File E28476 Project 95ME14640

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REPORT

on

# \*CONNECTORS FOR USE IN DATA, SIGNAL, CONTROL AND POWER APPLICATIONS

TYCO ELECTRONICS CORP MIDDLETOWN PA 17057-3170

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### DESCRIPTION

#### PRODUCT COVERED:

USR, CNR - Component Connectors, Series Faston Connectors.

USR/CNR - Component Connectors, Faston Connector, Cat. Nos. 1969725-1, 1969387-1, 1969639-1, 1969640-1, 1969656-1, 1969657-1, 1969843-1, 1-1969186-1, 2-176498-6, 2133857-1, 2133857-3 and 2133857-4, 521701-x, 521702-x, and 521787-x.

USR, CNR - Component Connector, Series Faston Dual Tab Connector, Cat. No. 1969375-1.

USR - Component Connectors, Series Faston, Cat. No. 1969632-1.

#### GENERAL:

These devices are single-pole or multi-pole connectors employing contacts of the crimp termination type for use in electrical equipment where the acceptability of the combinations is determined by Underwriters Laboratories Inc.

# ELECTRICAL RATINGS:

Cat. No.	Current (A)/	Wire AWG (or Wire
	Voltage	Cross-sectional area)
Housing 8-735075-0 and 6-735075-0	3 /240V AC/DC	22
with Contacts 444334-x		
Housing 8-735075-0 and 6-735075-0	6 /240V AC/DC	18
with Contacts 444334-x		_
Housing 8-735075-0 and 6-735075-0	8 /240V AC/DC	1.0 mm <sup>2</sup>
with Contacts 444335-x		_
Housing 8-735075-0 and 6-735075-0	14 /240V AC/DC	2.5 mm <sup>2</sup>
with Contacts 444335-x		
1969387-1 with Contacts 63306	230 V AC/DC	14, 16, 18 AWG
Housings 1969507-2, 1969507-3 with	No Electrical	10 - 22 AWG str
FASTON 250 Series Quick Connect	Ratings	
Connectors (E66717 report issued		
1982-01-28)		
Housings 1969538-1, 1969547-1 with	No Electrical	14 - 18 AWG str
FASTON 250 Series Quick Connect	Ratings	
Connectors - Cat. No. 63009 (E66717		
report issued 1982-01-28)		
Housings 2-480435-1, 2-480435-2 with	No Electrical	16 - 22 AWG str
FASTON 187 Series (budget and	Ratings	
premier) Quick Connect Connectors		
(E66717 report issued 1982-01-28)		
Housings 1969632-1 with FASTON 250	No Electrical	18 - 14 AWG str
Series Quick-Connect Connectors -	Ratings	
Cat. No. 1742198-1 (E66717 report		
issued 1978-07-19)		
Housings 1969655-1 and 521053-1 with	No Electrical	Refer to Ill. 87
Listed Tyco FASTON terminals as shown	Ratings	
in Ill. 87		

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ELECTRICAL RATING: (Cont)

Cat. No.	Current (A)/ Voltage	Wire AWG (str)
Housing 1969656-1 with Contacts	7 /600V AC/DC	18
63009-1	10 /600V AC/DC	16
	15 /600V AC/DC	14
Housing 1969657-1 with Contacts	7 /600V AC/DC	18
63010-1	10 /600V AC/DC	16
	15 /600V AC/DC	14

Housings 1969705-1, 1969706-1 with	No Electrical	14 - 18 AWG str
FASTON 250 Series Quick Connect	Ratings	
Connectors - Cat. No. 63009 (E66717		
report issued 1982-01-28)		

Cat. No.	Current(A)/Voltage (V)
Housings 480416-1,-2; 2-480416-4, 2-	No Electrical Ratings
480416-4, 1969507-2,-3 with	
Recognized Component (RFWV2) FASTON	
250 Series Quick Connect Connectors;	
480435-1,-2, 2-480435-2 with	
Recognized Component (RFWV2) FASTON	
187 Series Quick Connect Connectors	
1-1969186-1 with Recognized	No Electrical Ratings
Component (RFWV2) Cat. Nos. 62092-1, 61399-1, 63677-1	
2-176498-6 with Recognized Component	No Electrical Ratings
(RFWV2) Quick-Connect Faston Series	
187 tabs	
Housings 2-480416-5, 1969507-9,	No Electrical Ratings
1969295-4,-5, 1-1969141-1,-2;	
1969199-2, 1969201-2, 1969202-2, 1-	
1969232-1,-2,-3,-4; 1969422-2, 1-	
1969705-1, 1-1969706-1, 1969437-2,	
2-521498-0,-1,-2;, 1-520212-3,	
521358-2, 2-521498-7,-8,-9, 1-	
521771-1, 1-521785-1 with Recognized	
Component (RFWV2) FASTON 250 Series	
Quick Connect Connectors; 3-480435-1	
with Recognized Component (RFWV2)	
FASTON 187 Series Quick Connect	
Connectors	
521787-x employing housing 521787-x	600V
with Recognized Component (RFWV2)	
FASTON 187 Series Quick Connect	
Connectors	
521701-x, 521702-x employing	600V
housings 521701-x, 521702-x	
respectively with Recognized	
Component (RFWV2) FASTON 250 Series	
Quick Connect Connectors	

Cat. Nos. 2133857-1, 2133857-3 and 2133857-4 - No electrical ratings.

