Inductosyn, MR, and Hall Converters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------|-----|------|------|----|-----|------|---|----------|---------------|--------------------|---|---|---|---|---|------------|----|----|----|----|------------------|----|-----------------------|--------|------------|------|---------------------|----------|-----------|
| Product Number | Package | | | | | | | | | # of Channels | Accuracy (Arc-Min) | | | | | | Resolution | | | | | Special Features | | | | | Page | | | |
| | Pin | DIP | DDIP | TDIP | FP | QFP | MGFP | J | Leadless | | Module | 1 | 2 | 4 | 5 | 6 | 8 | 21 | 10 | 12 | 13 | 14 | 16 | Synthesized Reference | Hybrid | Monolithic | | Programm Resolution | +5V Only | High Temp |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Resolver-to-Digital | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RD-19231 | 64 | | | | | ■ | | | | 1 | ■ | ■ | ■ | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 57 | |
| RD-19232 | 52 | | | | | | ■ | | | 1 | ■ | | | | | | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 57 | | |
| RD-19240 | 52 | | | | | | ■ | | | 1 | | | | | ■ | | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 57 | | |
| RD-19243 | 48 | | | | | | | ■ | | 1 | | | ■ | | | | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 57 | | |
| RDC-19220/2/4 | 44, 40 | | ■ | | | | ■ | ■ | | 1 | | ■ | ■ | | | | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 58 | | |
| RDC-19220/2S | 44, 40 | | ■ | | | | | ■ | | 1 | | ■ | ■ | | | | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 58 | | |
| Synchro/Resolver-to-Digital | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SD-14531 | 36 | | ■ | | | | | | | 1 | ■ | ■ | ■ | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 59 | |
| SD-14550 | 34 | ■ | | | ■ | | | | | 1 | ■ | ■ | ■ | | | | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 59 | | |
| SD-14590/1/2 | 36 | | ■ | | | | | | | 1 | ■ | ■ | ■ | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 59 | | |
| SD-14595/6/7 | 36 | | ■ | | | | | | | 1 | ■ | ■ | ■ | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 59 | | |
| SD-14620 | 54 | ■ | | | ■ | | | | | 2 | ■ | ■ | ■ | | | | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 59 | | |
| SDC-14560 | 36 | | ■ | | | | | | | 1 | ■ | ■ | ■ | | ■ | | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 59 | | |
| SDC-14580 | 36 | | ■ | | | | | | | 1 | ■ | ■ | ■ | | | | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 59 | | |
| SDC-14600/05 | 28 | | ■ | | | | | | | 2 | | ■ | ■ | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 59 | | |
| SDC-14610/15 | 36 | | ■ | | | | | | | 3 | ■ | ■ | ■ | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 59 | | |
| SDC-630/2/4A/ST | 28 | | | | | | | | ■ | 1 | | ■ | ■ | | ■ | ■ | | ■ | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 59 | | |
| Synchro-to-Digital | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SDC-14545 | 24 | | ■ | | | | | | | 1 | | | ■ | | ■ | ■ | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 59 | | |

☞ Visit www.ddc-web.com/sr for complete product information.

| Components — Digital-to-Synchro and Resolver Converters | | | | | | | | | | | | | | | | | | | | |
|---|---------|----|----|------|------|--------|----------------|-----|------|------|----|----------------|------------------|--------|-------|--------|-----------|------|-------------|-----------|
| Product Number | Package | | | | | | Output Voltage | | | | | Output Current | Special Features | | | | | Page | | |
| | Pin | | | TDIP | DDIP | Module | 2 | 6.8 | 6.81 | 11.8 | 90 | | Scalable | Hybrid | DC to | | 60/400 Hz | | Low Profile | 2 Channel |
| | 32 | 36 | 40 | | | | | | | | | | | | 1 kHz | 10 kHz | | | | |
| Digital-to-Resolver | | | | | | | | | | | | | | | | | | | | |
| DR-11525 | | ■ | | | ■ | | ■ | | ■ | | ■ | 2mA | ■ | | ■ | | | 59 | | |
| DRC-10520 | ■ | | | | ■ | | | ■ | | | ■ | 2VA | ■ | ■ | | | | 61 | | |
| DRC-11522 | | ■ | | | ■ | | | ■ | | | ■ | 2mA | ■ | ■ | | | ■ | 61 | | |
| Digital-to-Synchro | | | | | | | | | | | | | | | | | | | | |
| DSC-10510 | | | ■ | ■ | | | | | ■ | | ■ | 7VA | ■ | ■ | | | | 60 | | |
| DSC-544/545 | | | | | ■ | | | | | ■ | | 4.5VA | | | ■ | | | 60 | | |
| Digital-to-Synchro/Resolver | | | | | | | | | | | | | | | | | | | | |
| DSC-11520 | | ■ | | | ■ | | | ■ | | ■ | ■ | 2mA | ■ | ■ | | | | 61 | | |
| DSC-11524 | | ■ | | | ■ | | | ■ | | ■ | ■ | 15mA | ■ | ■ | | | | 61 | | |
| DSC-644 | | | | | ■ | | | | ■ | ■ | | 1.5VA | | | ■ | ■ | | 61 | | |

| Components and Boards — Synchro and Resolver Special Function | | | | | | | | | | | | | | | | | | |
|---|---------|----|----|-----|------|----|--------|------------------|--------------|--------|-------|------|----|-------|--|--|--|----|
| Product Number | Package | | | | | | | Special Features | | | | | | | | | Page | |
| | Pin | | | DIP | DDIP | SM | Module | Thin Film | Differential | Hybrid | Volts | | | Other | | | | |
| | 16 | 18 | 36 | | | | | | | | 2 | 11.8 | 90 | | | | | |
| Synchro Booster Amplifier | | | | | | | | | | | | | | | | | | |
| SBA-3500x | | | | | | ■ | | | | | | | | | | | 90V Synchro or 2V, 5V, 6.8V, 90V Resolver input to 90V Synchro 25VA, 60/400Hz output | 58 |
| Resistor Network | | | | | | | | | | | | | | | | | | |
| DDC-49530 | ■ | | | ■ | | | | ■ | | | | ■ | | | | | High Precision Tolerance (0.02%) | 61 |
| DDC-49590 | ■ | | | ■ | | | | ■ | | | | ■ | | | | | High Precision Tolerance (0.02%) | 61 |
| DDC-55688-1 | ■ | | | ■ | | | | ■ | | ■ | | | | | | | High Precision Tolerance (0.02%) | 61 |
| DDC-57470 | ■ | | | | | ■ | | ■ | | | ■ | | | | | | High Precision Tolerance (0.02%) | 61 |
| DDC-57471 | ■ | | | | | ■ | | ■ | | | ■ | | | | | | High Precision Tolerance (0.02%) | 61 |
| DDC-82620 | ■ | | | | | ■ | | ■ | ■ | | ■ | | | | | | High Precision Tolerance (0.02%) | 61 |
| Oscillator | | | | | | | | | | | | | | | | | | |
| OSC-15801 | | ■ | | | ■ | | | | | | | | | | | | Programmable Frequency, 47Hz to 20kHz | 60 |
| OSC-15802 | | ■ | | | ■ | | | | | | | | | | | | Programmable Frequency with AGC Amplitude Control, 47Hz to 10kHz | 60 |
| OSC-15803 | | ■ | | | ■ | | | | | | | | | | | | Radiation Tolerant Synchro/Resolver/Inductosyn® Reference Oscillator | 60 |

| Transformers | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|---------------------|---------------------|---------------------|---------------------|----------|---------------|------|----|----|-----|----------------|---|-----|-----|-----|------|------|-----------|----|----------|----|------|----|--------------------|--------|----------------------|--------------|-----|
| Product Number | Type | | | | | Input Voltage | | | | | Output Voltage | | | | | | | Terminals | | Mounting | | Page | | | | | | |
| | Synchro to Resolver | Resolver to Synchro | Synchro to Resolver | Resolver to Synchro | Resolver | 6.8 | 11.8 | 26 | 90 | 115 | 1 | 2 | 3.4 | 5.8 | 6.3 | 11.8 | 13.6 | 16 | 26 | 39 | 57 | | 90 | Sn63 solder dipped | | Sn90 plated alloy 42 | Through Hole | SMT |
| | | | | | | | | | | | | | | | | | | | | | | | | brass | copper | | | |
| Input Scott-T | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2104X | ■ | | ■ | | | ■ | ■ | ■ | ■ | | ■ | | | | | | | | | | | | ■ | | ■ | ■ | ■ | 61 |
| 5023X | ■ | | ■ | | | ■ | ■ | ■ | ■ | | ■ | | | | | | | | | | | | ■ | | ■ | ■ | ■ | 61 |
| Output Scott-T | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 29XXX | | ■ | ■ | | ■ | | | | | | | | | | ■ | | | | | | | | ■ | | ■ | ■ | ■ | 61 |
| 3XXXX | | ■ | ■ | | ■ | | | | | | | | ■ | | | | | | | | | | ■ | | ■ | ■ | ■ | 61 |
| 4073X | | | ■ | | ■ | | | | | | | | | ■ | | | | ■ | | | | | ■ | | ■ | ■ | ■ | 61 |
| B-10XX | | | ■ | | ■ | | | | | | | | | ■ | | | ■ | ■ | | | | | ■ | | ■ | ■ | ■ | 61 |
| B-XXX | | ■ | ■ | | ■ | | | | | | | | | ■ | | | ■ | ■ | | | | | ■ | | ■ | ■ | ■ | 61 |
| Reference | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21049 | | | | | | | | | ■ | | | | | | | | | ■ | | | | | ■ | | ■ | ■ | ■ | 61 |
| B-4XX | | | | | | | | | ■ | | | | ■ | | | | | | | | | | ■ | | ■ | ■ | ■ | 61 |
| B-7XX | | | | | ■ | ■ | | | ■ | | | | | ■ | | | | | | | | | ■ | | ■ | ■ | ■ | 61 |
| B-8XX | | | | | | | ■ | | | | | | | ■ | | | | ■ | | | | | ■ | | ■ | ■ | ■ | 61 |
| B-10XX | | | | | | | ■ | | | | | | | ■ | | | | ■ | | | | | ■ | | ■ | ■ | ■ | 61 |

Visit www.ddc-web.com/sr for complete product information.

USB**Synchro/Resolver-to-Digital****Model: SB-3661XUX-3L0****Features**

- 2 Input Channels
- ± 1 Arc Minute Accuracy
- BIT Output for Each Channel
- Self Test Mode
- 2VA On-Board Programmable Reference Sine Oscillator
- Driver and API Libraries with Windows® GUI and Linux®
- LabVIEW® Support
- Programmable Two-Speed Mode
- Data Logging
- Temp Range: 0°C to +71°C

Applications

- Motor Control Lab Testing
- Machine Tool Control Lab Testing
- Antenna Control Lab Testing
- Robotics Lab Testing
- Process Control Systems Lab Testing
- Lab Testing
- Production Testing
- Can be used as a Portable Sine Ref Oscillator Source

Complete Info: www.ddc-web.com/SB-3661XUX**ePCI****Combination S/R-to-D & D-to-S/R****Model: SB-36XXXTX****Features**

- Three Independent Angle Position Indication Channels
- Six Independent Simulation Channels
- ± 2 Arc Minute Accuracy
- Unpopulated Simulation Channels may be used as Additional Isolated API Channels
- Built-in Test Diagnostics
- Supports +3.3V or +5V PCI Bus
- Driver and API Libraries with Windows® GUI and Linux
- Temp Range: 0°C to +55°C

Applications

- Motor Control
- Machine Tool Control
- Naval Ship Navigation
- Antenna Control
- Process Control Systems

Complete Info: www.ddc-web.com/SB-36XXXTX**PMC****Synchro/Resolver-to-Digital****Model: SB-3641X, SB-3642X****Features**

- 4 or 8 Synchro or Resolver Input Channels
- ± 1 Arc Minute Accuracy
- Programmable Two-Speed Mode
- Each Channel with Independent Reference Input
- User Friendly Windows® GUI
- Prog. Resolution and Bandwidth
- LabVIEW® Support
- Driver and API Libraries with Windows® GUI and Linux®
- Temp Range: -40°C to +85°C

Applications

- High Performance Industrial and Military Position Feedback and Control Systems
- Ship Navigation
- Motor Control
- Machine Tool Control
- Antenna Control
- Robotics and Process Control Systems
- Engineering Development and Production Test

Complete Info: www.ddc-web.com/SB-36410ix
www.ddc-web.com/SB-3642X**Digital-to-Synchro/Resolver****Model: SB-3644X****Features**

- Programmable Two-Speed Mode
- ± 1 Arc Minute Accuracy
- Each Channel with Independent Reference Input
- User Friendly Windows® GUI
- 2 or 4 Synchro or Resolver Input Channels
- LabVIEW® Support
- Driver and API Libraries with Windows® GUI and Linux®
- Temp Range: -40°C to +85°C

Applications

- High Performance Industrial and Military Position Feedback and Control Systems
- Ship Navigation
- Motor Control
- Machine Tool Control
- Antenna Control
- Robotics and Process Control Systems
- Engineering Development and Production Test

Complete Info: www.ddc-web.com/SB-3644X

PCI**Synchro/Resolver-to-Digital****Model: SB-3624X****Features**

- 6 Input Channels
- Software Programmable Resolution and Bandwidth
- ± 1 Arc Minute Accuracy
- Onboard Programmable Reference Sine Oscillator
- Universal (+3.3 or +5V) PCI Signaling
- Internal Synthesized Reference
- Half-Size PCI Form Factor
- Transformer Isolation Available
- Driver and API Libraries with Windows® GUI and Linux®
- Temp Range: 0°C to +71°C

Applications

- Motor Control
- Machine Tool Control
- Antenna Control
- Robotics
- Process Control Systems
- Lab Testing
- Production Testing

Complete Info: www.ddc-web.com/SB-3624X**Did You Know?**

All Synchro/Resolver boards come with a mating connector, which allows for fast setup, and software (SDK, GUI and libraries), which can also be downloaded from the website for evaluation prior to board purchase.

