File E28476 Project 88ME13417

Issued: November 2, 1988 Revised: May 5, 2015

REPORT

on

COMPONENT - CONNECTORS FOR USE IN DATA, SIGNAL, CONTROL AND POWER APPLICATIONS

Tyco Electronics Corp. Harrisburg, PA

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DESCRIPTION

PRODUCT COVERED:

USR/CNR - Component Connectors: Standard Timer Series Connectors Cat. Nos. 3-1241965-2, 4-1241965-2, 3-1241965-5, 6-1241965-5, 3-1241965-7, 8-1241965-2, 2-1241965-2, 1-1241965-4, 4-1241965-7, 2-1241965-4, 3-1241965-4, 5-1241965-5, 5-1241965-7, x-2295787-x, 0-2178600-2, 3-2178600-2, 4-2178600-2, 5-2178600-2 and 1241983 with prefixes 0- to 8- and suffixes -2 to -3.

USR/CNR - Component Connectors: Standard Timer Series Connectors, Cat. Nos. 2345754-1, 2345753-1.

USR - Component Connectors: Standard Timer Series Connectors Cat. Nos. x-1241959-x, x-2178571-x, 2322917-x, x-2322912-x, 4-1241965-4, 5-1241965-4, 9-1241961-7, x-1241961-x, x-1241964-x, 2298443-x, x-1241981-x, and x-927742-x.

USR/CNR - Component Connectors: Standard Timer Series Connector, Cat. No. 9-1241961-8.

USR/CNR - Component Connectors: Standard Timer Series Connector, Cat. No. X-1241961-X(only for the terminal 927833-2).

USR, CNR - Component Connectors: Standard Timer Series Connectors, Cat. Nos. 1-964768-2, 2364739-2, 2364739-3, 2364739-4, 2364739-5, 1-2364739-2, 2-2364739-2, 3-2364739-2, 1-2364739-3, 2364736-7, 2364737-2, 2364737-5, 2364737-9, 1-2364737-1, 1-2364737-2, 6-927742-2, 6-1241965-4, 0-2178561-2, x-2315717-x, x-2364000-x (x=0-9, means different position numbers, Keycode or latch location).

USR/CNR - Component Connector: Standard Timer Series Connectors, Cat. No. 1-2178029-3

USR/CNR - Component Connector: Standard Timer Series Connectors, Cat. Nos. 928309-7, 928309-8

OBSOLETE:

The following Cat. No's. are not Recognized Connectors but are included in this list for reference purposes only: x-928343-x, x-928344-x, and x-964768-x.

GENERAL:

These devices are 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. For specific catalog numbers see Pages 2A and 2B.

USR - Products designated USR have been investigated using US requirements as noted in the Test Record.

CNR - Products designated CNR have been investigated using Canadian requirements as noted in the Test Record.

ENGINEERING CONSIDERATIONS (NOT FOR INSPECTOR USE): Use - For use only in complete equipment where the acceptability of the combination is determined by Underwriters Laboratories Inc.

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RATINGS:

Table 1:

$ \begin{array}{ c c c c c c } \hline Housing & Contact & Voltage \\ \hline V & A & Mpere \\ X & MmG or \\ nmn^2 \\ \hline 1 -964768-2, \\ 2364739-2, 2 \\ 2364739-2, 3 \\ 2364739-2, 3 \\ 2364739-2, 3 \\ 2364739-2, 3 \\ 2364739-2, 3 \\ 2364739-2, 1 \\ 2364739-2, 3 \\ 2364739-2, 3 \\ 2364737-2, 92820-1 \\ 2364737-2, 92820-1 \\ 2364737-2, 964203-5 \\ 2364737-2, 0 \\ 2364204-1 \\ 964204-1 \\ 964203-1 \\ 12 \\ 16 \\ $			USR&CNR Rating			Positions
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$					Wire	number
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Housing	Contact	Voltage	Ampere	Size	
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$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	· · · ·	926984-1			20	
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$		964201-1	-	5	20	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			-			
$ \begin{array}{ c c c c c c c c } \hline 2364739-2, 2- & 964203-1 \\ 2364739-2, 3- & 1862006-1 \\ 2364739-2, 1- & 1862006-5 \\ 2364737-2, 928820-1 \\ 2364737-2, 964203-5 \\ 2364737-2, 9& 964204-5 \\ 2364737-2, 0- & 3-927837-1 \\ 2364737-2, 0- & 3-927837-1 \\ 2178561-2, & 2378282-1 \\ \hline 6-927742-2 & 160691-2 \\ 6-927742-2 & 160691-2 \\ 6-927742-2 & 1206691-2 \\ \hline 6-927742-2 & 1206691-2 \\ \hline 6-927837-1 \\ 3 & 22 \\ \hline 6-9278309-7, 928309-8 & 160691-2 \\ \hline 928309-7, 928309-8 & 160691-2 \\ \hline 9269273-1 \\ 9269273-1 \\ \hline 9269273-1 \\ 9269273-1 \\ \hline 9269273-1 \\ \hline 9269273-1 \\ \hline 926973-1 \\ \hline 964202-1 \\ 964203-5 \\ \hline 926973-1 \\ \hline 926973-1 \\ \hline 964203-5 \\ \hline 926973-1 \\ \hline 964203-5 \\ \hline 12 & 16 \\ \hline $			-	5		
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$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	x-2315717-x	2378282-1				
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$		160691-2	-			
928309-7,928309-8 160691-2 600 N/A 20 7,8 926984-1 926984-1 3 22 5 20 964201-1 964202-1 964202-1 5 20 5 20 964203-1 964203-1 964203-1 5 20 7 18 1862006-1 1862006-5 928820-1 5 20 7 18 1862006-5 928820-1 964203-5 12 16 12 16 122 16 12 16 12 16 12 16 964203-5 964204-1 926973-1 8 16 12 16 964204-5 927837-1 3 22 16 3 22 927837-1 2378282-1 5 20 10 1.0mm ² 2 14 X-1241961-X 927833-2 600 16 1.5mm ² 2 14	6-927742-2		-		-	2
$\begin{array}{ c c c c c c c c } \hline & & & & & & & & & & & & & & & & & & $	928309-7 928309-8		600			78
$\begin{array}{ c c c c c c c } \hline & & & & & & & & & & & & & & & & & & $	320303 1,320303 0		000			,, 0
$\begin{array}{ c c c c c c c } \hline & 964201-1 & & 5 & 20 & & \\ \hline & 964202-1 & & & 964203-1 & & \\ \hline & 927831-1 & & & 5 & 20 & & \\ \hline & 964203-1 & & & 5 & 20 & & \\ \hline & 964203-1 & & & 5 & 20 & & \\ \hline & 1862006-5 & & & & 12 & 16 & & \\ \hline & 12 & 16 & & & 12 & 16 & & \\ \hline & 926973-1 & & & & 8 & 16 & & \\ \hline & 964203-5 & & & & 8 & 18 & & \\ \hline & 964204-1 & & & & & 8 & 16 & & \\ \hline & 964204-5 & & & & & 12 & 16 & & \\ \hline & 964204-5 & & & & & 12 & 16 & & \\ \hline & 964204-5 & & & & & 12 & 16 & & \\ \hline & 927837-1 & & & & & 12 & 16 & & \\ \hline & 2378282-1 & & & & & 5 & 20 & & \\ \hline & X-1241961-X & 927833-2 & & & & & 600 & & & & 10 & 1.0 \text{mm}^2 & & 2 & \text{thru} & \\ \hline \end{array}$		926984-1				
$\begin{array}{ c c c c c c c }\hline & 964202-1 & & & & & & & & & & & & & & & & & & &$	-	964201-1	-			
$\begin{array}{ c c c c c c c }\hline & & & & & & & & & & & & & & & & & & &$	-		-		-	
