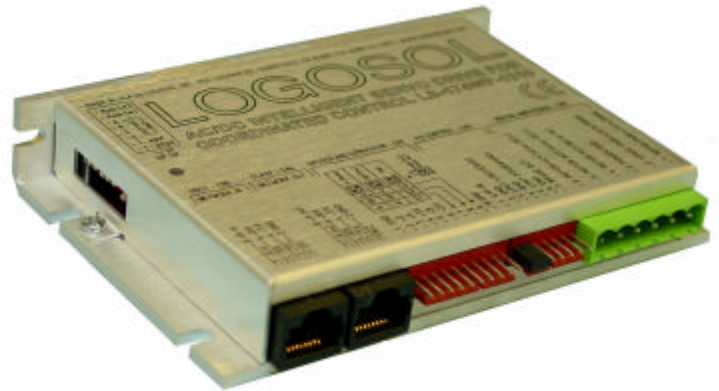


Features

- ❑ **Motors supported:**
 - Panasonic A and S series
 - Brushless 60/120° commutated
 - Brush-commutated (DC) motors
- ❑ Up to 20A peak, 12A continuous output current
- ❑ 12 to 90VDC power supply
- ❑ Separate motor and logic power supply terminals
- ❑ Path point buffer for coordinated motion control
- ❑ 30/60/120/240 Hz point rate
- ❑ 32-bit position, velocity, acceleration, 16-bit PID filter gain values
- ❑ Comprehensive motor output short-circuit protection:
 - Output to output
 - Output to ground
 - Output to power
- ❑ Adjustable motor current limit
- ❑ Over/under voltage shutdown
- ❑ Overheating protection
- ❑ Hardware Stop Input
- ❑ Forward and reverse over travel inputs
- ❑ Communication speed 19.2 - 115.2 KBps
- ❑ Servo rate 2 kHz
- ❑ PWM frequency 20 kHz
- ❑ Command rate up to 1000/sec
- ❑ Small footprint (5" x 3.3" x 0.85")



Description

LS-174WP is a version of the LS-174P Servo Drive, with separate motor and logic power supply terminals. Motor power supply can be switched OFF without affecting the encoder reading and device communication. LS-174WP is a single-axis motion controller with integrated servo amplifier designed for applications using Panasonic A and S series motors, standard brushless motors and brush-commutated motors up to 1 HP. Trapezoidal brushless motor commutation is performed. Up to 31 intelligent servo drives can be controlled over a multi-drop full duplex RS-485 network in a distributed motion control environment. Standard RJ-45 connectors and commercially available cables are used for daisy chaining of the modules.

LS-174WP is equipped with various safety features such as short circuit protection for the motor and amplifier, over travel switch inputs, hardware stop input, over/under voltage shutdown and encoder presence control. The maximum motor output current can be limited by setting of dip-switches or by software.

Logosol AC/DC Intelligent Servo Drive for Coordinated Control LS-174WP

Doc # 712174009 / Rev. 1.2, 05/09/2002

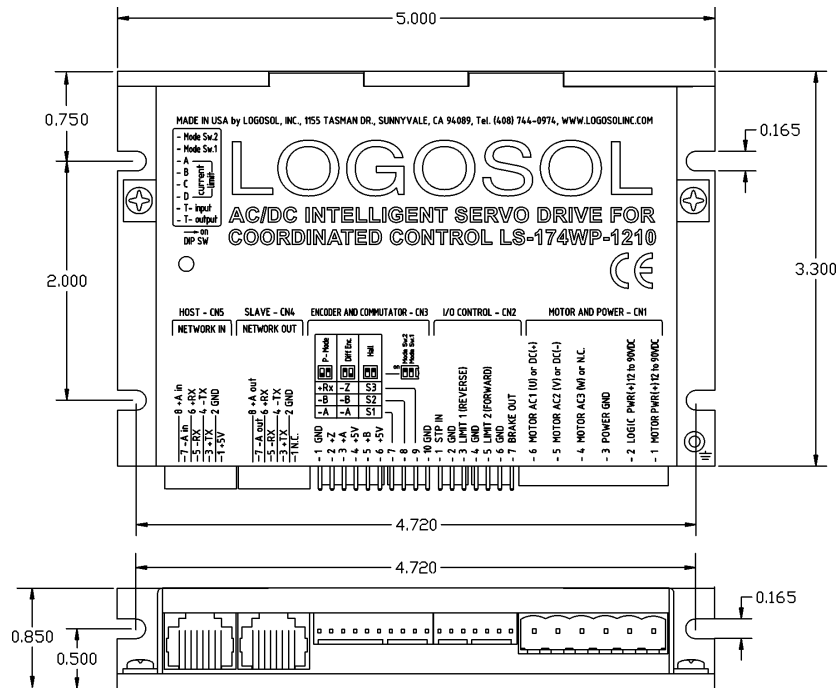
TECHNICAL SPECIFICATIONS rated at 25°C ambient, POWER (+)=60VDC, Load=250μH motor

