

Wiring and Cable Specifications

Flying Leads, Cabled and "MS" Connection

Options

The **"FL" (Flying Lead) connection** option for the SM Series motors features 18" leads extending from the motor body. Wire color codes are the same as listed below for the "MS" connection option.

The **"10" and "25" connection** option for the SM Series motors consist of either 10 feet or 25 feet of hard-wired cable extending from the motor body. These cables terminate in flying leads. Wire color codes are the same as listed below for the "MS" connection option.

The **"MS" connection** option for the SM Series motors provides quick disconnect, bayonet style connectors attached to the motor body. Mating cables are specified and ordered separately. With the "MS" connection option, the motor phase and temperature switch wires are in one cable/connector, and the hall and encoder signals are in the other cable/connector. This option works well when using an amplifier with a built-in controller, or when all cables enter into a cabinet or enclosure and then are wired into a terminal strip. When specifying the "R" (resolver) feedback option, the motor phase wires reside in one connector, the resolver signal and temperature switch wires in the other.

Encoder/Hall Feedback Connection

| Designation | Pin Number | |
|--------------------|------------|---------------|
| | MS14-18 | Wire Color |
| Encoder +5 | H | Red |
| Encoder Ground | G | Black |
| CH A + | A | White |
| CH A - | B | Yellow |
| CH B + | C | Green |
| CH B - | D | Blue |
| Index + | E | Orange |
| Index - | F | Brown |
| Hall Ground | K | White/Green |
| Hall +5 | M | White/Blue |
| Hall 1 | T | White/Brown |
| Hall 2 | U | White/Orange |
| Hall 3 | P | White/Violet |
| Brake ¹ | R | Red/Blue |
| Brake ¹ | S | Red/Blue |
| N.C. | N.C. | Clear |
| N.C. | N.C. | Orange/Yellow |
| N.C. | N.C. | Orange/Yellow |

Motor Connection

| Designation | Pin Number | |
|-------------------|------------|----------------------------|
| | MS14-12 | Wire Color |
| Phase A | J | Red/Yellow |
| Phase B | K | White/Yellow |
| Phase C | L | Black/Yellow |
| Ground | M | Green/Yellow |
| Temp ² | G | Orange/Yellow or Yellow |
| Temp ² | H | Orange/Yellow or Yellow |
| Shield | N.C. | Clear |

- 1 Brake will operate regardless of polarity connection
- 2 For motors with the "R" (resolver) feedback option, the temperature switch is connected to leads in the feedback cable/connector

Resolver Feedback Connection

| Designation | Pin Number | |
|--------------------|------------|----------------------------|
| | MS14-18 | Wire Color |
| S1, COS + | E | Black |
| S2, SIN + | L | Green |
| S3, COS - | J | Red |
| S4, SIN - | G | Blue |
| R1, EXC + | C | Brown |
| R2, EXC - | U | White |
| Temp ² | R | Orange/Yellow or Yellow |
| Temp ² | N | Orange/Yellow or Yellow |
| Brake ¹ | S | Red/Blue |
| Brake ¹ | T | Red/Blue |
| Shield | N.C. | Clear |

The following cable sets are available for SM Series motors with the "MS" connection option. The cable sets include one motor power cable and one feedback cable. These cables have mating motor connectors at one end, flying leads at the other. Use these cable sets for both size 16 and 23 SM motors.

23MS CABLE-XX - One set of cables for SM motors with encoder feedback and "MS" connection option "-XX" is cable length "23MS CABLE" sets available in lengths of 10, 25 and 35 feet.

23RS CABLE-XX - One set of cables for SM motors with resolver feedback and "MS" connection option "-XX" is cable length "23RS CABLE" sets available in lengths of 10, 25, 35 and 50 feet.

The following hi-flex cables are available for SM motors with the "MS" connection option. Motor power cable and feedback cable must be ordered separately. These cables have mating motor connectors at one end, flying leads at the other. Wire colors in hi-flex cables do not match the above wiring diagram. Contact Compumotor for wiring diagram.

71-016023-XX - SM "MS" motor cable, hi flex "-XX" is cable length. Cable available in lengths of 10, 25, 35 and 50 feet.

71-016022-XX - Encoder feedback cable, hi flex "-XX" is cable length. Cable available in lengths of 10, 25 and 35 feet.

71-016374-XX - Resolver feedback cable, hi flex "-XX" is cable length. Cable available in lengths of 10, 25, 35 and 50 feet.



Wiring and Cable Specifications (Continued)

"GS" Connection Option

The "GS" connection option for the SM Series motors provides quick disconnect, bayonet style connectors attached to the motor body. Mating cables are specified and ordered separately. Wiring for the "GS" connection option for SM motors is

similar to the "MS" option, except the temperature switch leads have been moved to the feedback connector. This connection option should be selected when operating the SM motors with the Gemini family of amplifiers.

