Modular Power Converters

Quick Selection Guide

Product Grades

Please consult product datasheet on our website for complete specifications.

Input characteristics

Efficiency 83-92%  80-87%

Output characteristics

Set point accuracy (at 75% load) (+/-) 2%  (+/-) 2%
Line regulation (Ui min to max) (+/-) 0.5% max  (+/-) 1% max
Load regulation (25% to full load) (+/-) 2% max  (+/-) 2% max
Ripple output voltage

For 3.3 and 5 Vdc output voltage 40 mVpp max  50 mVpp max
For 12 Vdc output voltage 50 mVpp max  100 mVpp max
For 15 and 24 Vdc output voltage 60 mVpp max  150 mVpp max

General characteristics

Start up  soft start
Protections  permanent short circuit, temperature, current
Circuit restart  auto recovery
Isolation voltage  1500 Vdc
Isolation resistance   100 Mohm
Switching frequency  Fixed
Storage temperature -55°C/125°C  -40°C/105°C
Operating temperature (case) -40°C/105°C  -40°C/95°C

Technical Specifications

- tcase : -40°C to +105°C
- tstorage : -55°C to +125°C
- Encapsulation : Hi-Rel grade qualified potting
- Burn-in
- Control function
- Low output ripple voltage
- Option for -55°C start-up and MIL-STD-883C screening

- tcase : -40°C to +95°C
- tstorage : -45°C to +105°C
- Encapsulation : Industrial grade potting
- Qualified for industrial grade applications
- Option for high isolation up to 3KVdc

Hi-Rel grade converters are designed for demanding applications in extreme environments such as aerospace, military and high-end industrial applications. The modules are potted with a military qualified thermal conductive compound and packaged in a five sided metallic case.

Where optimum trade-off between cost and performances is of the essence, industrial grade DC/DC converters is the solution of choice.

GAIA Converter proposes two classes of modules, one with standard 2:1 input range and one with wide 4:1 input range.

Ultra Wide Input

- The wide input series is designed for use in distributed power architecture where variable input voltage and transient are prevalent making them ideal particularly for transportation, railways or high-end industrial applications.

  4.7 to 16 Vdc - 9 to 36 Vdc
  16 to 40 Vdc - 18 to 75 Vdc
  36 to 140/175 Vdc

  Multi batteries and robustness against transients. 12 - 160 Vdc

- The wide input series is designed for use in distributed power architecture where variable input voltage and transient are prevalent making them ideal particularly for avionics, defense, marine applications.

  9 to 45 Vdc
  16 to 40 Vdc
  16 to 80 Vdc
  120 to 480 Vdc

Standard Input

- The standard input series is designed for relatively narrow input voltage variations.

  This series represents the lowest cost approach for a given output power.

  4.5 to 5.5 Vdc
  18 to 36 Vdc

Ultra Wide Input

- Designed for multi batteries and transients compliance.

  4.5 to 33 Vdc
  9 to 60 Vdc
  10 to 100 Vdc

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2 Grades of Products

Hi-Rel grade converters are designed for demanding applications in extreme environments such as aerospace, military, and high-end industrial applications. The modules are potted with a military qualified thermal conductive compound and packaged in a five sided metallic case.

- Tcase : -40°C to +105°C
- Tstorage : -55°C to +125°C
- Encapsulation : Hi-Rel grade qualified potting
- Burn-in
- Control function
- Low output ripple voltage
- Option for -55°C start-up and MIL-STD-883C screening

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Hi-Rel (M) Grade</th>
<th>Industrial (I) Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input characteristics</td>
<td>Efficiency 83-92%</td>
<td>80-87%</td>
</tr>
<tr>
<td>Output characteristics</td>
<td>Set point accuracy (at 75% load) (+/-) 2%</td>
<td>(+/-) 2%</td>
</tr>
<tr>
<td></td>
<td>Line regulation (Ui min to max) (+/-) 0.5% max</td>
<td>(+/-) 1% max</td>
</tr>
<tr>
<td></td>
<td>Load regulation (25% to full load) (+/-) 2% max</td>
<td>(+/-) 2% max</td>
</tr>
<tr>
<td></td>
<td>Ripple output voltage for 3.3 and 5 Vdc output voltage 40 mVpp max</td>
<td>50 mVpp max</td>
</tr>
<tr>
<td></td>
<td>for 12 Vdc output voltage 50 mVpp max</td>
<td>100 mVpp max</td>
</tr>
<tr>
<td></td>
<td>for 15 and 24 Vdc output voltage 60 mVpp max</td>
<td>150 mVpp max</td>
</tr>
<tr>
<td>General characteristics</td>
<td>Start up soft start</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Protections permanent short circuit, temperature, current auto recovery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Circuit restart</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Isolation voltage 1500 Vdc</td>
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<td></td>
<td>Isolation resistance 100 Mohm</td>
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<td></td>
<td>Switching frequency Fixed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Storage temperature -55°C/125°C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operating temperature (case) -40°C/105°C</td>
<td></td>
</tr>
</tbody>
</table>

Wide Input

The wide input series is designed for use in distributed power architecture where variable input voltage and transient are prevalent making them ideal particularly for avionics, defense, marine applications.

9 to 45 Vdc
16 to 40 Vdc
16 to 80 Vdc
120 to 480 Vdc

Ultra Wide Input

The ultra wide input series is designed for use in distributed power architecture where variable input voltage and transient are prevalent making them ideal particularly for avionics, defense, marine applications.

4,7 to 16 Vdc - 9 to 36 Vdc
16 to 40 Vdc - 18 to 75 Vdc
36 to 140/175 Vdc

Multi batteries and robustness against transients 12 - 160 Vdc

Standard Input

The standard input series is designed for relatively narrow input voltage variations. This series represents the lowest cost approach for a given output power.

4,5 to 5,5 Vdc
9 to 36 Vdc
10 to 100 Vdc

Ultra Wide Input

The ultra wide input series is designed for use in distributed power architecture where variable input voltage and transient are prevalent making them ideal particularly for transportation, railways or high-end industrial applications.

9 to 45 Vdc
16 to 40 Vdc
16 to 80 Vdc
120 to 480 Vdc

Multi batteries and robustness against transients 12 - 160 Vdc

Please consult product datasheet on our website for complete specifications.
### DC/DC Product Line

**Isolated DC/DC Converter Modules**

<table>
<thead>
<tr>
<th>Family</th>
<th>Package</th>
<th>Power</th>
<th>Grade</th>
<th>Permanent Input Range</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGDxx-04</td>
<td>Dil 24</td>
<td>4 W</td>
<td>Industrial Grade</td>
<td>4.5-5.5V, 18-36V, 9-36V, 16-40V, 36-140V</td>
<td>Single, Bi, Triple</td>
</tr>
<tr>
<td>MGDxx-06</td>
<td>1” x 0.75”</td>
<td>6 W</td>
<td>Industrial Grade</td>
<td>12-160V</td>
<td>Dual</td>
</tr>
<tr>
<td>MGDxx-08</td>
<td>1” x 0.75”</td>
<td>8 W</td>
<td>Industrial Grade</td>
<td>4.5-33V, 9-60V</td>
<td>Dual</td>
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<tr>
<td>MGDxx-10</td>
<td>1” x 1.5”</td>
<td>10 W</td>
<td>Industrial Grade</td>
<td>4.5-5.5V, 18-36V, 4.7-16V, 9-36V, 16-40V, 36-140V</td>
<td>Single, Bi, Triple</td>
</tr>
<tr>
<td>MGDxx-18</td>
<td>1” x 1.5”</td>
<td>18 W</td>
<td>Industrial Grade</td>
<td>4.5-5.5V, 4.7-16V, 9-36V, 16-40V, 36-140V</td>
<td>Single</td>
</tr>
<tr>
<td>MGDxx-20</td>
<td>2” x 2”</td>
<td>20 W</td>
<td>Industrial Grade</td>
<td>4.5-5.5V, 18-36V, 4.7-16V, 9-36V, 16-40V, 36-140V</td>
<td>Single, Bi, Triple</td>
</tr>
<tr>
<td>MGDxx-20</td>
<td>1” x 1.5”</td>
<td>20 W</td>
<td>Industrial Grade</td>
<td>12-160V</td>
<td>Dual</td>
</tr>
<tr>
<td>MGDxx-21</td>
<td>1” x 1.25”</td>
<td>20 W</td>
<td>Industrial Grade</td>
<td>4.5-33V, 9-60V</td>
<td>Dual</td>
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<tr>
<td>MGDxx-25</td>
<td>2” x 2”</td>
<td>25 W</td>
<td>Industrial Grade</td>
<td>9-36V, 16-40V, 18-75V</td>
<td>Single, Bi, Triple</td>
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<tr>
<td>MGDSx-26</td>
<td>2” x 2”</td>
<td>25 W</td>
<td>Industrial Grade</td>
<td>9-36V, 16-40V</td>
<td>Single</td>
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<tr>
<td>CGDx-30</td>
<td>3” x 2”</td>
<td>30 W</td>
<td>Industrial Grade</td>
<td>18-36V, 4.7-16V, 9-36V, 16-40V, 36-140V</td>
<td>Up to Six</td>
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<tr>
<td>MGDxx-35</td>
<td>3” x 2”</td>
<td>35 W</td>
<td>Industrial Grade</td>
<td>9-36V, 16-75V, 36-140V</td>
<td>Single, Bi, Triple</td>
</tr>
<tr>
<td>MGDxx-40</td>
<td>1.25” x 1.70”</td>
<td>40 W</td>
<td>Industrial Grade</td>
<td>4.5-33V, 9-60V</td>
<td>Dual</td>
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<tr>
<td>MGDSx-60</td>
<td>3” x 2”</td>
<td>60 W</td>
<td>Industrial Grade</td>
<td>14-55V, 36-140V</td>
<td>Single</td>
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<tr>
<td>MGDDx-60</td>
<td>3” x 2”</td>
<td>60 W</td>
<td>Industrial Grade</td>
<td>12-160V</td>
<td>Dual</td>
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<tr>
<td>MGDSx-75</td>
<td>1/4 Brick</td>
<td>75 W</td>
<td>Industrial Grade</td>
<td>9-45V, 16-80V, 155-480V</td>
<td>Single</td>
</tr>
<tr>
<td>MGDSx-100</td>
<td>3” x 2”</td>
<td>100 W</td>
<td>Industrial Grade</td>
<td>14-55V, 36-140V, 10.7-100V</td>
<td>Single</td>
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<tr>
<td>MGDSx-150</td>
<td>1/2 Brick</td>
<td>150 W</td>
<td>Industrial Grade</td>
<td>9-45V, 16-80V, 120-480V</td>
<td>Single</td>
</tr>
<tr>
<td>MGDS-155</td>
<td>1/4 Brick</td>
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<td>Industrial Grade</td>
<td>9-45V, 16-80V, 155-480V</td>
<td>Single</td>
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<tr>
<td>MGDS-200</td>
<td>2/3 Brick</td>
<td>200 W</td>
<td>Industrial Grade</td>
<td>9-45V, 16-80V</td>
<td>Single</td>
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</tbody>
</table>
# Front End Product Line

