

DIGIFLEX® DIGITAL SERVO DRIVES MODEL: DR100RE25A20NAC (-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
- Resolver based commutation
- Surface-mount technology
- Small size, low cost, ease of use

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

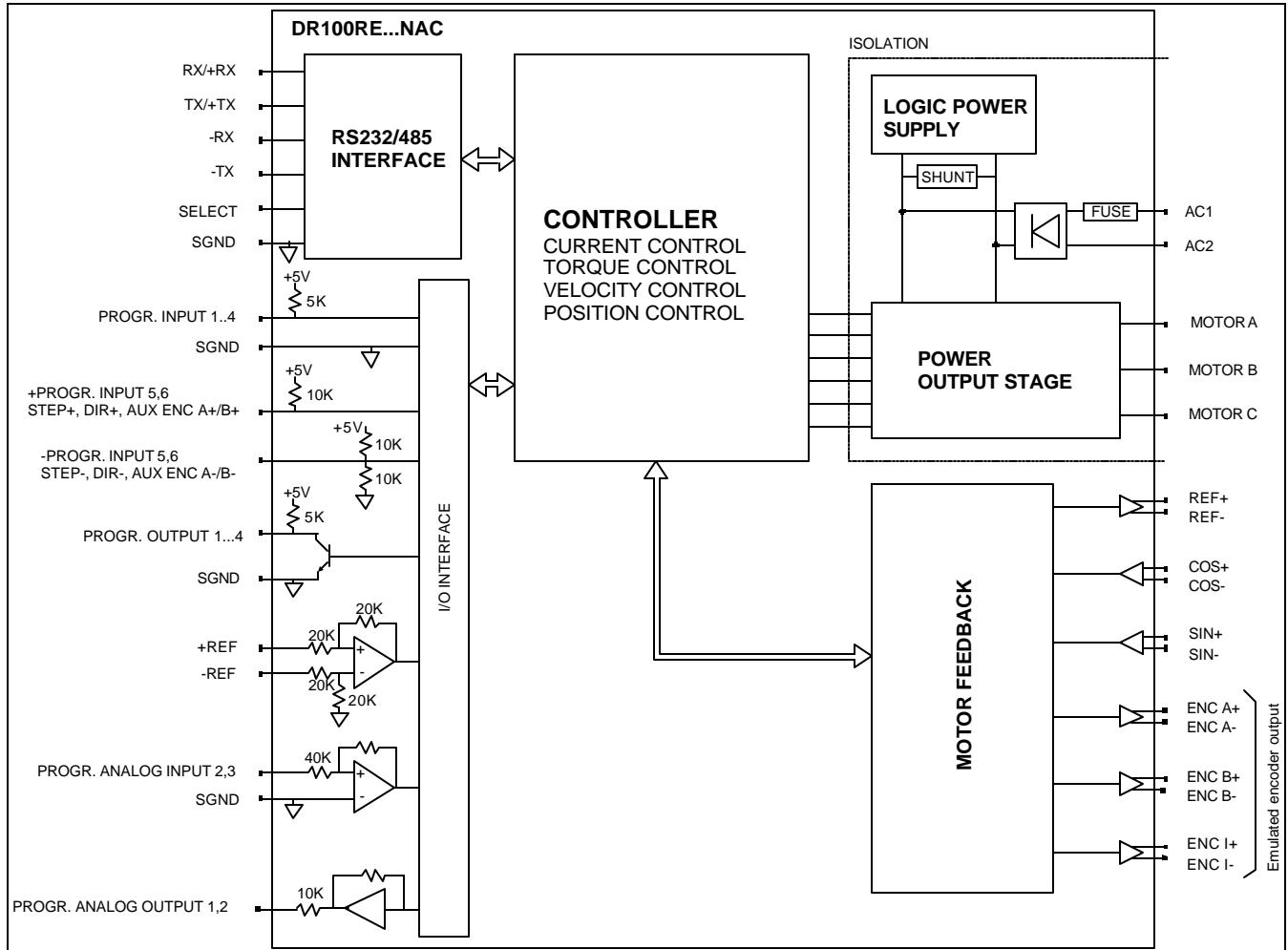
| Model Number | Low | High |
|---------------------|--------|--------|
| DR100RE25A20NAC | 12-bit | 14-bit |
| DR100RE25A20NAC -10 | 10-bit | 12-bit |
| DR100RE25A20NAC -16 | 14-bit | 16-bit |