Included software (as applicable)

- LabVIEW®
- Linux®
- Windows® GUI

Included hardware

- Mating connector

PCI-Express**Instrument Grade Digital-to-S/R****Model: SB-3623X****Features**

- 6 Synchro or Resolver Output Channels with independent Reference input
- Instrument Grade Accuracy - 30 Arc Second
- Programmable Dynamic Rotation
- Programmable Two-Speed
- On-Board Reference Sine Oscillator
- Driver and API Libraries with Windows® GUI and Linux®
- LabVIEW® Support
- Temp Range: 0°C to +55°C

Applications

- High Performance Industrial and Military Position Feedback and Control Systems
- Motor Control
- Machine Tool Control
- Antenna Control
- Robotics and Process Control Systems

Complete Info: www.ddc-web.com/SB-3623X**Synchro/Resolver-to-Digital****Model: SB-3625XKX****Features**

- 4 or 8 Synchro/Resolver Input Channels with independent Reference input
- 1 Arc Minute Accuracy
- Programmable Resolution and Bandwidth
- Programmable Two-Speed
- Driver and API Libraries with Windows® GUI and Linux®
- User-Friendly Windows® Graphical User Interface
- LabVIEW® Support
- Temp Range: 0°C to +55°C

Applications

- High Performance Industrial and Military Position Feedback and Control Systems
- Motor Control
- Machine Tool Control
- Antenna Control
- Robotics and Process Control Systems

Complete Info: www.ddc-web.com/SB-3625XKX

PC/104

Digital-to-Synchro/Resolver



Model: SB-36320CX

Features

- 2 Independent Output Converter Channels for Synchro, Resolver, or SIN/COS Outputs
- ± 1 Arc Minute Accuracy
- Low (2mA) or Medium (15mA) Power Outputs
- 16-Bit Resolution
- Opto-Isolated Discrete I/O for External Control Functions
- Temp Range: -40°C to $+85^{\circ}\text{C}$

Applications

- ATE
- Displays
- Positioning Applications

Complete Info: www.ddc-web.com/SB-36320C

Output Isolation



Model: SB-36340CX

Features

- Up to 2 Channels of Output Isolation
- Converts Low Voltage to 90 Vrms/ 400Hz Synchro Output
- Reference Input Isolation
- Conformal Coated
- Mates Directly with SB-36320CX PC/104 Synchro Output Card
- Temp Range: -40°C to $+85^{\circ}\text{C}$

Applications

- Naval Navigation Systems
 - Gyro
 - Antenna
 - Steering
- Naval Firing Control Systems
- Military Control Systems
- 90V Synchro Positioning/ Simulations

Complete Info: www.ddc-web.com/SB-36340C

Synchro/Resolver-to-Digital



Model: SB-36330CX

Features

- Up to 4 Independent Input Channels for Synchro/Resolver
- ± 1 Arc Minute Accuracy
- Velocity Output
- Software Programmable Resolution and Bandwidth
- Jumper Programmable Reference Voltage Inputs
- Discrete I/O for External Control Functions
- Temp Range: -40°C to $+85^{\circ}\text{C}$

Applications

- Motor Control
- Machine Tool Control
- Antenna Control
- Robotics
- Process Control Systems
- Gimbal Control

Complete Info: www.ddc-web.com/SB-36330C

Reference Sine Oscillator



Model: SB-36350CX

Features

- Software Programmable Voltage and Frequency
- Isolated Differential Output
- 5 VA Reference Sine Drive
- 400Hz to 8192Hz
- 2V to 123V
- Temp Range: -40°C to $+85^{\circ}\text{C}$

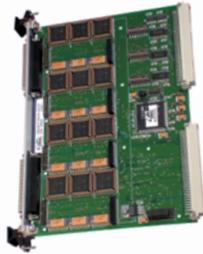
Applications

- ATE
- Displays
- Aircraft
- Ground Vehicles
- Robotics

Complete Info: www.ddc-web.com/SB-36350C

VME

Synchro/Resolver-to-Digital



Model: SB-36110VX

Features

- Up to 12 Independent Converter Channels
- ± 1 Arc Minute Accuracy
- Each Channel Accepts Synchro or Resolver Inputs
- Software Programmable Resolution and Bandwidth
- Synthesized Reference
- 16-, 24-, and 32-Bit Addressing Modes
- VxWorks® Support
- Temp Range: -40°C to $+85^{\circ}\text{C}$

Applications

- Gimbal Control
- Antenna Position
- Machine Tool Control
- Process Control
- Motor Control

Complete Info: www.ddc-web.com/SB-36110VX

Did You Know?

DDC's Synchro Conversion Handbook was conceived in 1973 during a series of technical seminars. It was the first integrated reference source on synchro/resolver data converters.

The handbook serves as a practical tutorial and reference source, describing the theory of operation of data converter products, performance parameters, and design factors for typical applications.

Visit: www.ddc-web.com/synchrohandbook

Did You Know?

DDC understands the life cycle requirements of the military and aerospace industries. With a comprehensive system to manage obsolete materials, we are committed to supplying electronic products that ensure uninterrupted product availability, backwards hardware and software compatibility, and configuration control.

Life Cycle Management:

- Vendor life cycle checks
 - Life time buy
 - Customer notification prior to obsolescence
- Configuration management
 - Class 1 for standard product
 - Class 2 notification available
- Generation-to-generation compatibility
- Use of in-house intellectual property
- Boeing approval to D6-82479

Evaluation Boards



Models: RD-19230EX-300, RD-19232EX-3L0, RD-19240EX-300, RD-19243EX-30L0

Features

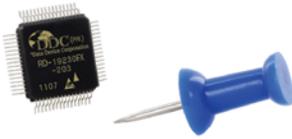
- Evaluate DDC's RD-192XX series converters, with little to no installation & configuration setup
- Easy On-Card Programmable Features of the RD-19230, RD-19232, RD-19240, & RD-19243
- Pre-Installed RD-19230/32/40/43 Converter on Associated Development Board
- RD-19230EX/RD-19240EX Only:
 - On-Card Visual LED Indicators for Output Angle and Fault Indicator
- RD-19232EX/RD-19243EX Only:
 - Serial and USB Data Output
 - Onboard Ref Sine Oscillator
 - Onboard Digital Display for Angle Readout

Applications

- Prototyping New Designs

Complete Info: www.ddc-web.com/RD-19230EX
www.ddc-web.com/RD-19232EX
www.ddc-web.com/RD-19240EX
www.ddc-web.com/RD-19243EX

Resolver, Synchro, LVDT, RVDT, Inductosyn, MR & Hall Converters



Model: RD-19231

Features

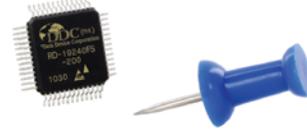
- ± 1 Arc Minute Accuracy
- Programmable Resolution (10, 12, 14, 16 Bits)
- Parallel Data Output
- Up to 45 Degree Phase Shift Correction
- +5V Only Option
- Dual Bandwidth
- A Quad B Encoder Emulation
- 13.22 mm 64-pin Quad Flat Pack
- Temp Range: -40°C to $+85^{\circ}\text{C}$

Applications

- Military Fire Control Systems
- Naval Navigation and Weapons Systems
- Industrial Control
- Motor Control
- Machine Tool Control
- Robotics
- Factory Automation
- Hybrid Electric Vehicles
- Aviation Flight Control Surfaces
- Unmanned Vehicles

Evaluation Board Available,
See Page 56

Complete Info: www.ddc-web.com/RD-19231



Model: RD-19240

Features

- ± 8 Arc Minute Accuracy
- Programmable Resolution (10, 12, 14 Bits)
- Parallel Data Output
- Up to 45 Degree Phase Shift Correction
- +5V Only Option
- Dual Bandwidth
- A Quad B Encoder Emulation
- 13.22mm 52-pin Quad Flat Pack
- Temp Range: -55°C to $+125^{\circ}\text{C}$

Applications

- Industrial Control
- Motor Control
- Machine Tool Control
- Robotics
- Factory Automation
- Hybrid Electric Vehicles
- Aviation Flight Control Surfaces

Evaluation Board Available,
See Page 56

Complete Info: www.ddc-web.com/RD-19240



Model: RD-19232

Features

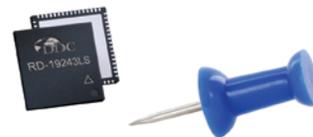
- ± 1 Arc Minute Accuracy
- Programmable Resolution (10, 12, 14, 16 Bits)
- Serial Data Output
- Built-in Reference Oscillator
- Up to 45 Degree Phase Shift Correction
- +5V Only Option
- Dual Bandwidth
- A Quad B Encoder Emulation
- 13.22mm 52-pin Quad Flat Pack
- Temp Range: -55°C to $+85^{\circ}\text{C}$

Applications

- Aviation Flight Control Surfaces
- Unmanned Vehicles
- Naval Navigation and Weapon Systems
- Military Fire Control Systems
- Motor Control
- Factory Automation
- Machine Tool

Evaluation Board Available,
See Page 56

Complete Info: www.ddc-web.com/RD-19232



Model: RD-19243

Features

- Up to 5.2 Arc Minute Accuracy
- Programmable Resolution (10, 12 Bits)
- SPI and Encoder Emulation (A Quad B) Interface Outputs
- Integrated Programmable Reference Oscillator
- 1152 RPS Maximum Tracking Rate, 10-bit Resolution
- DC, 1kHz to 20kHz
- +5V Only Option
- Dual Bandwidth
- 48-pin Leadless Package
- Temp Range: -40°C to $+85^{\circ}\text{C}$

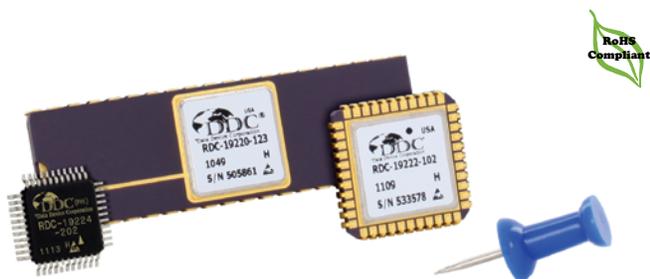
Applications

- Industrial Motor Control
- Factory Automation
- Robotics
- Hybrid Electric Vehicles
- Automotive Position Sense

Evaluation Board Available,
See Page 56

Complete Info: www.ddc-web.com/RD-19243

Resolver, Synchro, LVDT, RVDT, Inductosyn, MR & Hall Converters



Model: RDC-19220/2/4

Features

- ± 2 Arc Minute Accuracy
- +5V Only Option
- Only 5 External Passive Components Needed
- Programmable Resolution, Bandwidth, and Tracking
- Differential Resolver and LVDT Input Modes
- Small Size, Available in DDIP, J-Lead, or MQFP Packages
- RoHS Compliant Available
- Temp Range: -55°C to $+125^{\circ}\text{C}$

Applications

- Motor Control
- Machine Tool Control
- Robotics
- Flight Surface Control
- Radar Antenna Positioning
- Process Control
- Military Fire Control Systems
- Navigation

Complete Info: www.ddc-web.com/RDC-19220



Model: RDC-19220/2S

Features

- ± 2 Arc Minute Accuracy
- +5V Only Option
- Programmable Resolution, Bandwidth, and Tracking
- Up to 45° Phase Shift Correction
- Small Size, Available in DDIP, J-Lead, or MQFP Packages
- RoHS Compliant Versions Available
- Temp Range: -55°C to $+125^{\circ}\text{C}$

Applications

- Motor Control
- Machine Tool Control
- Robotics
- Flight Surface Control
- Radar Antenna Positioning
- Process Control
- Military Fire Control Systems
- Navigation

Complete Info: www.ddc-web.com/RDC-19220S

Did You Know?

DDC offers the most modern synchro booster amplifiers (SBAs) providing the smallest footprint, with the lightest weight.