Motor Connection

| Designation | Pin Number MS14-12 | Wire Color |
|-------------|-----------------------|--------------|
| Phase A | J | Black 1 |
| Phase B | K | Black 2 |
| Phase C | L | Black 3 |
| Ground | M | Green/Yellow |

Encoder/Hall Feedback Connection

| Designation | Pin Number MS14-18 | Wire Color |
|--------------------|-----------------------|---------------|
| Encoder +5 | H | Red |
| Encoder Ground | G | Black |
| CH A + | A | White |
| CH A - | B | Yellow |
| CH B + | C | Green |
| CH B - | D | Blue |
| Index + | E | Orange |
| Index - | F | Brown |
| Hall Ground | K | White/Green |
| Hall +5 | M | White/Blue |
| Hall 1 | T | White/Brown |
| Hall 2 | U | White/Orange |
| Hall 3 | P | White/Violet |
| Brake ¹ | R | Red/Blue |
| Brake ¹ | S | Red/Blue |
| Temp | L | Orange/Yellow |
| Temp | N | Orange/Yellow |

The following cable sets are available for SM Series motors with encoder feedback for use with the Gemini family of amplifiers. The "GS" connection option should be specified for the SM series motors when using these cable sets. These cable sets consist of one motor power cable and one feedback cable. These cables have mating motor connectors at one end, and molded connectors for wiring to a Gemini amplifier at the other. These cables have a braided metal shield and are CE(EMC) compliant. The "GB" cable sets have leads for wiring SM motors with internal brakes, the "GS" cable sets do not. Use these cable sets for both size 16 and 23 SM motors.

23GS CABLE-XX

One set of cables for SM motors with encoder feedback and "GS" connection option. Cables include molded connectors for wiring to Gemini amplifier. *No connection for internal brake.* "-XX" is cable length "23GS CABLE" sets available in lengths of 10, 25 and 35 feet.

23GB CABLE-XX

One set of cables for SM motors with encoder feedback and "GS" connection option. Cables include molded connectors for wiring to Gemini amplifier. *Includes wiring for internal brake.* "-XX" is cable length "23GB CABLE" sets available in lengths of 10, 25 and 35 feet.

¹ Brake will operate regardless of polarity connection

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Wiring and Cable Specifications (Continued)

“TQ” Connection Option

The “TQ” connection option for the SM Series motors provides quick disconnect, bayonet style connectors attached to the motor body. Mating cables are specified and ordered separately. The “TQ” connection option joins the motor phase, hall effect and temperature switch wires in one connector. The

second connector has only encoder signals. This connection option applies well in applications where the hall and motor phase wires connect directly to an amplifier, while the encoder signals connect directly to a controller.

Motor /HallConnection

| Designation | Pin Number MS14-12 | Wire Color |
|-------------|--------------------|----------------------------|
| Phase A | J | Red/Yellow |
| Phase B | K | White/Yellow |
| Phase C | L | Black/Yellow |
| Ground | M | Green/Yellow |
| Temp | G | Orange/Yellow or Yellow |
| Temp | H | Orange/Yellow or Yellow |
| Hall Ground | F | White/Green |
| Hall +5 | B | White/Blue |
| Hall 1 | C | White/Brown |
| Hall 2 | D | White/Orange |
| Hall 3 | E | White/Violet |
| Shield | N.C. | Clear |

Encoder Feedback Connection

| Designation | Pin Number MS14-18 | Wire Color |
|--------------------|--------------------|------------|
| Encoder +5 | H | Red |
| Encoder Ground | G | Black |
| CH A + | A | White |
| CH A - | B | Yellow |
| CH B + | C | Green |
| CH B - | D | Blue |
| Index + | E | Orange |
| Index - | F | Brown |
| Brake ¹ | R | Red/Blue |
| Brake ¹ | S | Red/Blue |
| Shield | N.C. | Clear |

¹ Brake will operate regardless of polarity of connection

The following cable sets are available for SM motors with encoder feedback and the “TQ” connection option. These cable sets consist of one motor power cable and one feedback cable. These cables have mating motor connectors at one end, flying leads at the other. Use these cable sets for both size 16 and 23 SM motors.

23TQ CABLE-XX

One set of cables for the SM motors with encoder feedback and “TQ” connection option. “-XX” is cable length. “23TQ CABLE” sets available in lengths of 10, 25, and 35 feet.

The following hi-flex cables are available for SM motors with the “TQ” connection option. Motor power cable and feedback cable must be ordered separately. These cables have mating motor connectors at one end, flying leads at the other. Wire colors in hi-flex cables do not match the above wiring diagram. Contact Compumotor for wiring diagram.

71-017677-XX

TQ motor cable, hi flex. “-XX” is cable length. Cable available in lengths of 10, 25, and 35 feet.

71-016022-XX

Encoder feedback cable, hi flex. “-XX” is cable length. Cable available in lengths of 10, 25, and 35 feet.

