

File E28476
Project 4788893201

August 05, 2019

REPORT

on

COMPONENT - Connectors for Use in Data, Signal, Control and Power Applications

Tyco Electronics Corp
Middletown PA 17057

Copyright © 2019 UL LLC

UL LLC authorizes the above named company to reproduce this Report only for purposes as described in the Conclusion. The Report should be reproduced in its entirety; however to protect confidential product information, the Construction Details Descriptive pages may be excluded.

DESCRIPTION

PRODUCT COVERED:

USR, CNR Component Connector -

Series HMN-HD1-48-M, Cat. No. 2312729-2.

Series HMN-HD1-48-F, Cat. No. 2312730-2.

Series HMN-HD1-24-M, Cat. No. 2316315-2.

Series HMN-HD1-24-F, Cat. No. 2316316-2.

GENERAL:

These devices are multiple connectors intended for factory assembly on copper wire sizes as indicated in Ratings table below where the acceptability of combinations is determined by UL LLC. The devices are identified as follows:

USR indicates investigation to United States Standards, UL 1977.

CNR indicates investigation to Canadian National Standards, C22.2 No. 182.3.

RATINGS:

Cat. No	Voltage Vac/dc	USR Ampere (A)	CNR Ampere (A)	Wire Size (AWG)
2312729-2	250	2.4	1.5	22
		Not assign	Not assign	24-30
2312730-2	250	2.4	1.5	22
		Not assign	Not assign	24-30
2316315-2	600	4	2.6	18
		Not assign	Not assign	20-30
2316316-2	600	4	2.6	18
		Not assign	Not assign	20-30

Disconnecting Use - see Sec Gen for required marking.

TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Use - For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC.

Conditions of Acceptability - The following are among the considerations to be made when evaluating the device in the end-use product.

Interruption of Current

1. These devices are not suitable for interrupting the flow of current by connecting or disconnecting the mating connector.

Current-Carrying Capability and Current Ratings

2. These devices have been subjected to the Temperature test with the rated currents and maximum temperature rise and recorded temperature (adjusted to 25°C ambient) values tabulated below:

Cat Nos.	Wire Size, AWG	Current, A	Maximum Temperature °C	
			Rise	Recorded Temperature
2312729-2	22	1.5 (CNR)	7.5	-
2312730-2	22	1.5 (CNR)	6.7	-
2312729-2	22	2.4 (USR)	-	45.6
2312730-2	22	2.4 (USR)	-	44.5
2316315-2	18	2.6 (CNR)	11.9	-
2316316-2	18	2.6 (CNR)	13.2	-
2316315-2	18	4 (USR)	-	51.7
2316316-2	18	4 (USR)	-	61.9

Insulating Materials

3. These devices employ insulating materials with properties as tabulated below at the minimum thickness employed in the connector housing, the suitability of the insulating materials based on the documented values shall be determined in the end-use application. Please note the values specified in the table when multiple materials are indicated represent the minimum values for the group of materials.

Mold Stress testing was performed at 140 °C for 7 hours with acceptable results.

Cat. No.	Insulating Material (#)	Measured Minimum Thickness	Flame Class	HWI	HAI	RTI Elec(++)
2312729-2	A	0.35 mm	(+)	-	-	130
2312730-2	A	0.35 mm	(+)	-	-	130
2316315-2	A	0.35 mm	(+)	-	-	130
2316316-2	A	0.35 mm	(+)	-	-	130

Note:

(#) - Code for Insulating Body Material.

(+): Thickness is less than the minimum Recognized material thickness, as such no assigned Flame class. UL 746C 12mm Flammability test conducted.

(++): These PLCs are based on the minimum Recognized material thickness.

- A. Tyco RM 704654-1.
 1. Dielectric strength (kV/mm): -
 2. CTI: 3

Miscellaneous

4. The enclosure of the device has live parts that may be exposed to user contact when the connector is energized. The device is suitable for use only within an acceptable enclosure.

Mating Connectors

5. These devices have only been assessed for use with specific types of connectors within their product family. They have not been assessed to operate with any other similar devices from any other manufacturer.