Easy-to-Use

- Plug & play installation
- No calibration required

Compact, SWaP Optimized Solution

- 50% size reduction vs. comparable SBAs
- 75% weight reduction vs. comparable SBAs
- Powered from the reference input; No additional power source required

Engineered for High Reliability

- Short circuit, overload, load transient, and over temperature protection
- Extended operating temperature (-40°C to $+85^{\circ}\text{C}$)

Synchro Booster Amplifier



Model: SBA-3500x

Features

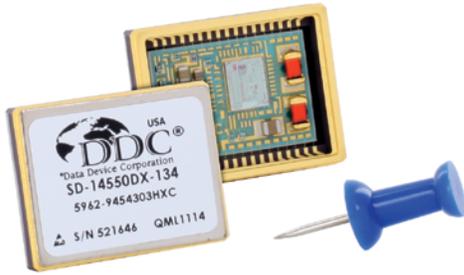
- Powered from Reference
- 90V, 60 or 400Hz Synchro Outputs
- Amplifies 90V Synchro, 6.81V, 5V, and 2V Resolver Inputs
- 25 VA Output Drive
- Protected Against Short Circuits, Overloading, Load Transients, Temperature, and Reference Supply Shutdown
- "Power-Up" in Disable or Enable Mode
- Drop-in Replacement for SBA-25001/2/3/4 Series

Applications

- Training Simulators
- Remote Indicators
- Gunfire Control
- Navy Retransmission Systems

Complete Info: www.ddc-web.com/SBA-3500x

Synchro/Resolver-to-Digital Converters



Model: SD-14550

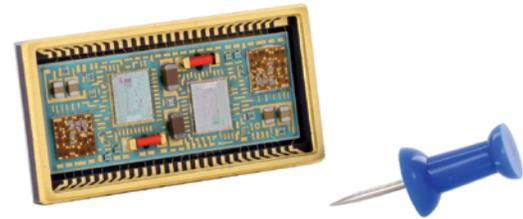
Features

- ± 1 Arc Minute Accuracy
- Single +5V Power Supply
- 10, 12, 14, or 16 Bit Programmable Resolution
- Synthesized Reference Option
- Small 34-Pin Ceramic Package
- BIT Output
- Velocity Output Eliminates Tachometer
- High Reliability Single Chip Monolithic
- Temp Range: -55°C to $+125^{\circ}\text{C}$

Applications

- Radar Antenna Positioning
- Navigation Systems
- Fire Control Systems
- Motor Control

Complete Info: www.ddc-web.com/SD-14550



Model: SD-14620

Features

- 2 Channels in One Package
- ± 1 Arc Minute Accuracy
- Single +5V Power Supply
- 10, 12, 14, or 16 Bit Programmable Resolution
- Synthesized Reference Option
- Small 54-Pin Ceramic Package
- BIT Output
- Velocity Output Eliminates Tachometer
- High Reliability Single Chip Monolithic
- Temp Range: -55°C to $+125^{\circ}\text{C}$

Applications

- Radar Antenna Positioning
- Navigation Systems
- Fire Control Systems
- Motor Control

Complete Info: www.ddc-web.com/SD-14620

Digital-to-Resolver Converters



Model: SDC-630/2/4A/ST

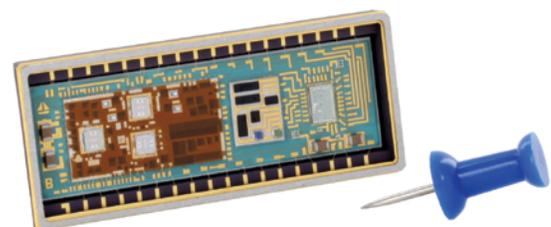
Features

- ± 2.6 Arc Minute Accuracy
- Internal Transformer Isolation
- 10, 12 or 14 Bit Resolution
- Options for Velocity, BIT (Built-In Test)
- Temp Range: -55°C to $+105^{\circ}\text{C}$

Applications

- Radar Tracking Systems
- Navigation Systems
- Motor Control

Complete Info: www.ddc-web.com/SDC-630ST



Model: DR-11525

Features

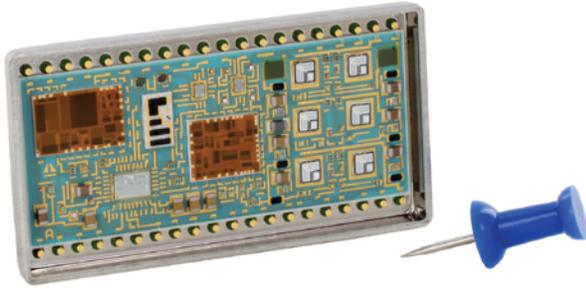
- ± 1 Arc Minute Accuracy
- Operational Up to 10 kHz
- 2Vrms, 6.81Vrms, 11.8VL-L, or Scalable Resolver Outputs
- 2mA RMS Output
- 16 Bit Resolution
- 8 Bit/2 Byte Double Buffered Transparent Latches
- DC-Coupled Reference Accepts Any Waveform
- High-Rel CMOS D/R Chip
- No +5V Supply Required
- Temp Range: -55°C to $+125^{\circ}\text{C}$

Applications

- Synchro/Resolver Simulators
- Flight Trainers
- Flight Instrumentation
- Fire Control Systems
- IR
- Radar
- Navigation Systems
- Motor Control Test Systems
- Robotic Control Test Systems

Complete Info: www.ddc-web.com/DR-11525

Digital-to-Synchro Converters



Model: DSC-10510

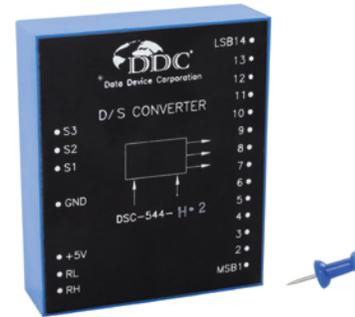
Features

- ± 2 Arc Minute Accuracy
- 7VA Drive Capability for CT, CDX, or TR Loads
- Double Buffered Transparent Input Latch
- 16 Bit Resolution
- Power Amplifier Uses Pulsating or DC Supplies
- Built-in Test (BIT) Output
- Temp Range: -55°C to $+125^{\circ}\text{C}$

Applications

- Flight Simulators
- Flight Instrumentation
- Fire Control Systems
- Flight Data Computers

Complete Info: www.ddc-web.com/DSC-10510



Model: DSC-544, DSC-545

Features

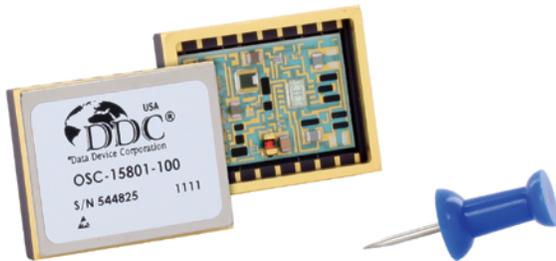
- ± 4 Arc Minute Accuracy
- 90V, 4.5VA Output
- Powered from Reference Input
- Power Dissipation Cut in Half
- No External $\pm 15\text{V}$ Supplies Required
- No External Transformer Required at 60Hz
- Short Circuit Protection
- Rugged Power Amplifiers with Current Limiting
- Overvoltage Transient Protection
- Thermal Cutoff
- Temp Range: -55°C to $+85^{\circ}\text{C}$

Applications

- Simulators
- Flight Trainers
- Flight Instrumentation
- Fire Control Systems

Complete Info: www.ddc-web.com/DSC-544

Reference Sine Oscillator Components



Model: OSC-15801, OSC-15802

Features

- Programmable Output Frequency from 400Hz to 20kHz
- Scalable Reference Output
- Small 18-Pin DDIP
- Temp Range: -55°C to $+125^{\circ}\text{C}$

OSC-15801 Only:

- Quadrature Reference Output (-90°) Voltages for Inductosyn Applications

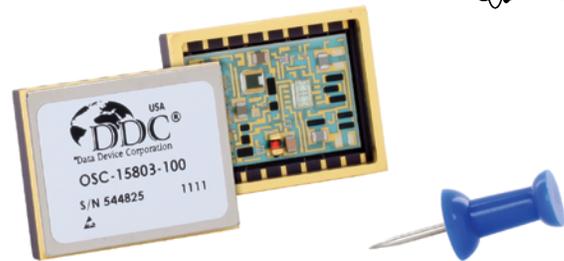
OSC-15802 Only:

- ADI Alternate Source
- Quadrature Reference Output ($+90^{\circ}$) Voltages for Inductosyn Applications

Applications

- Radar Antenna Positioning
- Navigation Systems
- Fire Control Systems
- Motor Control
- Robotics
- Inductosyn Applications

Complete Info: www.ddc-web.com/OSC-15801
www.ddc-web.com/OSC-15802



Model: OSC-15803

Features

- Programmable Output Frequency from 400Hz to 20kHz
- Quadrature Reference Output Voltages for Inductosyn Applications
- Small 18-Pin DDIP
- Scalable Reference Output
- Radiation Tolerant
 - Contact DDC for Rad Report Details
- Temp Range: -55°C to $+125^{\circ}\text{C}$

Applications

- Space
- Nuclear
- Military
- Inductosyn Applications

See Page 62 for all DDC Rad-Hard solutions

Complete Info: www.ddc-web.com/OSC-15803

Transformers

Input Scott-T Series



Model: 2104X, 5203X

Features

- Designed and Manufactured to Meet MIL-PRF-27, Class S, Grade 5 Requirements
- High Input Impedance
- Precise Angle Accuracy Up to 1 Min Max
- Long Life Expectancy - 10,000 Hours
- Rugged, Flame Resistant Case
- Available in Through-hole or Surface Mount Configurations

Applications

- Motor Control
- Radar Antenna Positioning
- Machine Tool Control
- Robotics
- Process Control

Complete Info: www.ddc-web.com/Scottt

Reference Series



Model: 21049, B-4XX, B-7XX, B-8XX, B-10XX

Features

- Designed and Manufactured to Meet MIL-PRF-27, Class S, Grade 5 Requirements
- High Input Impedance
- Precise Angle Accuracy Up to 1 Min Max
- Long Life Expectancy - 10,000 Hours
- Rugged, Flame Resistant Case
- Available in Through-hole or Surface Mount Configurations

Applications

- Motor Control
- Radar Antenna Positioning
- Machine Tool Control
- Robotics
- Process Control

Complete Info: www.ddc-web.com/Scottt

Output Scott-T Series



Model: 29XXX, 3XXXX, 4073X, B-10XX, B-XXX

Features

- Designed and Manufactured to Meet MIL-PRF-27, Class S, Grade 5 Requirements
- High Input Impedance
- Precise Angle Accuracy Up to 1 Min Max
- Long Life Expectancy - 10,000 Hours
- Rugged, Flame Resistant Case
- Available in Through-hole or Surface Mount Configurations

Applications

- Motor Control
- Radar Antenna Positioning
- Machine Tool Control
- Robotics
- Process Control

Complete Info: www.ddc-web.com/Scottt

Did You Know?

Since 2013, DDC has made five acquisitions, expanding our product offering.

- National Hybrids (2013):
 - MIL-STD-1553 components
- Pascall Electronics Ltd (2015):
 - Power supplies (custom & sub-system solutions for commercial aerospace and defense)
 - Radio frequency products
- XCEL Power Systems (2015):
 - Power supplies (for avionics, land, sea, and industrial)
- Maxwell Technologies' Microelectronics product line (2016):
 - Rad-Hard single board computers for space
 - Radiation shielded RAD-PAK® components
- North Hills Signal Processing (2017):
 - Transformers and box couplers

Rad-Hard Solutions



Space-Qualified, DLA Approved

DDC, the leader for more than 55 years in high reliability motion control, power control, and data networking technology for the aerospace and defense industries, has provided space-qualified rad-hard solutions to the space industry for more than 30 years. DDC space-qualified products include TRL-9 field proven, compact solutions that meet space's extreme environmental requirements, while reducing space, weight, and power consumption, along with total cost of ownership.

DDC develops radiation-tolerant by design and radiation-shielded products, including semiconductors and single-board computers. In satisfying customers' needs to achieve the highest levels of reliability, DDC's design and manufacturing headquarters in NY is fully qualified to build, test and qualify our hybrid circuits in accordance with MIL-PRF-38534 for all classes, including class H and K, and MIL-PRF-38535 to support Class S, V, B and Q. Our Center of Excellence for Radiation Hardened Microelectronics and Single Board Computers located in Poway, California is also qualified to MIL-PRF-38535 to support Class S, V, B and Q production. Additionally, DDC specializes in understanding the radiation performance of commercial semiconductors, qualifying selected components for use in space, integrating them with our proprietary radiation mitigation (RAD-PAK®) technologies, and manufacturing and screening our products in our DLA approved MIL-PRF-38534 and MIL-PRF-38535 facilities.

Commitment to Excellence:

- ISO 9001:2015 Certificate
- AS9100:2016 Certificate
- MIL-PRF-38534 Certified for Classes: H, K, D & G
- MIL-PRF-38535 Certified for Classes: S, V, B & Q
- Annual Recipient of Supplier Performance Awards

DDC Microelectronics Standard Product Flows:

- Monolithic Screening Flow
- MCM Screening Flow

DDC is a leading supplier of space qualified SBCs and radiation hardened components. DDC offers multiple radiation hardening techniques, to serve mission specific needs including: RAD-PAK® technology, Rad Hard by Design, Triple Mode Redundancy (TMR), and Error-Correction Codes (ECC).

Single Board Computers

Having achieved TRL-9 on multiple missions, DDC's Single Board Computers (SBCs) satisfy the industries' need for medium to high-performance computing, combining IBM PowerPC® or Quad-Core Leon 4FT® processors with volatile & non-volatile data storage, as well as a variety of interfaces in 3U and 6U form factors. (See page 63)

Radiation Shielded RAD-PAK® Solutions

DDC's RAD-PAK® technology improves TID (Total Ionizing Dose) hardness by shielding the semiconductor die. RAD-PAK® enables the latest commercially-available integrated circuits (ICs) to be deployed on various space missions, by tailoring the shielding thickness to mitigate the specific space-radiation environment. (See page 64)

Product Solutions:

- Memories
- A/D & D/A Converters
- Amplifiers & Comparators
- Multiplexers
- Buffers/Drivers/Transceivers
- Optocouplers

Radiation Hardened by Design & Process Solutions

DDC has successfully deployed mixed-signal and digital ASICs on multiple space missions via its portfolio of MIL-STD-1553 interface, motion feedback, and motor control and drive solutions. To mitigate TID & SEE (Single Event Effects) these Multi-Chip Modules (MCMs) incorporate ICs employing the latest state-of-the-art rad-hard by design techniques, as well as modern dielectrically-isolated semiconductor processes. DDC selectively applies rad-hard libraries and or processes that are proven to be radiation hardened to optimize performance. (See page 74)

Product Solutions:

- MIL-STD-1553 Terminals
- MIL-STD-1553 Transformers & Couplers
- 3-Phase Motor Controller/Drive Hybrids
- Sine Reference Oscillators

☞ Visit www.ddc-web.com/space for complete product information.

Single Board Computer Solutions

DDC's single board computers (SBCs) for space fulfill the space industry's need for medium- to high-performance computing. These SBCs combine the latest generation of processors with large amounts of memory storage and a variety of interfaces in industry standard form factors.

The SCS3740 is the first off-the-shelf Quad Core LEON 4FT® 3U SpaceVPX SBC and is SWaP (size, weight and power) optimized in a compact form factor – weighing 550 grams, with a low power consumption of only 5 Watts. The highly integrated SoC (system on a chip) LEON quad-core processor reduces overall parts count, enabling low power consumption and high performance, up to 1700 DMIPS, in a compact 3U SpaceVPX. Additionally, the many I/O options provided offer flexibility to match a wide range of mission requirements.