POWER SUPPLY VOLTAGE MOTOR PWR LOGIC PWR	12 to 90 V DC, 100V Absolute Maximum 12 to 90 V DC, 100V Absolute Maximum
POWER CONSUMPTION (LOGOC PWR)	2.5W at 24V
MAX MOTOR OUTPUT CURRENT LS-174WP-1210 Peak / Continuous LS-174WP-2010 Peak / Continuous	12A/8A 20A/12A
MAX MOTOR OUTPUT VOLTAGE	$V_{out} = 0.96(\text{POWER (+)} - 0.17(I_{out}))$
MIN LOAD INDUCTANCE	200μH
PWM SWITCHING FREQUENCY	19,512 KHz
SERVO RATE	0.512 msec
SERIAL BAUD RATE	19.2 – 115.2 Kbps (faster communication rates are possible at lower servo rates)
OPEN COLLECTOR BRAKE OUTPUT Max voltage applied to output Max current	48V 0.3A
INPUTS Encoder & Commutation Digital Inputs	TTL with 1K pull-up to 5V LO min=-1V, HI max=48V
ENCODER	Quadrature with index
COMMUTATION	Hall sensors 60/120°
INDICATORS Red LED (two intensity levels)	Power 'ok' – low intensity Servo 'ok' – high intensity
PROTECTION Short circuit Overheating shut off	Motor output to motor output Motor output to POWER GND Motor output to POWER (+) Activated at 80°C
FIRE-SAFETY Internal fuse	10A Quick blow
POWER DISSIPATION (max)	30W
THERMAL REQUIREMENTS Storage temperature range Operating temperature range	-30 to +85°C 0 to 45°C
MECHANICAL Size Weight	L=5.00", H=3.30", D=0.85" 0.55lb. (250gr.)
MATING CONNECTORS Power & Motor Inputs & Outputs Encoder & Commutator Communication	Magnum EM2565-06-VL or Phoenix MSTB2.5/6-ST-5.08 Molex 22-01-3077 housing with 08-50-0114 pins (7 pcs.) Molex 22-01-3107 housing with 08-50-0114 pins (10 pcs.) 8 pin RJ-45

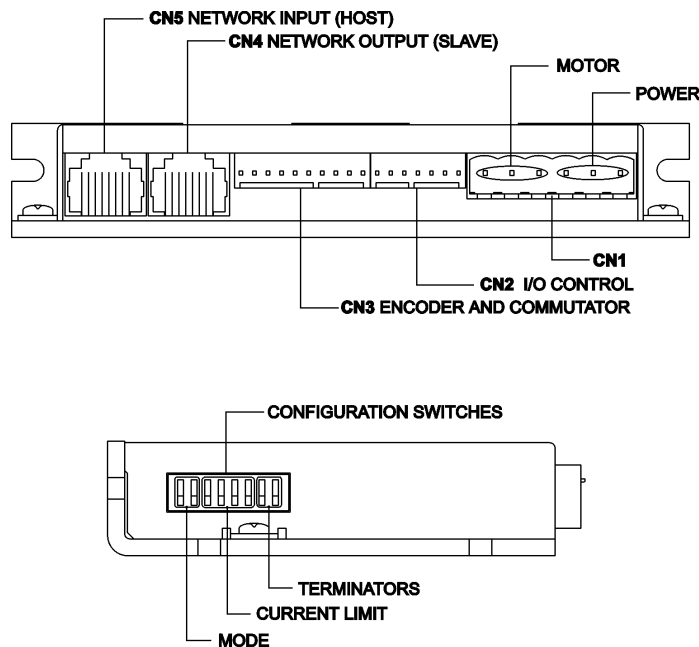
Logosol AC/DC Intelligent Servo Drive for Coordinated Control LS-174WP

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DIMENSIONAL DRAWING



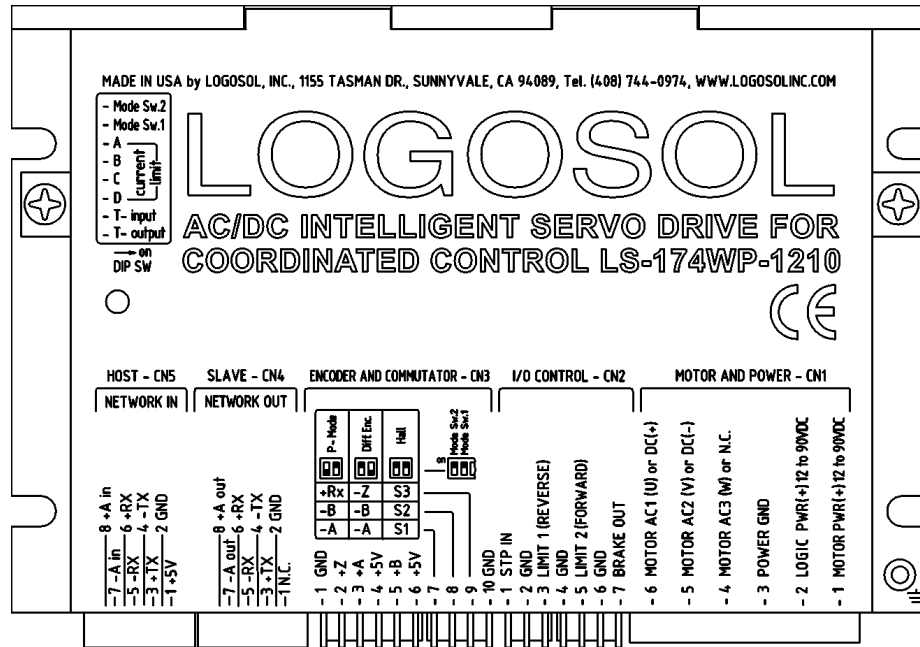
SERVO DRIVE LAYOUT



ORDERING GUIDE

PART NUMBER	MODEL	DESCRIPTION
912174009	LS-174WP-1210	Intelligent Servo Drive 12A/8A /100V
912174011	LS-174WP-2010	Intelligent Servo Drive 20A/12A /100V
230601004	LS-173-CN	Mating connector kit
230601017	PAN-AS-CN	Mating connector kit for Panasonic A and S series motors
230601027	PAN-ASB-CN	Mating connector kit for Panasonic A and S series motors with brake

CONNECTORS AND PINOUT



DIP SW – DIP SWITCH

SW	SIGNAL	DESCRIPTION	FACTORY SETTING
1	T-out	Transmit line terminator	OFF
2	T-in	Receive line terminator	OFF
3	D	Current limit switch	OFF
4	C	Current limit switch	ON
5	B	Current limit switch	ON
6	A	Current limit switch	ON
7	Mode SW1	Mode select switch	
8	Mode SW2	Mode select switch	

CN1 – POWER AND MOTOR CONNECTOR

PIN	SIGNAL	DESCRIPTION
1	MOTOR PWR (+)	12 to 90V motor power supply, positive terminal
2	LOGIC PWR (+)	12 to 90V logic power supply, positive terminal
3	POWER GND*	Power supply ground
4	MOTOR AC3 (W) or NC	Output to motor Phase 3 terminal for brushless motors Phase W for Panasonic A and S series motors Not connected for brush motors
5	MOTOR AC2 (V) or DC (-)	Output to motor Phase 2 terminal for brushless motors Phase V for Panasonic A and S series motors Negative terminal for brush motors
6	MOTOR AC1 (U) or DC (+)	Output to motor Phase 1 terminal for brushless motors Phase U for Panasonic A and S series motors Positive terminal for brush motors

* POWER GND and GND are electrically connected. Drive Case is isolated from drive circuitry and can be grounded externally.

CN2 – I/O CONTROL

PIN	SIGNAL	DESCRIPTION
1	STP IN	Stop input (disables the drive)
2	GND*	Signal ground
3	LIMIT 1 (REVERSE)	Over travel input
4	GND*	Signal ground
5	LIMIT 2 (FORWARD)	Over travel input
6	GND*	Signal ground
7	BRAKE OUT	Brake output. Open collector output 48V/0.3A

CN3 – ENCODER AND COMMUTATOR

PIN	SIGNAL	DESCRIPTION
1	GND*	Encoder ground
2	+Z	Encoder index
3	+A	Encoder phase A
4	+5V**	Encoder power supply
5	+B	Encoder phase B
6	+5V**	Commutator power supply
7	S1	Hall input #1 for Hall mode
	-A	Encoder phase –A for DC brush motor (differential encoder)
	-A	Encoder phase –A for Panasonic A and S series motors
8	S2	Hall input #2 for Hall mode
	-B	Encoder phase –B for DC brush motor (differential encoder)
	-B	Encoder phase –B for Panasonic A and S series motors
9	S3	Hall input #3
	-Z	Encoder phase –Z for DC brush motor (differential encoder)
	+RX	Hall data for Panasonic A and S series motors
10	GND*	Commutator ground

CN4 – NETWORK OUT (SLAVE)

PIN	SIGNAL	DESCRIPTION
1	N.C.	Not connected
2	GND*	Interface ground
3	+TX	(+) Transmit data
4	-TX	(-) Transmit data
5	-RX	(-) Receive data
6	+RX	(+) Receive data
7	-A out	(-) Address output
8	+A out	(+) Address output

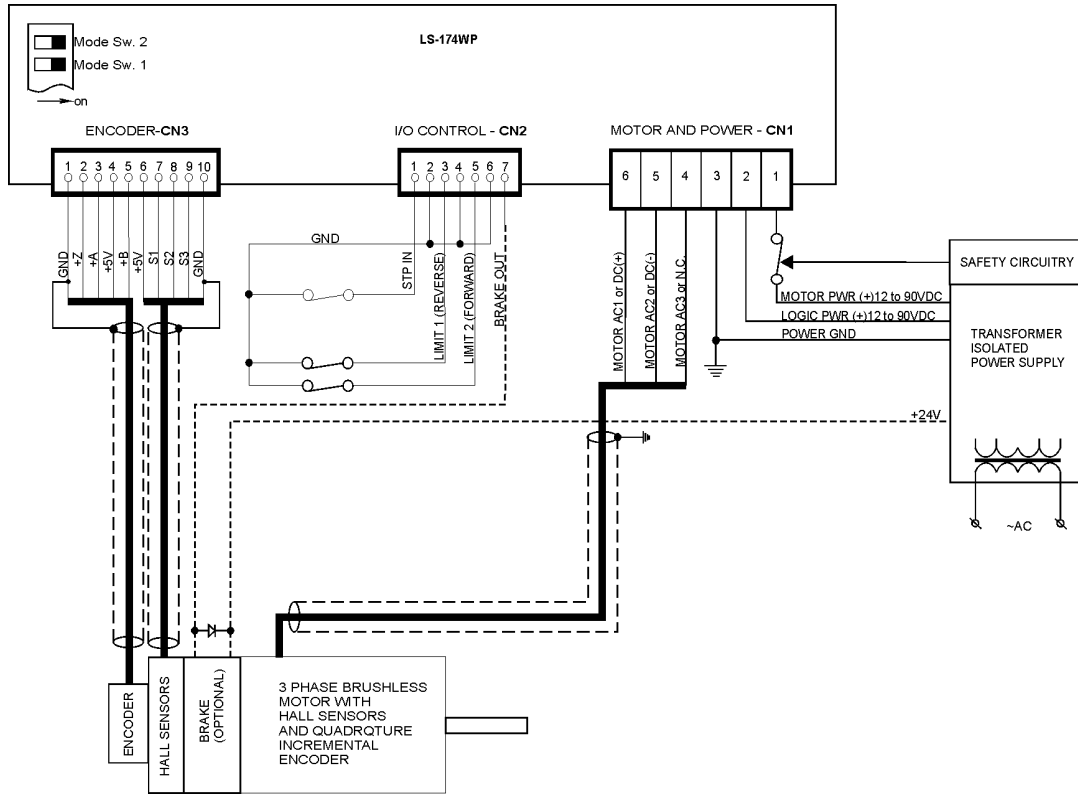
CN5 – NETWORK IN (HOST)

PIN	SIGNAL	DESCRIPTION
1	+5V**	RS-232 adapter power supply
2	GND*	Interface ground
3	+TX	(+) Transmit data
4	-TX	(-) Transmit data
5	-RX	(-) Receive data
6	+RX	(+) Receive data
7	-A in	(-) Address input
8	+A in	(+) Address input

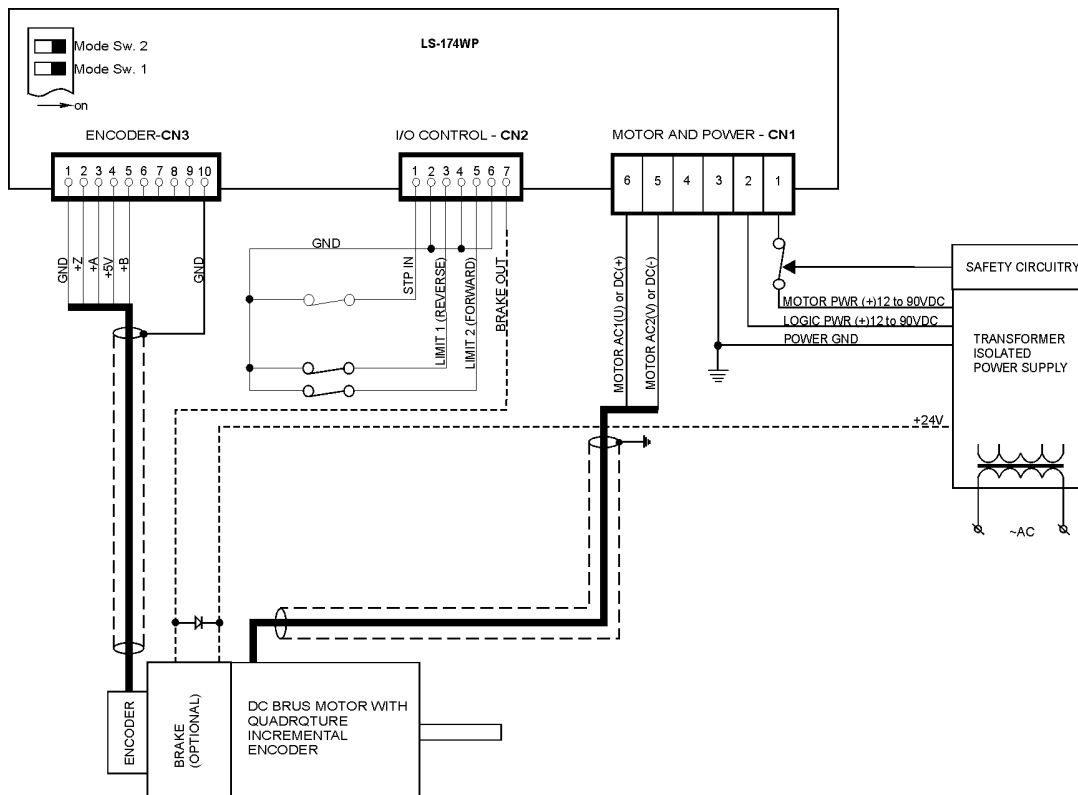
* POWER GND and GND are electrically connected. Drive Case is isolated from drive circuitry and can be grounded externally.

**200mA Max current for all three outputs combined.

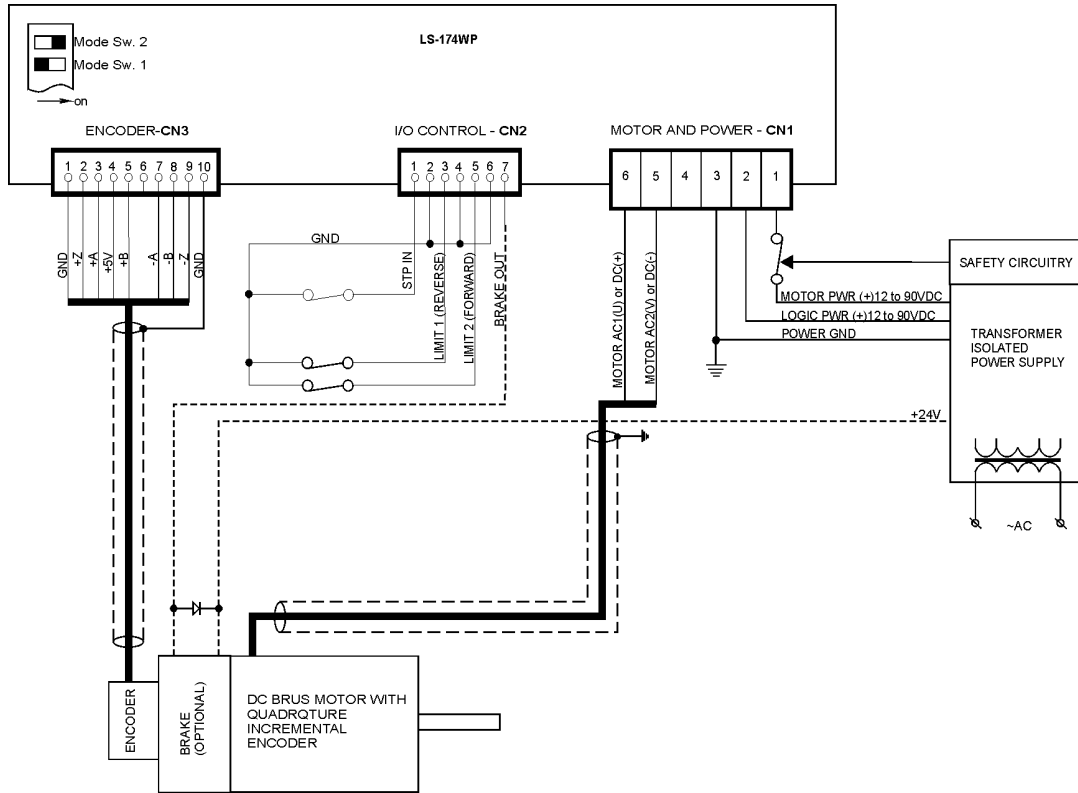
SAMPLE APPLICATION using Brushless motor



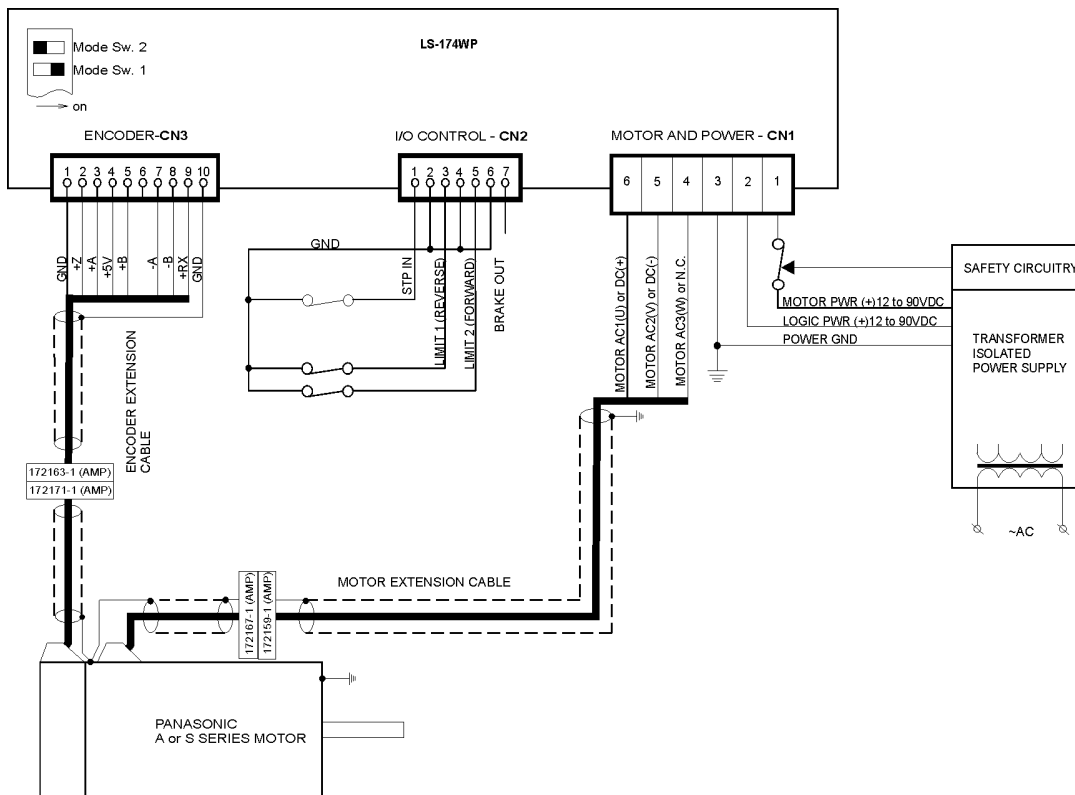
SAMPLE APPLICATION using DC (brush) motor with single ended encoder



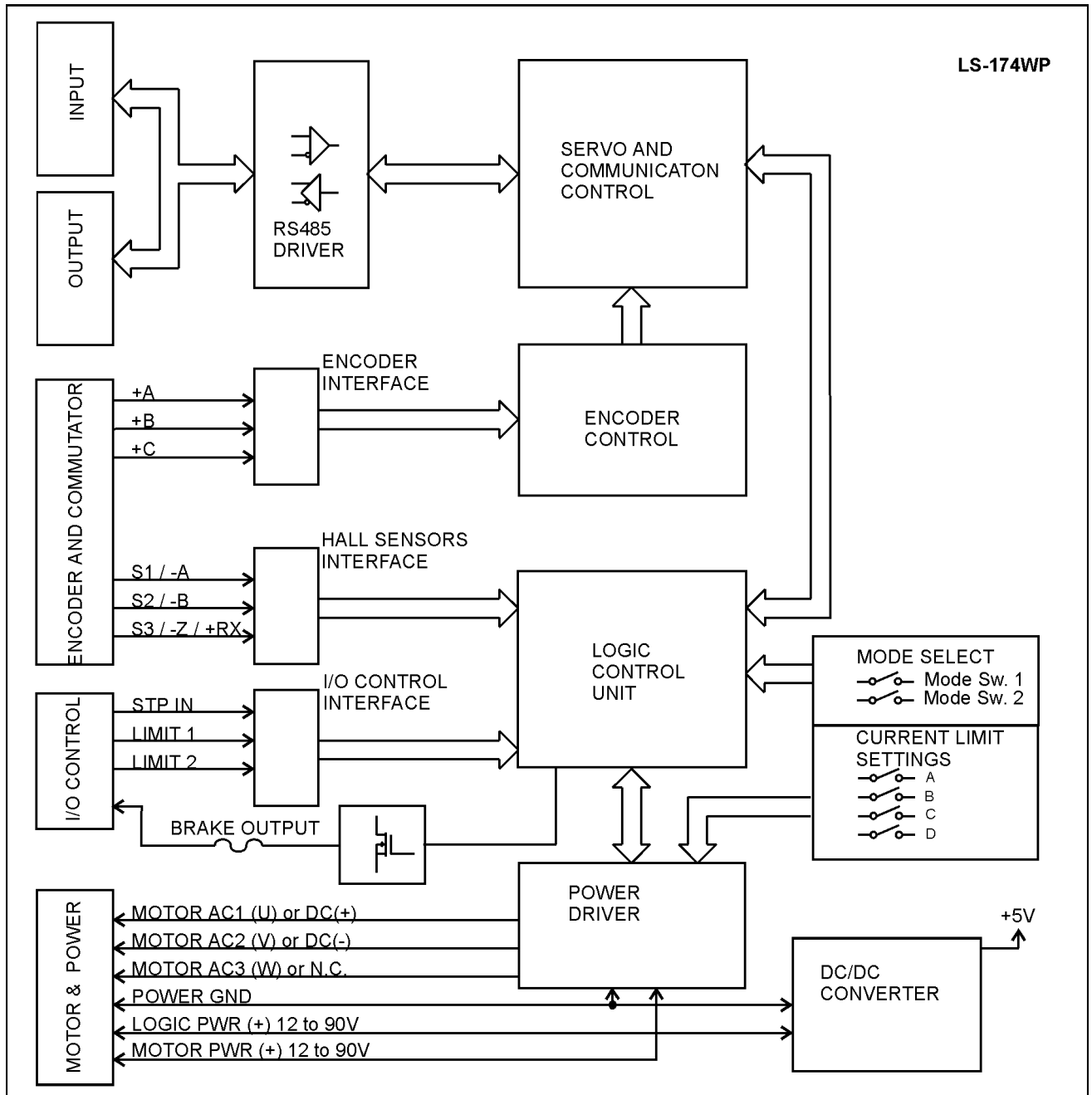
SAMPLE APPLICATION using DC (brush) motor with differential encoder



SAMPLE APPLICATION using Panasonic A or S series motor



LS-174WP functional diagram



For more information about:

- Architecture;
- Safety features;
- Theory of operation;
- Commands description;
- Software examples;

refer to LS-174P manual.