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# ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

Use - For use only in complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

USR - Indicates investigation to UL Standard for Safety for Component Connectors for Use in Data, Signal, Control and Power Applications, UL 1977.

CNR - Indicates investigation to Canadian Standard for Special Use Attachment Plugs, Receptacles, and Connectors, CSA C22.2 No. 182.3-M1987.

Conditions of Acceptability - In order to be judged acceptable as a component of electrical equipment, the following conditions should be met.

- These devices should be used only where they will not interrupt the current.
- 2. These devices have not been tested for current-carrying capability except below devices have been subjected to the Temperature test with the rated currents and maximum temperature rise values tabulated below.

Connector Cat.	Contact Cat.	Wire	Investigated	Maximum Temp
No. [1]	No.	Gauge	Current	Rise
Housing 8-735075-	444334-x	22	3	3.5
Housing 8-735075- 0	444334-x	18	6	7.0
Housing 8-735075-	444335-x	1.0 mm2	8	19.6
Housing 8-735075- 0	444335-x	2.5 mm2	14	27.1

Note [1] - Housing 8-735075-0 represents Housing 6-735075-0

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Connector Cat. No.		Wire	Investigated	Maximum
[1]	Contact Cat. No.	Gauge	Current	Temp Rise
1969657-1	63010-1	18	7	8.6
(representing	(representing	16	10	11.4
1969656-1)	63009-1)	14	15	19.1

- 3. The suitability of the mounting means shall be determined in the end use.
- 4. The electrical and mechanical suitability of the wiring terminals shall be determined in the end use.
- 5. The placement of these devices within the equipment enclosure should be such that spacings between the live parts and the equipment are suitable for the particular application.
- 6. The suitability of the spacings between adjacent poles and the associated voltage rating shall be determined in the end use. (Dielectric testing has not been performed.)

Dielectric testing was performed on below connectors:

Cat. No.
Housing 8-735075-0 with Contacts 444334-x
Housing 8-735075-0 with Contacts 444335-x
Model 1969387-1 with Contacts 63306

Note - Housing 8-735075-0 represents Housing 6-735075-0

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- 7. The electrical and mechanical contact between the connector and the discreet wire is to be determined in the end use equipment.
- 8. The suitability of the insulating materials used in the molded bodies shall be judged in the end use equipment.
- 9. For all devices except for Cat. Nos. 1969387-1, 1969507-2, 1969507-3, 1969538-1, 1969547-1, 2-480435-1, 2-480435-2 and Series Faston Dual Tab Connector, Cat. No. 1969375-1, the materials may be used interchangeably at a max operating temperature of 65°C. For Series Faston Dual Tab Connector, Cat. No. 1969375-1, the materials may be used interchangeably at a max operating temperature of 120°C. Cat. Nos. 1969507-2, 2-480435-1 may be used at 150°C, Cat. No. 1969507-3 may be used at 130°C, Cat. Nos. 1969538-1, 1969547-1 may be used at 120°C, Cat. No. 2-480435-2 may be used at 140°C, and Cat. No. 1969632-1 may be used at 240°C.
- 10. The max operating temperature of Model 1969387-1 is 120°C.
- 11. The factory assembled contacts have been investigated for the following wire ranges and maximum tensile forces.

Part No.	Wire Ranges (AWG)	Tensile Force (lbs)
Contacts 444334-x	22	8
Contacts 444334-x	18	20
Contacts 444335-x	1.0 mm2	20
Contacts 444335-x	2.5 mm2	20
Contacts 63306	14	25
Contacts 63306	16	20
Contacts 63306	18	20
Contacts <b>63010-1</b> , <b>63009-1</b>	18	20
Contacts 63010-1, 63009-1	14	25

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12. 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.