DDC's SCS750 series single board computers utilize reliable silicon-on-insulator Power PC processors and radiation hardened parts, including DDC's RAD-PAK® memories, in conjunction with triple redundant processing algorithms and error correction tools that provide comprehensive error detection and correction. These features enable the SCS750 SBCs to achieve the best SEE performance (less than one uncorrectable error in 80 years) to yield high performance low-risk (TRL-9) computing solutions for the most demanding space applications.

Since the inception of our Space Microelectronics group, more than 20 years ago, our RAD-PAK® products and single board computers have experienced zero failures in space.

| Product Description | Part Number | Radiation Technology | | | | Package Style | | | Specs | Screening Level (DDC's Classes) | Page |
|--|-------------|----------------------|-----------------|----------|--------------------------|------------------|-----|-----|-------|---------------------------------|------|
| | | Error Detection | Rad Hard at Die | RAD-PAK® | Triple Redundant Process | Flat Pack | DIP | QFP | | | |
| Single Board Computers | | | | | | | | | | | |
| Single Board Computer, PowerPC® Based | SCS750® | ■ | ■ | ■ | ■ | 6U cPCI | | | ■ | FS, FB, E | 63 |
| Single Board Computer, PowerPC® Based | SCS750G4® | ■ | ■ | ■ | ■ | Standard 6U cPCI | | | ■ | FS, FB, E | 63 |
| Single Board Computer, Quad-Core LEON® | SCS3740 | ■ | ■ | ■ | | 3U SpaceVPX | | | ■ | FS, FB, E | 63 |

Single Board Computers



Rad-Hard



Model: SCS750, SCS750G4

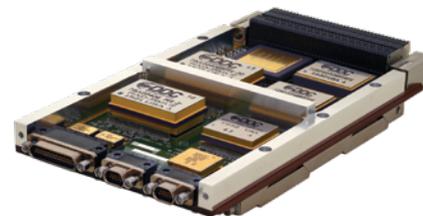
Features

- 6U cPCI
- Operating Capability
 - 200 - 1800 MIPS,
 - 7 - 30 Watts Typical
- Speed and Power Settings can be Managed via Software in Real Time; No Reboot Required
- Outstanding SBC Radiation Hardness
 - TID Greater than 100krad (Si)
 - SEU Hard
 - SEL Immune
- Proven in Space - TRL-9
- Less than 1 Uncorrected Upset Every 80 Years in a Typical GEO Mission
- G4 Version Available with SpaceWire and 64 GBytes of NAND Flash
- Standard Development Platform, VxWorks®, RTEMS & Linux (contact factory)

Applications

- Launchers
- Payload Processing
- Satellites
- Command and Control

Complete Info: www.ddc-web.com/SCS750



Rad-Hard

Model: SCS3740

Features

- 3U SpaceVPX
- GR740 Rad-Hard Quad-Core LEON 4FT® Processor
- High Speed Processing (1,700 DMIPS, 90 Linpack MFLOPS)
- Memory
 - 128 MB of EDAC corrected SDRAM
 - 32 GB of BCH corrected NAND flash
 - 4 MB of EDAC corrected EEPROM
- I/O Interfaces:
 - Integrated SpaceWire router: (8) general purpose SpaceWire ports (up to 200 Mbps each) and (1) SpW debug port
 - (2) UART (RS-422 or LVDS)
 - (2) CANbus
 - (2) I2C, (1) Ethernet, (1) SPI, GPIO
- TID Greater than 100krad (Si)
- Low Power Consumption: 5W

Applications

- Launchers
- Payload Processing
- Satellites
- Command and Control

Complete Info: www.ddc-web.com/SCS3740

Radiation Shielded RAD-PAK® Solutions

Space Commercial Off-The-Shelf (Sp-COTS™) radiation hardened microelectronic solutions offer the optimal combination of high-performance functionality, in a highly-reliable, and economical package. Utilizing advanced commercially-available microelectronics, with DDC's best-in-class radiation-mitigation expertise (error correction, TMR capable and RAD-PAK® radiation shielding technology), Sp-COTS products are assembled, screened and qualified at DDC's MIL-PRF-38534/5 certified production facilities, and come with a radiation-performance guarantee, ensuring confidence and satisfaction for the most challenging space missions.

Sp-COTS™: Space Commercial Off-The-Shelf

- Offer the optimal combination of high performance functionality, in a highly reliable RAD-PAK® package, which improves TID (Total Ionizing Dose) hardness by shielding the semiconductor die
- Utilizes latest commercially available technology, with DDC's best-in-class radiation mitigation expertise
- Radiation mitigation includes error correction, Triple Mode Redundancy (TMR capable) and RAD-PAK® radiation shielding technology
- All products are assembled, screened and qualified at DDC's MIL-PRF-38534/5 certified production facilities
- Radiation performance guarantee provided, ensuring confidence and satisfaction for the most challenging space missions

Rad Tolerant: "RT"

- Rad Tolerant versions of some key products (NAND Flash, NOR Flash, DDR2, some SDRAM & EEPROM) ; lower TID rated and no RAD-PAK ("RP"), (i.e. no shielding, lighter package)
- Sufficient for missions with less stringent total dose requirements

Class A "Affordable"

- The Class A test flow for our cost saving RAD-PAK® and Rad Tolerant (RT) hermetic parts, provide the most economical space grade solutions for short, cost-sensitive and non-critical applications.
- The Class A screening flow includes tri-temp electrical tests, data retention tests for memory devices, fine & gross leak tests to verify hermeticity, external visual inspection and final QA review.

| Product Description | Part Number | Radiation Technology | | | | | Package Style # Of Pins | | | | Specs | | Screening Level (DDC's Classes) | Page |
|---|-------------|----------------------|-----------------|----------|---------------------|------------|----------------------------|-----|-----|---------|------------|-----|------------------------------------|------|
| | | Latchup Protection | Rad-Hard at Die | RAD-PAK® | Rad Tolerant Option | X-ray-Pak® | Flat Pack | DIP | QFP | BGA/CGA | Data Sheet | SMD | | |
| Memories | | | | | | | | | | | | | | |
| DDR2 SDRAM | | | | | | | | | | | | | | |
| DDR2 SDRAM, 8 Gb | 97D2H8G64 | | | ■ | ■ | | | | ■ | ■ | | | K, H, A, I, E | 66 |
| DDR2 SDRAM, 6 Gb | 97D2H6G48 | | | ■ | ■ | | | | ■ | ■ | | | K, H, A, I, E | 66 |
| DDR2 SDRAM, 5 Gb | 97D2H5G80 | | | ■ | ■ | | | | ■ | ■ | | | K, H, A, I, E | 66 |
| DDR2 SDRAM, 4 Gb | 97D2H4G32 | | | ■ | ■ | | | | ■ | ■ | | | K, H, A, I, E | 66 |
| DDR2 SDRAM, 2 Gb | 97D2H2G16 | | | ■ | ■ | | | | ■ | ■ | | | K, H, A, I, E | 66 |
| SDRAM (100MHz Operating Frequency) | | | | | | | | | | | | | | |
| SDRAM, 1.5 Gb (32Mb x 48) Dual-Cavity | 97SD3248B | | | ■ | | | | | 132 | ■ | | | K, H, A, I, E | 66 |
| SDRAM, 1.25 Gb (32 Mb x 40) Dual-Cavity | 97SD3240B | | | ■ | | | | | 132 | ■ | | | K, H, A, I, E | 66 |
| SDRAM, 1.0 Gb (32Mb x 32) | 72SD3232B | | | ■ | ■ | | 72 | | | ■ | | | K, H, A, I, E | 66 |
| SDRAM, 256 Mb (16Mb x 16) | 48SD1616B | | | ■ | | | 72 | | | ■ | | | K, H, A, I, E | 67 |
| Low Voltage 3.3V SRAM (20ns, 25ns or 30ns Access Time) | | | | | | | | | | | | | | |
| SRAM, 16 Mb (512kb x 32) | 89LV1632 | | | ■ | | | | | 68 | ■ | | | K, H, A, I, E | 67 |
| SRAM, 4 Mb (512kb x 8) | 33LV408 | | | ■ | | | 32 | | | ■ | | | S, B, A, I, E | ☞ |
| Flash | | | | | | | | | | | | | | |
| FLASH, NAND, 256 Gb x16 - High Density | 69F256G16 | | | ■ | ■ | | 68 | | | ■ | | | K, H, A, I, E | 67 |
| FLASH, NAND, 192 Gb x24 - High Density | 69F192G24 | | | ■ | ■ | | 70 | | | ■ | | | K, H, A, I, E | ☞ |
| FLASH, NAND, 128 Gb x16 - High Density | 69F128G16 | | | ■ | ■ | | 68 | | | ■ | | | K, H, A, I, E | ☞ |
| FLASH, NAND, 96 Gb x24 - High Density | 69F96G24 | | | ■ | ■ | | 70 | | | ■ | | | K, H, A, I, E | ☞ |
| FLASH, NAND, 64 Gb x16 - High Density | 69F64G16 | | | ■ | ■ | | 68 | | | ■ | | | K, H, A, I, E | ☞ |
| FLASH, NAND, 32 Gb x8 - High Density | 29F32G08 | | | ■ | ■ | | 68 | | | ■ | | | S, B, A, I, E | ☞ |
| FLASH, NAND, 24 Gb x24 - High Density | 69F24G24 | | | ■ | ■ | | 70 | | | ■ | | | K, H, A, I, E | ☞ |
| FLASH, NAND, 12 Gb x24 - High Density | 69F12G24 | | | ■ | ■ | | 70 | | | ■ | | | K, H, A, I, E | ☞ |

☞ Visit www.ddc-web.com/space for complete product information.

| Product Description | Part Number | Radiation Technology | | | | | Package Style # Of Pins | | | | Specs | | Screening Level (DDC's Classes) | Page |
|---|---|----------------------|-----------------|----------|---------------------|------------|----------------------------|-----|-----|---------|------------|-----|------------------------------------|------|
| | | Latchup Protection | Rad-Hard at Die | RAD-PAK® | Rad Tolerant Option | X-ray-Pak® | Flat Pack | DIP | QFP | BGA/CGA | Data Sheet | SMD | | |
| FLASH, NAND, 128 Mb (16Mb x 8) | 69F1608 | | | ■ | ■ | | 24 | | | | ■ | | K, H, A, I, E | 71 |
| FLASH, NAND, 32 Mb (4Mb x 8) | 29F0408 | | | ■ | ■ | | 44 | | | | ■ | | S, B, A, I, E | 71 |
| FLASH, NOR, 512 Mb (x 8 or x16) - HD | 56F6408 | | | ■ | ■ | | 56 | | | | ■ | | S, B, A, I, E | 67 |
| Low Voltage 3.3V EEPROM (200ns or 250ns Access Time) (Available in RAD-PAK® and RAD Tolerant Versions) | | | | | | | | | | | | | | |
| EEPROM, 20 Mb (512kb x 40) Dual-Cavity | 79LV2040B | | | ■ | ■ | | 100 | | | | ■ | | K, H, A, I, E | 68 |
| EEPROM, 8 Mb (256kb x 32) | 79LV0832 | | | ■ | ■ | | | | 96 | | ■ | | K, H, A, I, E | 68 |
| EEPROM, 4 Mb (512kb x 8) | 79LV0408 | | | ■ | ■ | ■ | 40 | | | | ■ | | K, H, A, I, E | 68 |
| EEPROM, 1 Mb (128kb x 8) .480" Wide | 28LV010 | | | ■ | ■ | | 32 | | | | ■ | | S, B, A, I, E | 68 |
| EEPROM, 1 Mb (128kb x 8) .410" Wide | 28LV011 | | | ■ | ■ | | 32 | | | | ■ | | S, B, A, I, E | 71 |
| 5.0V EEPROM (120 ns, 150ns, or 200ns Access Time) (Available in RAD-PAK® and RAD Tolerant Versions) | | | | | | | | | | | | | | |
| EEPROM, 20 Mb (512kb x 40) Dual-Cavity | 79C2040B | | | ■ | ■ | | 100 | | | | ■ | | K, H, A, I, E | 69 |
| EEPROM, 8 Mb (256kb x 32) | 79C0832 | | | ■ | ■ | | | | 96 | | ■ | | K, H, A, I, E | 69 |
| EEPROM, 4 Mb (512kb x 8) | 79C0408 | | | ■ | ■ | ■ | 40 | | | | ■ | | K, H, A, I, E | 69 |
| EEPROM, 1 Mb (128kb x 8) .480" Wide | 28C010 | | | ■ | ■ | | 32 | | | | ■ | ■ | V, Q, S, B, A, I, E | 69 |
| EEPROM, 1 Mb (128kb x 8) .410" Wide | 28C011T | | | ■ | ■ | | 32 | | | | ■ | ■ | V, Q, S, B, A, I, E | 71 |
| A/D & D/A Converters | | | | | | | | | | | | | | |
| Analog-to-Digital Converters | | | | | | | | | | | | | | |
| ADC, 16 bit, 100 kSPS, Serial | 7809C | | | ■ | ■ | | 24 | | | | ■ | | S, B, A, I, E | 70 |
| ADC, 16 bit, 200 kSPS | 976B | | | ■ | ■ | | 28 | | | | ■ | | S, B, A, I, E | 71 |
| ADC, 14 Bit, 10 MSPS | 9240LP | ■ | | ■ | ■ | | | | 44 | | ■ | | K, H, A, I, E | 70 |
| ADC, 14 Bit, 83 kSPS, Single Supply | 7872A | | | ■ | ■ | | 16 | | | | ■ | | S, B, A, I, E | 71 |
| ADC, 12 Bit, 41 MSPS | 9042 | | | ■ | ■ | | 28 | | | | ■ | | K, H, A, I, E | 71 |
| Digital-to-Analog Converters | | | | | | | | | | | | | | |
| DAC, 16 Bit, Low Power | 7846B | | | ■ | ■ | | 28 | | | | ■ | | S, B, A, I, E | 71 |
| DAC, 12 Bit, Buffered, Multiplying | 7545B | | | ■ | ■ | | 20 | | | | ■ | | S, B, A, I, E | 70 |
| DAC, 12 Bit Serial | 8143 | | | ■ | ■ | | 16 | | | | ■ | | S, B, A, I, E | 71 |
| Amplifier and Comparators | | | | | | | | | | | | | | |
| Operational Amplifier, Quad | OP400A | | | ■ | ■ | | 16 | | | | ■ | | S, B, A, I, E | 71 |
| Comparator, High Speed | 903 | | | ■ | ■ | | 8 | | | | ■ | | S, B, A, I, E | 71 |
| Operational Amplifier, Quad, Rail to Rail | 6484 | | | ■ | ■ | | 14 | | | | ■ | | S, B, A, I, E | 71 |
| Operational Amplifier, Dual | OP220 | | | ■ | ■ | | 8 | | | | ■ | | S, B, A, I, E | 71 |
| Operational Amplifier, Dual, 4 MHz | OP284B | | | ■ | ■ | | 8 | | | | ■ | | S, B, A, I, E | 71 |
| Multiplexers | | | | | | | | | | | | | | |
| 128 Channel, Fault Protected | 81840 | | | ■ | ■ | | | | 256 | | ■ | | K, H, A, I, E | 71 |
| 16 Channel | 306 | | | ■ | ■ | | 28 | | | | ■ | | S, B, A, I, E | 71 |
| 8 Channel | 338 | | | ■ | ■ | | 16 | | | | ■ | | S, B, A, I, E | 71 |
| 8 Channel, Fault Protected | 358 | | | ■ | ■ | | 16 | | | | ■ | | S, B, A, I, E | 71 |
| Buffers/Drivers/Transceivers | | | | | | | | | | | | | | |
| Buffer/Driver, 8 Bit | 54BCT244 | | | ■ | ■ | | 20 | | | | ■ | | S, B, A, I, E | 71 |
| Transceiver, 8 Bit | 54BCT245 | | | ■ | ■ | | 20 | | | | ■ | | S, B, A, I, E | 72 |
| Buffer/Driver, 16 Bit, 3.3V | 54LVTH162244 | | | ■ | ■ | | 48 | | | | ■ | | S, B, A, I, E | 72 |
| Buffer/Driver, 8 Bit, 3.3V | 54LVTH244A | | | ■ | ■ | | 20 | | | | ■ | | S, B, A, I, E | 72 |
| Transceiver, 8 Bit, 3.3V | 54LVTH245A | | | ■ | ■ | | 20 | | | | ■ | | S, B, A, I, E | 72 |
| Interface, D-Latch, 16 Bit, 3.3V | 54LVTH162373 | | | ■ | ■ | | 48 | | | | ■ | | S, B, A, I, E | 73 |
| Nuclear Event Detectors | | | | | | | | | | | | | | |
| Designed In Rad-Hard w/Event Flag | HSN-1000 | | ■ | | | | 14 | 14 | | | ■ | | H | 71 |
| Guaranteed Rad-Hard w/Event Flag | HSN-3000 | | ■ | | | | 14 | 14 | | | ■ | | H | 73 |
| Optocouplers | | | | | | | | | | | | | | |
| Optocouplers | Visit www.ddc-web.com/Optocouplers to see the full line of optocouplers | | | | | | | | | | | | | 71 |

