The R-Series

Servo Drives for Extreme Environments

Copley Controls Corp.
Rugged

The Copley Edge

- 25 years experience in servos and power systems
- Quality products designed and built in the U.S.A.
- Comprehensive range with custom capability
- ISO 9001:2000 certified
- RoHS compliant
- Agile, responsive R&D and applications team
- Global sales offices and technical support

R-Series Drives

- 150W to 7kW power range
- Indexing and trajectory tracking modes
- CANopen, RS-232 and RS-422/RS-485
- Analog and digital command interfaces
- Encoder and resolver versions

Design Standards

- MIL-STD-810 Environmental Engineering Considerations and Laboratory Test
- MIL-STD-1275 Characteristics of 28 VDC Electrical Systems in Military Vehicles
- MIL-STD-704 Aircraft, Electric Power Characteristics
- MIL-STD-461 Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment
- MIL-STD-1399 Interface Standard for Shipboard Systems
- IEC-60079 Electrical Apparatus for Explosive Gas Atmospheres
- IEC-60068 Environmental Testing

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800-999-7378
The R-Series delivers performance you can trust in the harshest environments. Ruggedized to endure temperature extremes, high humidity, vibration and shock, Copley’s proven drive technology finds application in COTS military, nautical, aviation, oil refining and vehicle based systems.

<table>
<thead>
<tr>
<th></th>
<th>Non-Operating</th>
<th>Operating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ambient Temperature</strong></td>
<td>-50°C to 85°C</td>
<td>-40°C to 70°C</td>
</tr>
<tr>
<td><strong>Thermal Shock</strong></td>
<td>-40°C to 70°C in 1 minute</td>
<td></td>
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<tr>
<td><strong>Relative Humidity</strong></td>
<td>95% non-condensing at 60°C</td>
<td>95% non-condensing at 60°C</td>
</tr>
<tr>
<td><strong>Vibration</strong></td>
<td>5 Hz to 500 Hz, up to 3.85 g&lt;sub&gt;rms&lt;/sub&gt;</td>
<td></td>
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<tr>
<td><strong>Altitude</strong></td>
<td>-400 m to 12,200 m</td>
<td>-400 m to 5,000 m</td>
</tr>
<tr>
<td><strong>Shock</strong></td>
<td>Crash Safety</td>
<td>75 g peak acceleration</td>
</tr>
<tr>
<td></td>
<td>Operating</td>
<td>40 g peak acceleration</td>
</tr>
</tbody>
</table>
Control & Communications

R-Series drives incorporate a range of command interfaces and communication channels for system integration flexibility. CANopen, an international standard for motion control, is proven in harsh environments. RS-232/422/485 interfaces enable control via ASCII commands. Step/direction and analog velocity/current command interfaces are ideal for integration into traditional architectures.

Copley distributed control software for CANopen makes system commissioning fast and simple. All network management is taken care of by a few commands linked into your application program.

Copley supports two development environments. Copley Motion Libraries (CML) link into a C++ application program. Copley Motion Objects (CMO) are COM objects that can be used by Visual Basic®, .NET®, and LabVIEW®.
Installation Flexibility
Copley offers a comprehensive range of digital drives for brushless and brush motors. High power density panel-mount and PCB-mount packages deliver installation flexibility. A complete set of feedback options are provided. Both AC and DC powered versions are available.

Built-In Indexing Capability
Point-and-click to define up to 32 indexes or index sequences. Index sequences can include parameter changes, dwell times and I/O control. Simply select the index/sequence and command GO. Any parameter (e.g. move distance) can be assigned to a register for efficient adjustment by a master controller.

Drive Configuration
Java based CME 2 configuration software is powerful and intuitive. Comprehensive diagnostics, auto-tuning and advanced oscilloscope tools simplify system commissioning. Auto-phasing eliminates time consuming rewire-and-try for feedback connections.
Control Modes
- Indexer, Point-to-Point, PVT
- Camming, Gearing, Position, Velocity, Torque

Command Interface
- CANopen/DeviceNet
- ASCII and discrete I/O
- Stepper commands
- ±10V position/velocity/torque command
- PWM velocity/torque command
- Master encoder [Gearing/Camming]

Communications
- CANopen/DeviceNet
- RS-232
- RS-422/RS-485 [option]

Accessories
- External regen resistors
- External edge filter

Feedback
- Digital quad A/B encoder
- Resolver [option]
- Aux. encoder / encoder out
- Analog sin/cos encoder [option]
- Digital Halls

I/O - Digital
- 11-14 inputs, 4 outputs

Regen
- R10: internal transistor, external resistor
- R11: internal dissipator

Dimensions: mm [in]
- R10: 191 x 140 x 64 [7.5 x 5.5 x 2.5]
- R11: 126 x 90 x 53 [5.0 x 3.5 x 2.1]
R20

Control Modes
- Indexer, Point-to-Point, PVT
- Camming, Gearing, Position, Velocity, Torque

Command Interface
- CANopen/DeviceNet
- ASCII and discrete I/O
- Stepper commands
- ±10V position/velocity/torque command
- PWM velocity/torque command
- Master encoder [Gearing/Camming]

Communications
- CANopen/DeviceNet
- RS-232
- RS-422/RS-485 [R20, R21, R22 option]

Feedback
- Digital quad A/B encoder
- Resolver [option]
- Aux. encoder/encoder out [R20, R21]
- Analog sin/cos encoder [R20, R21 option]
- Digital Halls

I/O - Digital
- 8-12 inputs, 2-4 outputs

Dimensions: mm [in]
- R20: 168 x 99 x 31 [6.6 x 3.9 x 1.2]
- R21: 97 x 64 x 33 [3.8 x 2.5 x 1.3]
- R22: 102 x 69 x 25 [4.0 x 2.7 x 1.0]
- R23: 64 x 41 x 16 [2.5 x 1.6 x 0.6]

Panel | VDC | Ic | Ip
-----|-----|----|----
R20-055-18 | 20 - 55 | 6 | 18
R20-090-09 | 20 - 90 | 3 | 9
R20-090-18 | 20 - 90 | 6 | 18
R20-090-36 | 20 - 90 | 12 | 36
R20-180-09 | 20 - 180 | 3 | 9
R20-180-18 | 20 - 180 | 6 | 18

Micro Panel | VDC | Ic | Ip
-------------|-----|----|----
R21-055-09 | 20 - 55 | 3 | 9
R21-055-18 | 20 - 55 | 6 | 18
R21-090-03 | 20 - 90 | 1 | 3
R21-090-09 | 20 - 90 | 3 | 9
R21-090-12 | 20 - 90 | 6 | 12

Module | VDC | Ic | Ip
-------|-----|----|----
R22-055-18 | 20 - 55 | 6 | 18
R22-090-09 | 20 - 90 | 3 | 9
R22-180-09 | 20 - 180 | 3 | 9
R22-180-18 | 20 - 180 | 6 | 18
R22-180-20 | 20 - 180 | 10 | 20

Micro Module | VDC | Ic | Ip
-------------|-----|----|----
R23-055-06 | 20 - 55 | 3 | 6
R23-090-04 | 20 - 90 | 2 | 4

Resolver: -R, Analog encoder: -S