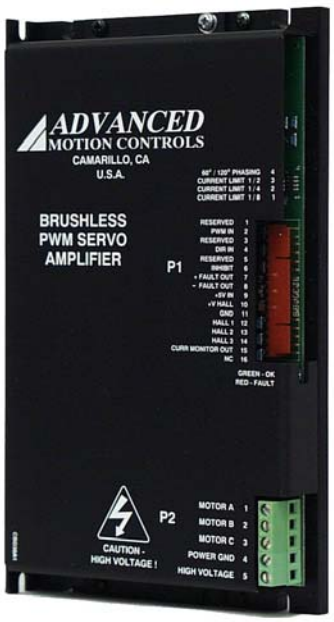
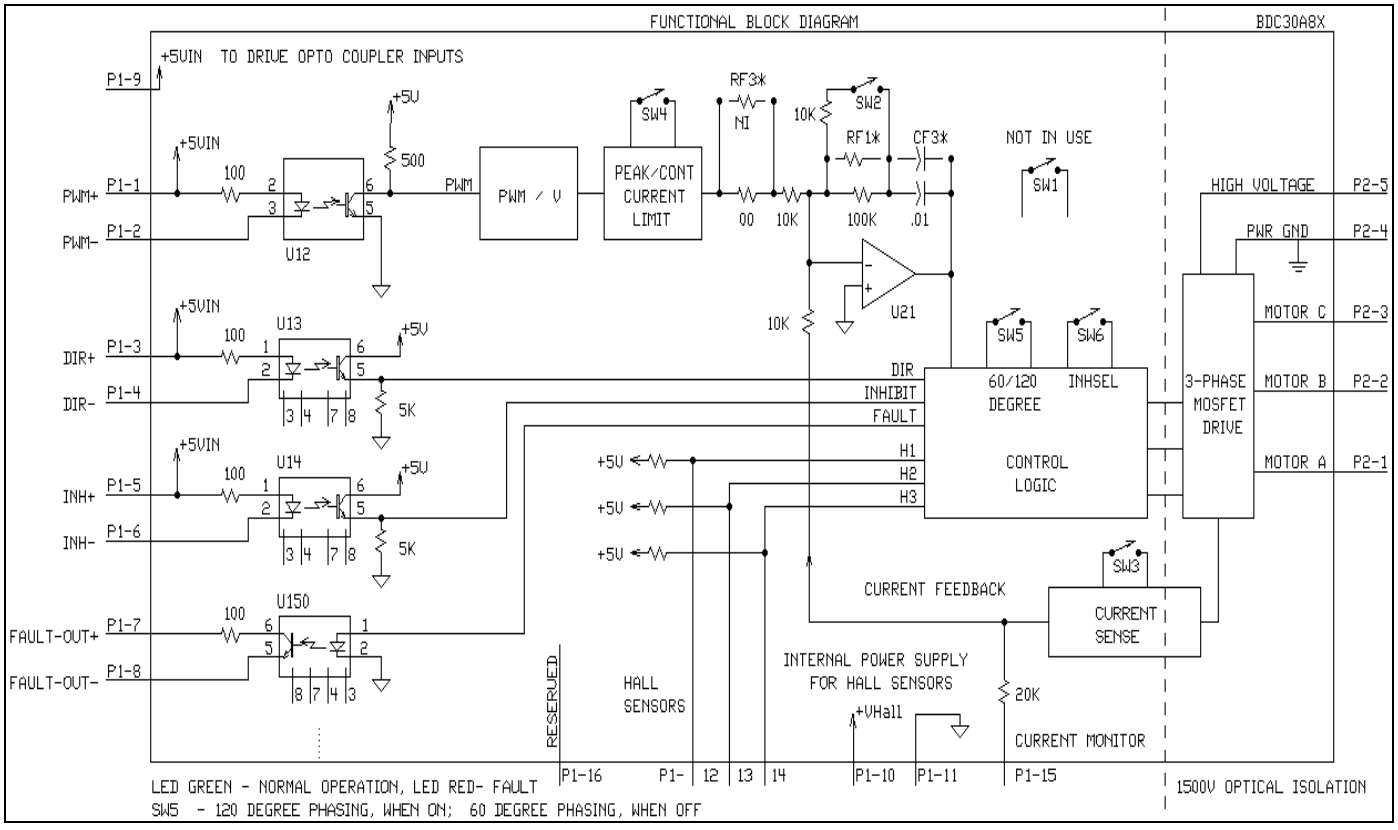
BDC30A SERIES BRUSHLESS SERVO AMPLIFIERS
Models: BDC30A8, BDC40A20

FEATURES:

- Surface-mount technology
- Small size, low cost, ease of use
- Standard input signal isolation
- Four quadrant regenerative operation
- Hall sensor commutation
- Agency Approvals:



BLOCK DIAGRAM:



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

DESCRIPTION: The BDC30A Series PWM servo amplifiers are designed to drive brushless DC motors at a high switching frequency. They are fully protected against over-voltage, over-current, over-heating and short-circuits. All models interface with digital controllers that have a digital PWM output. PWM IN determines the output current. DIR determines the direction of rotation. A single red/green LED indicates operating status.

