

## DIGIFLEX® DIGITAL SERVO DRIVES MODEL: DR100EE20A8BDC

### FEATURES:

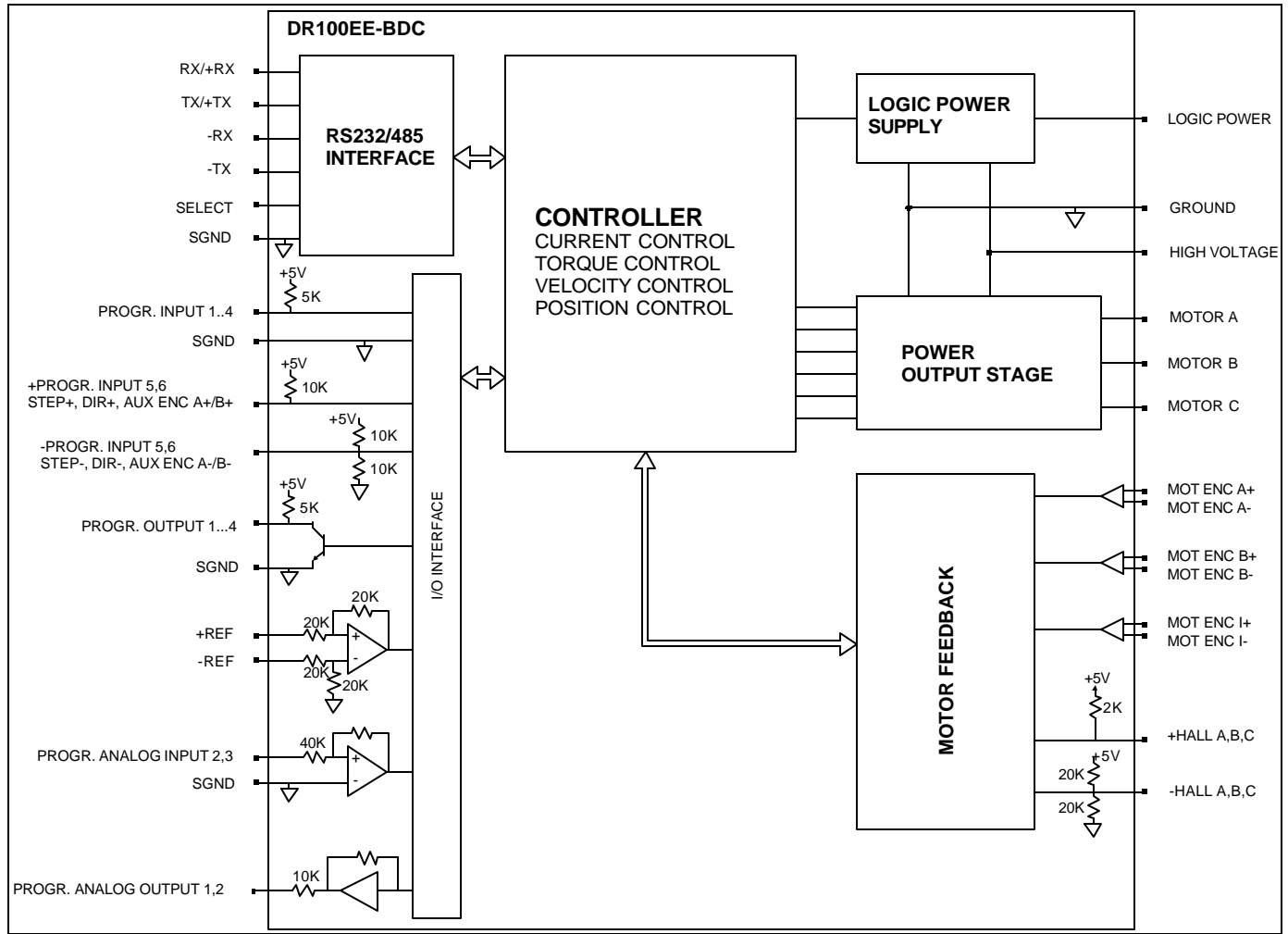
- Fully digital, state-of-the-art design
  - Space Vector Modulation and vector control technology
  - 20kHz Digital current loop with programmable gain settings
  - PIDF velocity loop with 100microsecond update rate
  - PID + FF position loop with 100 microsecond update rate
  - Hall sensor + encoder or encoder-only based commutation
  - Surface-mount technology
  - Small size, low cost, ease of use
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- 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
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- 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)
  - Encoder output (from motor, optionally buffered)
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- Four quadrant regenerative operation
  - Separate backup logic supply input
  - 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



**ADVANCED MOTION CONTROLS**

3805 Calle Tecate, Camarillo, CA 93012  
Tel: (805) 389-1935, Fax: (805) 389-1165

**BLOCK DIAGRAM:**



**DESCRIPTION:**

The DR100EE 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.

