

DIGIFLEX® DIGITAL SERVO DRIVES MODEL: DR101RE60A40LDC (-10, -16)

FEATURES:

- Fully digital, state-of-the-art design
- Space Vector Modulation and vector control technology
- 20kHz Digital current loop with programmable gain settings
- PIDF velocity loop with 100microsecond update rate
- PID + FF position loop with 100 microsecond update rate
- Hall sensor + encoder or encoder-only based commutation
- Surface-mount technology
- Small size, low cost, ease of use

- Isolated RS232/485 interface for setup and networking
- Windows© based setup software with built-in 8-channel digital scope
- Operates in torque, velocity or position mode with programmable gain settings
- Programmable profiling in all modes
- Fully configurable current, voltage, velocity and position limits.
- Step & direction mode for stepper replacement
- Encoder following with programmable gear ratio

- 4 isolated programmable digital inputs
- 2 programmable differential inputs, configurable as step & direction, master encoder, or secondary encoder for dual loop operation
- 4 isolated programmable digital outputs
- 2 programmable analog inputs (10-bit)
- 14-bit reference input or programmable analog input
- 1 programmable analog output (10-bit)
- Software selectable emulated encoder output resolution*

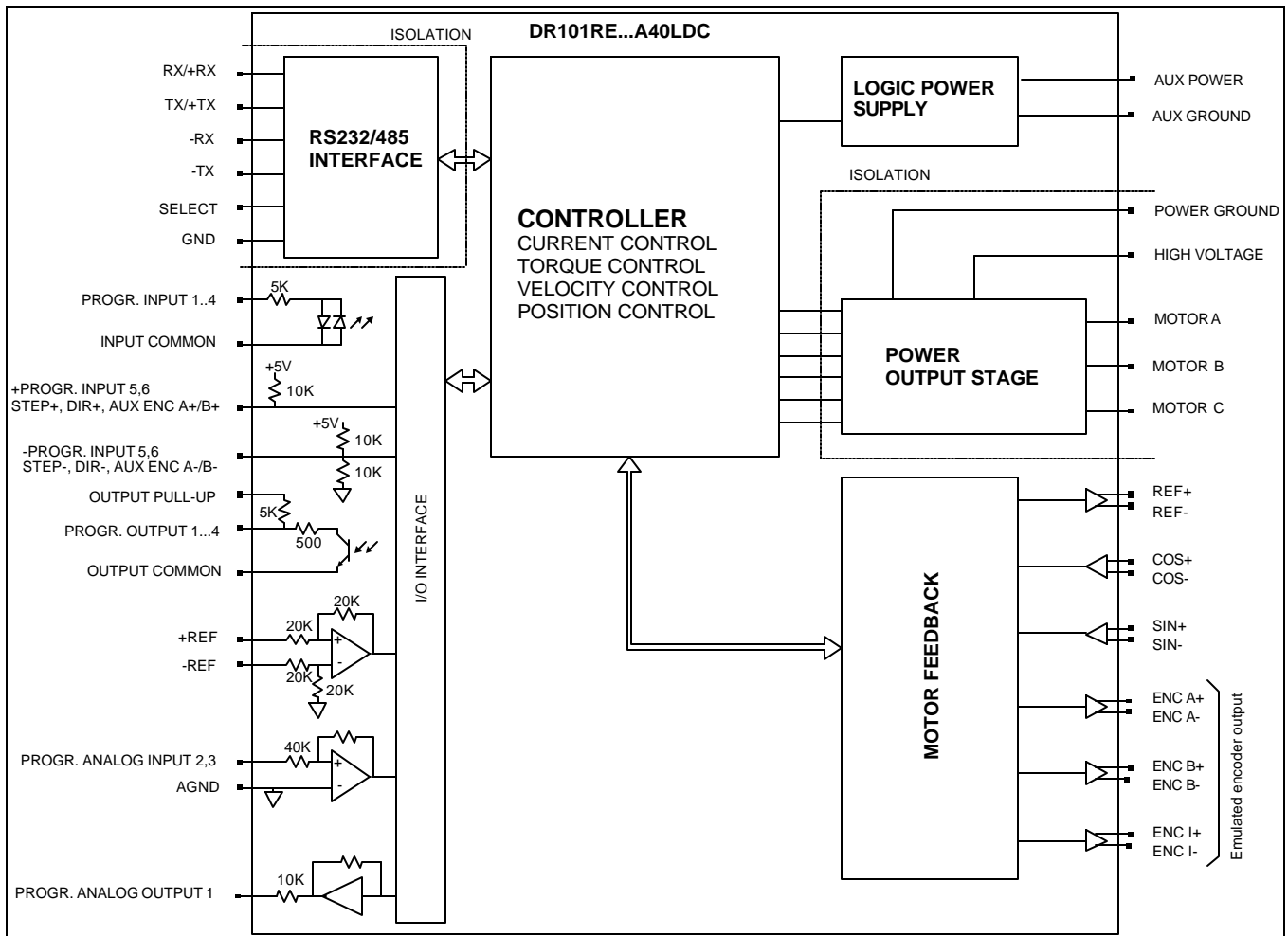
| Model Number | Low | High |
|----------------|--------|--------|
| DR101RE | 12-bit | 14-bit |
| DR101RE... -10 | 10-bit | 12-bit |
| DR101RE... -16 | 14-bit | 16-bit |