## Front End Modules

<table>
<thead>
<tr>
<th>Family</th>
<th>Standards</th>
<th>Package</th>
<th>Power/Current</th>
<th>Grade</th>
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</thead>
<tbody>
<tr>
<td><strong>EMI FILTERS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F6DS - 2 A - 50 V</td>
<td>MIL-STD-461, DO-160</td>
<td>Dil 24</td>
<td>2 A</td>
<td></td>
</tr>
<tr>
<td>F6DS - 10 A - 50 V</td>
<td>MIL-STD-461, DO-160</td>
<td>1” x 1.5”</td>
<td>10 A</td>
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</tr>
<tr>
<td>F6DS - 20 A - 50 V</td>
<td>MIL-STD-461, DO-160</td>
<td>1” x 1.5”</td>
<td>20 A</td>
<td></td>
</tr>
<tr>
<td><strong>HOLD UP MODULES</strong></td>
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<td></td>
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</tr>
<tr>
<td>HUGD - 50</td>
<td>MIL-STD-704, DO-160</td>
<td>1” x 1.5”</td>
<td>50 W</td>
<td>Hi-Rel</td>
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<tr>
<td>HUGD - 300</td>
<td>MIL-STD-704, DO-160</td>
<td>1” x 1.5”</td>
<td>300 W</td>
<td>Hi-Rel</td>
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<tr>
<td><strong>AC / DC POWER FACTOR MODULES</strong></td>
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<tr>
<td>HGMB - 35</td>
<td>MIL-STD-704, DO-160</td>
<td>3” x 2”</td>
<td>35 W</td>
<td>Hi-Rel</td>
</tr>
<tr>
<td>HGMS - 150</td>
<td>MIL-STD-704, DO-160</td>
<td>1/2 brick</td>
<td>150 W</td>
<td>Hi-Rel</td>
</tr>
<tr>
<td>HGMS - 350</td>
<td>MIL-STD-704, DO-160</td>
<td>1/2 brick</td>
<td>350 W</td>
<td>Hi-Rel</td>
</tr>
<tr>
<td><strong>TRANSIENT PROTECTION MODULES</strong></td>
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<tr>
<td>PGDS - 50</td>
<td>MIL-STD-704, MIL-STD-1275</td>
<td>1” x 1.5”</td>
<td>50 W</td>
<td>Hi-Rel</td>
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<tr>
<td>LGDSI - 50</td>
<td>EN50155, RIA12</td>
<td>1” x 1.5”</td>
<td>50 W</td>
<td>Industrial</td>
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<tr>
<td>LGDSI - 75</td>
<td>EN50155</td>
<td>1” x 1.5”</td>
<td>75 W</td>
<td>Industrial</td>
</tr>
<tr>
<td>LGDS - 100</td>
<td>MIL-STD-1275, DEF-STAN-61.5.6</td>
<td>1” x 1.5”</td>
<td>100 W</td>
<td>Hi-Rel</td>
</tr>
<tr>
<td>LGDS - 300</td>
<td>MIL-STD-704, MIL-STD-1275</td>
<td>1” x 1.5”</td>
<td>300 W</td>
<td>Hi-Rel</td>
</tr>
</tbody>
</table>

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[www.gaia-converter.com](http://www.gaia-converter.com)
GAÏA Converter Modular Power Architecture feeds your exact need with one of the most comprehensive range of DC/DC, AC/DC converters and bus adaptation modules. Whether you need basic power or advanced power management, you will find everything you need with GAÏA Converter to meet your sophisticated power supply requirements.

This "building block" approach using off-the-shelf products provides unprecedented advantages to ease design, simplify qualification and reduce time to market.

Modular Power Architecture

**DC Modular Power Architecture**

- **DC Front-End Modules**
  - EMI filter module
  - Transient or spike protection module
- **DC/isolated Converters**
  - Hold-Up module

**DC Input Bus**
from 4.5 Vdc to 480 Vdc

**FGDS Series**
- Single, dual and triple outputs from 3.3V to 48V

**PGDS/LGDS Series**

**HUGD Series**

**AC Modular Power Architecture**

- **AC PFC module**
- **AC Input Bus**
  from 85 to 265 Vac/47-440 Hz
  320-800 Hz

**HGMM Series**

**MGDM/I Series**

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The Experience of a Leader in Hi-Rel Environments
The Most Comprehensive Range of Products with more than 3500 References from 4W to 350W Power
Local Support Worldwide
ISO9001 v 2008 Quality certified

GAIA Converter was founded in 1993. Since that time the company has provided one of the most comprehensive range of modular power components in the market place. GAIA Converter has also brought to the market its well known concept of Modular Power Architecture to allow simple design of complex power supplies. With more than 5000 standard power component references serving the Hi-Rel industrial, transportation, aerospace and military markets, GAIA Converter is recognized as one of the world’s leaders for “power module” solutions. Strongly focused on power modules, GAIA Converter can concentrate all its efforts to propose innovative solutions and a complete comprehensive suite in this field. More than 300 new products are completed every year by our engineering team to cope with new technologies and market trends.

GAIA Converter dedicates significant R&D investment on a continuous basis in order to maintain a state of the art product range. The GAIA engineering team not only designs products with a competitive advantage but is also devoted to solving the customers’ power problems.

The company’s advanced design and development capabilities include:
- Circuit behavior simulation
- Thermal management
- Advanced packaging techniques
- Proprietary magnetic and ASIC design
- Environmental test
- Reliability evaluation

The skill and innovative spirit of our design team is supported by a full suite of computer aided engineering tools. These tools include electrical simulation, mechanical design, thermal analysis and optimization, reliability prediction, circuit board layout and manufacturing instructions. This CAE system is used extensively to ensure design performance, traceability and integrity from prototyping to mass production.

With a presence in 25 countries around the world through subsidiaries and local distributors, GAIA Converter is a global company. In three major markets (The Americas, Europe and Asia), Gaia Converter maintains a strong presence with Sales and Technical Support Offices for its distributor network and customers.

GAIA Converter’s manufacturing philosophy is based on fully automated lines with no manual operation. These automated lines include the latest fast SMD pick and place machines, automatic pin insertion tools and automatic potting machines. The extensive use of statistical methods guarantees high quality products.

www.gaia-converter.com
LEADING SUPPLIER OF HI-REL POWER CONVERSION PRODUCTS

GAIA Converter products have a long and successful record of projects around the world from Aerospace, Military, Transportation and Hi-End Industrial applications and among them:

AEROSPACE/MILITARY APPLICATIONS INCLUDE :

• Commercial aircrafts :
  • Airbus : A320/A330/A340/A380/A350 XWB
  • Boeing : 737NG/777/787
  • Bombardier : CRJ 100/200/700/900
  • Embraer : ERJ 135/140/145/170/190/195
  • Dassault : F50/F900/F2000/F7X/F5X
  • Various : Learjet 60/85, Gulfstream G550/G650

• Military aircrafts :
  • Fighters : M2000, Rafale, Typhoon, JAS39,
    Tornado, F-16 Falcon, F/A-18 Hornet, F-35 JSF
  • Cargos : C130 Hercules, C160, C27J, A400M
  • Missions : Awacs, Nimrod MR4A, P3C Orion

• Commercial & military helicopters :
  • Eurocopter : HAP, EC120/135/155/175, NH-90
  • AgustaWestland : A109/A129, AW139, EH101
  • Bell : B206/212, V22, B407/427/430, AH-64
  • Sikorsky : S76, S92, UH-60, RAH-66

• Military Ground Borne :
  • Tanks : Leclerc, Leopard, Puma, Bradley
  • Vehicles : LandWarrior, Humvee, VBCI
  • Groundborne : COMM, MMR, MLS,

• Naval :
  • PAN, SNLE, FREMM Fregate, Aegis Destroyer

• Missiles, Torpedoes & UAV’s :
  • Milan, Eryx, Stinger, Crotale, MLRS, Aster,
    Exocet, Marte, Sea Wolf, Meteor, Taurus KEPD,
    Stingray, MU90

TRANSPORTATION APPLICATIONS INCLUDE :

• Intercity trains and locomotives :
  • Alstom : TGV, TGV2N, KTX, ET423, AGV
  • Siemens : ICE2, ICE3, ES64, S252
  • Ansaldo : ETR400/500, E402, TAF
  • Bombardier : AGC, Talent, ICN
  • GE Transport : AC6000, Dash
  • Various: locomotives T13, ES65, Euro4000

• Urban subways & tramways :
  • Subways : Meteor, MF77, MF2000, M7, Lisboa, NY
  • Tramways : Citadis, Combino, Sirio, Flexity C/E,
    Icentro, Eurotram

• Local Rolling stock :
  • LRV : Arlanda, Gatwick, Frankfurt, OrlyVal
  • Buses/trolleys : Civis, Cristalis, Cito, Agra, Ares

• Signaling equipments :
  • Positioning systems, TPWS, ETCS
  • ERTMS, Video, Data transmission, GPS-R

INDUSTRIAL APPLICATIONS INCLUDE :

• Power station & energy controls :
  • Power generation : VHV, MHV, LV
  • Propulsion node, Heat exchangers

• Security systems :
  • Pumps and valves controls, gas and steam
    controls, petrochemical regulators

• Environmental control systems :
  • Seismic acquisition, hydro controls
  • Oil drilling, down hole instrumentation
  • Deep sea exploration
GAIA Converter has always operated a quality system in accordance to ISO 9001 standards and has been certified to the latest ISO 9001 v2008 standard. This standard is now used as a platform for developing a greater appreciation of the quality required by our customers. Our success in this area is recognized by independent approval Authorities such as Underwriters Laboratories (UL) and has resulted in approved and preferred supplier status at major electronics companies. However quality is not a static objective and GAIA Converter is continuously improving in this field and is particularly active with:

Design for Product Reliability:
In order to provide reliable products, GAIA Converter has always maintained stringent specifications with the aid of the most advanced theoretical and experienced feedback tools including:

- **Stress analysis**: GAIA Converter products undergo stress analysis and charged factors for each single component used in our products.
- **MTBF**: GAIA Converter calculations are done according to the MIL-HDBK-217F, RDF 2000, IEC-6280-TR methods with conservative quality and environmental factors.
- **Accelerated stress analysis**: all GAIA Converter's new designs are submitted to accelerate stress (thermal and shocks, thermal cycling and humidity) to analyze reliability.
- **Failure Analysis**: every product returned for failure during operation is carefully analyzed and failure root causes are monitored.

Manufacturing with Statistical Method for Prevention:
To manufacture high-quality products, the monitoring at the end of the production process is not enough. Quality has also to be "designed-in" during process and production process. This is achieved by means of appropriate measurements and tools; among them GAIA Converter has implemented:

- **Statistical Process Control (SPC)**: for key process parameters all along the manufacturing flow GAIA Converter can establish very quickly deviations from process goal. This allows control over parameters and ensures process durability.
- **Average Outgoing Quality (AOQ)**: All products manufactured are 100% tested for acceptance or rejection. The results of this inspection are recorded and monitored carefully.
- **Statistical Product Monitoring (SPM)**: All product parameters are recorded to statistically monitor the average deviation.

Customer Audit Quality:
GAIA Converter welcomes customer quality audits or independent quality audits on behalf of customers. We have already been audited by independent organization such as Qualifas acting for European Aerospace companies, LCIE acting for UL approval, and major electronics companies from around the world.

www.gaia-converter.com
GAIA Converter Technical Support Centers are fully equipped and staffed to provide product information and technical assistance concerning GAIA Converter products and power solutions. These facilities house electronic laboratories where GAIA Converter application engineers evaluate specific customer design issues as well as offer a wide range of component-based power solutions that include distributed power, current sharing, N+1 redundancy, thermal management, compliance with safety and performance standards, and more.

Application engineers:
- Answer technical questions by phone, fax, e-mail, or directly by the GAIA Converter website.
- Assist with component-based power system design.
- Support user needs through visits to GAIA Converter and customer facilities.

