



## TB-111: M12 (12 mm) Connector Option

The MS style connector has been the standard for encoder connector wiring for more than 30 years – since the introduction of the Cube series, EPC's first Accu-Coder™ products. However, since that time, not only has the Accu-Coder™ line broadened into a full line of encoder offerings, but the encoder industry has also matured, and encoders have found their way into an increasingly wide range of applications. Due to the demands of these new applications, EPC's customers began asking for connectors, and associated cordsets, which could provide smaller profiles and improved sealing. After extensive research, EPC selected the M12 (12 mm) style of connector as offering the best combination of performance and price, so that, today, you can specify either the standard MS series or the M12 (12 mm) connector on nearly all of EPC's encoders. The many advantages of the M12 (12 mm) style of connectors more than offset the small additional cost. For openers, they are physically much smaller in size, and the associated cordsets have a tighter bend radius. As a result, an Accu-Coder™



encoder with an M12 (12 mm) connector installed will have a lower profile than with the traditional MS series, allowing for an easier and more flexible installation of the Accu-Coder™ in many applications.

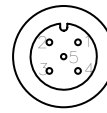
Uniformity is another key feature of the M12 (12 mm) option. Unlike the MS Series with its variety of pin-outs and casing styles, the M12 (12 mm) option uses one of just two connector types, a 5-pin or an 8-pin. Moreover, each pin on a given connector has the same function no matter which Accu-Coder™ model is chosen. The unused functions are simply not brought out. That way, since the pin-outs for all cordsets are identical, you can standardize on a reduced number of cordsets. In addition, the same cordset will work for all Accu-Coder™ models that have a given connector type. This also means that, if you change to or add another Accu-Coder™ model with the same M12 (12 mm) connector, the same cordsets you already own and stock can be used.

Another important thing to consider is that most motion control applications include sensors or other detectors besides encoders. Quite often these devices - limit switches, proximity switches, and the like – will also have M12 (12 mm) style connectors. Therefore, given that the 3-, 4-, and 5-pin cordsets are all compatible with the 5-pin connector on the Accu-Coder™, the very real possibility exists that you will be able to stock fewer cordsets to cover multiple motion control devices, making this option even more cost effective. M12 (12 mm) cordsets are available from an extensive network of distributors worldwide.

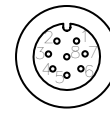
Two types of cordsets are available for use with Accu-Coder™ encoders. (See table below.) In the first type, the cordset shield is not connected to the coupling nut, but instead, is grounded only at the controller end of the cordset. This method is common to legacy North American encoder applications, but not exclusively so.

The latter type is employed when Accu-Coder™ case must be grounded - common in systems requiring CE certification for the European marketplace. In this method, the shield is connected to the coupling nut, which in turn provides continuity between the cordset shield and Accu-Coder™ case. When doing so, special caution should be taken to insure proper machine bonding and grounding in order to prevent harmful ground loops. Please refer to Tech Bulletin TB-100 "When to Choose the CE Mark" for further information.

Contact EPC Applications Engineering for further consultation on these matters, if needed.



5-pin  
M12



8-pin  
M12

Connector View

M12 CONNECTOR PINOUT AND FUNCTIONS						
Connector	8-PIN			3-PIN, 4-PIN, 5-PIN		
	Incremental Function	SSI Absolutes Function	Conductor	Incremental Function	CANopen Absolutes Function	Conductor
Pin 1	Data A	Ground (GND)	White	+VDC	CAN <sub>GND</sub> / shield	Brown
Pin 2	+VDC	+VDC	Brown	Data B	+VDC	White
Pin 3	Data A'	SSI CLK+	Green	Common	Ground (GND)	Blue
Pin 4	Data B	SSI CLK-	Yellow	Data A	CAN <sub>High</sub>	Black
Pin 5	Data B'	SSI DATA+	Gray	Data Z	CAN <sub>Low</sub>	Gray
Pin 6	Data Z	SSI DATA-	Pink	---	---	---
Pin 7	Common	PRESET	Blue	---	---	---
Pin 8	Data Z'	DIR	Red	---	---	---
Connector Shell	Case	Shield**	Bare*	Case	---	Bare*

\*Only on specified cordsets. See Technical Bulletin "TB111" at [www.encoder.com](http://www.encoder.com)  
 \*\*Side Exit - housing; End Exit - N/C

**NOTE: This table should only be used for cordsets supplied by Encoder Products Co.**



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