

Application Solution 103:

M-Series, Higher Voltage (80 vdc) Circuit Protection in a Small Package

The Challenge:

In order to save valuable panel space, the Telecom Industry is constantly looking for ways to reduce the size of its equipment, while maintaining the international power requirement of 80 VDC. For many years, the industry has been using the Carling A, B & C-Series UL489-A approved breakers to meet these needs.

Recently, Carling was approached by the telecom market leaders, and asked to achieve 80 VDC ratings and UL489-A approvals on the M-Series circuit breaker which would provide them with further panel "down-sizing" opportunities.

Here lies the challenge: As you increase a circuit breaker's voltage rating, the resulting arc between contacts during a short circuit event increases as well. The arc, especially one fed by DC, is a very destructive force. Unlike an AC sine wave, DC does not have a zero current characteristic. Also, UL 489-A requires that a breaker subjected to a short circuit, must open the circuit and subsequently, be "resettable" and operational.



The Solution:

By applying an extensive R&D focus on arc quenching techniques and ultimately redesigning the breaker's arc chamber, Carling's Engineering team was able to increase the M-Series' voltage rating from 65 VDC to 80 VDC and meet UL 489-A.

The Results:

The M-Series is now available with 80 VDC, UL 489-A construction, as shown on this table:

CIRCUIT CONFIGURATION	VOLTAGE MAXIMUM RATING (DC)	CURRENT RATING		POLES BREAKING	INTERRUPTING CAPACITY (WITH NO FUSE BACKUP) AMPS		STANDARD	AGENCY CODE
		FULL LOAD AMPS	GENERAL PURPOSE AMPS		UL/CSA	TUV		
SERIES	80	0.02 - 15	15.1 - 25	1	600	---	UL1077	M
	80	---	0.02 - 25	1	600	---	UL489A	T
	65	0.02 - 15	15.1 - 25	1	1000	---	UL1077	M
	65		0.02 - 25	1	1000	---	UL489A*	T
	80	0.10 - 15	15.1 - 25	1	600	600	UL1077/EN60934	N
	80	---	0.10 - 25	1	600	600	UL489A/ EN60934	J

Applications:

Telecommunications equipment, or any 80 VDC application.

Warranty Policy

Carling Technologies, Inc. (Seller) warrants that goods sold hereunder shall be free of defects in material and workmanship for one year from date of shipment.

In the event of such defects, the Seller's only obligation shall be the replacement or the cost of the defective goods, themselves, excluding, without limitation, labor costs, which are or may be required in connection with the replacement or reinstallation of the goods. This warranty is the Seller's sole obligation and excludes all other remedies or warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, whether or not purposes or specifications are described herein. This Warranty expressly excludes any and all incidental, special and/or consequential damages of any nature. Seller further disclaims any responsibility for injury to person or damage to or loss of property or value caused by any product which has been subjected to misuse, negligence, or accident; or misapplied, or modified or repaired by a person or persons not authorized by the Seller or which have been improperly installed.

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For additional information and to order our high voltage M-Series breaker, please contact a Carling Technologies Technical Customer Service Rep:

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