Customer service representatives:
- Provide product price and delivery information.
- Help select the most appropriate product for your application.
- Can arrange a visit to your site by a GAIA Converter application engineer or sales representative.

Contact the GAIA Converter location nearest you to get the answers you need, or submit your inquiry on our website.
**Input Specifications**

- MIL-STD-461C/D/E/F compliant
- DO-160C/D/E/F/G compliant
- Wide input range 9–50 Vdc
- Input immunity to MIL-STD-1275A/B/C/D
- Input immunity to MIL-STD-704A/D/F

**Input Range**

9-50 Vdc transient 80 Vdc / 100 ms
100 Vdc / 50 ms

Option [ ]: Screening-55°C start-up temperature
Option [ ]: Screening and serialization

**Input Current**

2A

Compatible with all GAÏA Converter H J O M N input range modules

**Part Numbering**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>FGDS-2A - 50V /</td>
</tr>
</tbody>
</table>

**Dimensions and Pin-out**

*Dimensions in mm and (inches)*

Pin dimensions: Ø 0.73 mm (0.029")

Plastic case black solder plated pin

- 1
- 2
- 3
- 4
- 5

Bottom view

www.gaia-converter.com
Front End Modules
DC EMI Filter 10A

- MIL-STD-461D/E/F compliant
- DO-160C/D/E/F/G compliant
- Wide input range 9–50 Vdc
- Input immunity to MIL-STD-1275A/B/C/D
- Input immunity to MIL-STD-704A/D/F

Input Specifications

- 9-50 Vdc transient 80 Vdc / 100 ms
- 100 Vdc / 50 ms

Option [1]: Screening-55°C start-up temperature
Option [2]: Screening and serialization

Input Current

10A

Compatible with all GAÏA Converter H J O M N input range modules

Part Numbering

Grade | Single Output
--- | ---
Hi-Rel | FGDS-10A - 50V

Dimensions and Pin-out

Dimensions in mm and (inches)

Pin dimensions: 1, 2, 3, 4: ø 1.29 mm (0.05")
Pin dimensions: 5, 6: ø 0.73 mm (0.028")

Metallic case black anodized coating solder plated pin

Pin Single Output

- 1: + Input (Vi)
- 2: - Input (Gi)
- 3: - Output (Go)
- 4: + Output (Vo)
- 5: Ground (Gnd)
- 6: Ground (Gnd)
- MIL-STD-461D/E/F compliant
- DO-160C/D/E/F/G compliant
- Wide input range 9–50 Vdc
- Input immunity to MIL-STD-1275A/B/C/D
- Input immunity to MIL-STD-704A/D/F

Input Specifications

Input Range

9–50 Vdc transient 80 Vdc / 100 ms
100 Vdc / 50 ms

Option T : Screening-55°C start-up temperature
Option S : Screening and serialization

Input Current

20A

Compatible with all GAÏA Converter H J O M N input range modules

Part Numbering

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>FGDS-20A - 50V</td>
</tr>
</tbody>
</table>

Dimensions and Pin-out

Dimensions in mm and (inches)

Pin dimensions : 1, 2, 3, 4 : ø 1.29 mm (0.05")
Pin dimensions : 5, 6 : ø 0.73 mm (0.028")

Metallic case black anodized coating solder plated pin

Bottom view

<table>
<thead>
<tr>
<th>Pin</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Input (V)</td>
</tr>
<tr>
<td>2</td>
<td>Input (G)</td>
</tr>
<tr>
<td>3</td>
<td>Output (Vo)</td>
</tr>
<tr>
<td>4</td>
<td>Ground (Gnd)</td>
</tr>
<tr>
<td>5</td>
<td>Ground (Gnd)</td>
</tr>
<tr>
<td>6</td>
<td>Ground (Gnd)</td>
</tr>
</tbody>
</table>
**Input Specifications**

- Dedicated for Avionics/Military Applications
- Transient suppressor module 60 Vdc, 80 Vdc, 100 Vdc
  - DO160C/D/E/F cat A, B and Z
  - MIL-STD-1275A/B/C/D
- Extended operation for voltage drop out
- Power range: from 4 W to 50 W
- Inhibition function

**Output Specifications**

- **Output Voltage**: K: 28 Vdc

**Part Numbering**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>PGDS-50 - [ ] - [ ] / [ ]</td>
</tr>
</tbody>
</table>

For leaded process add - L after reference - Contact factory for availability

**Dimensions and Pin-out**

- **Dimensions in mm and (inches)**
  - Pin dimensions: Ø 0.73 mm (0.03")
  - Metallic case black anodized coating solder plated pin

**Pin Configuration**

- Pin 1 - Input (Vi)
- Pin 2 - Input measure (VIMES)
- Pin 3 - On/Off
- Pin 4 - Input (Gi)
- Pin 5 - Common (Go)
- Pin 6 - Output (Vo)

For leaded process add - L after reference - Contact factory for availability
Front-End Modules
DC Transient Protection 100 WATT

- Dedicated for Avionics/Military Applications
- Transient suppressor module 60, 80, 100, 202 Vdc
  - DEF-STAN-61.5 issue 6
  - DO160C/D/E/F cat A, B and Z
  - MIL-STD-1275A/B/C/D
- Power range: from 4 W to 100 W

**Input Specifications**

**Input Range**

- P: 9-42 Vdc
- transient: 202 Vdc / 350 ms

Option Z: Screening-55°C start-up temperature
Option B: Screening and serialization

**Output Specifications**

**Output Voltage**

- K: 28 Vdc

**Part Numbering**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>LGDS-100 -</td>
</tr>
</tbody>
</table>

**Dimensions and Pin-out**

Dimensions in mm and (inches)

Pin dimensions: square pin 0.64 mm (0.025”)
Metallic case black anodized coating solder plated pin

Bottom view

www.gaia-converter.com
Front-End Modules
DC Transient Protection 300 Watt

- Dedicated for Avionics/Military Applications
- Transient suppressor module 60 Vdc, 80 Vdc, 100 Vdc
  - DO160C/D/E/F cat A, B and Z
  - MIL-STD-1275A/B/C/D
- Power range: from 4 W to 300 W

Input Specifications

Input Range

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>9-42 Vdc</td>
</tr>
<tr>
<td></td>
<td>transient: 100 Vdc / 50 ms</td>
</tr>
</tbody>
</table>

Output Specifications

Output Voltage

K: 28 Vdc

Part Numbering

Grade | Single Output
Hi-Rel | LGDS-300

Dimensions and Pin-out

Dimensions in mm and (inches)

Pin dimensions: square pin 0.64 mm (0.025")
Metallic case black anodized coating solder plated pin

Bottom view
• Dedicated for Railway/Industrial Applications
• Spike suppressor module
  - EN61000-4-5 level 4
  - EN50155 level 1800V & 8400V
  - RIA 12
• Transient suppressor module
  - EN50155, IEC 571, RIA 12
• Input reverse polarity protection
• High efficiency (98%)
• Power range: from 4 W to 50 W
• Integrated EMI filter
• Inhibit function

---

**Input Specifications**

**Input Range**

<table>
<thead>
<tr>
<th>J</th>
<th>Q</th>
</tr>
</thead>
<tbody>
<tr>
<td>: 10–36 Vdc</td>
<td>: 36–154 Vdc</td>
</tr>
<tr>
<td>transient: 40 Vdc/1 s &amp; 85 Vdc/20 ms</td>
<td>transient: 165 Vdc/1 s &amp; 385 Vdc/20 ms</td>
</tr>
<tr>
<td>spike: 1800 Vdc/50 µs</td>
<td>spike: 1800 Vdc/50 µs</td>
</tr>
</tbody>
</table>

**Part Numbering**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial</td>
<td>LGDSI-50 - ■ ■</td>
</tr>
</tbody>
</table>

**Dimensions and Pin-out**

**Dimensions in mm and (inches)**

- Pin dimensions: Ø 0.73 mm (0.03")
- Metallic case black anodized coating solder plated pin

Bottom view:

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+ Input (V)</td>
</tr>
<tr>
<td>2</td>
<td>On/Off</td>
</tr>
<tr>
<td>3</td>
<td>- Input (G)</td>
</tr>
<tr>
<td>4</td>
<td>Ground (0V)</td>
</tr>
<tr>
<td>5</td>
<td>Output (Vo)</td>
</tr>
</tbody>
</table>

---

www.gaia-converter.com
- Dedicated for Railway/Industrial Applications
- Spike suppressor module
  - EN61000-4-5 level 4
  - EN50155 level 1800V & 8400V
  - RIA 12
- Transient suppressor module
  - EN50155, IEC 571, RIA 12
- Input reverse polarity protection
- High efficiency (98%)
- Power range: from 4 W to 75 W
- Integrated EMI filter
- Inhibit function

### Input Specifications

**Input Range**

- Q: 43-154 Vdc
- Transient: 165 Vdc / 1 s
- Spike: 1800 Vdc / 50 µs

### Part Numbering

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial</td>
<td>LGDSI-75 - ■ - ■</td>
</tr>
</tbody>
</table>

### Dimensions and Pin-out

**Dimensions in mm and (inches)**

- Pin dimensions: Ø 0.73 mm (0.03")
- Metallic case black anodized coating solder plated pin

**Bottom View**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+ Input (V)</td>
</tr>
<tr>
<td>2</td>
<td>On/Off</td>
</tr>
<tr>
<td>3</td>
<td>- Input (G)</td>
</tr>
<tr>
<td>4</td>
<td>Common (G)</td>
</tr>
<tr>
<td>5</td>
<td>Output (Vo)</td>
</tr>
</tbody>
</table>
**Input Specifications**

- Unique product for hold-up solutions
- Compliant with DO-160, MIL-704
- Reduce capacitance size by 80%
- High efficiency (98%)
- Power range: from 4 W to 50 W
- Compatible with 9–36 or 16–40 Vdc converters
- Include monitoring signals
- Programmable inrush current limitation

**Input Range**

9-45 Vdc

Option **1**: Screening-55°C start-up temperature
Option **2**: Screening and serialization

**Part Numbering**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>HUGD-50</td>
</tr>
</tbody>
</table>

For leaded process add - L after reference - Contact factory for availability

**Dimensions and Pin-out**

Dimensions in mm and (inches)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>+Input (30)</td>
</tr>
<tr>
<td>2</td>
<td>Power Fail Set (50)</td>
</tr>
<tr>
<td>3</td>
<td>Voltage Current Level (60)</td>
</tr>
<tr>
<td>4</td>
<td>Ground (5)</td>
</tr>
<tr>
<td>5</td>
<td>Output (60)</td>
</tr>
<tr>
<td>6</td>
<td>Voltage Capacitor</td>
</tr>
<tr>
<td>7</td>
<td>Power Fail Signal (70)</td>
</tr>
<tr>
<td>8</td>
<td>Capacitor charged signal (80)</td>
</tr>
<tr>
<td>9</td>
<td>Capacitor discharged signal (90)</td>
</tr>
</tbody>
</table>

Pin dimensions: Ø 0,73 mm (0.03 “)

Metallic case black anodized coating solder plated pin
FRONT-END MODULES
DC HOLD UP 300 WATT

- Unique product for hold-up solutions
- Compliant with DO-160, MIL-704
- Reduce capacitance size by 80%
- Power range: from 4 W to 300 W
- Include monitoring signals
- Programmable capacitor charge voltage from 31 to 80 Vdc

Input Specifications

<table>
<thead>
<tr>
<th>Input Range</th>
<th>8-100 Vdc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option 1</td>
<td>: Screening-55°C start-up temperature</td>
</tr>
<tr>
<td>Option 2</td>
<td>: Screening and serialization</td>
</tr>
</tbody>
</table>

Part Numbering

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>HUGD-300</td>
</tr>
</tbody>
</table>

Dimensions and Pin-out

Dimensions in mm and (inches)

40.0 (1.58")
26.0 (1.03")
12.8 (0.50")

Pin dimensions:
- Pins: 2, 3, 4, 5, 6, 7, 8 : Ø 0.73 mm (0.03")
- Pins: 1, 9, 10 : Ø 1.5 mm (0.06")

Metallic case black anodized coating solder plated pin

Pin Single Output
- 1: Input (Vi)
- 2: Power Fail Set (Vth)
- 3: Capacitor Charge Voltage Set (Vcset)
- 4: Common (Go)
- 5: Common (Go)
- 6: Power Fail Signal (PF)
- 7: Capacitor discharged signal (CD)
- 8: Capacitor charged signal (CC)
- 9: Output (Vo)
- 10: Voltage Capacitor (Vc)

www.gaia-converter.com
HGMM-35 Series

Dedicated for 115 Vac airborne applications
Standard 3" x 2" package
Active PFC : MIL-STD-704, DO-160, ABD100 compliant
Nominal power up to 35 W without derating
Wide input range 71–180 Vac
Variable frequency 320–800 Hz
Low input current harmonic distortion < 10%
Integrated LC EMI filter
Inrush current limitation
Galvanic isolation 1500 Vrms

### Input Specifications

**Permanent Input Range**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>95-140 Vac transient 71-180 Vac / 100 ms frequency 320-800 Hz</td>
</tr>
<tr>
<td>Option</td>
<td>Screening-55°C start-up temperature</td>
</tr>
<tr>
<td>Option</td>
<td>Screening and serialization</td>
</tr>
</tbody>
</table>

**Basic : On/Off function**

**Output Specifications**

**Dual Output**

17 : 2 x 17 Vdc / 2 x 1.05 A

**Part Numbering**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Dual Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>HGMB-35 -</td>
</tr>
</tbody>
</table>

For leaded process add - L after reference - Contact factory for availability

**Dimensions and Pin-out**

Dimensions in mm and (inches)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power</td>
</tr>
<tr>
<td>2</td>
<td>Neutral</td>
</tr>
<tr>
<td>3</td>
<td>On/Off</td>
</tr>
<tr>
<td>4</td>
<td>On/Off Ref</td>
</tr>
<tr>
<td>5</td>
<td>Common 1 (Go1)</td>
</tr>
<tr>
<td>6</td>
<td>Common 2 (Go2)</td>
</tr>
<tr>
<td>7</td>
<td>Output 1 (Vo1)</td>
</tr>
<tr>
<td>8</td>
<td>Output 2 (Vo2)</td>
</tr>
</tbody>
</table>

Pin dimensions : 0.35 mm (0.014")

Metallic case black anodized casting welded plated pin

www.gaia-converter.com
FRONT-END MODULES
AC NON ISOLATED PFC 150 WATT SERIES

HGMM-150 Series

- Dedicated for 115 Vac applications
- Standard half brick package
- Active PFC: MIL-STD-704, DO-160, ABD100 MIL-STD-1399 compliant
- Nominal power up to 150W without derating
- Wide input range 71-180 Vac
- Variable frequency 320-800 Hz
- Low input current harmonic distortion < 10%
- Integrated LC EMI filter
- Inrush current limitation
- No galvanic isolation

Input Specifications

<table>
<thead>
<tr>
<th>Input Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>V: 95-140 Vac</td>
</tr>
<tr>
<td>transient: 71-180 Vac/100 ms</td>
</tr>
<tr>
<td>frequency: 320-800 Hz</td>
</tr>
</tbody>
</table>

Option: Screening -55°C start-up temperature
Option: Screening and serialization

Output Specifications

Single Output

<table>
<thead>
<tr>
<th>Basic: On/Off function</th>
</tr>
</thead>
<tbody>
<tr>
<td>T: 375 Vdc / 0.4 A</td>
</tr>
</tbody>
</table>

Part Numbering

Grade | Single Output
--- | ---
Hi-Rel | HGMS-150 - - / 

For leaded process add - L after reference

Dimensions and Pin-out

Dimensions in mm and (inches)

- Pin dimensions: Ø 1 mm (0.04")
- Metallic case aluminized coating solder plated pin

www.gaia-converter.com
HGMM-350 Series

- Dedicated for 115 Vac applications
- Standard half brick package
- Active PFC: MIL-STD-704, DO-160, ABD100 MIL-STD-1399 compliant
- Nominal power up to 350W without derating
- Wide input range 71-180 Vac
- Variable frequency 47-440, 320-800 Hz
- Low input current harmonic distortion < 10%
- Integrated LC EMI filter
- Inrush current limitation
- No galvanic isolation

**Input Specifications**

**Input Range**

<table>
<thead>
<tr>
<th>Option</th>
<th>Input Range</th>
<th>Transient</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>95-140 Vac</td>
<td>transient 71-180 Vac/100 ms</td>
<td>320-800 Hz</td>
</tr>
<tr>
<td>X</td>
<td>95-140 Vac</td>
<td>transient 71-180 Vac/100 ms</td>
<td>47-440 Hz</td>
</tr>
<tr>
<td>Y</td>
<td>85-265 Vac</td>
<td>-</td>
<td>50/60 Hz</td>
</tr>
</tbody>
</table>

Option T: Screening -55°C start-up temperature
Option S: Screening and serialization

**Output Specifications**

**Single Output**

<table>
<thead>
<tr>
<th>Option</th>
<th>Output</th>
<th>Input Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>375 Vdc</td>
<td>95-140 Vac transient 71-180 Vac/100 ms</td>
</tr>
</tbody>
</table>

For leaded process add - L after reference

**Part Numbering**

Grade Hi-Rel

HGMS-350 - ■ - ■ -

For leaded process add - L after reference

**Dimensions and Pin-out**

Dimensions in mm and (inches)

- Pin dimensions: 0.1 mm (0.04")
- Metallic case alodyned coating solder plated pin

Pin 1: Phase
Pin 2: Neutral
Pin 3: Output (Vo)
Pin 4: On/Off
Pin 5: Ref
Pin 6: PFCsh
Pin 7: Drive
Pin 8: Connex (Hdl)
Input Specifications

- Low profile 0.3" package
- Nominal power of 4 W without derating
- High efficiency up to 85%
- Soft start
- Galvanic isolation 1500 Vdc
- Integrated LC EMI filter
- Permanent short circuit protection
- Standard pin out DIL24 8 pins
- No optocoupler for high reliability

Output Specifications

- Single Output
  - B: 3.3 Vdc / 1 A
  - C: 5 Vdc / 0.8 A
  - E: 12 Vdc / 0.33 A
  - F: 15 Vdc / 0.26 A

- Bi Output
  - C: ± 5 Vdc / ± 0.4 A
  - E: ± 12 Vdc / ± 0.165 A
  - F: ± 15 Vdc / ± 0.13 A
  - G: 5 Vdc & ± 15 Vdc / 0.5 A & ± 0.05 A

- Triple Output
  - C: ± 5 Vdc / ± 0.4 A
  - E: ± 12 Vdc / ± 0.165 A
  - F: ± 15 Vdc / ± 0.13 A
  - H: ± 5 Vdc / ± 0.4 A
  - J: ± 12 Vdc / ± 0.165 A
  - K: ± 15 Vdc / ± 0.13 A

Part Numbering

- Hi-Rel
  - MGDS-04
  - MGDB-04
  - MGDT-04

- Industrial
  - MGDSI-04
  - MGDBI-04
  - MGDTI-04

Dimensions and Pin-out

- Pin dimensions: Ø 0.53 mm (0.02")
- Metallic case black anodized coating solder plated pin

www.gaia-converter.com
**Input Specifications**

- Ultra wide input 12-160 Vdc
- Small surface 1" x 0.75" package
- High efficiency over the entire range
- Flexible isolated dual outputs
- Soft start
- No load to full load operation
- Trim adjustment
- No optocoupler for high reliability

**Output Specifications**

- **Dual Isolated Output**
  - **C**: 2 x 5 Vdc / 2 x 0.6 A
  - **E**: 2 x 12 Vdc / 2 x 0.25 A
  - **F**: 2 x 15 Vdc / 2 x 0.2 A
  - **I**: 2 x 24 Vdc / 2 x 0.125 A

  *Possible unbalanced power up to 10% / 90%

**Part Numbering**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Dual Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial</td>
<td>MGDDI-06</td>
</tr>
</tbody>
</table>

**Dimensions and Pin-out**

- **Pin dimensions**: square pin 0.64 mm (0.025")
- **Metallic case** black anodized coating gold plated pin
DC/DC CONVERTERS
8 WATT NEW GENERATION SERIES

- Ultra wide input 9-60 Vdc, 4.5-33 Vdc
- Small surface 1” x 0.75” package
- Low profile 0.33”
- Flexible isolated dual outputs
- Soft start
- No load to full load operation
- Trim adjustment
- No optocoupler for high reliability

**Input Specifications**

<table>
<thead>
<tr>
<th>Ultra Wide Input</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong>: 9-60 Vdc</td>
</tr>
<tr>
<td>transients: 80 Vdc / 1 s</td>
</tr>
<tr>
<td><strong>E</strong>: 4.5-33 Vdc</td>
</tr>
<tr>
<td>transients: 45 Vdc / 0.1 s</td>
</tr>
</tbody>
</table>

Option [N]: Screening -55°C start-up temperature
Option [E]: Screening and serialization

**Output Specifications**

<table>
<thead>
<tr>
<th>Dual Isolated Output*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>C</strong>: 2 x 5 Vdc / 2 x 0.8 A</td>
</tr>
<tr>
<td><strong>E</strong>: 2 x 12 Vdc / 2 x 0.33 A</td>
</tr>
<tr>
<td><strong>F</strong>: 2 x 15 Vdc / 2 x 0.26 A</td>
</tr>
<tr>
<td><strong>I</strong>: 2 x 24 Vdc / 2 x 0.16 A</td>
</tr>
</tbody>
</table>

*Possible unbalanced power up to 10% / 90% |

**Part Numbering**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Dual Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>MGDD-08 - - /</td>
</tr>
</tbody>
</table>

**Dimensions and Pin-out**

Pin dimensions: square pin 0.64 mm (0.025")
Metallic case black anodized coating gold plated pin
MGDI-10 Serie

- Low profile 0.33" package
- Nominal power of 10 W without derating
- High efficiency up to 86 %
- Soft start
- Galvanic isolation 1500 Vdc
- Integrated LC EMI filter
- Permanent short circuit protection
- No optocoupler for high reliability

MGDM-10 Serie

- Low profile 0.33" package
- Nominal power of 10 W without derating
- High efficiency up to 86 %
- Soft start
- Galvanic isolation 1500 Vdc
- Integrated LC EMI filter
- Permanent short circuit protection
- No optocoupler for high reliability

Input Specifications

- **Input Range**
  - **C**: 4.5-5.5 Vdc
  - **H**: 9-36 Vdc transient 40 Vdc / 100 ms
  - **J**: 16-40 Vdc transient 50 Vdc / 100 ms
  - **Option** H: Screening -55°C start-up temperature
  - **Option** I: Screening and serialization
  - **Option** K: On/Off function

- **Standard Input**
  - **C**: 4.5-5.5 Vdc
  - **D**: 4.7-16 Vdc
  - **H**: 9-36 Vdc
  - **J**: 16-40 Vdc
  - **Q**: 36-140 Vdc