Cat Nos.	Mating Connector Cat Nos.
2312729-2	2312730-2
2316315-2	2316316-2

and Report

Terminations

6. The crimp contacts as tabulated below are intended for crimp termination on stranded copper conductor using the automatic crimp machine and the hand tool showing in below two tables (for information purposes only)

Contact	Wire Size, AWG	Automatic Tool No.	Crimp Width (mm)	Crimp Height (mm)	Crimp Tensile Strength (Kg MIN)
2316663-1	30	2151110-1	0.90	0.54±0.03	0.5
	28	2151110-1	0.90	0.57±0.03	1.0
2316663-2	28	2151082-1	1.16	0.64±0.03	1.0
	26	2151082-1	1.16	0.67±0.03	2.0
	24	2151082-1	1.16	0.73±0.03	3.0
	22	2151082-1	1.16	0.80±0.03	4.5
2316663-3	28	2151111-1	1.16	0.64±0.03	1.0
	26	2151111-1	1.16	0.67±0.03	2.0
	24	2151111-1	1.16	0.73±0.03	3.0
	22	2151111-1	1.16	0.80±0.03	4.5
2316663-4	22	2151083-1	1.40	0.85±0.03	4.5
	20	2151083-1	1.40	1.00±0.03	6.5
	18	2151083-1	1.40	1.15±0.03	6.5
2316670-1	30	2151110-1	0.90	0.54±0.03	0.5
	28	2151110-1	0.90	0.57±0.03	1.0
2316670-2	28	2151082-1	1.16	0.64±0.03	1.0
	26	2151082-1	1.16	0.67±0.03	2.0
	24	2151082-1	1.16	0.73±0.03	3.0
	22	2151082-1	1.16	0.80±0.03	4.5
2316670-3	28	2151111-1	1.16	0.64±0.03	1.0
	26	2151111-1	1.16	0.67±0.03	2.0
	24	2151111-1	1.16	0.73±0.03	3.0
	22	2151111-1	1.16	0.80±0.03	4.5
2316670-4	22	2151083-1	1.40	0.85±0.03	4.5
	20	2151083-1	1.40	1.00±0.03	6.5
	18	2151083-1	1.40	1.15±0.03	6.5

and Report

Contact	Wire Size, AWG	Hand Tool No.	Crimp Width (mm)	Crimp Height (mm)	Crimp Tensile Strength (Kg MIN)
2316669-1	30	2305684-1	0.90	0.54±0.05	0.5
	28	2305684-1	0.90	0.57±0.05	1.0
2316669-2	28	2305681-1	1.16	0.64±0.05	1.0
	26	2305681-1	1.16	0.67+0.03/-0.08	2.0
	24	2305681-1	1.16	0.73+0.06/-0.04	3.0
	22	2305681-1	1.16	0.80+0.03/-0.11	4.5
2316669-3	28	2305683-1	1.16	0.64±0.05	1.0
	26	2305683-1	1.16	0.67+0.03/-0.08	2.0
	24	2305683-1	1.16	0.73+0.06/-0.04	3.0
	22	2305683-1	1.16	0.80+0.03/-0.11	4.5
2316669-4	22	2305682-1	1.40	0.85±0.05	4.5
	20	2305682-1	1.40	1.00+0.03/-0.2	6.5
	18	2305682-1	1.40	1.15±0.05	6.5
2316671-1	30	2305684-1	0.90	0.54±0.05	0.5
	28	2305684-1	0.90	0.57±0.05	1.0
2316671-2	28	2305681-1	1.16	0.64±0.05	1.0
	26	2305681-1	1.16	0.67+0.03/-0.08	2.0
	24	2305681-1	1.16	0.73+0.06/-0.04	3.0
	22	2305681-1	1.16	0.80+0.03/-0.11	4.5
2316671-3	28	2305683-1	1.16	0.64±0.05	1.0
	26	2305683-1	1.16	0.67+0.03/-0.08	2.0
	24	2305683-1	1.16	0.73+0.06/-0.04	3.0
	22	2305683-1	1.16	0.80+0.03/-0.11	4.5
2316671-4	22	2305682-1	1.40	0.85±0.05	4.5
	20	2305682-1	1.40	1.00+0.03/-0.2	6.5
	18	2305682-1	1.40	1.15±0.05	6.5