DR100EE 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.

**SPECIFICATIONS:**

<b>POWER STAGE SPECIFICATIONS</b>	<b>DR100EE20A8BDC</b>
DC SUPPLY VOLTAGE	20...80 VDC
PEAK CURRENT	20A (14.2Arms)
MAXIMUM CONTINUOUS CURRENT	10A (7.1Arms)
MINIMUM LOAD INDUCTANCE	250 $\mu$ H
SWITCHING FREQUENCY	20 kHz
HEATSINK (BASEPLATE) TEMPERATURE RANGE	0 to 65 °C, disables at 65 °C
POWER DISSIPATION AT CONTINUOUS CURRENT	50W
MIN. UNDER VOLTAGE SHUTDOWN	20 VDC
MAX. OVER-VOLTAGE SHUTDOWN	86 VDC
LOGIC SUPPLY VOLTAGE (backup supply)	20...80 VDC, 20W maximum

<b>MECHANICAL SPECIFICATIONS</b>	
POWER CONNECTOR: P1	Plug-in with crimp-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	5.22 x 3.52 x 1.42 inches 132.5 x 89.5 x 35.9 mm
WEIGHT	1 lb. 0.44 kg

\* Mating connectors are not included.

**PIN FUNCTIONS:**

P1 - Motor and Power Connector:

**CAUTION:** the pin numbering of the mating connector is different from the numbering of the drive connector. In the table below, the second column corresponds to the drive pin numbering (silkscreen). The second to last column corresponds to the mating connector pin numbering.

DRIVE CONN.	PIN	NAME	DESCRIPTION	I/O	PIN	MATING CONN.
P1	1	MA	Motor phase A	O	6	
	2	MB	Motor phase B	O	5	
	3	MC	Motor phase C	O	4	
	4	HV IN	DC motor and power input. This input is used to supply power to the motor and drive logic circuitry.	I	3	
	5	GND	Ground	GND	2	
	6	LOGIC PWR	Logic supply input. This input can be used to supply power to the drive logic circuitry only. Effective only when the voltage applied to pin P1-4 is lower then the voltage applied to P1-6.	I	1	

CN3 - Motor Feedback Connector:

CONNECTOR	PIN	NAME	DESCRIPTION	I/O
CN3	1	+Hall A	Commutation sensor inputs. Internal 2K pull-up to +5VDC. Can be used with single ended or differential Hall sensors.	I
	2	+Hall B		I
	3	+Hall C		I
	4	MOT ENC A+	Differential Encoder Input. For single ended encoder signals, leave the A-terminal open.	I
	5	MOT ENC A-		I
	6	MOT ENC B+	Differential Encoder Input. For single ended encoder signals, leave the B-terminal open.	I
	7	MOT ENC B-		I
	8	MOT ENC I+	Differential Encoder Input. For single ended encoder signals, leave the I-terminal open.	I
	9	MOT ENC I-		I
	10	-Hall A*	See CN3-1. Leave open in case of single ended Hall sensors.	I
	11	-Hall B*	See CN3-2. Leave open in case of single ended Hall sensors.	I
	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	-Hall C*	See CN3-3. Leave open in case of single ended Hall sensors.	I

\* Contact factory for SE 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	Encoder Channel A+	Encoder Output (from connector CN3), not buffered	O
	21	Encoder Channel A-		O
	22	Encoder Channel B+	Encoder Output (from connector CN3), not buffered	O
	23	Encoder Channel B-		O
	24	Encoder Channel I+	Encoder Output (from connector CN3), not buffered	O
	25	Encoder Channel I-		O
	26	-PDI5	Programmable Input (See CN2-17) or Step- or Aux Enc A-	I

\* Contact factory for SE compatible options.

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

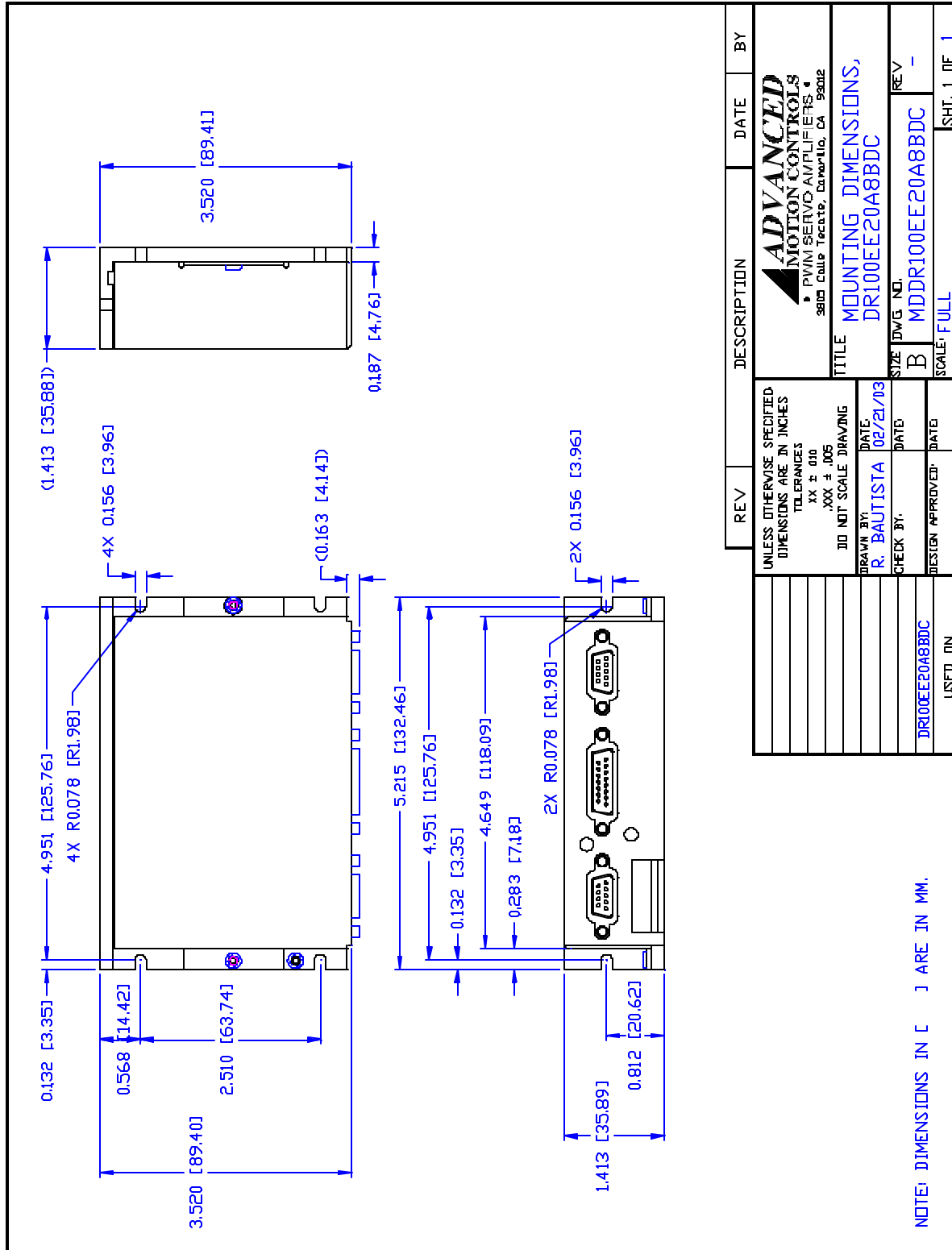
	4	N/C	Not connected	
	5	SGND	Signal ground	SGND
	6	-TX	RS485: -TX	O
	7	N/C	Not connected	
	8	-RX	RS485: -RX	I
	9	N/C	Not connected	

**ORDERING INFORMATION:**

Standard model: DR100EE20A8BDCX

X indicates the current revision letter.

**MOUNTING DIMENSIONS:**



REV	DESCRIPTION	DATE	BY
	<b>ADVANCED MOTION CONTROLS</b> PWIN SERVO AMPLIFIERS 3815 Calle Tecnico, Danville, CA 94022		
	TITLE: MOUNTING DIMENSIONS, DR100EE20A8BDC		
	SIZE: DWG. NO. B	REV: -	
	SCALE: FULL		SHT. 1 OF 1
	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES		
	TOLERANCES: XX ± .010, .XXX ± .005		
	DO NOT SCALE DRAWING		
	DRAWN BY: R. BAUTISTA	DATE: 02/21/03	
	CHECK BY:	DATE:	
	DESIGN APPROVED: DATE:		
	USED ON: DR100EE20A8BDC		