- **Wide Input**
  - **D**: 4.7-16 Vdc
  - **H**: 9-36 Vdc
  - **J**: 16-40 Vdc
  - **Q**: 36-140 Vdc

- **Option**: On/Off function

Output Specifications

- **Single Output**
  - **B**: ±5 Vdc / ±1 A
  - **C**: ±5 Vdc / ±1 A
  - **E**: ±12 Vdc / ±0.4 A
  - **F**: ±15 Vdc / ±0.325 A

- **Bi Output**
  - **C**: ±5 Vdc & ±12 Vdc / 1 A & ±0.2 A
  - **E**: ±5 Vdc & ±15 Vdc / 1 A & ±0.15 A

- **Triple Output**
  - **C**: ±5 Vdc & ±12 Vdc / 1 A & ±0.2 A
  - **E**: ±5 Vdc & ±15 Vdc / 1 A & ±0.15 A

Part Numbering

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
<th>Bi Output</th>
<th>Triple Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>MGDSI-10 - ■ - ■ / ■</td>
<td>MGDB-10 - ■ - ■ / ■</td>
<td>MGDTI-10 - ■ - ■ / ■</td>
</tr>
<tr>
<td>Industrial</td>
<td>MGDSI-10 - ■ - ■ / ■</td>
<td>MGDBI-10 - ■ - ■ / ■</td>
<td>MGDTI-10 - ■ - ■ / ■</td>
</tr>
</tbody>
</table>

For leaded process add "-L" after reference - Contact factory for availability

Dimensions and Pin-out

- **Dimensions in mm and (inches)**
  - **Pin dimensions**: Ø 0.73 mm (0.03")
  - **Metallic case black anodized coating solder plated pin**

- **Dimensions**: 40.0 (1.58")
- **Dimensions**: 26.0 (1.03")
- **Dimensions**: 8.0 (0.32")

- **Bottom view**
  - Single & Bi output models
  - Tri output models
DC/DC CONVERTERS
18 WATT SERIES

MGDM-18 Series

MGDI-18 Series

• Small surface 1” x 1.5” package
• Up to 20 W power
• High efficiency up to 86%
• Soft start
• Galvanic isolation 1500 Vdc
• Integrated LC EMI filter
• Permanent short circuit protection
• No optocoupler for high reliability

Input Specifications

Input Range

Option : On/Off function
Option : Screening -55°C start-up temperature
Option : Screening and serialization

C : 4.5-5.5 Vdc
H : 9-36 Vdc transient 40 Vdc / 100 ms
J : 16-40 Vdc transient 50 Vdc / 100 ms

Wide Input

Option : On/Off function

D : 4.7-16 Vdc
H : 9-36 Vdc
J : 16-40 Vdc
Q : 36-140 Vdc

Output Specifications

Single Output

B : 3.3 Vdc / 4 A
C : 5 Vdc / 4 A
E : 12 Vdc / 1.5 A
F : 15 Vdc / 1.2 A

Part Numbering

Grade | Single Output
---|---
Hi-Rel | MGDS-18-
Industrial | MGDSI-18-

Dimensions and Pin-out

Dimensions in mm and (inches)

Pin dimensions : Ø 0.73 mm (0.03 “)

Pin number : S, S, S, S

Metallic case black anodized coating silver plated pin

Pin | Single Output
---|---
1 | Input M
2 | Gate*
3 | Input D
4 | Output (V)
5 | No pin
6 | Common (G)
A | On/Off (option)

*No Gate for Industrial grade

For leaded process add - L after reference - Contact factory for availability

www.gaia-converter.com
• Ultra wide input 12-160 Vdc
• Small Surface 1” x 1.5” package
• High efficiency over the entire range
• Flexible isolated dual outputs
• Soft start
• No load to full load operation
• Trim adjustment
• No optocoupler for high reliability

Input Specifications

Ultra Wide Input

R : 12-160 Vdc transient 10,7 Vdc/1 sec

Option R : Screening-55°C start-up temperature
Option R : Screening and serialization

Output Specifications

Dual Isolated Output*

C : 2 X 5 Vdc / 2 x 2 A
E : 2 x 12 Vdc / 2 x 0.825 A
F : 2 x 15 Vdc / 2 x 0.65 A
I : 2 x 24 Vdc / 2 x 0.42 A

* Possible unbalanced power up to 10% / 90%

Part Numbering

Grade Dual Output
Hi-Rel MGDD-20 – ■ – ■
Industrial MGDDI-20 – ■ – ■

Dimensions and Pin-out

Pin dimensions : square pin Ø 0,64 mm (0.025”)

Bottom view

Metallic case black anodized coating gold plated pin

Pin Dual Output Pin Dual Output
1 ON/OFF 9 + Output 2 (Vo2)
2 Do not connect 10 - Output 2 (Go2)
3 UVLO 11 Do not connect
4 Do not connect 12 + Output 1 (Vo1)
5 Do not connect 13 - Output 1 (Go1)
6 - Input (Gi) 14 Do not connect
7 VIF 15 Vtrim
8 + Input (Vi) 16 Do not connect

www.gaia-converter.com
**Input Specifications**

- Standard 2” x 2” package
- Nominal power up to 20 W without derating
- High efficiency up to 85%
- Soft start
- Galvanic isolation 1500 Vdc
- Integrated LC EMI filter
- Permanent short circuit protection
- No optocoupler for high reliability

**Input Range**

<table>
<thead>
<tr>
<th>Option</th>
<th>Input Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>4.5-5.5 Vdc</td>
</tr>
<tr>
<td>H</td>
<td>9-36 Vdc transient 40 Vdc / 100 ms</td>
</tr>
<tr>
<td>J</td>
<td>16-40 Vdc transient 50 Vdc / 100 ms</td>
</tr>
</tbody>
</table>

**Standard Input**

<table>
<thead>
<tr>
<th>Option</th>
<th>Input Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>4.5-5.5 Vdc</td>
</tr>
<tr>
<td>H</td>
<td>9-36 Vdc</td>
</tr>
<tr>
<td>J</td>
<td>16-40 Vdc</td>
</tr>
<tr>
<td>Q</td>
<td>36-140 Vdc</td>
</tr>
</tbody>
</table>

**Wide Input**

<table>
<thead>
<tr>
<th>Option</th>
<th>Input Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>4.7-16 Vdc</td>
</tr>
<tr>
<td>H</td>
<td>9-36 Vdc</td>
</tr>
<tr>
<td>J</td>
<td>16-40 Vdc</td>
</tr>
<tr>
<td>Q</td>
<td>36-140 Vdc</td>
</tr>
</tbody>
</table>

**Output Specifications**

- Single Output:
  - B: 3.3 Vdc / 4 A
  - C: 5 Vdc / 4 A
  - E: 12 Vdc / 1.6 A
  - F: 15 Vdc / 1.3 A

- Bi Output:
  - C: ± 5 Vdc / ± 2 A
  - E: ± 12 Vdc / ± 0.8 A
  - F: ± 15 Vdc / ± 0.65 A

- Triple Output:
  - C: ± 12 Vdc / 2 A & ± 0.4 A
  - E: ± 15 Vdc / 2 A & ± 0.3 A
  - F: ± 15 Vdc / 2 A & ± 0.3 A

**Part Numbering**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
<th>Bi Output</th>
<th>Triple Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>MGDS-20 -</td>
<td>MGDB-20 -</td>
<td>MGDT-20 -</td>
</tr>
<tr>
<td>Industrial</td>
<td>MGDSI-20 -</td>
<td>MGDBI-20 -</td>
<td>MGDTI-20 -</td>
</tr>
</tbody>
</table>

For leaded process add - L after reference - Contact factory for availability

**Dimensions and Pin-out**

- Dimensions in mm and (inches)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Single Output</th>
<th>Bi Output</th>
<th>Triple Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Input (V)</td>
<td>Input (V)</td>
<td>Input (V)</td>
</tr>
<tr>
<td>2</td>
<td>Input (V)</td>
<td>Input (V)</td>
<td>Input (V)</td>
</tr>
<tr>
<td>3</td>
<td>Case</td>
<td>Case</td>
<td>Case</td>
</tr>
<tr>
<td>4</td>
<td>Do not connect</td>
<td>Do not connect</td>
<td>Do not connect</td>
</tr>
<tr>
<td>5</td>
<td>Do not connect</td>
<td>Output (+Vo)</td>
<td>Output (+Vo2)</td>
</tr>
<tr>
<td>6</td>
<td>Common (Go)</td>
<td>Output (-Vo1)</td>
<td>Common (Go)</td>
</tr>
<tr>
<td>7</td>
<td>Do not connect</td>
<td>Do not connect</td>
<td>Output (-Vo2)</td>
</tr>
<tr>
<td>8</td>
<td>Do not connect</td>
<td>Do not connect</td>
<td>Do not connect</td>
</tr>
</tbody>
</table>

Pin dimensions: 0.81 mm (0.031 in)
Metallic case black anodized coating solder plated pin
DC/DC Converters
21 Watt New Generation Series

- Ultra wide input 9-60 Vdc, 4.5-33 Vdc
- Small surface 1" x 1.25" package
- Low profile 0.33"
- Flexible isolated dual outputs
- Soft start
- No load to full load operation
- Trim adjustment
- No optocoupler for high reliability

Input Specifications

Ultra Wide Input

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>9-60 Vdc transient: 80 Vdc/1 s</td>
</tr>
<tr>
<td>E</td>
<td>4.5-33 Vdc transient: 45 Vdc/0.1 s</td>
</tr>
</tbody>
</table>

Option E: Screening -55°C start-up temperature
Option N: Screening and serialization

Output Specifications

Dual Isolated Output*

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>2 x 3.3 Vdc / 2 x 2 A</td>
</tr>
<tr>
<td>C</td>
<td>2 x 5 Vdc / 2 x 2 A</td>
</tr>
<tr>
<td>E</td>
<td>2 x 12 Vdc / 2 x 0.825 A</td>
</tr>
<tr>
<td>F</td>
<td>2 x 15 Vdc / 2 x 0.65 A</td>
</tr>
<tr>
<td>I</td>
<td>2 x 24 Vdc / 2 x 0.42 A</td>
</tr>
</tbody>
</table>

* Possible unbalanced power up to 10%/90%

Part Numbering

Grade Dual Output

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>MGDD-21 - - -</td>
</tr>
</tbody>
</table>

Dimensions and Pin-out

Pin dimensions: square pin 0.64 mm (0.025")

Metallic case black anodized coating gold plated pin

Pin | Dual Output
---|---
1 | Synchronous On/Off
2 | + Input (V+)
3 | - Input (G)
4 | UVLO
5 | - Output 1 (G+)
6 | + Output 1 (V+)
7 | + Output 2 (V+)
8 | - Output 2 (G+)
9 | + Trim
10 | - Trim

www.gaia-converter.com
DC/DC CONVERTERS
25 WATT SERIES

- Standard 2" x 2" package
- Nominal power up to 25 W without derating
- High efficiency up to 89%
- Soft start
- Galvanic isolation 1500 Vdc
- Integrated LC EMI filter
- Permanent short circuit protection
- No optocoupler for high reliability

Input Specifications

<table>
<thead>
<tr>
<th>Option</th>
<th>Input Range</th>
<th>Wide Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>9-36 Vdc transient 40 Vdc / 100 ms</td>
<td>H : 9-36 Vdc</td>
</tr>
<tr>
<td>J</td>
<td>16-40 Vdc transient 50 Vdc / 100 ms</td>
<td>O : 18-75 Vdc</td>
</tr>
</tbody>
</table>

Output Specifications

<table>
<thead>
<tr>
<th>Single Output</th>
<th>Bi Output</th>
<th>Triple Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>B : 3.3 Vdc / 6 A</td>
<td>C : ± 5 Vdc / ± 2.5 A</td>
<td>BB : 3.3 Vdc &amp; ± 12 Vdc / 2.5 A &amp; ± 0.5 A</td>
</tr>
<tr>
<td>C : 5 Vdc / 5 A</td>
<td>E : ± 12 Vdc / ± 1 A</td>
<td>BF : 3.3 Vdc &amp; ± 15 Vdc / 2.5 A &amp; ± 0.4 A</td>
</tr>
<tr>
<td>D : 12 Vdc / 2 A</td>
<td>F : ± 15 Vdc / ± 0.825 A</td>
<td>CE : 5 Vdc &amp; ± 12 Vdc / 2.5 A &amp; ± 0.5 A</td>
</tr>
<tr>
<td>E : 15 Vdc / 1.65 A</td>
<td>F : ± 15 Vdc / ± 0.825 A</td>
<td>CF : 5 Vdc &amp; ± 15 Vdc / 2.5 A &amp; ± 0.4 A</td>
</tr>
</tbody>
</table>

Part Numbering

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
<th>Bi Output</th>
<th>Triple Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>MGDS-25 - # - # / #</td>
<td>MGDB-25 - # - # / #</td>
<td>MGDT-25 - # - # / #</td>
</tr>
<tr>
<td>Industrial</td>
<td>MGDSI-25 - # - # / #</td>
<td>MGDBI-25 - # - # / #</td>
<td>MGDTI-25 - # - # / #</td>
</tr>
</tbody>
</table>

Dimensions and Pin-out

- Standard 2" x 2" package
- Nominal power up to 25 W without derating
- High efficiency up to 89%
- Soft start
- Galvanic isolation 1500 Vdc
- Integrated LC EMI filter
- Permanent short circuit protection
- No optocoupler for high reliability

For leaded process add - L after reference - Contact factory for availability

Dimensions in mm and (inches)

- Pin dimensions: square pin (0.50mm [0.020”])
- Metallic case black anodized coating solder plated pin

www.gaia-converter.com
DC/DC CONVERTERS
26 WATT SERIES

MGDI-26 Series

MGDM-26 Series

Input Specifications

<table>
<thead>
<tr>
<th>Hi-Rel Grade</th>
<th>Input Range</th>
<th>Basic: On/Off function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>H: 9-36 Vdc transient 40 Vdc / 100 ms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>J: 16-40 Vdc transient 50 Vdc / 100 ms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Option /: Screening -55°C start-up temperature</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Option /: Screening and serialization</td>
<td></td>
</tr>
</tbody>
</table>

Output Specifications

<table>
<thead>
<tr>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>B: 3.3 Vdc / 6 A</td>
</tr>
<tr>
<td>C: 5 Vdc / 5 A</td>
</tr>
<tr>
<td>E: 12 Vdc / 2 A</td>
</tr>
<tr>
<td>F: 15 Vdc / 1.65 A</td>
</tr>
</tbody>
</table>

Part Numbering

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>MGDS-26 - ■ - ■ / ■</td>
</tr>
<tr>
<td>Industrial</td>
<td>MGDSI-26 - ■ - ■ / ■</td>
</tr>
</tbody>
</table>

Dimensions and Pin-out

Dimensions in mm and (inches)

Pin 1: round pin Ø 0.63 mm (0.025") length: 4.305 mm
All other pins: square pin Ø 0.51mm (0.02") length: 5.562 mm

Metallic case anodized coating solder plated pins.
DC/DC CONVERTERS
30 WATT SERIES

- Low profile 0.33” package
- Highly configurable DC/DC converter
- Up to 6 outputs and 3 independent line regulations
- Nominal Power of 30 W without derating
- Galvanic isolation 1500 Vdc
- Integrated LC EMI filter
- Permanent short circuit protection
- External trim and sense adjustment
- No optocoupler for high reliability

**Input Specifications**

<table>
<thead>
<tr>
<th>Input Range</th>
<th>Basic: On/Off function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H</strong> 9-36 Vdc transient 40 Vdc / 100 ms</td>
<td></td>
</tr>
<tr>
<td><strong>J</strong> 16-40 Vdc transient 50 Vdc / 100 ms</td>
<td></td>
</tr>
</tbody>
</table>

Options:
- **H**: Screening -55°C start-up temperature
- **J**: Screening and serialization

<table>
<thead>
<tr>
<th>Output Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Output</strong></td>
</tr>
<tr>
<td>3 : ±3 Vdc</td>
</tr>
<tr>
<td>5 : ±5 Vdc</td>
</tr>
<tr>
<td>12 : ±12 Vdc</td>
</tr>
<tr>
<td>15 : ±15 Vdc</td>
</tr>
</tbody>
</table>

**Part Numbering**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Line Output</th>
<th>Dual Line Output</th>
<th>Triple Line Output</th>
</tr>
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<tbody>
<tr>
<td>Hi-Rel</td>
<td>CGDM - ■ - ■ - 0 - 0 / ■</td>
<td>CGDM - ■ - ■ - 0 - 0 / ■</td>
<td>CGDM - ■ - ■ - ■ - ■ / ■</td>
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<tr>
<td>Industrial</td>
<td>CGDI - ■ - ■ - 0 - 0 / ■</td>
<td>CGDI - ■ - ■ - 0 - 0 / ■</td>
<td>CGDI - ■ - ■ - ■ - ■ / ■</td>
</tr>
</tbody>
</table>

**Dimensions and Pin-out**

Dimensions in mm and (inches)

---

**Output Specifications**

<table>
<thead>
<tr>
<th>Standard Input</th>
<th>Wide Input</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I</strong> 18-36 Vdc</td>
<td><strong>D</strong> 4.7-16 Vdc</td>
</tr>
<tr>
<td><strong>H</strong> 9-36 Vdc</td>
<td><strong>H</strong> 9-36 Vdc</td>
</tr>
<tr>
<td><strong>J</strong> 16-40 Vdc</td>
<td><strong>J</strong> 16-40 Vdc</td>
</tr>
<tr>
<td><strong>Q</strong> 36-140 Vdc</td>
<td><strong>Q</strong> 36-140 Vdc</td>
</tr>
</tbody>
</table>

**Part Numbering**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Line Output</th>
<th>Dual Line Output</th>
<th>Triple Line Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>CGDM - ■ - ■ - 0 - 0 / ■</td>
<td>CGDM - ■ - ■ - 0 - 0 / ■</td>
<td>CGDM - ■ - ■ - ■ - ■ / ■</td>
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<tr>
<td>Industrial</td>
<td>CGDI - ■ - ■ - 0 - 0 / ■</td>
<td>CGDI - ■ - ■ - 0 - 0 / ■</td>
<td>CGDI - ■ - ■ - ■ - ■ / ■</td>
</tr>
</tbody>
</table>

For leaded process add – L after reference - Contact factory for availability

---

www.gaia-converter.com
**Input Specifications**

- Standard 3” x 2” package
- Nominal power up to 35 W without derating
- High efficiency up to 89 %
- Soft start
- Galvanic isolation 1500 Vdc
- Integrated LC EMI filter
- No load to full load operation
- External synchronization
- Trim adjustment
- Permanent short circuit protection
- No optocoupler for high reliability

**Input Range**

<table>
<thead>
<tr>
<th>Input</th>
<th>Input Range</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>9-36 Vdc transient 40 Vdc / 100 ms</td>
<td>Option H : Screening-55°C start-up temperature</td>
</tr>
<tr>
<td>O</td>
<td>16-75 Vdc transient 80 Vdc / 100 ms</td>
<td>Option O : Screening and serialization</td>
</tr>
</tbody>
</table>

**Wide Input**

<table>
<thead>
<tr>
<th>Input</th>
<th>Input Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>9-36 Vdc</td>
</tr>
<tr>
<td>O</td>
<td>18-75 Vdc</td>
</tr>
<tr>
<td>Q</td>
<td>36-140 Vdc</td>
</tr>
</tbody>
</table>

**Output Specifications**

*Indicated values are maximum current on each output with total power not exceeding 35W*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
<th>Bi Output</th>
<th>Triple Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>MGDS-35</td>
<td>MGDB-35</td>
<td>MGDT-35</td>
</tr>
<tr>
<td>Industrial</td>
<td>MGDSI-35</td>
<td>MGDBI-35</td>
<td>MGDTI-35</td>
</tr>
</tbody>
</table>

**Part Numbering**

- HI-REL MGDS-35
- MGDB-35
- MGDT-35
- INDUSTRIAL MGDSI-35
- MGDBI-35
- MGDTI-35

**Dimensions and Pin-out**

- Dimensions in mm and (inches)
- Metallic case, black anodized coating, solder plated pins

**Pin Dimensions**

- [Pin dimensions](image)

**Contact Information**

www.gaia-converter.com
• Ultra wide input 9–60 Vdc, 4.5–33 Vdc
• Small surface 1.5” x 1.75” package
• Low profile 0.33”
• Flexible isolated dual outputs
• Soft start
• No load to full load operation
• Trim adjustment
• No optocoupler for high reliability

**Input Specifications**

**Ultra Wide Input**

- **N**: 9-60 Vdc | transient : 80 Vdc / 1 s
- **E**: 4.5-33 Vdc | transient : 45 Vdc / 0.1 s

Option **L**: Screening -55°C start-up temperature
Option **N**: Screening and serialization

**Output Specifications**

**Dual Isolated Output**

- **B**: 2 x 3.3 Vdc / 2 x 4 A
- **C**: 2 x 5 Vdc / 2 x 4 A
- **E**: 2 x 12 Vdc / 2 x 1.65 A
- **F**: 2 x 15 Vdc / 2 x 1.30 A
- **I**: 2 x 24 Vdc / 2 x 0.85 A

* Possible unbalanced power up to 10% / 90%

**Part Numbering**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Dual Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>MGDD-40 - ■ - ■ / ■</td>
</tr>
</tbody>
</table>

**Dimensions and Pin-out**

Pin dimensions: square pin Ø 0.64 mm (0.025”)

Metallic case black anodized coating gold plated pin

Pin | Dual |
--- | --- |
1 | Synchro-SD |
2 | +Input (S) |
3 | -Input (S) |
4 | UT |
5 | +Input (I) |
6 | -Input (I) |
7 | +Output 1 (Vo1) |
8 | -Output 1 (Go1) |
9 | +Output 2 (Vo2) |
10 | -Output 2 (Go2) |
11 | -Output 1 (G1) |
12 | V trim |
DC/DC CONVERTERS
60 WATT SERIES

MGDI-60 Series

Input Specifications

- Standard 3" x 2" package
- Nominal power up to 60 W without derating
- High efficiency up to 89%
- Soft start
- Galvanic isolation 1500 Vdc
- Integrated LC EMI filter
- No load to full load operation
- External synchronization
- Trim adjustment
- Permanent short circuit protection
- No optocoupler for high reliability

Output Specifications

<table>
<thead>
<tr>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>B : 3.3 Vdc / 15 A</td>
</tr>
<tr>
<td>C : 5 Vdc / 12 A</td>
</tr>
<tr>
<td>E : 12 Vdc / 5 A</td>
</tr>
<tr>
<td>F : 15 Vdc / 4 A</td>
</tr>
<tr>
<td>26 : 26 Vdc / 2.3 A</td>
</tr>
</tbody>
</table>

Part Numbering

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial</td>
<td>MGDI-60 - - / -</td>
</tr>
</tbody>
</table>

Dimensions and Pin-out

Dimensions in mm and (inches)

Pin dimensions: square pin Ø 0.5 mm (0.014")

Metallic case black anodized coating solder plated pin
DC/DC CONVERTERS
60 WATT NEW GENERATION SERIES

- Ultra wide input 12-160 Vdc
- Standard 3” x 2” package
- High efficiency over the entire range
- Flexible isolated dual outputs
- Soft start
- No load to full load operation
- Trim adjustment
- No optocoupler for high reliability

Input Specifications

Ultra Wide Input

R : 12-160 Vdc transient 10.5 Vdc/1 sec

Option R : Screening-55°C start-up temperature
Option R : Screening and serialization

Output Specifications

Dual Isolated Output*

C : 2 X 5 Vdc / 2 x 5 A
E : 2 x 12 Vdc / 2 x 2.5 A
F : 2 x 15 Vdc / 2 x 2 A
I : 2 x 24 Vdc / 2 x 1.25 A

* Possible unbalanced power up to 10% / 90%

Part Numbering

<table>
<thead>
<tr>
<th>Grade</th>
<th>Dual Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>MGDD-60 - ■ - ■ / ■</td>
</tr>
<tr>
<td>Industrial</td>
<td>MGDDI-60 - ■ - ■</td>
</tr>
</tbody>
</table>

Dimensions and Pin-out

Dimensions in mm and (inches)

Pin dimensions: Square pin 0.91 mm (0.036”)

Metallic case black anodized coating gold plated pins

Pin 1-8: 0.81 mm (0.032”)

Pin 9: 0.91 mm (0.036”)

Dimensions in mm:

Hi-Rel Grade

Industrial Grade

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DC/DC CONVERTERS
75 WATT SERIES

- Standard quarter brick package
- Nominal power up to 75 W
- Soft start
- Galvanic isolation 1500 Vdc
- Integrated LC EMI Filter
- No load to full load operation
- External synchronization
- Trim and sense adjustment
- Under voltage / over voltage / over current protection
- No optocoupler for high reliability

Input Specifications

<table>
<thead>
<tr>
<th>Input Range</th>
<th>Wide Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>H : 9-45 Vdc</td>
<td>H : 9-36 Vdc</td>
</tr>
<tr>
<td>O : 16-80 Vdc</td>
<td>O : 18-75 Vdc</td>
</tr>
<tr>
<td>S : 155-480 Vdc</td>
<td></td>
</tr>
</tbody>
</table>

Input Specifications

Output Specifications

<table>
<thead>
<tr>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>B : 3.3 Vdc / 15 A</td>
</tr>
<tr>
<td>C : 5 Vdc / 15 A</td>
</tr>
<tr>
<td>E : 12 Vdc / 6.25 A</td>
</tr>
<tr>
<td>F : 15 Vdc / 5 A</td>
</tr>
<tr>
<td>I : 24 Vdc / 3.125 A</td>
</tr>
<tr>
<td>J : 26 Vdc / 2.85 A</td>
</tr>
<tr>
<td>26 : 26 Vdc / 2.85 A</td>
</tr>
<tr>
<td>28 : 28 Vdc / 2.7 A</td>
</tr>
<tr>
<td>28 Vdc / 2.7 A</td>
</tr>
</tbody>
</table>

Part Numbering

<table>
<thead>
<tr>
<th>Grade</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>MGDS-75</td>
</tr>
<tr>
<td>Industrial</td>
<td>MGDSI-75</td>
</tr>
</tbody>
</table>

Dimensions and Pin-out

Dimensions in mm and (inches)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Single Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-Input (G1)</td>
</tr>
<tr>
<td>2</td>
<td>On/Off</td>
</tr>
<tr>
<td>3</td>
<td>+Output (V0)</td>
</tr>
<tr>
<td>4</td>
<td>Sense (S+)</td>
</tr>
<tr>
<td>5</td>
<td>Sense (S-)</td>
</tr>
<tr>
<td>6</td>
<td>Trim (Trim)</td>
</tr>
<tr>
<td>7</td>
<td>Sense (S+)</td>
</tr>
<tr>
<td>8</td>
<td>-Output (G0)</td>
</tr>
<tr>
<td>9</td>
<td>+Output (V0)</td>
</tr>
</tbody>
</table>

www.gaia-converter.com
DC/DC CONVERTERS
100 WATT SERIES

MGDM-100 Series

MGDI-100 Series

- Standard 3” x 2” package
- Nominal power up to 100 W without derating
- High efficiency up to 89 %
- Soft start
- Galvanic isolation 1500 Vdc
- Integrated LC EMI filter
- No load to full load operation
- External synchronization
- Trim adjustment
- Permanent short circuit protection
- No optocoupler for high reliability

Input Specifications

Hi-Rel Grade

Input Range

 INPUT RANGE

Hi-Rel Grade

Basic : On/Off function

M : 10.7-100 Vdc

Option H : Screening-55°C start-up temperature

Option H : Screening and serialization

Industrial Grade

Basic : On/Off function

G : 14-55 Vdc

Q : 36-140 Vdc

Output Specifications

Single Output

B : 3.3 Vdc / 20 A

C : 5 Vdc / 20 A

E : 12 Vdc / 8.5 A

F : 15 Vdc / 6.5 A

26 : 26 Vdc / 4 A

Part Numbering

Grade

Hi-Rel

MGDS-100

Industrial

MGDSI-100

Dimensions and Pin-out

Dimensions in mm and (inches)

Pin dimensions : square pin Ø 0.95mm (0.038”)

Metallic case black anodized coating solder plated pin

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DC/DC CONVERTERS
150 WATT SERIES

- Standard half brick package
- Nominal power up to 150 W
- Soft start
- Galvanic isolation 1500 Vdc
- Integrated LC EMI filter
- No load to full load operation
- External synchronization
- Trim and sense adjustment
- Current sharing
- Under voltage / over voltage / over current protection
- No optocoupler for high reliability

Input Specifications

### Input Range

<table>
<thead>
<tr>
<th>Grade</th>
<th>Input Range</th>
<th>Single Output</th>
<th>Pin Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel</td>
<td>H: 9-45 Vdc</td>
<td>MGDS-150</td>
<td>1 - Input (Gi)</td>
</tr>
<tr>
<td></td>
<td>Q: 16-80 Vdc</td>
<td></td>
<td>2 - Synchro (Sync)</td>
</tr>
<tr>
<td></td>
<td>T: 120-480 Vdc</td>
<td></td>
<td>3 - Share</td>
</tr>
<tr>
<td></td>
<td>Option H: Screening-55°C start-up temperature</td>
<td></td>
<td>4 - On/Off</td>
</tr>
<tr>
<td></td>
<td>Option Q: Screening and serialization</td>
<td></td>
<td>5 - +Input (Vi)</td>
</tr>
<tr>
<td></td>
<td>Option T:</td>
<td></td>
<td>6 - Output (Vo)</td>
</tr>
<tr>
<td>Industrial Grade</td>
<td>H: 9-36 Vdc</td>
<td>MGDSi-150</td>
<td>7 - Sense + (S+)</td>
</tr>
<tr>
<td></td>
<td>Q: 18-75 Vdc</td>
<td></td>
<td>8 - Trim (Trim)</td>
</tr>
<tr>
<td></td>
<td>T: 90-480 Vdc</td>
<td></td>
<td>9 - Sense - (S-)</td>
</tr>
<tr>
<td></td>
<td>Option H:</td>
<td></td>
<td>10 - Common (Go)</td>
</tr>
<tr>
<td></td>
<td>Option Q:</td>
<td></td>
<td>11 -</td>
</tr>
<tr>
<td></td>
<td>Option T:</td>
<td></td>
<td>12 -</td>
</tr>
</tbody>
</table>

Output Specifications

### Single Output

- B: 3.3 Vdc / 30 A
- C: 5 Vdc / 30 A
- E: 12 Vdc / 12.5 A
- F: 15 Vdc / 10 A
- I: 24 Vdc / 6.25 A
- J: 28 Vdc / 5.3 A

Part Numbering

- Hi-Rel MGDS-150
- Industrial Grade MGDSi-150

Dimensions and Pin-out

- Dimensions in mm and (inches)
- Pin dimensions:
  - Pins: 1, 2, 3, 4, 5, 7, 8, 9: Ø 1 mm (0.04")
  - Pins: 6, 10: Ø 2.5 mm (0.08")

For leaded process add - L after reference

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DC/DC CONVERTERS
155 WATT NEW GENERATION SERIES

- Standard quarter brick package
- Nominal power up to 150 W
- Soft start
- Galvanic isolation 1500 Vdc (2200 Vdc for S input)
- Integrated LC EMI Filter
- No load to full load operation
- External synchronization
- Trim and sense adjustment
- Under voltage / over voltage / over current protection
- No optocoupler for high reliability

**Input Specifications**

**Input Range**

<table>
<thead>
<tr>
<th>Option</th>
<th>Input Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>9-45 Vdc</td>
</tr>
<tr>
<td>S</td>
<td>155-480 Vdc</td>
</tr>
<tr>
<td>O</td>
<td>16-80 Vdc</td>
</tr>
</tbody>
</table>

Option **H**: Screening -55°C start-up temperature
Option **S**: Screening and serialization

**Output Specifications**

**Single Output**

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>3.3 Vdc</td>
<td>30 A</td>
</tr>
<tr>
<td>C</td>
<td>5 Vdc</td>
<td>30 A</td>
</tr>
<tr>
<td>E</td>
<td>12 Vdc</td>
<td>12.5 A</td>
</tr>
<tr>
<td>F</td>
<td>15 Vdc</td>
<td>10 A</td>
</tr>
<tr>
<td>I</td>
<td>24 Vdc</td>
<td>6.25 A</td>
</tr>
<tr>
<td>26</td>
<td>26 Vdc</td>
<td>5.8 A</td>
</tr>
<tr>
<td>28</td>
<td>28 Vdc</td>
<td>5.3 A</td>
</tr>
</tbody>
</table>

**Part Numbering**

**Grade**

- Hi-Rel

**Single Output**

- MGDS-155 - [ ] [ ] [ ]

**Dimensions and Pin-out**

*Only on high input Series*

**Pin**

1. Input (Gi)
2. Output (Go)
3. Sense + (S+)
4. Sense - (S-)
5. +Input (Vi)
6. +Output (Vo)
7. Trim (Trim)
8. Share*
9. On/Off
10. Synchro (Sync)

Dimensions in mm and (inches)

- Pin dimensions: Pins: 1, 2, 3, 4, 5, 7, 8, 9: Ø 1 mm (0.04")
- Pins: 6, 10: Ø 1.5 mm (0.059")

Metallic case alodined，reelable gold plated pin
**DC/DC CONVERTERS**

**200 WATT SERIES**

- Unique product with heat dissipation on side
- Nominal power up to 200 W
- Soft start
- Galvanic isolation 1 500 Vdc
- Integrated LC EMI filter
- No load to full load operation
- External synchronization
- Trim and sense adjustment
- Current sharing
- Under voltage / over voltage / over current protection
- No optocoupler for high reliability

**Input Specifications**

**Input Range**

<table>
<thead>
<tr>
<th>H</th>
<th>9-45 Vdc</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>16-80 Vdc</td>
</tr>
</tbody>
</table>

**Option**

- Option T: Screening-55°C start-up temperature
- Option S: Screening and serialization