SPECIFICATIONS:

	MODELS	
POWER STAGE SPECIFICATIONS	**BDC30A8**	**BDC40A20**
DC SUPPLY VOLTAGE	20-80 V	60-190 V
PEAK CURRENT (2 sec. max., internally limited)	± 30 A	± 40 A
MAX. CONT. CURRENT (internally limited)	± 15 A	± 20 A
MINIMUM LOAD INDUCTANCE*	200 µH	250 µH
INTERNAL SWITCHING FREQUENCY	20 kHz ±15%	
RANGE OF EXTERNAL PWM FREQ	5 to 25 kHz.	
RECOMMENDED FREQUENCY (FOR USER)	15 to 20 kHz	
HEATSINK (BASE) TEMPERATURE RANGE	0^{o} to $+65^{o}$ C, disables if $>65^{o}$ C	
POWER DISSIPATION AT CONTINUOUS CURRENT	60 W	190 W
OVER-VOLTAGE SHUT-DOWN (self reset)	90 V	195 V
BANDWIDTH (load dependent)	2.5 kHz	

MECHANICAL SPECIFICATIONS	
POWER CONNECTOR	Screw terminals
SIGNAL CONNECTOR	Molex connector
SIZE	7.35 x 4.40 x 1.45 inches 186.7 x 111.7 x 36.8 mm
WEIGHT	1.5 lb. 0.68 kg

* Low inductance motors require external inductors.

PIN FUNCTIONS:

CONNECTOR	PIN	NAME	DESCRIPTION / NOTES	I/O
P1	1	PWM+	Same as pin 9	I
	2	PWM-	Pulse width modulated digital input	I
	3	DIR+	Same as pin 9	I
	4	DIR-	Direction input	I
	5	INH+	Same as pin 9	I
	6	INH-	Pull low to enable. This TTL level input signal turns off all power devices of the “H” bridge when pulled high. This inhibit will cause a fault condition and a red LED.	I
	7	+FAULT	Output transistor turns on and becomes high during output short circuit, over-voltage, over temperature, inhibit, and during power-up reset. Fault condition indicated by red LED.	O
	8	-FAULT		
	9	+5V IN	+5 V @ 150 mA in to drive opto coupler inputs.	I
	10	+V HALL OUT	Power for HALL sensors, Short circuit protected, +6V @ 30mA.	O
	11	GND		SGND
	12	HALL 1	HALL sensor inputs, logic levels, internal 5 KΩ pull-up. Maximum low level input is 1.5 V, minimum high level input is 3.5 V.	I
	13	HALL 2		
	14	HALL 3		
	15	CURRENT MONITOR OUT	BDC30A8: 4.2 A/V (2.1 A/V when SW3 = OFF) BDC40A20: 11A/V (5.5 A/V when SW3= OFF)	O
	16	RESERVED		
P2	1	MOTOR A	Motor phase A connection	O
	2	MOTOR B	Motor phase B connection	O
	3	MOTOR C	Motor phase C connection	O
	4	POWER GND	Power ground	PGND
	5	HIGH VOLTAGE	DC power input	I

SWITCH FUNCTIONS:

SWITCH	FUNCTION DESCRIPTION	SETTING	
		ON	OFF
1	Not Used: OFF		
2	Current Loop Gain	Decrease	Increase
3	Current Scaling. When OFF, increases sensitivity of current sense thus reducing both peak and continuous current limit by 50%.	100%	50%
4	Continuous Current Reduction	Continuous/Peak ratio is 50%	Continuous/Peak ratio is 25%
5	60/120 degree phasing	120	60
6	INHIBIT/ENABLE	P1-6 Low to Enable	P1-6 Low to Inhibit

SET-UP: See section "G" for engineering and installation notes.

CURRENT LIMIT ADJUSTMENTS:

Current limits are set with switches SW3 and SW4. SW3 reduces the Peak and Continuous currents by 50%. SW4 changes the continuous/peak current ratio from 50% to 25%.

The actual current can be monitored at pin P1-15 and is referenced to SGND P1-11.

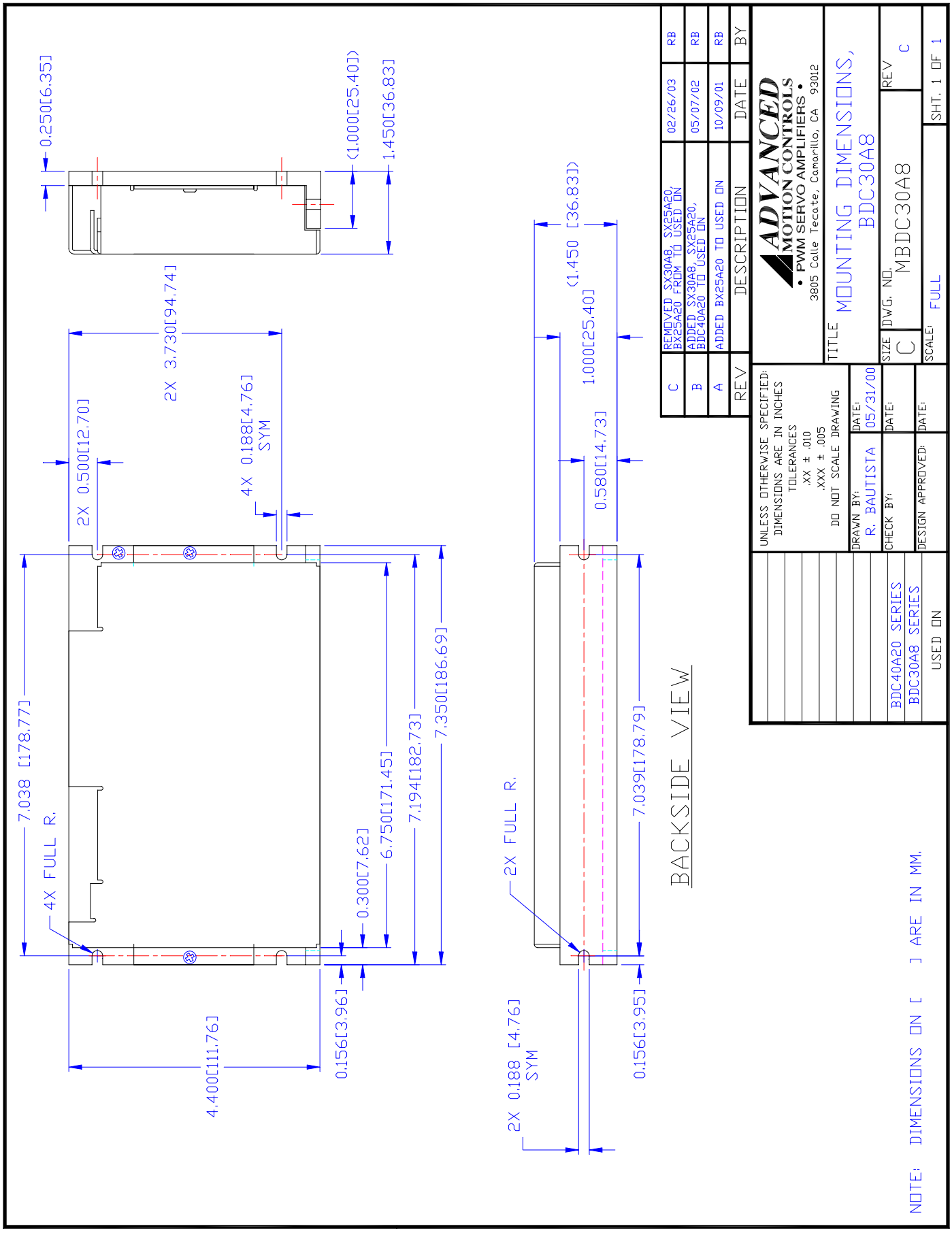
ORDERING INFORMATION:

Models: BDC30A8X, BDC40A20X

X indicates the current revision letter.

TYPICAL SYSTEM WIRING: See section "G".

MOUNTING DIMENSIONS: See page F-36.


0.250[6.35]
(1.000[25.40])
1.450[36.83]
2X 3.730[94.74]
2X 0.500[12.70]
4X 0.188[4.76] SYM
7.038 [178.77]
4X FULL R.
0.300[7.62]
6.750[171.45]
7.194[182.73]
7.350[186.69]
4.400[111.76]
0.156[3.96]
(1.450 [36.83])
1.000[25.40]
0.580[14.73]
2X FULL R.
7.039[178.79]
2X 0.188 [4.76] SYM
0.156[3.95]
BACKSIDE VIEW
NOTE: DIMENSIONS ON [ ] ARE IN MM.
C REMOVED SX30A8, SX25A20, BX25A20 FROM TO USED ON 02/26/03 RB
B ADDED SX30A8, SX25A20, BDC40A20 TO USED ON 05/07/02 RB
A ADDED BX25A20 TO USED ON 10/09/01 RB
REV DESCRIPTION DATE BY
ADVANCED MOTION CONTROLS • PWM SERVO AMPLIFIERS •
3805 Calle Tecate, Camarillo, CA 93012
TITLE MOUNTING DIMENSIONS, BDC30A8
SIZE C DWG. NO. MBDC30A8 REV C
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: 05/31/00
CHECK BY: DATE:
DESIGN APPROVED: DATE:
BDC40A20 SERIES
BDC30A8 SERIES
USED ON