71- Visit www.ddc-web.com/space for complete product information.

DDR2 SDRAM Memory

2 Gb - 8 Gb

**Model: 97D2H****Features**

- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened >100krads (Si), Dependent on Space Mission
- Excellent SEU tolerance
- Latchup threshold > 57 MeV cm²/mg
- Low-profile 442-pad CCGA package
- High Speed Operation – Clock frequency up to 400MHz, 800MHz data rate
- A variety of data interfaces for FPGA's and processors: x8, x16, x32, x48, x64 and x80
- Also available in Rad Tolerant package

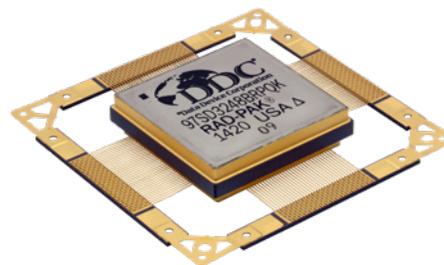
Applications

- Processor Memory
- FPGA Memory
- Mass Storage Arrays

Complete Info: www.ddc-web.com/DDR2

SDRAM Memory

1.5 Gb

**Model: 97SD3248B****Features**

- 8Meg x 48-Bit x 4-Banks
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened >100krads (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SEL_{TH}: >85MeV/mg/cm² @25°C
- Available in 132 Lead Quad Flat Package
- JEDEC Standard 3.3V Power Supply
- 100MHz Operation Clock Frequency

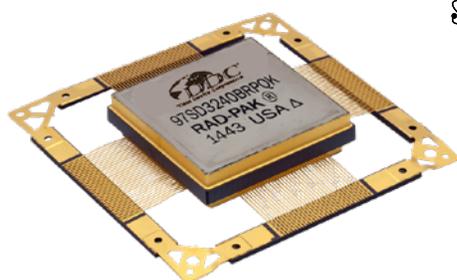
Applications

- Processor Memory
- FPGA Memory

Complete Info: www.ddc-web.com/97SD3248B

SDRAM Memory

1.25 Gb

**Model: 97SD3240B****Features**

- 8Meg x 32-Bit x 4-Banks
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened >100krads (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SEL_{TH}: >85MeV/mg/cm² @25°C
- Available in 132 Lead Quad Stack Pack Flat Package
- JEDEC Standard 3.3V Power Supply
- 100MHz Operation Clock Frequency

Applications

- Processor Memory
- FPGA Memory

Complete Info: www.ddc-web.com/97SD3240B

1 Gb

**Model: 72SD3232B****Features**

- 32 Meg x 32-bit x 4 Banks
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened >100krads (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SEL_{TH}: >85MeV/mg/cm² @25°C
- Available in 132 Lead Quad Stack Pack Flat Package
- JEDEC Standard 3.3V Power Supply
- 100MHz Operation Clock Frequency
- Also available in Rad Tolerant package

Applications

- Processor Memory
- FPGA Memory

Complete Info: www.ddc-web.com/72SD3232B

SDRAM Memory

256 Mb



Model: 48SD1616B

Features

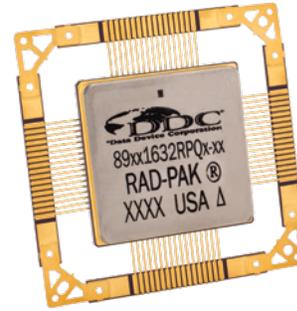
- 8 Meg x 8-bit x 4 Banks
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened >100krads (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SEL_{th} : >85MeV/mg/cm² @25°C
- Available in 132 Lead Quad Stack Pack Flat Package
- JEDEC Standard 3.3V Power Supply
- 100MHz Operation Clock Frequency

Applications

- Processor Memory
- FPGA Memory

Complete Info: www.ddc-web.com/48SD1616B

Low Voltage 3.3V SRAM Memory



Model: 89LV1632

Features

- Four 512k x 8 SRAM Die
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SEL: >68MeV/cm²/mg
 - SEU Threshold: 3MeV/cm²/mg
 - SEU Saturated Cross Section: 6E-9cm²/bit
- Available in 68-pin QFP
- 3.3V ±10% Power Supply
- Completely Static Memory - No Clock or Timing Strobe Required

Applications

- Processor Memory
- FPGA Memory

Complete Info: www.ddc-web.com/89LV1632

NAND Flash Memory



Model: 69F256G16

Features

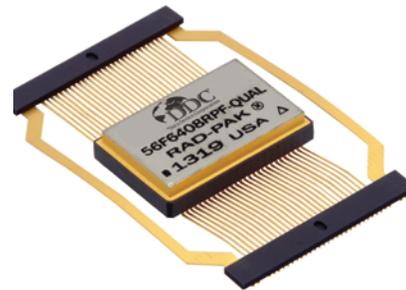
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads
- High Density 64, 128, or 256Gb
- NAND Flash Interface: Single Level Cell (SLC) Technology, ONFI 2.2 Compliant
- Operating Voltage: V_{cc} 3.0 - 3.6V, V_{ccq} 1.7 to 1.95 or 3.0 to 3.6V
- High Reliability Data Storage for Demanding Space Applications
- Ceramic Hermetic Package with Built-in TID Shielding
- Class E, I, H, or K Certified
- Also available in Rad Tolerant package

Applications

- Solid-State Recorder Memory
- High-Density Memory Storage
- FPGA Configuration Memory

Complete Info: www.ddc-web.com/69F256G16

NOR Flash Memory



Model: 56F6408

Features

- Single Power Supply Operation
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads
- Single Event Effects: SEL > 60MeV*cm²/mg at 85°C
- Flexible Sector Architecture: 512 64K Word Sectors
- Hardware and Software Data Protection
- 56-Pin RAD-PAK Flat Pack
- 100,000 Erase/Program Cycles per Sector
- Low Power Consumption: 25mA read, 50mA erase/program, 1μA Standby mode
- Also available in Rad Tolerant package

Applications

- Processor Boot Memory
- FPGA Configuration Memory

Complete Info: www.ddc-web.com/56F6408

Low Voltage 3.3V EEPROM Memory

20 Mb



Model: 79LV2040B

Features

- 3.3V Low Voltage Operation 512k x 40 Bit EEPROM
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SEL: >120MeV/cm²/mg
 - SEU: >85MeV/cm²/mg
 - SEU: >18MeV/cm²/mg (write)
 - SET: >40MeV/cm²/mg (read)
- High Endurance: 10,000 cycles/dword, 10 year retention data
- Low Power Dissipation
- Also available in Rad Tolerant package

Applications

- Processor Boot Memory
- Coefficient & Variable Memory

Complete Info: www.ddc-web.com/79LV2040B

4 Mb



Model: 79LV0408

Features

- 3.3V Low Voltage Operation 512k x 8 Bit EEPROM
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SEL: >120MeV/cm²/mg
 - SEU: >85MeV/cm²/mg
 - SEU: >18MeV/cm²/mg (write)
 - SET: >40MeV/cm²/mg (read)
- High Endurance: 10,000 cycles/dword, 10 year retention data
- Low Power Dissipation
- Also available in Rad Tolerant package

Applications

- Processor Boot Memory
- Coefficient & Variable Memory

Complete Info: www.ddc-web.com/79LV0408

8 Mb



Model: 79LV0832

Features

- 3.3V Low Voltage Operation 256k x 32 Bit EEPROM
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SEL: >120MeV/cm²/mg
 - SEU: >85MeV/cm²/mg
 - SEU: >18MeV/cm²/mg (write)
 - SET: >40MeV/cm²/mg (read)
- High Endurance: 10,000 cycles/dword, 10 year retention data
- Low Power Dissipation
- Also available in Rad Tolerant package

Applications

- Processor Boot Memory
- Coefficient & Variable Memory

Complete Info: www.ddc-web.com/79LV0832

1 Mb



Model: 28LV010

Features

- 3.3V Low Voltage Operation 128k x 8 Bit EEPROM
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SEL: >120MeV/cm²/mg
 - SEU: >85MeV/cm²/mg
 - SEU: >18MeV/cm²/mg (write)
 - SET: >40MeV/cm²/mg (read)
- High Endurance: 10,000 cycles/dword, 10 year retention data
- Low Power Dissipation
- Also available in Rad Tolerant package

Applications

- Processor Boot Memory
- Coefficient & Variable Memory

Complete Info: www.ddc-web.com/28LV010

5V EEPROM Memory

20 Mb



Model: 79C2040B

Features

- 5V Low Voltage Operation 512k x 40 Bit EEPROM
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SEL: >120MeV/cm²/mg
 - SEU: >85MeV/cm²/mg
 - SEU: >18MeV/cm²/mg (write)
 - SET: >40MeV/cm²/mg (read)
- High Endurance: 10,000 cycles/dword, 10 year retention data
- Low Power Dissipation
- Also available in Rad Tolerant package

Applications

- Processor Boot Memory
- Coefficient & Variable Memory

Complete Info: www.ddc-web.com/79C2040B

4 Mb



Model: 79C0408

Features

- 5V Low Voltage Operation 512k x 8 Bit EEPROM
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SEL: >120MeV/cm²/mg
 - SEU: >85MeV/cm²/mg
 - SEU: >18MeV/cm²/mg (write)
 - SET: >40MeV/cm²/mg (read)
- High Endurance: 10,000 cycles/dword, 10 year retention data
- Low Power Dissipation
- Also available in Rad Tolerant package

Applications

- Processor Boot Memory
- Coefficient & Variable Memory

Complete Info: www.ddc-web.com/79C0408

8 Mb



Model: 79C0832

Features

- 5V Low Voltage Operation 256k x 32 Bit EEPROM
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SEL: >120MeV/cm²/mg
 - SEU: >85MeV/cm²/mg
 - SEU: >18MeV/cm²/mg (write)
 - SET: >40MeV/cm²/mg (read)
- High Endurance: 10,000 cycles/dword, 10 year retention data
- Low Power Dissipation
- Also available in Rad Tolerant package

Applications

- Processor Boot Memory
- Coefficient & Variable Memory

Complete Info: www.ddc-web.com/79C0832

1 Mb



Model: 28C010

Features

- 5V Low Voltage Operation 128k x 8 Bit EEPROM
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SEL: >120MeV/cm²/mg
 - SEU: >85MeV/cm²/mg
 - SEU: >18MeV/cm²/mg (write)
 - SET: >40MeV/cm²/mg (read)
- High Endurance: 10,000 cycles/dword, 10 year retention data
- Low Power Dissipation
- Also available in Rad Tolerant package

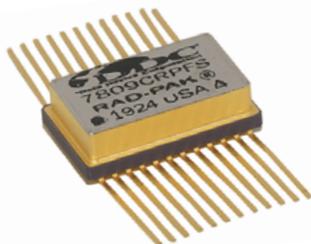
Applications

- Processor Boot Memory
- Coefficient & Variable Memory

Complete Info: www.ddc-web.com/28C010

Analog-to-Digital (A-to-D) Converters

16-Bit A-to-D Converter



Model: 7809C

Features

- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Single 5V Supply
- $\pm 10V$ and $0V$ to $5V$ Input Range
- Single Event Latchup Immune
- $100kHz$ min sample rate
- 24 pin RAD-PAK® Flat Package

Applications

- Interface to Sensors

Complete Info: www.ddc-web.com/7809C

14-Bit A-to-D Converter



Model: 9240LPRP

Features

- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Low Power Dissipation: $285mW$
- Single 5V Supply
- Integral Nonlinearity Error: $2.5LSB$
- Differential Nonlinearity Error: $0.36LSB$
- On-chip Sample-and-Hold Amplifier and Voltage Reference
- Signal-to-Noise and Distortion Ratio: $77.5dB$
- Spurious-Free Dynamic Range: $90dB$
- Total Dose Hardened to $100krads$ (Si), Dependent on Orbit and Mission Duration

Applications

- Interface to Sensors

Complete Info: www.ddc-web.com/9240LPRP

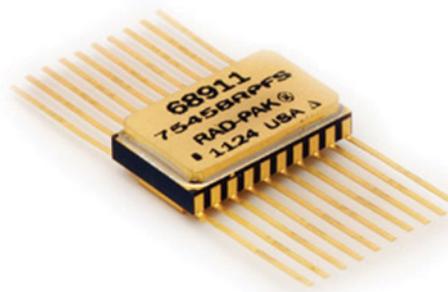
Did You Know?