$\begin{array}{ c c c c c c }\hline & 964203-1 & & & & & & & & & & & & & & & & & & &$	-		-	-	-	
$ \begin{array}{ c c c c c c } \hline & 1862006-1 \\ \hline & 1862006-5 \\ \hline & 928820-1 \\ \hline & 926973-1 \\ \hline & 964203-5 \\ \hline & 964204-5 \\ \hline & 964204-5 \\ \hline & 927837-1 \\ \hline & 3-927837-1 \\ \hline & 2378282-1 \\ \hline & X-1241961-X \\ \end{array} \begin{array}{ c c c c c } \hline & 1862006-5 \\ \hline & 928820-1 \\ \hline & 926973-1 \\ \hline & 964204-5 \\ \hline & 964204-5 \\ \hline & 12 \\ \hline & 16 \\ \hline & 2.5mm^2 \\ \hline & 2 \\ \hline & 16 \\ \hline & 2.5mm^2 \\ \hline & 2 \\ \hline & 16 \\ \hline & 2.5mm^2 \\ \hline & 2 \\ \hline & 16 \\ \hline & 2.5mm^2 \\ \hline & 2 \\ \hline & 16 \\ \hline & 2.5mm^2 \\ \hline & 2 \\ \hline & 16 \\ \hline & 2.5mm^2 \\ \hline & 2 \\ \hline & 16 \\ \hline & 1.5mm^2 \\ \hline & 2 \\ \hline & 16 \\ \hline & 1.5mm^2 \\ \hline & 2 \\ \hline & 16 \\ \hline & 1.5mm^2 \\ \hline & 2 \\ \hline & 16 \\ \hline & 1.5mm^2 \\ \hline & 2 \\ \hline & 16 \\ \hline & 1.5mm^2 \\ \hline & 16 \\ \hline & 15 \\ \hline & 10 \\ \hline$	-		-		-	
$ \begin{array}{ c c c c c c c } \hline 5-1241965-5 \\ \hline 6-1241965-4 \\ \hline 928820-1 \\ \hline 926973-1 \\ \hline 964203-5 \\ \hline 964203-5 \\ \hline 964204-1 \\ \hline 964204-5 \\ \hline 927837-1 \\ \hline 3-927837-1 \\ \hline 2378282-1 \\ \hline X-1241961-X \\ \hline 927833-2 \\ \hline \end{array} \begin{array}{ c c c c c c c } \hline 1862006-5 \\ \hline 928820-1 \\ \hline 5250 \\ \hline 8 & 18 \\ \hline 8 & 16 \\ \hline 8 & 16 \\ \hline 12 & 16 \\ \hline 3 & 22 \\ \hline 3 & 22 \\ \hline 5 & 20 \\ \hline \hline 10 & 1.0mm^2 \\ \hline 16 & 1.5mm^2 \\ \hline 2 & thru \\ \hline \end{array} $	-		-		-	
$ \begin{array}{ c c c c c c c c } \hline & 5-1241965-5 & 928820-1 & \leq 250 & 8 & 18 & 4 & thru \\ \hline & 926973-1 & & & & & & & & & & & & & & & & & & &$	-		-			
8 16 964203-5 12 16 964204-1 12 16 964204-5 12 16 927837-1 12 16 3-927837-1 12 16 2378282-1 3 22 X-1241961-X 927833-2 600 16 1.5mm² 16 2.5mm² 2 11	5-1241965-5		<250			4 + hru 5
964203-5 12 16 964204-1 12 16 964204-5 12 16 927837-1 12 16 3-927837-1 12 16 2378282-1 3 22 X-1241961-X 927833-2 600 16 1.5mm² X-1241961-X 927833-2 600 16 1.5mm² 2 thru	6-1241965-4					
$\begin{array}{ c c c c c c }\hline & 964204-1 & & 12 & 16 \\ \hline 964204-5 & & 12 & 16 \\ \hline 927837-1 & & 12 & 16 \\ \hline 3-927837-1 & & 12 & 16 \\ \hline 3-927837-1 & & 12 & 16 \\ \hline 2378282-1 & & 3 & 22 \\ \hline & & 3 & 22 \\ \hline & & 3 & 22 \\ \hline & & 5 & 20 \\ \hline & & & 10 & 1.0 \text{mm}^2 \\ \hline & & & 16 & 1.5 \text{mm}^2 \\ \hline & & & 16 & 2.5 \text{mm}^2 \end{array} $			-	-	-	
$\begin{array}{ c c c c c c c }\hline & 964204-5 & 12 & 16 \\ \hline 927837-1 & 12 & 16 \\ \hline 3-927837-1 & 12 & 16 \\ \hline 32378282-1 & 5 & 20 \\ \hline & & & & & \\ \hline & & & & & \\ \hline & & & &$			-			
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3-927837-1 12 16 2378282-1 3 22 5 20 X-1241961-X 927833-2 600 16 1.5mm² 2 thru 16 2.5mm² 2 thru 16 2.5mm² 2 thru			-			
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X-1241961-X 927833-2 600 10 1.0mm ² 16 1.5mm ² 2 thru		2378282-1				
X-1241961-X 927833-2 600 16 1.5mm ² 2 thru 16 2.5mm ² 2 16 2.5mm ² 3 3						
16 2.5mm ²	x-12/1061-v	927833-2	600			2 + hrm 3
	X-1241901-X	927833-2	000			
				30	10	
2364003-1 25 12		2364003-1				
	x-2364000-x		<600			2 thru 4
964203-1 2000 16 14 2 CHIU		964203-1	_000	-		
1862006-1 8 18		1862006-1	-			
964203 or						_
1-2178029-3 964204 250 - 16-18	1-2178029-3		250	-	16-18	

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

1. These devices should be used only where they will not interrupt the current.

2. Only the following devices have been tested for current-carrying capability. Cat. No. 3-1241965-2, 4-1241965-2, 0-2178600-2, 3-2178600-2, 4-2178600-2, 5-2178600-2, 1241983 with prefixes 0- to 8- and suffixes -2 to -3, 1-964768-2, 6-927742-2, 1-1241965-1 with contacts as described in the following table.

Contact	Conductor AWG	Current A
926984-1	22	3
926964-1	20	5
964201-1	20	5
964202-1	18-14	6
927831-1	20	5
964203-1	18	7
1862006-1	16	12
1862006-5	16	12
928820-1	18	8
926973-1	16	8
160691-2	20	5
42460-2	16	12
964203-5	16	12
964204-1	16	12
964204-5	16	12
927837-1	16	12
3-927837-1	16	12

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Cat. No. 2825197-1 has been evaluated for the current carrying capability in housing 1241959-x with the following conductors and current.

Housing	Contact	Conductor Size	Current A	Temp. Rise
1241959-x	2825197-1	0.5mm ²	5	10.1°C
1241959-x	2825197-1	0.8mm ²	7	14.0°C
1241959-x	2825197-1	1.0 mm ²	10	26.4°C

2A. Contact Cat. No. 2825197-1 assembled with housing 2315717-x, x-2178571-x, 2322917-x, 2322912-2, 1-2322912-2, 2-2322912-2, 2322912-3, 4-1241965-4, 5-1241965-4, 9-1241961-7 has rating with the following conductors and current.

Contact	Conductor Size	Current A
2825197-1	0.5mm ²	5
2825197-1	0.8mm ²	7
2825197-1	1.0 mm ²	10

2B. Contact Cat. No. 964203 assembled with housing 2345754-1, 2345753-1, 9-1241961-8 has rating with the following conductors and current.

Contact	Conductor Size	Current A
964203	1.0mm ²	10
964203	1.5mm ²	16
964203	2.5mm ²	16

2B1. Contact Cat. No. 927833-2 assembled with housing x-1241961-x has rating with the following conductors and current.

Contact	Conductor Size	Current A
927833-2	1.0mm ²	10
927833-2	1.5mm ²	16
927833-2	2.5mm ²	16

*

2C. Contact Cat. No. 964204 assembled with housing 2345754-1, 2345753-1 has rating with the following conductors and current.

Contact	Conductor Size	Current A
964204	1.5mm ²	16
964204	2.5mm ²	16
964204	(2)1.5mm ²	16

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

Housing	Contact	Current	Wire Size	· ·		Representative for Cat. No.
		A	AWG	Rise	Recorded Temperature	
1-964768-2	926984-1	5	20	6.8	31.8	NA
1-964768-2	928820-1	8	18	15.4	40.4	NA
1-964768-2	964203-5	12	16	15.1	40.1	NA
6-927742-2	10691-2	5	22	7.1	32.1	NA
6-927742-2	42460-2	12	18	19.6	44.6	NA
1-1241965-1	926984-1	5	20	10.8	35.8	All
1-1241965-1	928820-1	8	18	19.3	44.3	combination in
1-1241965-1	964203-5	12	16	28.5	53.5	RATINGS Table 1
	2364003-1	30	10	29.5	54.5	NA
	2304003-1	25	12	24.5	49.5	NA
x-2364000-x	964203-1	16	14	13.3	38.3	NA
	904203-1	10	16	7.1	32.1	NA
	1862006-1	8	18	6.1	31.1	NA

Housing	Contact	Current	Wire Size	e °C		Representative for Cat. No.
		A	mm ²	Rise	Recorded Temperature	IOI Cat. NO.
1-1241961-9	927833-2	10	1.0	13.8	38.8	X-1241961- X(with the terminal 927833-2)
1-1241961-9	927833-2	16	1.5	24.1	49.1	X-1241961- X(with the terminal 927833-2)

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3. The suitability of the mounting means shall be determined in the end use.

 $4\,.$ The acceptability of the grounding connection shall be determined by the end product use engineer.

5. The electrical and mechanical suitability of the wiring terminals shall be determined in the end use.

6. The factory assembled contacts have been investigated for the following wire sizes and maximum tensile forces.

Part No.	Wire Range (AWG)	Tensile Force (lb)
927837	16	20
964201	20-18	8/20
964202	18-14	20
964203	18-14	20
964204	16-12	20
926984	24-20	8
1241174	16	20
1241834	18	20
927831-1	20	8
2825197-1	0.5mm ²	8
2825197-1	0.8mm ²	20
2825197-1	1.0 mm ²	20
964203	1.0mm2	20
501200	1.5mm2	25
	2.5mm2	35
	1.0mm2	20
927833-2	1.5mm2	25
921033-2	2.5mm2	35
964204	1.5mm2	25
964204	2.5mm2	35
	(2)1.5mm2	25
	18	20
1862006-1	18 16	20
	18	20
928820-1	16	20
964203-5	16	20
926973-1	16	20
	22	8
160691-2	20	10
	18	20
42460-2	22 20	8
42400-2	18	10 20
	10	40
2364003	12	35
0.0000 1	14	25
964203-1	16	20
1862006-1	18	20

7. 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.

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8. The adjacent poles of all devices except Series 1241965, 2295787 and Series 1241983 may be used at potentials not exceeding 600 V based on the spacings requirements of Paragraph 12.1 of UL 498. Dielectric testing has not been performed.

Cat. Nos. 0-2178600-2, 3-2178600-2, 4-2178600-2 and 5-2178600-2 and Series 1241983 may be used at potentials not exceeding 250V AC as Dielectric testing has only been performed on Cat. No. 1-1241965-1 at 1500 V AC.

Series 1241965, 2295787 may be used at potentials not exceeding 250V AC as Dielectric testing has only been performed on Cat. No. 1-1241965-1 at 1500 V AC.

Cat. No. 1241959-5 may be used at potentials not exceeding 250V. A dielectric withstand test has been conducted at 1500 Vac.

Cat. Nos. x-2178571-x, 2322917-x, x-2322912-x, 4-1241965-4, 5-1241965-4, 9-1241961-7, 9-1241961-8 may be used at potentials not exceeding 250V. A dielectric withstand test has been performed on Cat. Nos. 2315717-4, 2322917-4, 2322912-8 at 1500 Vac.

Cat. Nos. 2345754-1, 2345753-1, 1-2178029-3 may be used at potentials not exceeding 250V. A dielectric withstand test has been performed on Cat. No. 2345753-1 at 1500 Vac.

Cat. Nos. 1-964768-2, 0-2178561-2 may be used at potentials not exceeding 600V. A dielectric withstand test has been performed on Cat. No. 1-964768-2 at 2200 Vac.

Cat. No. 6-927742-2 may be used at potentials not exceeding 600V. A dielectric withstand test has been performed on Cat. No. 6-927742-2 at 2200 Vac.

Cat. Nos. 2364739-2, 2364739-3, 2364739-4, 2364739-5, 1-2364739-2, 2-2364739-2, 3-2364739-2, 1-2364739-3, 2364736-7, 2364737-2, 2364737-5, 2364737-9, 1-2364737-1, 1-2364737-2, **928309-7**, **928309-8** may be used at potentials not exceeding 600V. A dielectric withstand test has been performed on Cat. No. 1-2364737-1 at 2200 Vac.

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9. The electrical and mechanical contact between the connector and the printed wiring board is to be judged in the end-use equipment.

10. The suitability of the insulating materials used in the molded bodies shall be judged in the end-use equipment.

11. The operating temperature of these devices should not exceed the temperature ratings of the insulating materials. These materials may be used interchangeably at a maximum temperature of 90°C except for Housing Series 2178029 with or without Prefix and Suffix which can be used at a maximum temperature of 120° C.

12. Housing Series 2178029 with or without Prefix and Suffix are molded in a thickness no less than 0.75mm and can employ any contact contained in this report. There are no assigned electrical ratings for this Housing.

12A. Series 1-2178029-3 can employ only contact 964203 or 964204

* 13. Part Nos. 928309-7, 928309-8 use contact 160691-2, but have not been tested for current capability and do not have any assigned current rating.

927740 Housing 1,7,8 928151 Housing 1,10 928423 Housing 1,19 *0-2178561-2 Housing 14A *927742 Housing 1 6-927742-2 Housing 1 293267 Housing 1 293267 Housing 6 92830 Housing 1 *927717 Housing 6 928230 Housing 1 *927717 Housing 6 928154 Housing 11 928345 Housing 18 928420 Housing 20,21 964016 Contact 22 964017 Contact 23 964663 Housing 24 *1-964768-2 Housing 27 966307 Housing 28 966664 Housing 29 927837 Contact 31 3-927837-1 Contact 33 </th <th>Cat. No.</th> <th>Description</th> <th>Illustration No.</th>	Cat. No.	Description	Illustration No.
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