



INDEPENDENT TECHNOLOGY SERVICE INC.
 9182 Independence Avenue • Chatsworth CA, 91311
 Tel: (818) 727-1500 • Fax: (818) 727-1750 • **ITS**cnc.com

BRUSHLESS POWER CABLE PINOUTS:

MS3112E-14-5P Receptacle on motor
 MS3116F-14-5S Plug on cable (motor end)

Spade terminals 16-14 Awg, #8, Blue (Panduit PNF14-8LF or equivalent)
 Ring Terminal 16-14 Awg, #10; Blue (Panduit PNF14-10R or equivalent)

<u>MS 14-5 Plug & Socket</u>	<u>Amplifier End</u>	<u>Wire Color</u>	<u>Signal name</u>
A	spade □ R □	red	3-phase motor R
B	spade □ S □	white	3-phase motor S
C	spade □ T □	black	3-phase motor T
D	ring	grn/yel	chassis gnd
E	nc		
CASE	chassis	shield	shield

Power cable is 16 awg for axis motors rated less than 10 A (most machines), 14awg for axis motors rated above 10 A (VMC 6535).
 Cable is 4-conductor twisted with braid or braid-and-foil shield.
 Cable shield attaches to connector case and amplifier chassis by the braid, NOT by a wire pigtail. (This is essential for good EMI shielding.)

BRUSHLESS FEEDBACK CABLE PINOUTS WITH COLOR CODE:

MS3112E-14-19P Receptacle on motor
 MS3116F-14-19S Plug on cable (motor end)
 20-pin IDC connector □ 3M 3421-6620 or equivalent

<u>MS 14-19 Plug & Recp.</u>	<u>Amp 20-pin IDC</u>	<u>Wire Color</u>	<u>Signal Name</u>
F	1	green	A+
G	2	red	A-
S	3	lt blue	+5V (encoder)
V	4	lt blue	+5V (encoder)
U	5	white	M+ (Heidenhain /Ua0)
K	6	orange	M- (Heidenhain Ua0)
E	7	black	COM (encoder)
R	8	black	COM (encoder)
H	9	brown	B+
J	10	yellow	B-
T	11	purple	ENCODER ERROR
L	17	dk blue	TEMP
-	12	nc	
-	13	nc	
M	14	gray	U
-	-	white	unused
A	15	tan	V
B	16	brown	W
N	18	pink	+5V (Hall)
P	19	black	COM (Hall)
C	20	pink	Hall "shield" (not connected to cable shield)
D	20	red	Encoder "shield" (not connected to cable shield)
CASE	-	shield	SHIELD

20-conductor cable has foil and braid shielding and consists of **10 twisted pairs as shown above**. Conductors are 22 awg.

The following wires are twisted pairs: C & D, F & G, S & V, K & U, E & R, N & P, and H & J.

L, T, A, B, & M could be unpaired, or could be paired L&T, A&B, and M & the unused wire.

Cable shield attaches to the MS connector case by the braid, NOT by a wire pigtail. This is essential for good EMI shielding.
 Pins C and D are connected to the encoder and Hall shields within the motor and to pin 20 at the amplifier, but NOT to the cable shield.