DDC's 192Gb NAND flash was chosen for use on the Pearl Single Board Computer (SBC), that is used as the flight computer on NASA's BioSentinel CubeSat spacecraft. This device provides the CubeSat spacecraft with compact, high density memory, along with the advantages that a 24-bit bus configuration provides, allowing the use of TMR (Triple Modular Redundancy) error correction, for seamless operation without failure.

In August 2019, DDC introduced the first ceramic hermetic DDR2 memory available for space! The DDR2 (97D2H) offers up to 8 Gb of SDRAM in a compact CCGA package, providing a highly reliable and flexible memory solution for long dependable use and ease of design.

Digital-to-Analog Converters

12-Bit D-to-A Converter



Model: 7545B

Features

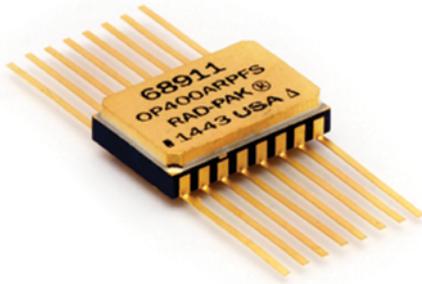
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened to $50krads$ (Si), Dependent on Space Mission
- Excellent Single Event Effects
 - SELTH: $>120MeV/mg/cm^2$
 - SEUTH: $>120MeV/mg/cm^2$
- Available in 20-pin RAD-PAK® Flat Pack or 20-pin RAD-PAK® DIP
- Low Gain Temperature Coefficient: $5ppm/^{\circ}C$ Typ.
- Fast Interface Timing
- Single $+5V$ to $+15V$ Supply

Applications

- Instrumentation Control
- Servo Control

Complete Info: www.ddc-web.com/7545BRP

Amplifiers



Model: OP400A

Features

- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- 16-pin RAD-PAK® Flat Pack
- Low Input Offset Voltage 150µA Max
- Low Offset Voltage Drift: +1.2µV/°C Max (Over -55 to +125°C)
- Low Supply Current (Per Amplifier): 725 µA Max
- High Open-Loop Gain: 5000V/mV Min
- Input Bias Current: 3nA Max

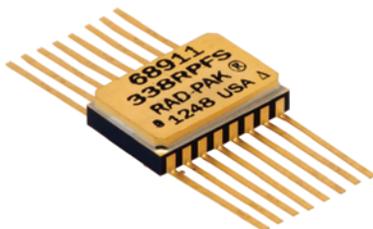
Applications

- Signal Conditioning
- Data Acquisition

Complete Info: www.ddc-web.com/OP400A

Multiplexers

8-Ch. Multiplexer



Model: 338

Features

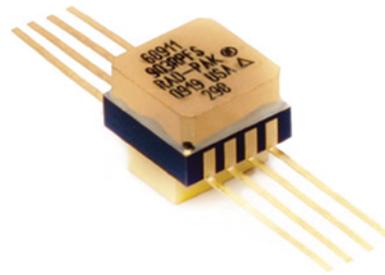
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened >100krads (Si), Dependent on Space Mission
- 16 Pin RAD-PAK® Flat Pack
- On-resistance, <400Ω Max
- Transition Time, <500ns
- On-resistance match, <10Ω
- NO-Off Leakage Current, <20pA @ 25°C
- Single-Supply Operation (4.5V to 30V) Bipolar-Supply Operation (±4.5V to ±20V)
- Plug-in Upgrade for Industry Standard DG508A/DG509A

Applications

- Telemetry Acquisition

Complete Info: www.ddc-web.com/338

Comparators



Model: 903

Features

- High-Speed, Low-Power Voltage Comparator
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- 8ns Typ Propagation Delay
- 18mW Power Consumption (Typ at +5V)
- Separate Analog and Digital Supplies
- Flexible Analog Supply: +5V to +10V or ±5V
- Input Range Includes Negative Supply Rail

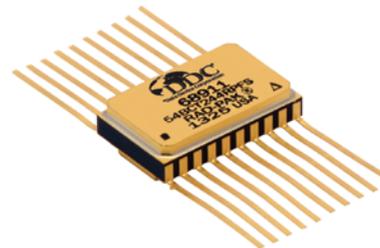
Applications:

- Analog Controls

Complete Info: www.ddc-web.com/903RP

Buffers/Drivers/Transceivers

Octal Buffer/Driver



Model: 54BCT244

Features

- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- P-N-P inputs reduce DC loading
- Typical V_{OLP} <0.8V at $V_{CC} = 3.3V$, $T_A = 25^\circ C$
- 20-Pin RAD-PAK® Flat Pack
- ESD protection exceeds 2000 V

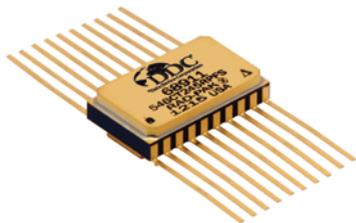
Applications

- Digital Bus Control

Complete Info: www.ddc-web.com/54BCT244

Buffers/Drivers/Transceivers

Octal Buffer/Transceiver



Model: 54BCT245

Features

- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- 3-State Outputs Drive Bus Lines or Buffer Memory Address
- 20-Pin RAD-PAK® Flat Pack
- Bi-CMOS design
- ESD protection exceeds 2000V

Applications

- Digital Bus Control

Complete Info: www.ddc-web.com/54BCT245

16-Bit Buffer/Driver



Model: 54LVTH162244

Features

- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- No External Resistors Required, Output Ports Have Equivalent 22-Ω Series Resistors
- Supports Mixed-Mode Signal Operation: 5V Input & Output Voltages with 3.3V Vcc
- 48-Pin RAD-PAK Flat Pack
- Supports Unregulated Battery Operation Down to 2.7V
- Typical VolP < 0.8V at Vcc = 3.3V, TA = 25°C

Applications

- Digital Bus Control

Complete Info: www.ddc-web.com/54LVTH162244

3.3V ABT 8-Bit Octal Buffer/Driver



Model: 54LVTH244A

Features

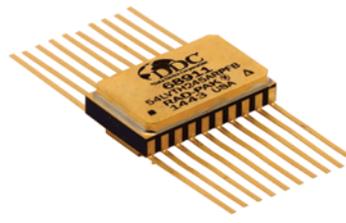
- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- Supports Mixed-Mode Signal Operation: 5V Input with 3.3V Vcc
- 20-Pin RAD-PAK® Flat Pack
- Supports Unregulated Battery Operation Down to 2.7V
- Typical VolP < 0.8V at Vcc = 3.3V, TA = 25°C

Applications

- Digital Bus Control

Complete Info: www.ddc-web.com/54LVTH244A

3.3V ABT Octal Bus Transceiver



Model: 54LVTH245A

Features

- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- 3.3V ABT octal bus transceiver with 3-state outputs
- Supports Mixed-Mode Signal Operation: 5V Input & Output Voltages with 3.3V Vcc
- 20-Pin RAD-PAK® Flat Pack & DIP
- Supports Unregulated Battery Operation Down to 2.7V
- Latch-up performance exceeds 500mA per JEDEC standard
- Typical VolP < 0.8V at Vcc = 3.3V, TA = 25°C

Applications

- Digital Bus Control

Complete Info: www.ddc-web.com/54LVTH245A

Buffers/Drivers/Transceivers

3.3V 16-Bit D-Type Latch



Model: 54LVTH162373

Features

- RAD-PAK® Radiation-Hardened Against Natural Space Radiation
- Total Dose Hardened > 100krads (Si), Dependent on Space Mission
- 3.3V Low Voltage Advanced BiCMOS Technology (LVT) 16-bit Transparent D-type Latches with 3-State Outputs
- Supports Mixed-Mode Signal Operation: 5V Input & Output Voltages with 3.3V Vcc
- 48-Pin RAD-PAK Flat Pack
- Supports Unregulated Battery Operation Down to 2.7V
- Typical $V_{OLP} < 0.8V$ at $V_{CC} = 3.3V$, $T_A = 25^{\circ}C$

Applications

- Digital Bus Control

Complete Info: www.ddc-web.com/54LVTH162373

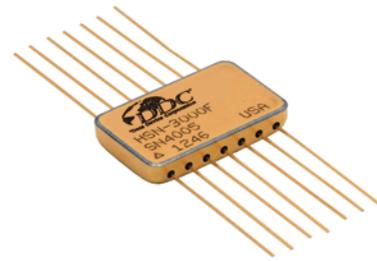
Did You Know?

In August 2018, the U.S. Naval Research Laboratory (NRL), developer of the robotic servicing payload for RSGS, chose DDC's SCS750 Single Board Computer (SBC) for use in the Robotic Servicing of Geosynchronous Earth Orbit (RSGS) program for the Defense Advanced Research Projects Agency (DARPA).

In February 2019, DDC announced the successful deployment of its SCS750 Single Board Computer (SBC) on the Second Greenhouse Gases Observing Satellite (GOSAT-2).

In September 2019, DDC was selected by L3Harris Technologies to provide high reliability motion control Synchro/Resolver-to-Digital (R/D) conversion components for use in the Telescope Control Electronics box to be installed on the Wide Field Infrared Survey Telescope (WFIRST). NASA is designing WFIRST to settle essential questions in the areas of dark energy, exoplanets, and infrared astrophysics.

Nuclear Event Detectors



Model: HSN-3000

Features

- Detects Ionizing Radiation Pulses
- 100% Tested/Certified Detection Threshold Level
- Adjustable Circumvention Period
- 100% Testable with Built-In Test
- Flat Pack or DIP Package
- Single +5V Operation
- Radiation Hardness Guaranteed
 - Compliant to MIL-PRF-38534 Class H
 - Dose Rate: 1×10^{12} rad(Si)/sec
 - Total Dose: 1×10^6 rad(Si)
 - Neutron Fluence: 5×10^{13} n/cm²
 - Approximate Detection Range: 2×10^5 - 2×10^7 rad(Si)/sec

Applications

- Defense

Complete Info: www.ddc-web.com/NED

Did You Know?

In high-reliability systems, DDC employs TMR (triple mode redundancy) and ECC (error correction codes) to mitigate TID (total ionizing dose) & SEE (single event effects). In both methods, failure-free operation is ensured by the use of redundancy. In the case of TMR, the output of three processors is run through a voting algorithm, and an error in one processor may then be "outvoted" by the other two processors. Additionally, incorrect data is resolved by applying Error Correction Codes and computing algorithms with redundant data-bits. With multiple error correction tools, the level of correction can be tailored to the severity of the environment.