* See maximum speed table below

- Four quadrant regenerative operation
- Separate logic supply
- Bi-color LED status indicator
- Extensive built-in protection against:
 - over-voltage (programmable)
 - under-voltage (programmable)
 - short-circuit: phase-phase, phase-ground
 - over-current
 - over-temperature



BLOCK DIAGRAM:



DESCRIPTION:

The DR101RE Series digital PWM servo drives are designed to drive brushed and brushless servomotors. These fully digital drives operate in torque, velocity, or position mode and employ Space Vector Modulation (SVM), which results in higher bus voltage utilization and reduced heat dissipation. The command source can be generated internally or can be supplied externally. In addition to motor control, these drives feature dedicated and programmable digital and analog inputs and outputs to enhance interfacing with external controllers and devices.

DR101RE Series drives feature a single, isolated RS232/485 interface, which is used for drive configuration and setup as well as online operation in networked applications. Drive commissioning can be accomplished through a fully graphical Windows© based application.

All drive and motor parameters are stored in non-volatile memory.

Maximum Motor Velocity

| Emulated Encoder Resolution | Maximum Motor Speed* |
|-----------------------------|----------------------|
| 10-bit | 64000 rpm |
| 12-bit | 16000 rpm |
| 14-bit | 4000 rpm |
| 16-bit | 1000 rpm |

* Assuming no other limitations limit the motor speed.

SPECIFICATIONS:

| POWER STAGE SPECIFICATIONS | DR101RE60A40LDC |
|---|-------------------------------|
| DC SUPPLY VOLTAGE | 60...400 VDC |
| PEAK CURRENT | 60A (42.4Arms) |
| MAXIMUM CONTINUOUS CURRENT | 30A (21.2Arms) |
| MINIMUM LOAD INDUCTANCE | 600 μ H |
| SWITCHING FREQUENCY | 20 kHz |
| HEATSINK (BASEPLATE) TEMPERATURE RANGE | 0 to 65 °C, disables at 65 °C |
| POWER DISSIPATION AT CONTINUOUS CURRENT | 600W |
| MIN. UNDER VOLTAGE SHUTDOWN | 60 VDC |
| MAX. OVER-VOLTAGE SHUTDOWN | 425 VDC |
| LOGIC SUPPLY VOLTAGE | 20...30 VDC |

| MECHANICAL SPECIFICATIONS | |
|--|---|
| POWER CONNECTOR: | Screw terminals |
| LOGIC SUPPLY CONNECTOR: | 2-pin; 5.08mm pitch removable with screw flange |
| MOTOR FEEDBACK CONNECTOR: CN3* | 15-pin high density female D-sub |
| I/O CONNECTOR: CN2* | 26-pin high density female D-sub |
| COMMUNICATIONS INTERFACE (RS232/485): CN1* | 9-pin female D-sub |
| SIZE | 9.24 x 6.31 x 3.99 inches 234.7 x 160.2 x 101.3 mm |
| WEIGHT | |

* Mating connectors are not included.

PIN FUNCTIONS:

P1 - Motor and Power Connector:

| CONNECTOR | PIN | NAME | DESCRIPTION | I/O |
|-----------|-----|--------------|----------------|--------|
| P1 | 1 | MA | Motor phase A | O |
| | 2 | MB | Motor phase B | O |
| | 3 | MC | Motor phase C | O |
| | 4 | POWER GND | Power ground. | GNDPWR |
| | 5 | HIGH VOLTAGE | DC power input | I |

P – Logic Supply Connector:

| CONNECTOR | PIN | NAME | DESCRIPTION | I/O |
|-----------|-----|---------|---------------------|-----|
| P | 1 | RTN AUX | Logic supply ground | GND |
| | 2 | PWR AUX | Logic supply power | I |