* See maximum speed table below

- 120VAC off-line operation
- Four quadrant regenerative operation
- Integrated shunt regulator and resistor
- 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 DR100RE 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.

DR100RE Series drives feature a single 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 | DR100RE25A20NAC (-10, -16) |
|---|--|
| AC SUPPLY VOLTAGE | 45 – 125 VAC, single phase, 50 – 60 Hz |
| PEAK CURRENT | 25A (17.6Arms) |
| MAXIMUM CONTINUOUS CURRENT | 12.5A (8.8Arms) |
| MINIMUM LOAD INDUCTANCE | 300 μ H |
| SWITCHING FREQUENCY | 20 kHz |
| HEATSINK (BASEPLATE) TEMPERATURE RANGE | 0 to 65 °C, disables at 65 °C |
| POWER DISSIPATION AT CONTINUOUS CURRENT | 150W |
| MIN. UNDER-VOLTAGE SHUTDOWN | 60 VDC |
| MAX. OVER-VOLTAGE SHUTDOWN | 205 VDC |
| BUS CAPACITANCE | 3000 μ F |
| SHUNT RESISTOR | 10 Ω @ 50W |
| SHUNT SWITCH-ON VOLTAGE | Programmable |
| SHUNT FUSE | 3A Motor Delay @ 250VAC |
| BUS FUSE | 15A Slow-Blow @ 250 VAC |

| MECHANICAL SPECIFICATIONS | |
|--|--|
| POWER CONNECTOR: P1 | Removable screw terminal |
| 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 | 7.42 x 5.92 x 2.58 188.5x 150.4 x 65.5 mm |
| WEIGHT | |

* Mating connectors 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 | AC2 | AC supply input | I |
| | 5 | AC1 | | 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 | |

* Contact factory for SR compatible options.

CN2 – I/O Connector:

| CONNECTOR | PIN | NAME | DESCRIPTION | I/O |
|-----------|-----|-------|--|------|
| CN2 | 1 | PDO1* | Programmable digital output | O |
| | 2 | SGND | Signal ground | SGND |
| | 3 | PDO2* | Programmable digital output | 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 | PAO2 | Programmable analog output | O |
| 9 | -PDI6 | Programmable Input (see CN2-18) or Direction- or Aux Enc B- | I |
| 10 | PDO3 | Programmable digital output | O |
| 11 | PDI1 | Programmable digital input | I |
| 12 | PDI2 | Programmable digital input | I |
| 13 | PDI3 | Programmable digital input | I |
| 14 | PDO4 | Programmable digital output | O |
| 15 | +5V OUT | +5VDC. Note: the total current on CN2-15 and CN3-13 combined should not exceed 250 mA | O |
| 16 | SGND | Signal ground | SGND |
| 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 | Programmable digital input | I |
| 20 | Enc A+ | Emulated channel A output. (10, 12, 14, or 16 bit resolution) | O |
| 21 | Enc A- | | O |
| 22 | Enc B+ | Emulated channel B output. (10, 12, 14, or 16 bit resolution) | O |
| 23 | Enc B- | | O |
| 24 | Enc I+ | Emulated index output. High when channel A and B or both low. | O |
| 25 | Enc I- | | O |
| 26 | -PDI5 | Programmable Input (See CN2-17) or Step- or Aux Enc A- | I |

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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: DR100RE25A20NACX

Options: DR100RE25A20NAC X-10, DR100RE25A20NAC X-16

X indicates the current revision letter.

MOUNTING DIMENSIONS:

