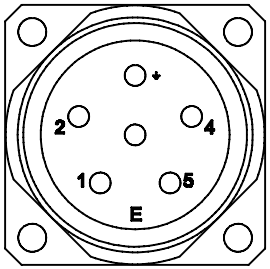
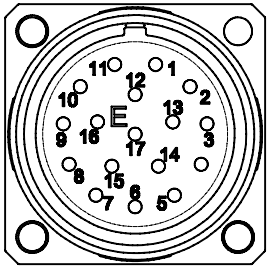
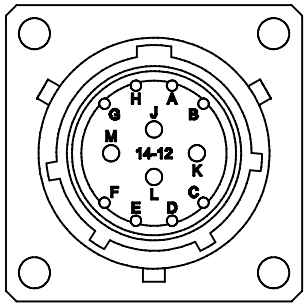
NOTES:
1. EXAMPLE: SM161AE-N**PS**N
   USE **PS** POWER &
   FEEDBACK PINOUT
2. EXAMPLE: BE232DJ-N**10**N
   USE **10** CONNECTION POWER
   & FEEDBACK LEADS
3. HALL 3 , HALL +5 & HALL RET.: NOT PRESENT ON Q OPTION ENCODER



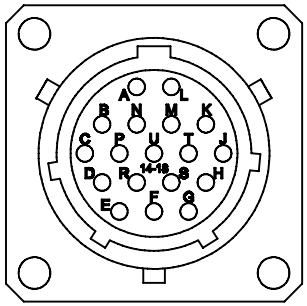
PS POWER PINOUT	
PIN	FUNCTION
1	PHASE A
2	PHASE B
3	GROUND
4	BRAKE
5	BRAKE
6	PHASE C



PS FEEDBACK PINOUT		
PIN	ENCODER	RESOLVER
1	CH A-	SINE -
2	CH A+	SINE +
4	HALL 1 or (CLOCK +)	N/C
5	HALL 2 or (CLOCK -)	N/C
6	HALL 3	N/C
7	HALL GND & GND	N/C
8	HALL +5 & Vcc	N/C
9	TEMP	TEMP
11	CH B+	COS +
12	CH B-	COS -
13	TEMP	TEMP
14	N/C	REF +
15	INDEX + or (DATA +)	N/C
16	INDEX - or (DATA -)	CH A -
17	N/C	REF -



MS/GS POWER PINOUT	
PIN	FUNCTION
G	TEMP*
H	TEMP*
J	PHASE A
K	PHASE B
L	PHASE C
M	GROUND



MS/GS FEEDBACK PINOUT		
PIN	ENCODER	RESOLVER
A	CH A+	N/C
B	CH A-	N/C
C	CH B+	R1, EXC +
D	CH B-	N/C
E	INDEX + or (DATA +)	S1, COS +
F	INDEX - or (DATA -)	N/C
G	GROUND	S4, SIN -
H	Vcc	N/C
J	N/C	S3, COS -
K	HALL GROUND	N/C
L	TEMP*	S2, SIN +
M	HALL +5V	N/C
N	TEMP*	TEMP
P	HALL 3	N/C
R	BRAKE	TEMP
S	BRAKE	BRAKE
T	HALL 1 or (CLOCK +)	BRAKE
U	HALL 2 or (CLOCK -)	R2, EXC -

* - SM WITH **MS** CONNECTORS: TEMP LEADS IN MOTOR POWER CONNECTOR
BE WITH **MS** CONNECTORS: TEMP LEADS IN FEEDBACK CONNECTOR

10 CONNECTION POWER LEADS	
WIRE COLOR	FUNCTION
RED/YELLOW	PHASE A
WHITE/YELLOW	PHASE B
BLACK/YELLOW	PHASE C
GREEN/YELLOW	GROUND
YELLOW/ORANGE	TEMP
YELLOW/ORANGE	TEMP

10 CONNECTION FEEDBACK LEADS	
WIRE COLOR	FUNCTION
RED	Vcc
BLACK & RED/BLUE	GROUND
YELLOW/BROWN	CH A +
WHITE/YELLOW	CH A -
BROWN	CH B +
WHITE	CH B -
GREEN	INDEX +
YELLOW	INDEX -
GRAY/BROWN	BRAKE
WHITE/GRAY	BRAKE
PINK/BROWN	TEMP +
WHITE/PINK	TEMP -
BLUE	HALL GROUND
VIOLET	HALL +5V
WHITE/GREEN	HALL 1
BROWN/GREEN	HALL 2
GRAY/PINK	HALL 3

FL/FO LEAD COLORS	
WIRE COLOR	FUNCTION
RED	Vcc
BLACK & BLACK/WHITE	GROUND
YELLOW	CH A +
YELLOW/WHITE	CH A -
BLUE	CH B +
BLUE/WHITE	CH B -
ORANGE	INDEX +
ORANGE/WHITE	INDEX -
RED/BLUE	BRAKE
RED/BLUE	BRAKE
YELLOW/ORANGE	TEMP
YELLOW/ORANGE	TEMP
GREEN/WHITE	HALL GROUND
BROWN/WHITE	HALL +5V
BROWN	HALL 1
GREEN	HALL 2
VIOLET	HALL 3
RED/YELLOW	PHASE A
WHITE/YELLOW	PHASE B
BLACK/YELLOW	PHASES C
GREEN/YELLOW	GROUND

REVISIONS			
REV	DESCRIPTION	DATE	NAME
A	ER 2369	10/3/07	JBO
B	ECO - 1940	9/30/08	HNH

LC POWER PINOUT	
PIN	FUNCTION
1	PHASE A
2	PHASE B
3	PHASE C
4	GROUND

LC BRAKE PINOUT	
PIN	FUNCTION
1	BRAKE
2	BRAKE

LC FEEDBACK PINOUT		
PIN	ENCODER	RESOLVER
1	INDEX + OR (DATA +)	N/C
2	INDEX - OR (DATA -)	N/C
3	ENC. RET. & HALL RET.	N/C
4	N/C	REF +
5	+5 & HALL +5	N/C
6	TEMP -	TEMP -
7	CH A -	SIN -
8	CH A +	SIN +
9	HALL 1 OR (CLOCK +)	N/C
10	TEMP +	TEMP +
11	CH B -	COS -
12	CH B +	COS +
13	HALL 2 OR (CLOCK -)	N/C
14	HALL 3	N/C
15	N/C	REF -

	NAME	DATE
DRAWN	JBO	5/30/2007
CHECKED		
ENG APR		

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ± 1/64
ANGULAR ± .5
ONE PLACE DECIMAL ± .02
TWO PLACE DECIMAL ± .01
THREE PLACE DECIMAL ± .005
DO NOT SCALE DRAWING
SCALE:

MATERIAL:
FINISH:
COMMENTS:
SHEET 1 OF 2

PARKER HANNIFIN CORP.
EMN AUTOMATION DIVISION

SBN MOTOR CONNECTIONS

SHEET SIZE: C
PART NUMBER: 88-024328-01

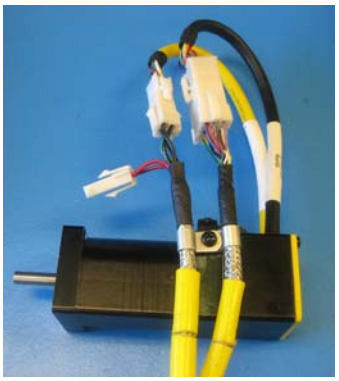
Electromechanical
Automation

"P" clip installation instructions for the LC connector option

Thank you for purchasing a motor and cable package from Parker Hannifin. The LC connectorization option is a lower cost motor and cable solution compatible for most industrial installations. The Tyco connector, while being easy to install and allows the customer to build their own cables, does not have the same full noise immunity as a metal shelled connector, such as one purchased from Interconntec.

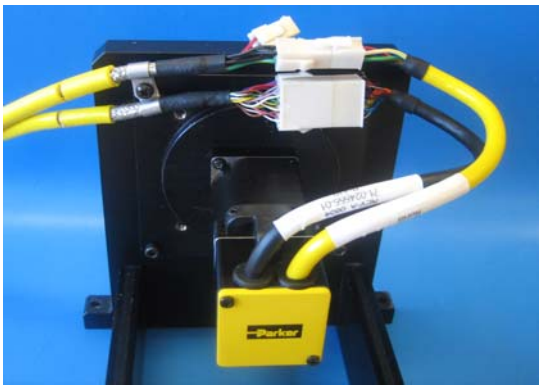
The LC connector option has a break in shielding continuity since the shield is not passed through the connector. Therefore, steps must be taken to attach the braided shielding, at the motor end, to a suitable ground plane. A "P" clip is sent with every "LC" cable along with a small #6-32 screw. The installer of the motor must be certain to attach the "P" clip around the exposed braiding on both the motor power and motor feedback cables. The "P" clip is then attached to a suitable grounded surface (GND) near the motor. If a suitable grounded surface is not available, the motor has a #6-32 tapped hole on the side of it. Mount both "P" clips onto the motor. Failure to use the "P" clips as described and having the braided shield grounded, can cause excessive noise issues that can make the system inoperable. The following two photos show an example of the "P" clips installed to the motor (a), and to a suitable grounded surface (b):

a)



"P" clip attached directly to motor

b)



"P" clip attached to suitable ground plane

If you have any questions, please contact:

- Technical Assistance, Applications Engineering Department

(e-mail: emn_support@parker.com or call 800-358-9070 North America, 707-584-7558 International)

PARKER
Brushless Servo Motors

Thank you for selecting our brushless servo motor to solve your application requirements. To help ensure complete satisfaction with your purchase, please review the following information.

As with all servo motors, it is possible to cause failure by overheating the motor. The motors offer an internal temperature sensor.

Motors with the PS connection have a thermistor with a normal resistance of 100 Ohms. Should commanded motor operation exceed predetermined internal temperatures, the thermistor resistance will increase to 1000 Ohms or more. We strongly recommend the thermistor be wired to a suitable input on either your amplifier or controller.

All other motors have a thermoswitch with normally closed contacts. Should commanded motor operation exceed predetermined internal temperatures, those contacts will open. We strongly recommend the thermoswitch be wired to a suitable input on either your amplifier or controller.

Important Note: All motors with encoder feedback now feature Hall-effect commutation signals as part of the encoder module. While electrical isolation between the commutation and incremental encoder signals exists, there is a single LED providing the light source for each. That LED is powered from the encoders power supply input. If hall signals are not being generated from the device, be sure that the encoder power supply voltage is present and that both encoder and hall grounds are connected.