Radiation Hardened by Design & Process Solutions

DDC has more than 30 years of experience in the design and manufacture of hybrids for space applications. This includes supplying MIL-STD-1553, motion feedback, and motor drive and controller hybrids for use on launch vehicles, satellites, deep space applications, and the International Space Station. In satisfying customers' needs to achieve the highest levels of reliability, DDC is fully qualified to build, test and qualify our hybrid circuits in accordance with MIL-PRF-38534 for multiple classes including class K.

| Data Bus — MIL-STD-1553 | | | | | | | | | | | | | | | | |
|---|----------------|---------------|-------------|----------|-----|----|----|----|---------------------|---------------|-----------|-----------|-----|------------------------|-------------|------|
| Product | Product Number | 1553 Function | | | | | | | Subsystem Interface | | Package | | | Temperature Range (°C) | | Page |
| | | Transceiver | Transformer | Protocol | RAM | BC | RT | MT | Local Bus | Simple System | Flat Pack | Gull Wing | DIP | Operating | Storage | |
| Radiation Tolerant 1553 Physical Layer for Space (includes Transceivers and Transformers) | | | | | | | | | | | | | | | | |
| SPACE-PHY | BU-67402Fx0HL | ■ | ■ | | | | | | | | ■ | ■ | | -55 to +125 | -65 to +150 | 75 |
| Radiation Tolerant Fully Integrated 1553 Package for Space (includes Protocol, Transceivers, and Transformers) | | | | | | | | | | | | | | | | |
| Total-Space ACE | BU-6752xFHL | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | | -55 to +125 | -65 to +150 | 75 |
| Total-Space RT | BU-67502 | ■ | ■ | ■ | ■ | | | ■ | ■ | | ■ | ■ | | -55 to +125 | -65 to +150 | 75 |
| Radiation Tolerant 1553 Space Terminals (includes Protocol and Transceivers) | | | | | | | | | | | | | | | | |
| SP ¹ ACE RT II | BU-63705 | ■ | | ■ | | | | ■ | ■ | | ■ | ■ | ■ | -55 to +125 | -65 to +150 | 75 |
| SP ¹ ACE II BC/RT/MT | BU-63825 | ■ | | ■ | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | ■ | -55 to +125 | -65 to +150 | 76 |

| Data Bus — MIL-STD-1553 — Transformers & Couplers | | |
|---|--|----|
| Transformers | | |
| HREL Series | For use with MIL-STD-1553A/B, MacAir A-5690, A-5232, and A-4905; MIL-STD-981 for Space Flight Transformers | 76 |
| Box Couplers | | |
| BDXXXXX | Full MIL-STD-1553 Capability; Single, Dual, Triple, and Quad-stub Versions; MIL-STD-981 for Space Flight Box Coupler | 76 |
| In-Line Couplers | | |
| BDXXXXX | Full MIL-STD-1553 Capability; Single, Dual, and Triple-stub Versions; MIL-STD-981 for Space Flight In-line Coupler | 76 |

| Motor Drives & Controllers | | | | | | | | | | | | | | | |
|----------------------------|---------|---|---|------|---|---------------|-------------|----------|---------|-------------------|--------------|---------------|------------------|---------------|------|
| Product Number | Package | | | | | Voltage (VDC) | Current (A) | Features | | | | | | Functionality | Page |
| | Pin | | | Case | | | | Hybrid | 3-Phase | Torque Controller | Bridge Drive | Small Plug In | 4 Quadrant Drive | | |
| Motor Controllers | | | | | | | | | | | | | | | |
| PWR-82332 | ■ | | | | ■ | 400 | 19 | ■ | ■ | | ■ | | | | 77 |
| PW-82336 | | | ■ | ■ | | 100 | 3 | ■ | ■ | | ■ | | | | 77 |
| Motor Drives | | | | | | | | | | | | | | | |
| PW-82540R0 | | ■ | | | ■ | 100 | 10 | ■ | ■ | ■ | | ■ | ■ | ■ | 77 |

| Motion Feedback — Synchro/Resolver | | | | |
|------------------------------------|---------|------|--|------|
| Product Number | Package | | Features | Page |
| | 18 Pin | DDIP | | |
| Reference Sine Oscillator | | | | |
| OSC-15803 | ■ | ■ | Radiation Tolerant Synchro/Resolver/Inductosyn [®] Reference Oscillator | 77 |

☞ Visit www.ddc-web.com/space for complete product information.

SPACE-PHY



MIL-STD-1553



Model: BU-67402F30HL, BU-67402F80HL

Features

- Dual-Redundant, Side-by-Side, MIL-STD-1553 Transceiver/Transformer Combo
 - Ceramic Flatpack Package
 - 25.4mm x 25.4mm x 6.35mm (1in. x 1in. x 0.25in.)
- 5V and 3.3V
- Temp Range: -55°C to +125°C
- Radiation Specifications:
 - Total Dose: 100krad (5V Version), 300krads (3.3V version)
 - Latchup Immunity Minimum LET Threshold: 85.4 MeV-cm²/mg
- MIL-PRF-38534

Applications

- Launch Vehicles
- Military Satellites
- Research Satellites
- International Space Station
- Commercial Telecommunication Satellites

Complete Info: www.ddc-web.com/BU-67402F

Total-Space ACE



MIL-STD-1553



Model: BU-6752XFHL

Features

- Fully Integrated 1553 Terminal & Transformer in a Single Package
 - Ceramic Flatpack Package
 - 41.4mm x 28.7mm x 6.35mm (1.63in. x 1.13in. x 0.25in.)
- 3.3V (Only) Input Power
- 1 Dual Redundant 1553 Channel
- BC, RT, MT or RT/MT Functionality
- Temp Range: -55°C to +125°C
- Radiation Specifications:
 - Total Dose: 300krad
 - Latchup Immune: 75MeV

Applications

- Launch Vehicles
- Military Satellites
- Research Satellites
- International Space Station
- Commercial Telecommunication Satellites

Complete Info: www.ddc-web.com/BU-6752xF

Total-Space RT



MIL-STD-1553



Model: BU-67502

Features

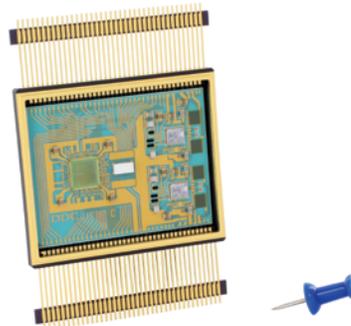
- Complete Integrated Remote Terminal Including: Dual Low-Power Transceivers/Complete RT Protocol
- 3.3V (Only) Input Power
- Direct Interface to Systems With No Processor
- Radiation-Tolerant to 300krad
- Space-Qualified
- High Reliability Screening Available
- Temp Range: -55°C to +125°C

Applications

- Launch Vehicles
- Military Satellites
- Research Satellites
- International Space Station
- Commercial Telecommunication Satellites

Complete Info: www.ddc-web.com/BU-67502

SP'ACE RT II



MIL-STD-1553



Model: BU-63705

Features

- Complete Integrated BC/RT/MT Terminal Including: Dual Low-Power Transceivers/Complete Protocol
- 5V (Only), +5/-15V, or +5/-12V Input Power
- Radiation-Tolerant to 1mrad Available
- Flexible Processor/Memory Interface
- 16K x 16 Internal RAM
- Automatic BC Retries
- Programmable BC Gap Times
- BC Frame Auto-Repeat
- Flexible RT Data Buffering
- Temp Range: -55°C to +125°C

Applications

- Launch Vehicles
- Satellites
- International Space Station

Complete Info: www.ddc-web.com/BU-63705

SP'ACE II BC/RT/MT



MIL-STD-1553
Rad-Hard

Model: BU-63825

Features

- +5V Only, +5/-15V, or +5/-12V Power
- Radiation-Tolerant to 1mrad Available
- Flexible Processor/Memory Interface
- 16K x 16 Internal RAM
- Automatic BC Retries
- Programmable BC Gap Times
- BC Frame Auto-Repeat
- Flexible RT Data Buffering
- Temp Range: -55°C to +125°C

Applications

- Launch Vehicles
- Satellites
- International Space Station

Complete Info: www.ddc-web.com/BU-63825

Space Grade Box Coupler



MIL-STD-1553
MIL-PRF-981
Rad-Hard

Model: BDXXXXX



Features

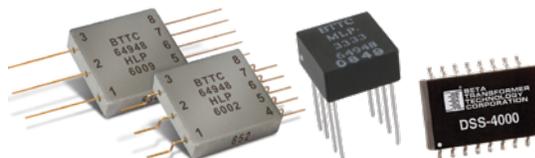
- Full MIL-STD-1553 Compatibility
- Designed to Meet MIL-STD-981
- Standard Single, Dual, Triple, and Quad-Stub Versions
- Custom Multi-Stub Designs Accepted
- Miniature Configurations
- Industry Standard Connectors, Equivalent to Emerson P/N BJ-770
- MIL-R-39007 Q.P.L Resistors
- Outgassing Levels that Meet NASA Requirements
- Soldering to J-STD-001, S-Level

Applications

- Space Applications
- Satellites
- Launch Vehicles

Complete Info: www.ddc-web.com/SpaceBoxCouplers

HREL Series



MIL-STD-1553
MIL-PRF-981
Rad-Hard



Model: HREL Series

Features

- Hermetically Sealed, Ultra-Low Profile 0.175" Maximum Height, Surface Mount Flat Pack
- 3.3V, 5V, 12V, and 15V Ratios
- For use with MIL-STD-1553A/B, MacAir A-5690, A-5232, and A-4905
- Temp Range: -55°C to +130°C
- Built and Tested to MIL-PRF-21038 and MIL-STD-202
- Soldering to J-STD-001, S-Level

Applications

- Mission Computers
- Digital Data Recorders
- LRUs
- Radios/Modems
- Radar Systems/Situational Awareness
- Displays
- Ground Vehicles
- Commercial Aerospace
- Space Flight

Complete Info: www.ddc-web.com/HREL

Space Grade In-line Coupler



MIL-STD-1553
MIL-PRF-981
Rad-Hard



Model: BDXXXXX

Features

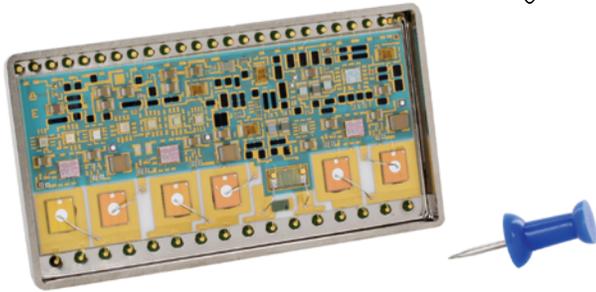
- Full MIL-STD-1553 Compatibility
- Designed to Meet MIL-STD-981
- Standard Single, Dual, and Triple-Stub Versions
- Custom Multi-Stub Designs Accepted, Up to 6 Stubs Available
- M17/176-00002 Cable,
- MIL-R-39007 Q.P.L Resistors, Product Level Type S
- Outgassing Levels that Meet NASA Requirements
- Soldering to J-STD-001, S-Level

Applications

- Space Applications
- Satellites
- Launch Vehicles

Complete Info: www.ddc-web.com/SpaceInLineCouplers

3-Phase Motor Drive



Model: PW-82336

Features

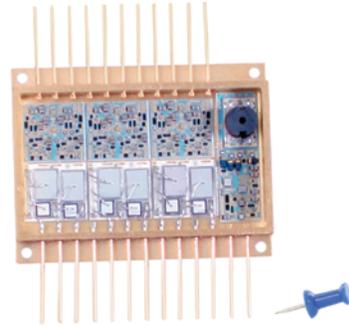
- 3-Phase Motor Drive Hybrid
- Small Size 66mm x 35.6mm x 6.35mm (2.6in x 1.4in x 0.25in)
- 100VDC Rating
- 3A Continuous, 6A Peak Current Capability
- Designed to Meet the Following Radiation Levels
 - 100krad Total Dose
 - 36MeV SEU
- Operating Temperature: -55°C to +125°C

Applications

- Electric Actuators
- Electric Valve Control
- Fuel Pumps
- Robotics
- Antenna/Camera Position Control
- Reaction Wheels

Complete Info: www.ddc-web.com/PWR-82336

3-Phase Motor Drive



Model: PWR-82332

Features

- Small Size 76.2mm x 53.3mm x 10.2mm (3.0in x 2.3in x 0.40in)
- 400 VDC Rating
- 19A Continuous Current Capability
- Class K Processing
- SEU Immune for LET Level of 36 MeV/mg/cm²
- Can Withstand 10krad (Si) Total Dose Radiation
- Space Station Qualified
- High-Efficiency MOSFET Drive Stage
- Direct Drive for Commutation Logic

Applications

- Robotics
- Electromechanical Valve Assemblies
- Actuator Systems
- Antenna and Solar Radar Positioning
- Fan and Blower Motors for Environmental Conditioning
- Reaction Wheels
- Compressor Motors for Cryogenic Coolers

Complete Info: www.ddc-web.com/PW-82332

3-Phase Motor Controller



Model: PW-82540R0

Features

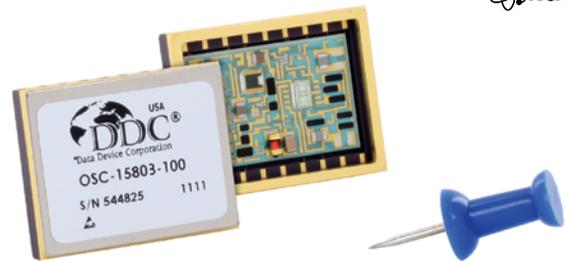
- Self-contained 3-Phase Motor Controller
- Controller for Current or Voltage
- 1, 3, or 10A Output Current
- 1.5% Linearity
- 3% Current Regulating Accuracy
- User-Programmable Compensation
- 10kHz - 100kHz PWM Frequency
- Designed to Meet the Following Radiation Levels
 - 100krad Total Dose
 - 36MeV SEU
- Operating Temperature: -55°C to +125°C

Applications

- Robotics
- Electromechanical Valve Assemblies
- Actuator Systems
- Antenna and Solar Radar Positioning
- Fan and Blower Motors for Environmental Conditioning
- Reaction Wheels
- Compressor Motors for Cryogenic Coolers

Complete Info: www.ddc-web.com/PW-82540R

Reference Sine Oscillator



Model: OSC-15803

Features

- Programmable Output Frequency from 400Hz to 20kHz
- Quadrature Reference Output Voltages for Inductosyn Applications
- Small 18-Pin DDIP
- Scalable Reference Output
- Radiation Tolerant
 - Contact DDC for Rad Report Details
- Temp Range: -55°C to +125°C

Applications

- Space
- Nuclear
- Military
- Inductosyn Applications

Complete Info: www.ddc-web.com/OSC-15803

Custom Hybrids, MCMs & ASICs



Core Competencies and Unique Suite of Capabilities

Data Device Corporation, a world leader in the design and manufacture of high-reliability Connectivity, Power and Control solutions, has been producing custom hybrid, MCM and ASIC solutions for use in military, commercial aerospace, space, and industrial applications, for more than 55 years.

DDC's core competencies and unique suite of capabilities for the production of custom microelectronic solutions span over every stage of development including electrical design, mechanical design, test engineering, process engineering, manufacturing, and product assurance. DDC is uniquely qualified to support a wide range of applications and technologies based upon our decades of experience in analog and digital microelectronics, magnetics, power supplies, radiation mitigation technology and quality certifications for AS9100, ISO 9001, EN9100, JIS Q9100, and through the DLA MIL-PRF-38534 and MIL-PRF-38535.

For space and extreme environmental conditions, DDC's microcircuit experience includes the design and manufacturing of power hybrids, interface hybrids and memory modules.

Our comprehensive range of capabilities enables DDC to deliver optimized custom hybrid and ASIC solutions to support multiple business models, including build-to-spec, build-to-schematic, and build-to-print. Additionally, DDC has the capacity to support high volume packaging and testing through partnerships with industry leading semiconductor foundries and suppliers.