CN3 - Motor Feedback Connector:

| CONNECTOR | PIN | NAME | DESCRIPTION | I/O |
|-----------|-----|---------|--|------|
| CN3 | 1 | N/C | Not connected | |
| | 2 | N/C | Not connected | |
| | 3 | N/C | Not connected | |
| | 4 | REF+ | Resolver reference (excitation) output. 4Vrms @ 5kHz. | O |
| | 5 | REF- | | O |
| | 6 | SIN+ | Resolver sine input. 2Vrms | I |
| | 7 | SIN- | | I |
| | 8 | COS+ | Resolver cosine input. 2Vrms | I |
| | 9 | COS- | | I |
| | 10 | N/C* | Not connected | |
| | 11 | N/C* | Not connected | |
| | 12 | SGND | Signal ground | SGND |
| | 13 | +5V OUT | +5V @ 250mA max. Short-circuit protected. | O |
| | 14 | PAI3 | Programmable analog input, single ended, 10-bit | I |
| | 15 | N/C* | Not connected | |

CN2 – I/O Connector:

| CONNECTOR | PIN | NAME | DESCRIPTION | I/O |
|-----------|-----|--------------------|--|------|
| CN2 | 1 | PDO1 | Isolated programmable digital output, 24V @ 50mA max. Referenced to pin 8, Output Common. | O |
| | 2 | OUTPUT COMMON | Digital output common. | OGND |
| | 3 | PDO2 | Isolated programmable digital output, 24V @ 50mA max. Referenced to pin 8, Output Common. | O |
| | 4 | +REF | Differential reference signal input, 14-bit resolution. Can also be used as programmable analog input 1. | I |
| | 5 | -REF | | I |
| | 6 | PAI2 | Programmable analog input | I |
| | 7 | PAO1 | Programmable analog output | O |
| | 8 | OUTPUT PULL-UP | Digital output pull-up via 5K resistor. | I |
| | 9 | -PDI6 | Programmable Input (see CN2-18) or Direction- or Aux Enc B- | I |
| | 10 | PDO3 | Isolated programmable digital output, 24V @ 50mA max. Referenced to pin 8, Output Common. | O |
| | 11 | PDI1 | Isolated programmable digital input, 24V @ 5mA max. Referenced to pin 15, Input Common. | I |
| | 12 | PDI2 | Isolated programmable digital input, 24V @ 5mA max. Referenced to pin 15, Input Common. | I |
| | 13 | PDI3 | Isolated programmable digital input, 24V @ 5mA max. Referenced to pin 15, Input Common. | I |
| | 14 | PDO4 | Isolated programmable digital output, 24V @ 50mA max. Referenced to pin 8, Output Common. | O |
| | 15 | Input Common | Digital input common. Can also be used to pull-up digital inputs. | IGND |
| | 16 | AGND | Analog ground | AGND |
| | 17 | +PDI5 | Programmable differential digital input, or Step+ or Aux Enc A+ | I |
| | 18 | +PDI6 | Programmable, differential digital input or Direction+ or Aux Enc B+ | I |
| | 19 | PDI4 | Isolated programmable digital input, 24V @ 5mA max. Referenced to pin 15, Input Common. | I |
| | 20 | Encoder Channel A+ | Emulated channel A output. (10, 12, 14, or 16 bit resolution) | O |
| | 21 | Encoder Channel A- | | O |
| | 22 | Encoder Channel B+ | Emulated channel B output. (10, 12, 14, or 16 bit resolution) | O |
| | 23 | Encoder Channel B- | | O |
| | 24 | Encoder Channel I+ | Emulated index output. High when channel A and B or both low. | O |
| | 25 | Encoder Channel I- | | O |
| | 26 | -PDI5 | Programmable Input (See CN2-17) or Step- or Aux Enc A- | I |

CN1 - Communications Interface (RS232/485):

| CONNECTOR | PIN | NAME | DESCRIPTION | I/O |
|-----------|-----|--------|--|------|
| CN1 | 1 | SELECT | RS232/485 selection. Pull to ground (CN1-5) for RS485. | I |
| | 2 | TX/+TX | RS232: Transmit; RS485: +TX | O |
| | 3 | RX/+RX | RS232: Receive; RS485: +RX | I |
| | 4 | N/C | Not connected | |
| | 5 | SGND | Signal ground | SGND |
| | 6 | -TX | RS485: -TX | O |
| | 7 | N/C | Not connected | |
| | 8 | -RX | RS485: -RX | I |
| | 9 | N/C | Not connected | |

ORDERING INFORMATION:

Standard model: DR101RE60A40LDCX

X indicates the current revision letter.

MOUNTING DIMENSIONS:

