

DIGIFLEX® DIGITAL SERVO DRIVES MODEL: DR101EE30A80LAC

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

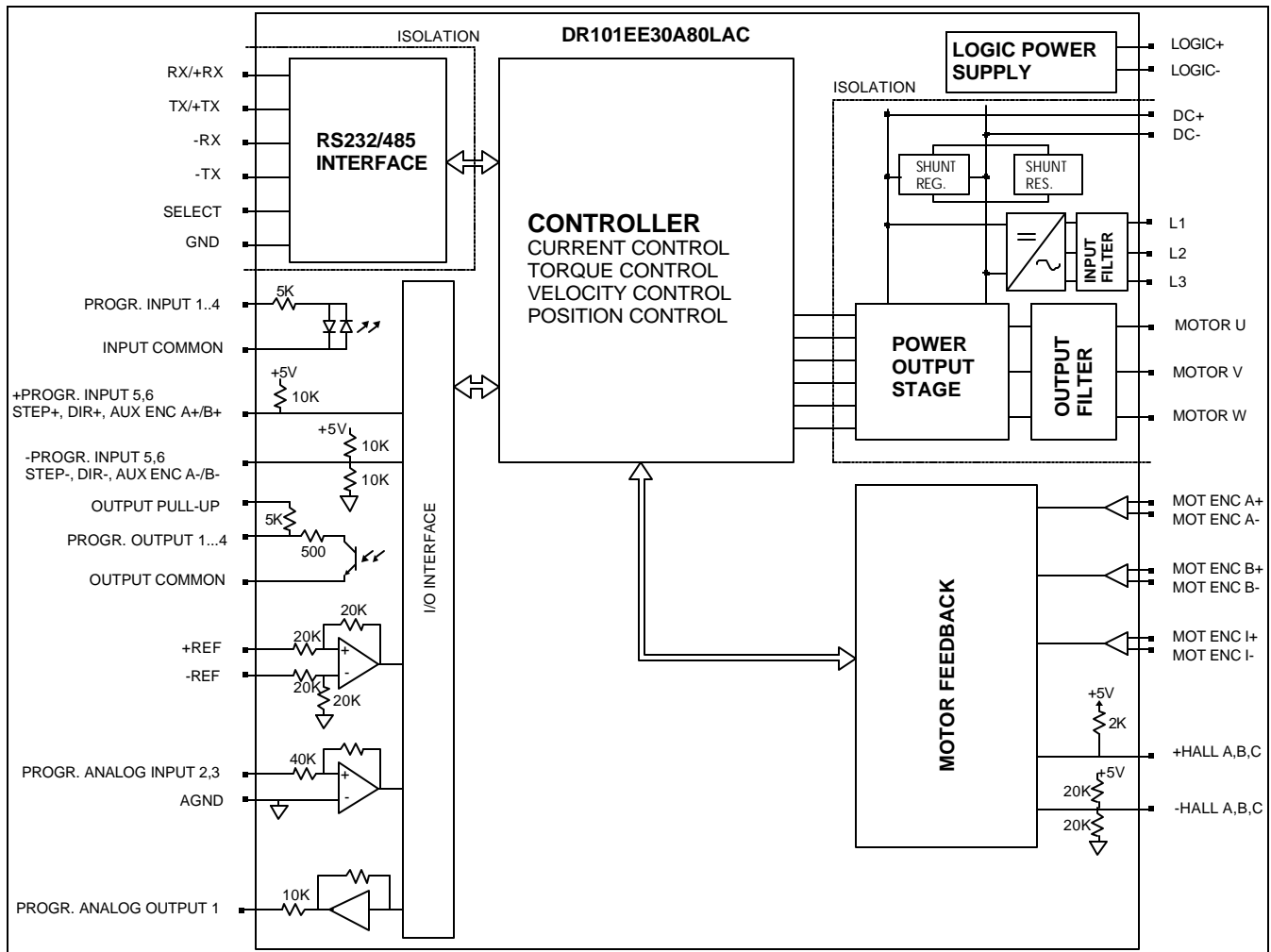
- 4 isolated programmable digital inputs
- 2 programmable differential inputs, configurable as step & direction, master encoder, or secondary encoder for dual loop operation
- 4 isolated programmable digital outputs
- 2 programmable analog inputs (10-bit)
- 14-bit reference input or programmable analog input
- 1 programmable analog output (10-bit)
- Encoder output (from motor, optionally buffered)

- Up to 3-phase 480VAC nominal operation
- Separate 24VDC logic supply
- Four quadrant regenerative operation
- Integrated shunt regulator
- Internal DC bus output for power sharing or regeneration
- Bi-color LED status indicator
- Extensive built-in protection against:
 - over-voltage (programmable)
 - under-voltage (programmable)
 - short-circuit: phase-phase, phase-ground, phase-line, phase-DC bus
 - over-current
 - over-temperature



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BLOCK DIAGRAM:



DESCRIPTION:

The DR101EE 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.

DR101EE 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.

SPECIFICATIONS:

POWER STAGE SPECIFICATIONS	DR101EE30A80LAC
AC SUPPLY VOLTAGE	0 - 480 VAC, 3-phase, 50 – 60 Hz nominal
DC LOGIC SUPPLY	20...30 VDC, 20W maximum
PEAK CURRENT	30A (21.2 Arms)
MAXIMUM CONTINUOUS CURRENT	15A (10.6 Arms)
MINIMUM LOAD INDUCTANCE	3mH
SWITCHING FREQUENCY	10 kHz
HEATSINK (BASEPLATE) TEMPERATURE RANGE	0 to 65 °C, disables at 65 °C
POWER DISSIPATION AT CONTINUOUS CURRENT	488W
MIN. UNDER-VOLTAGE SHUTDOWN	215 VDC nominal
MAX. OVER-VOLTAGE SHUTDOWN	850 VDC nominal
SHUNT RESISTOR	47 Ohm, 50W
SHUNT SWITCH-ON VOLTAGE	Programmable
SHUNT FUSE	3A Motor Delay @ 250VAC

MECHANICAL SPECIFICATIONS	
LOGIC POWER CONNECTOR: P1	Removable screw terminal
MOTOR POWER CONNECTOR: P2	Removable screw terminal
MAIN POWER CONNECTOR: P3	Removable screw terminal
DC BUS OUTPUT CONNECTOR: P4	Removable screw terminal
COMMUNICATIONS INTERFACE (RS232/485): CN1*	9-pin female D-sub
I/O CONNECTOR: CN2*	26-pin high density female D-sub
MOTOR FEEDBACK CONNECTOR: CN3*	15-pin high density female D-sub
SIZE	11.93 x 9.14 x 3.83 (5.48) inches 300.5 x 232.1 x 97.3 (139.2) mm
WEIGHT	8.8 lbs. 4 kg

* Mating connectors are not included.

PIN FUNCTIONS:

P1 – Logic Supply Connector:

CONNECTOR	PIN	NAME	DESCRIPTION	I/O
P1	1	LS+	Logic supply input	I
	2	LS-	Logic supply ground	GND

P2 - Motor Connector:

CONNECTOR	PIN	NAME	DESCRIPTION	I/O
P2	1	PE	Protective earth ground	PE
	2	Mot C	Motor phase C	O
	3	Mot B	Motor phase B	O
	4	Mot A	Motor phase A	O

P3 – Main Power Connector:

CONNECTOR	PIN	NAME	DESCRIPTION	I/O
P3	1	PE	Protective earth ground	PE
	2	L3	Main AC line L3	I
	3	L2	Main AC line L2	I
	4	L1	Main AC line L1	I

P4 – DC Bus Connector:

CONNECTOR	PIN	NAME	DESCRIPTION	I/O
P4	1	DC-	Internal DC bus voltage output	PGND
	2	DC-		
	3	DC+		O
	4	DC+		

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

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+	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

CN1 - Communications Interface (RS232/485):

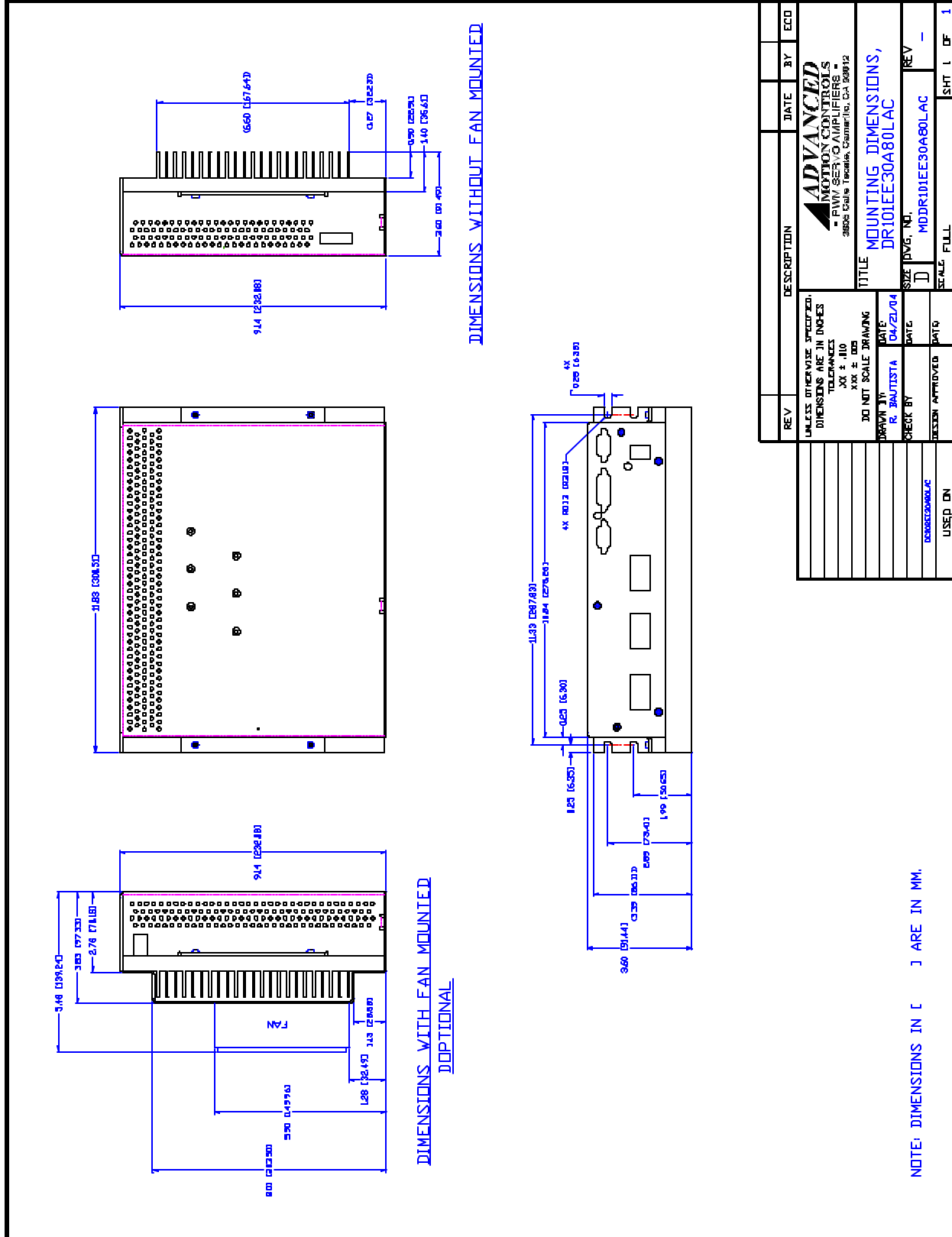
CONNECTOR	PIN	NAME	DESCRIPTION	I/O
CN1	1	SELECT	RS232/485 selection. Pull to ground (CN1-5) for RS485.	I
	2	TX/+TX	RS232: Transmit; RS485: +TX	O
	3	RX/+RX	RS232: Receive; RS485: +RX	I
	4	N/C	Not connected	
	5	SGND	Signal ground	SGND
	6	-TX	RS485: -TX	O
	7	N/C	Not connected	
	8	-RX	RS485: -RX	I
	9	N/C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

ORDERING INFORMATION:

Standard model: DR101EE30A80LACX

X indicates the current revision letter.

MOUNTING DIMENSIONS:



REV	DESCRIPTION	DATE	BY	ECD
	UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. TOLERANCES: XX ± .110, XXX ± .015, DO NOT SCALE DRAWING.			
	DRAWN BY: R. BAUTISTA	DATE: 04/22/04		
	CHECK BY:	DATE:		
	DESIGN APPROVED:	DATE:		
	USED ON: DR101EE30A80LAC			
	TITLE: MOUNTING DIMENSIONS, DR101EE30A80LAC			
	SCALE: FULL			
	SIZE: 11x8.5			
	REV: -			
	SHT: 1			
	DF: 1			