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# RM300 Wiring

**Revision 0.1**



## 1. Setup

This document describes details about the HV wiring of the RM300.

The RM300 uses the Amphenol PowerLok™ Single Position 500 Series Connector. A single connector is used for each of the five high voltage power connections.



Front Face of RM300 showing the Amphenol PowerLok™  
From left to right, DC-,DC+, C,B,A

Each of the five connectors used has a different key assigned to it. The key prevents the wrong connector from being plugged in. Each of the different key types is assigned a letter (X, Y, U, V, and W). The letters of the keying do not have any association with the function.

Each of the five keying has a color associated with it. The color is useful as a visual indication of which key is being used. However the mechanical nature of the key and only the key can determine whether the plug and receptacle can mate.

Function	Key	Color
DC Negative	Y	Black
DC Positive	W	Red
Motor Phase C	U	Yellow
Motor Phase B	X	Orange
Motor Phase A	V	Green

The RM300 follows the convention of phase naming used in the PM family of inverters. So if in a PM manual the Phase C is mentioned then this would be Phase C on the RM300. The RM100 does not follow this same convention.

The PowerLok™ series contains a high-voltage interlock (HVIL) connection. The mating plug, when properly inserted, completes the HVIL connection that exists in the receptacle. The HVIL circuit inside the RM300 is daisy-chained between all 5 connectors. The two ends of the daisy chain are brought out to the I/O



connector on the front of the RM300. The RM300 does not electrically connect or monitor the HVIL circuit.

The PowerLok™ plug comes in a variety of different configurations. There are different configurations for right angle versus straight connections as well as for different cable sizes. Additionally the plug can come as part of an over-molded cable assembly or as a customer crimped connector with customer supplied cable (still in development). Over-molded cable assemblies are generally custom in nature and must be ordered from the factory (this can be done through RMS if desired).

The PowerLok™ 500 Series plug is available for 3 different wires sizes (120mm<sup>2</sup>, 135mm<sup>2</sup>, 150mm<sup>2</sup>)

The size of wire that should be used in the application must be determined by the customer. The customer must understand the ambient temperature conditions as well as the amount of current that will be flowing in the conductor. The connection system is intended to be used with shielded cable

Amphenol provides the suggested cable ratings for their power cable based on an ambient temperature of 85°C and being used with the PowerLok™ system. Current ratings are shown below.

<b>Cable Size</b>	<b>Continuous Current (A)</b>
120 mm <sup>2</sup>	350
135 mm <sup>2</sup>	400
150 mm <sup>2</sup>	500

If the ambient temperature of the application is lower than 85°C it is possible that a higher continuous current rating could be achieved.

Note that the customer crimped cable receptacles are not available at this time. Only over-molded cable assemblies are available. Customers should contact Amphenol for more detail on the custom cable assemblies.



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#### Revision History

Version	Description of Versions / Changes	Responsible Party	Date
0.1	Initial version	Chris Brune	4/1/2019