Custom Hybrids

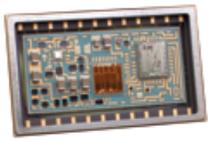
For more than 55 years, DDC has been a trusted manufacturer of highly reliable hybrid microelectronic solutions, supporting the critical, long life cycle requirements of military, industrial and space applications worldwide. DDC's experience and expertise includes the design and manufacture of all types of hybrid microelectronics, including analog, digital, mixed signal, power, radiation tolerant and space grade.

Custom ASICs

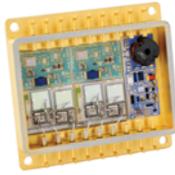
As the worldwide leader in MIL-STD-1553 data bus and synchro/resolver-to-digital conversion components, DDC is uniquely positioned to leverage our in-house experience and expertise to create low-risk, high Technology Readiness Level (TRL) custom analog, digital, and mixed signal ASIC solutions. Additionally, DDC has the capacity to support high volume packaging and testing through partnerships with industry leading semiconductor foundries and packaging houses.

Custom Hybrids

Types of Hybrids



Metal/Thick Film Substrate



Metal/Thick Film Substrate (Power Hybrid)



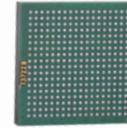
Ceramic/Thin Film Substrate



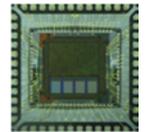
Co-Fired Ceramic



Plastic BGA



Flip-Chip



Stacked Die

Assembly & Processing

Hybrid Assembly and Processing

- Current annual volumes >120,000 hybrid/MCMs devices
- Die bond counts From 1 to 90
- Die bond capacity: >150K bonds/month --- 1.8M bonds/year

Die Bonding

- Conductive and non-conductive epoxy
- Eutectic bonding

Wire Bonding

- Thermosonic ball bonding 1 or 2 mil gold wire for signals
- Ultrasonic bonding for 1.25 - 20 mil aluminum wires for high current

Flip-Chip Capability

- Die handling from 0.17 mm to 50 mm, handles 300mm wafer magazines
- Placement accuracy of $\pm 7 \mu\text{m}$ @ rate of 20/minute

Die Handling

- Established supply chain relationships with franchised distributors for procurement of die components
- Established material handling process for storage of die components
 - Nitrogen dry box chambers in 100K clean room

In-House Multi-Layer Thick Film Deposition

- Hybrid substrate fabrication
- Conductive and non-conductive materials
- Gold, ceramic, resistive ink

Vacuum Sealing/Solder Reflow Furnace

- Vacuum sealing/solder reflow furnace
 - For near void free die attachment of high power dissipating devices (e.g., MOSFETs)
 - Positive pressure & vacuum for die attach up to 1000° C
 - Hydrogen furnace
- Solders:
 - Sintered silver
 - Gold tin

Laser Trimming

- Trim resistor values for thick film and thin film substrates
- Passive & active trimming for high accuracy circuits

Conductors

- Conductor materials
 - Gold
 - Platinum gold
 - Palladium gold
 - Platinum palladium gold
 - Silver
 - Platinum silver
 - Palladium silver
- Conductor types
 - 5 mil standard
 - Eutectic attach
 - Solderable
 - Wire bondable

Automated Test

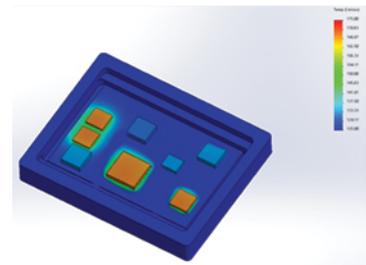
- Fully automated testing
- Test engineers involved with all phases of product development
- VXi test stands
- Power supplies, voltmeters, digitizing oscilloscopes, load banks, etc.
- Hybrid-specific Interface Test Adaptors (ITAs)
- PC based test software
- All aspects of environmental testing performed in-house

Hybrid / MCM Computer Aided Design (CAD) Tools

- Thermal Models
- Schematic capture: Cadence OrCAD layout: Cadence Allegro
- Algor - Three-dimensional conduction-cooled thermal analysis
- CFDesign - Air-cooled thermal analysis
- AutoCAD - Two-dimensional drawings
- SolidWorks - Three-dimensional mechanical drawings



Computer Aided Design (CAD)



Thermal Models

Custom Hybrids

DDC can also screen to specific profiles, enabling customers to choose from a menu including element evaluation, particle impact noise detection (PIND) testing, 320 hour burn-in, 100% nondestructive wire bond pull, and/or radiographic (X-ray) analysis.

Materials & Components - Element Evaluation

Active Elements (every wafer lot)

- 100% high magnification visual
- 100% probe at room temperature
- Samples put through standard environmental screening, including burn-in and electrical at min, max, and room temperature
- Life Test
- Scanning electron microscope (SEM) inspection
- Wire bond pull test

Passive Elements (Capacitors, Resistors, Inductors)

- 100% visual
- 100% electrical on select parameters at room temperature
- Samples screened, including voltage conditioning and full electrical at room temperature
- Wire bond pull test

Hybrid Microcircuit 100% Testing

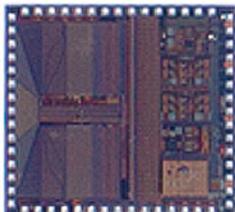
- Non-destructive bond pull
- Internal visual inspection
- Temperature cycling 10 times from -65°C to +150°C
- Constant acceleration 3,000 G
- PIND 1% PDA on 5th run and under 25% total
- Burn-in IAW MIL-STD-883 method 1015
- Seal (fine and gross)
- Full electrical test at min, max, and room temperature
- Radiography
- External visual
- Material control
- Full lot traceability to individual wafer
- Lot homogeneity

Custom ASICs

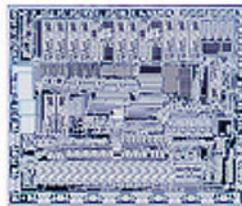
Examples of ASICs



Complete SPI to MIL-STD-1553 Interface



MIL-STD-1553 Radiation Tolerant Protocol ASIC



Resolver-to-Digital Mixed Signal ASIC



Resolver-to-Digital Converter

ASIC Capabilities

Unique Capabilities

- Dedicated ASIC design team
- Experience in high voltage processes
- DO-254 and DO-178 compliant
- Radiation hard ASICs with high TID and SEE/SEU immunity
- Experience in a wide range of processes including:
 - CMOS (down to 90nm)
 - BiCMOS
 - BCDMOS
 - HVIC

Core Expertise

- Analog
- Digital
- Mixed signal
- Power
- Radiation tolerant/space grade

Design Complexity Experience

- High transistor counts – up to 600,000
- High logic gate counts – up to 150,000
- High precision – 16-bit resolver-to-digital converters, with accuracies down to $\pm 1/2$ arc minute

Building Blocks

- Linear amplifiers
- Op-amps
- Voltage references
- A/D and D/A converters
- Oscillators
- Power management

ASICs for DDC Standard Products

- MIL-STD-1553
- ARINC 429
- Synchro/resolver-to-digital converters

Complete Info: www.ddc-web.com/ASICs

Data Device Corporation

Leadership Built on Over 55 Years of Innovation

Military | Civil Aerospace | Space | Industrial

Data Device Corporation (DDC) is a world leader in the design and manufacture of high-reliability Connectivity, Power and Control solutions (Data Networking; Power Distribution, Control and Conversion; Motor Control and Motion Feedback) for aerospace, defense, space, and industrial applications. With awards for quality, delivery and support, DDC has served these industries as a trusted resource for more than 55 years... providing proven solutions optimized for efficiency, reliability, and performance. Data Device Corporation brands include DDC, Beta Transformer Technology Corporation, National Hybrid Inc., North Hills Signal Processing Corporation, Pascall Electronics Ltd., and XCEL Power Systems Ltd. DDC is headquartered in Bohemia, NY and has manufacturing operations in New York, California, Mexico, and the United Kingdom.

Beta Transformer, a subsidiary of DDC, is the world leader in high performance military, commercial, and space qualified magnetic components. Beta Transformer developed many of the world's smallest transformers and inductors, and is recognized for superior quality and performance. The Beta Transformer product line now includes North Hills Signal Processing Corporation, which expands our product and technology portfolio with new MIL-STD-1553, RF Wideband, Interface, and Power Magnetic solutions. For high volume magnetics requiring globally competitive pricing, utilizes its AS9100 Rev C certified facilities in Ensenada and Matamoros Tamaulipas, Mexico.

DDC Electronics, Ltd. (DDC EL) specializes in the design and manufacture of power supply solutions for extreme environments. With over 30 years of experience in the defense, aerospace and industrial sectors, which draws on the heritage of both Pascall Electronics and XCEL Power Systems, DDC EL is a trusted source for complete solutions in the design, development and manufacture of electronic power conversion products – from single converters to complex multi-function conversion systems. DDC EL products are a leading choice for power on In-Flight Entertainment & Connectivity (IFEC) and defense systems. There are more than 180,000 DDC EL power supply units installed on commercial aircraft as well as a huge range of in-service products with ground, air and naval forces across the world. These units are powering state of the art electronic systems and are trusted by industry leaders to deliver reliable, proven performance in some of the most challenging environments to be found anywhere. Our power supply solutions are completely customizable and our specialty is working with challenging requirements. Wherever there is a demand for tight, unusual space envelopes, leading EMC performance, or anything in-between, DDC EL can provide solutions across a range of difficult applications.

DDC Space Microelectronics, a division of Data Device Corporation and formerly the space microelectronics division of Maxwell Technologies, is a leading developer and manufacturer of innovative, cost-effective, space-qualified microelectronics solutions for satellites and spacecraft. DDC Microelectronics has provided space-qualified radiation-tolerant and radiation-shielded products, including semiconductors and single-board computers, to the space industry for more than two decades. DDC radiation mitigated power modules, memory modules, and single board computers incorporate powerful commercial silicon for superior performance and high reliability in space applications. DDC Space Microelectronics specializes in understanding the radiation performance of commercial semiconductors, qualifying selected components for use in space, integrating them with proprietary radiation mitigation technologies, and manufacturing and screening these products in a DLA approved MIL-PRF-38535 facility, located in southern California. DDC's manufacturing facility in Poway, California is ISO 9001:2015 and AS9100 Rev C Certified, and MIL-PRF-38534 Class H and K, and MIL-PRF-38535 Class B, Q, S and V compliant.

Your Solution Provider for... Connectivity, Power, and Control

Connectivity

Data Bus Solutions

DDC is the market leader in high reliability data bus solutions for MIL-STD-1553/1760, ARINC 429, Fibre Channel, Ethernet, CANbus, Serial I/O and other protocols, and is one of the few companies able to provide a full range of computers, boards, hybrids and ASIC solutions for aerospace, defense and space applications.

Power

Power Supplies

DDC supplies highly customized power products to the aerospace, defense, maritime and satellite communications industries.

Solid-State Power Controllers

DDC's programmable solid-state power controllers provide simple and reliable power management for aerospace and defense systems.

Control

Motor Controllers and Drives

DDC is the world leader in high reliability torque, speed, and position controllers and drives engineered to operate in demanding environments.

Motion Feedback

DDC is the world leader in the design and manufacture of Synchro/Resolver-to-Digital and Digital-to-Synchro/Resolver converters.

Certifications

Data Device Corporation is ISO 9001, AS 9100, EN 9100, and JIS Q9100 certified. DDC has been granted certification by the Defense Logistics Agency, Land & Maritime (DLA) for manufacturing Class D, G, H, and K hybrid products in accordance with MIL-PRF-38534. Industry documents used to support DDC's certifications and Quality system are MIL-STD-883, ANSI/NCSL Z540-1, IPC-A-610, MIL-STD-202, JESD-22, and J-STD-020.

Beta Transformer Technology Corporation (BTTC) and its subsidiaries are ISO 9001 and AS 9100 certified. BTTC has been granted certification as a qualified source of transformers by the Defense Logistics Agency, Land & Maritime (DLA) and is listed on the QPL for products MIL-PRF 21038/27-01 through -31 Product Levels C, M and T.

DDC Electronics, Ltd.'s XCEL Power Systems and Pascall Electronics manufacturing operations are ISO 9001, AS 9100, EN9100 and ISO 14001:2004 certified.



Your Solution Provider for... Connectivity, Power, and Control



Contact Us

Inside the U.S. : Call 1-800-DDC-5757

Outside the U.S. : Call 1-631-567-5600

Operations

DDC Headquarters and Main Factory

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Tel: 1-800-DDC-5757 or (631) 567-5600

www.ddc-web.com

Data Device Corporation

DDC Space Microelectronics

13000 Gregg Street, Suite C, Poway, CA 92064
Tel: 1-800-DDC-5757 or (631) 567-5600

Beta Transformer Technology Corporation

40 Orville Drive, Bohemia, NY 11716
Tel: (631) 244-7393

www.BTTC-Beta.com

Beta Transformer Mexico, S. DE R. L. DE C.V.

Avenida 20 De Noviembre
959 Zona Centro, Ensenada, Baja Mexico
Tel: (631) 244-7393

North Hills Signal Processing Corporation

Avenida Jose Escandon y Helquera No. 21
Km. 8.5 Carretera Lauro Villar
H. Matamoros Tamaulipas, Mexico
Tel: (631) 244-7393

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Global Field Sales Support

Visit: www.ddc-web.com/Field-Support



DATA DEVICE CORPORATION
REGISTERED TO:
AS9100:2016, ISO9001:2015
FILE NO. 1001558



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DATA DEVICE CORPORATION
REGISTERED TO:
AS9100:2016, ISO9001:2015
FILE NO. 1001558



The first choice for more than 55 years!

DDC is a world leader in the design and manufacture of high-reliability Connectivity, Power and Control solutions (Data Networking Components to Processor Based Subsystems, Space Qualified SBCs & Radiation Hardened Components; Power Distribution, Control & Conversion; Motor Control & Motion Feedback), and has served the aerospace, defense, and space industries as a trusted resource for more than 55 years.