C-+ N-	D	M	E1	TILT	117 T	DMT	M
Cat. No.	Raw	Measure d	Flame	HWI	HAI	RTI	Max
	Material		Class			Elec	Operating
	Designation	Minimum					Temp, °C
		Thickne					
		នន					
Housing 735075	A	0.48 mm	V-2	_	_	65	65
Overmold 1969375-1	В	2.34 mm	V-0	4	0	120	120
Housing 1969422-1	_ C	0.45 mm	V-0	-	-	65	65
Housing 1969437-1	С	0.72 mm	V-0	0	0	130	130
Housing 1969507-2,	D	0.76 mm	V-0	4	2	150	150
2-480435-1							
Housing 1969507-3	E	0.76 mm	V-0	0	0	130	130
Housings 1969538-1,	F	0.76 mm	V-0	4	0	120	120
1969547-1							
Housing 2-480435-2	G	0.76 mm	V-0	4	0	140	140
Housing 2-480435-3	Н	0.76 mm	(+)	1 (++	4 (++	240	240
				)	)		
H; connector Cat.	D	0.76 mm	V-0	4	2	150	150
Nos. 1969656-1,							
1969657-1							
Housing 1969632-1	I		V-0	-	-	240	240
Connector Cat. Nos.	F	0.76 mm	V0	4	0	120	120
1969639-1 and							
1969640-1	<u> </u>						
Housings 1969705-1,	J	0.76 mm	V-0	0	0	130	130
1969706-1							
Housings 1969725-1,	D	0.64 mm	V-0	4	2	150	150
1969843-1							
2133857-1		0.6mm	V2	4	0	105	105
2133857-3		0.6mm	V2			130	130
			(++)	(++)	(++)	(++)	(++)
2133857-4	1	0.6mm	V2			65	65
	M					(GEN	(GENERIC)
						ERIC	
						)	
Housings 1969843-1,	N	0.64mm	V-0	0	0	150	150
1969725-1							
Housing PNs 2-	N	0.2mm	V-0			150	150
480416-4, 1969507-							
2,3; 2-480435-2							

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Cat. No.	Raw Material Designation	Measure d Minimum Thickne	Flame Class	HWI	HAI	RTI Elec	Max Operating Temp, °C
		SS					
2-480416-5,1- 480416-7, 3-480435- 1, 1969507-9. 1969295-1,-2,-4,-5; x-521498-x; 1- 1969141-1,-2; 1969141-1,-2; 1969202-1,-2, 1- 1969202-1,-2, 1- 1969232-1,-2,-3,-4; 1969232-1,-2,-3,-4; 1969422-1,-2, 1- 1969705-1,1969705- 1,1-1969706-1, 1969706-1, 1- 520212-3, 520212-3, 2-521498-7,-8,- 9,521498-7,-8,- 9,521498-7,-8,- 9,521771-1, 521771- 1, 1-521785-1, 1969437-1,-2, 521701-x, 521702-x, 521787-x	0	0.4	V0	0	0	130	130
1-1969186-1, 2- 176498-6	0	0.5	ν0	0	0	130	130
Housing PNs 480416- 1,-2, 1-480416-0,- 1, 480435-1,-2; 1- 480435-0,-3; 521358-1,-2	Р	0.45	VO	4	0	130	130

- (+): Thickness is less than the minimum Recognized material thickness, as such no assigned Flame class. UL746C 12mm Flammability test conducted.(++): These PLCs are based on the minimum Recognized material thickness.

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A - 1. Dielectric strength (kV/mm): -
    2. CTI: 2
B - 1. Dielectric strength (kV/mm): -
     2. CTI: 0
C - 1. Dielectric strength (kV/mm): - 26
     2. CTI: 1
D - 1. Dielectric strength (kV/mm): - 14
     2. CTI: 0
E - 1. Dielectric strength (kV/mm): - 26
    2. CTI: 1
F - 1. Dielectric strength (kV/mm): - --
     2. CTI: 0
G - 1. Dielectric strength (kV/mm): - --
     2. CTI: 2
H - 1. Dielectric strength (kV/mm): - 21
     2. CTI: 3
I - 1. Dielectric strength (kV/mm): - 21
     2. CTI: 3
J - 1. Dielectric strength (kV/mm): - 26
     2. CTI: 1
K - 1. Dielectric strength (kV/mm): - --
     2. CTI: 0
L - 1. Dielectric strength (kV/mm): - 18
    2. CTI: 1
M - 1. Dielectric strength (kV/mm): - --
     2. CTI: 2
N - 1. Dielectric strength (kV/mm): - 20
    2. CTI: 0
O - 1. Dielectric strength (kV/mm): 17
     2. CTI: 2
P - 1. Dielectric strength (kV/mm): 13
    2. CTI: 0
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- 13. For Housings 8-735075-0 and 6-735075-0 with Contacts 444334-x or Contacts 444335-x, when conducting temperature test, each mating male contact was connected with two connectors, six connectors were tested in series and there are 40 in conductor lengths between each connector assembly. Repeat of temperature test shall be considered in the end product.
- 14. The Series Faston Dual Tab Connector, Cat. No. 1969375-1, is intended for use with mating connectors size .250 in.

15. Cat. **Nos. 1969725-1, 1969843-1** employs the following contacts and intended tooling:

Contact	Wire Range - Cu str	Tooling
63477-1	16 - 20 AWG	Tooling: Ocean Applicator PN 2150007 Crimp height(in)(min/max wire range):16AWG060 +002; 20AWG049+002
1742975-1	18 - 22 AWG	Tooling: Ocean Applicator 2150325 Crimp Height(in) (min/max wire range): 18AWG049+002; 22AWG039+002

The suitability of any other tooling shall be an end product consideration.