**Output Specifications**

**Single Output**

<table>
<thead>
<tr>
<th>B</th>
<th>3.3 Vdc / 35 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>5 Vdc / 35 A</td>
</tr>
<tr>
<td>E</td>
<td>12 Vdc / 16.5 A</td>
</tr>
<tr>
<td>F</td>
<td>15 Vdc / 13.3 A</td>
</tr>
<tr>
<td>I</td>
<td>24 Vdc / 8.4 A</td>
</tr>
</tbody>
</table>

**Part Numbering**

**Grade**

- Hi-Rel

**Single Output**

- MGDS-200

**Dimensions and Pin-out**

**Dimensions in mm and (inches)**

- Pin dimensions: 0.64 mm (0.025”)
- Metallic case: L-shaped cradled gold plated pin

**Pin 1-18**

- 1 - Synchron [Sync]
- 2 - Output
- 3 - 5 Vdc
- 4 - Vf
- 5 - Gf
- 6 - Input (Di)
- 7 - Input (Do)
- 8 - Input (Vi)
- 9 - Input (Vo)
- 10 - Output (Di)
- 11 - Output (Do)
- 12 - Output (Vi)
- 13 - Output (Vo)
- 14 - Sense
- 15 - 24 Vdc (Vf)
- 16 - Sense [Sync]
- 17 - Trim
- 18 - Sense [Sync]

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### DC/DC Solutions

#### DC/DC Converters Selection Chart

<table>
<thead>
<tr>
<th>Grades</th>
<th>Single Output</th>
<th>Bi Output</th>
<th>Dual Output</th>
<th>Triple Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hi-Rel (M)</td>
<td>MGDS</td>
<td>MGDB</td>
<td>MGDD</td>
<td>MGDT</td>
</tr>
<tr>
<td>Industrial (I)</td>
<td>MGDSI</td>
<td>MGDBI</td>
<td>MGDDI</td>
<td>MGDTI</td>
</tr>
</tbody>
</table>

#### Power references
- 04: 4 W
- 06: 6 W
- 08: 8 W
- 10: 10 W
- 18: 18 W
- 20: 20 W
- 21: 21 W
- 25: 25 W
- 26: 26 W
- 30: 30 W
- 35: 35 W
- 40: 40 W
- 50: 50 W
- 60: 60 W
- 75: 75 W
- 100: 100 W
- 150: 150 W
- 155: 155 W
- 200: 200 W
- 26: 26 Vdc
- 37: 37 Vdc
- 17: 17 Vdc
- T: 375 Vdc

#### Input Voltage range reference
- Standard Input
  - C: 4.5-5.5 Vdc
  - I: 18-36 Vdc
- Ultra Wide Input
  - E: 4.5-33 Vdc
  - N: 9-60 Vdc
  - R: 12-160 Vdc
- Wide Input
  - D: 4.7-16 Vdc
  - H: 9-36 / 9-45 Vdc
  - K: 16-40 Vdc
  - O: 18-75 / 16-80 Vdc
  - Q: 36-140 / 36-175 Vdc
  - S: 120-480 Vdc
  - N: 155-480 Vdc

#### Output references
- A: 2.5 Vdc
- B: 3.3 Vdc
- C: 5 or +/- 5 Vdc
- D: 12 or +/- 12 Vdc
- E: 15 or +/- 15 Vdc
- F: 24 or +/- 24 Vdc
- G: 26 Vdc
- J: 28 Vdc

#### Options
- Option M: On/Off function
- Option P: High isolation 3000 Vdc
- Option R: -55° C start-up temperature
- Option K: Screening and serialization

### DC/DC Front-End Module Section Chart

<table>
<thead>
<tr>
<th>Type of module</th>
<th>Single Output</th>
<th>Bi Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMI input filter module</td>
<td>FGDS - A - 50V</td>
<td></td>
</tr>
<tr>
<td>Transient/drop-out protection module 50 W</td>
<td>PGDS - 50 - K</td>
<td></td>
</tr>
<tr>
<td>Transient protection module 50 W / 300 W</td>
<td>LGDS - K</td>
<td></td>
</tr>
<tr>
<td>Hold-up module 50 W / 300 W</td>
<td>HUGD -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power references</th>
<th>Input Voltage range reference</th>
<th>Output references</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 : 35 W</td>
<td>W: 95-140 Vac / frequency 320-800 Hz</td>
<td>17 : 17 Vdc</td>
</tr>
<tr>
<td>150 : 150 W</td>
<td>X: 94-140 Vac / frequency 47 - 440 Hz</td>
<td>375 Vdc</td>
</tr>
<tr>
<td>350 : 350 W</td>
<td>Y: 85-265 Vac / frequency 50 - 60 Hz</td>
<td></td>
</tr>
</tbody>
</table>

#### Options
- Option M: Leaded process
- Option M: RoHS process

### AC/DC Solutions

#### Isolated PFC Modules series

<table>
<thead>
<tr>
<th>Type of module</th>
<th>Single Output</th>
<th>Bi Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMB</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Non Isolated PFC Modules series

<table>
<thead>
<tr>
<th>Type of module</th>
<th>Single Output</th>
<th>Bi Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>HGMIS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power references</th>
<th>Input Voltage range reference</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 : 35 W</td>
<td>W: 95-140 Vac / frequency 320-800 Hz</td>
<td>Option R: -55° C start-up temperature</td>
</tr>
<tr>
<td>150 : 150 W</td>
<td>X: 94-140 Vac / frequency 47 - 440 Hz</td>
<td>Option K: Screening and serialization</td>
</tr>
<tr>
<td>350 : 350 W</td>
<td>Y: 85-265 Vac / frequency 50 - 60 Hz</td>
<td></td>
</tr>
</tbody>
</table>

#### Process
- Option M: Leaded process
- Option M: RoHS process
GAIA Converter is a manufacturer of rugged and reliable products suitable for the harshest environments. To verify the suitability of GAIA Converter products to these harsh environments, the modules have been subjected to the environmental requirements of well-known and widespread standards. Many of these tests have been performed by independent laboratories.

### Environmental Qualifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Standards</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life at high temperature</td>
<td>per MIL-STD-202G Method 108A</td>
<td>Operation: 1,000 hrs @ +105°C case Storage: 1,000 hrs @ +125°C ambient</td>
</tr>
<tr>
<td>Low temperature</td>
<td>per MIL-STD-810E/F/G Methods 502.3, 502.4, 502.5</td>
<td>Storage: 1,000 hrs @ -55°C ambient</td>
</tr>
<tr>
<td>Temperature cycling</td>
<td>per MIL-STD-202A/G Method 102A</td>
<td>Number of cycles: 200 Temperature change: -40°C / +85°C Transfer time: &lt; 10 s / steady state time: 20 min.</td>
</tr>
<tr>
<td>Thermal shock</td>
<td>per MIL-STD-202G Method 107G</td>
<td>Number of shocks: 100 Temperature: -55°C to +105°C Transfer time: &lt; 10 s / steady state time: 20 min.</td>
</tr>
<tr>
<td>Altitude</td>
<td>per MIL-STD-810E/F/G Methods 500.3, 500.5</td>
<td>40,000 ft, unit functioning 1,000 f/min to 70,000 ft, unit functioning</td>
</tr>
<tr>
<td>Humidity cycling</td>
<td>per MIL-STD-202G Method 103B</td>
<td>Damp heat: 93 % relative humidity Temperature: 40°C Duration: 48 hrs</td>
</tr>
<tr>
<td>Salt atmosphere</td>
<td>per MIL-STD-810D/F/G Methods 514.3, 514.5, 514.6</td>
<td>Temperature: 35°C Duration: 48 hrs</td>
</tr>
<tr>
<td>Vibration</td>
<td>per MIL-STD-810D/F/G Methods 516.3, 516.5</td>
<td>10 cycles in each axis Frequency: 10 to 60Hz/60Hz to 2kHz Amplitude/acceleration: 0.7 mm/10 g</td>
</tr>
<tr>
<td>Shock</td>
<td>per MIL-STD-810D/F/G Methods 516.3, 516.5</td>
<td>3 shocks in each axis Peak acceleration: 100 g Duration: 6 ms</td>
</tr>
<tr>
<td>Bumps</td>
<td>per MIL-STD-810D/F/G Methods 516.3, 516.5, 516.5</td>
<td>2,000 bumps in each direction Duration: 6 ms Peak acceleration: 40 g</td>
</tr>
<tr>
<td>Conducted emissions</td>
<td>per MIL-STD-461C/D/EF-C501, C502, C503 CE102</td>
<td>with external filter (see technical datasheet for details)</td>
</tr>
<tr>
<td>ConductedSusceptibility</td>
<td>per MIL-STD-461C/D/EF-C501, C502, C506, C510</td>
<td>with external filter (see technical datasheet for details)</td>
</tr>
<tr>
<td>Radiated emissions</td>
<td>per MIL-STD-461C/D/EF-R501, R503, R510, R510</td>
<td>module stand alone</td>
</tr>
<tr>
<td>Radiated susceptibility</td>
<td>per MIL-STD-461C/D/EF-R501, R503, R510, R510</td>
<td>module stand alone</td>
</tr>
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<th>Specification</th>
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<tr>
<td>Life at high temperature</td>
<td>per IEC 68-2-2</td>
<td>1,000 hours 95°C case</td>
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<td>Humidity</td>
<td>per IEC 68-2-3 Test Ca</td>
<td>Damp heat: 93 % H.R 56 days Temperature: 40°C</td>
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<tr>
<td>Temperature cycling</td>
<td>per IEC 68-2-14 Test N</td>
<td>Number of cycles: 200 Temperature change: -40°C/+71°C Transfer time: 40 min. Steady state time: 20 min.</td>
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<tr>
<td>Vibration</td>
<td>per IEC 68-2-6 Test Eb</td>
<td>10 cycles in each axis Frequency: 10 to 60Hz/60Hz to 2kHz Amplitude/acceleration: 0.7 mm/10 g</td>
</tr>
<tr>
<td>Shock</td>
<td>per IEC 68-2-27 Test Ea</td>
<td>3 cycles in each axis Peak acceleration: 100 g Duration: 6 ms</td>
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<td>Bumps</td>
<td>per IEC 68-2-29 Test Eb</td>
<td>2,000 bumps in each direction Duration: 6 ms Peak acceleration: 25 g</td>
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<td>Electrical discharge susceptibility</td>
<td>per EN55082-2 with EN61000-4-2 (IEC 801-2)</td>
<td>Air discharge level 4 kV: sanction A Contact discharge level 2 kV: sanction A Air discharge level 8 kV: sanction B Contact discharge level 4 kV: sanction B</td>
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<td>Electrical field susceptibility</td>
<td>per EN55082-2 with EN61000-4-3 (IEC 801-3)</td>
<td>Antenna at 1 m distance Value applied: 10V/m Waveform: AM modulated 80 % 1 kHz test: 26 MHz to 1 Ghz</td>
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<td>Electrical fast transient susceptibility</td>
<td>per EN55082-2 with EN61000-4-4 (IEC 801-4)</td>
<td>Level 1: 0.5 kV/sanction A: module stand alone Level 3: 2 kV/sanction B: module stand alone Level 4: 4 kV/sanction A: with external filter Waveform: 5/50 µs impedance 50 Ohm</td>
</tr>
<tr>
<td>Surge transients</td>
<td>per EN55082-2 with EN61000-4-5 (IEC 801-5)</td>
<td>Level 4: 4 kV/sanction A: with external filter Waveform: 1.2/50 µs impedance 12 Ohm Level 1, 3: 4 kV/sanction A: with external filter Waveform: 5/50 µs impedance 5 Ohm</td>
</tr>
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</table>
For more detailed specifications and application information, contact:

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