CERTIFICATE OF COMPLIANCE

Certificate Number	UL-US-2306333-0
Report Reference	40TE28476-20230214
Date	28-Feb-2023
Issued to:	TYCO Electronics Corp 2901 Fulling Mill Rd Middletown, PA 17057 United States
This is to certify that representative samples of	ECBT2 - Connectors for Use in Data, Signal, Control and Power Applications - Component See Addendum Page for Product Designation(s).
	Have been evaluated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.
Standard(s) for Safety:	UL 1977, Edition 4, Issue Date 2022-12-07
Additional Information:	See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Recognized Component Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.

Deborah Jennings-Conner, VP Regulatory Services

UL LLC

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Report Reference 40TE28476-20230214
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Model	Category Description
NTSeal, 1-2350890, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 1-2350891, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2-2350891, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2-2366509, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2350890, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2350891, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2366494, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2366509, may be followed by -1, -2, -3, or -4	Connectors

Deborah Jennings-Conner

Deborah Jennings-Conner, VP Regulatory Services

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CERTIFICATE OF COMPLIANCE

Certificate Number	UL-US-2308735-0
Report Reference	40TE28476-20230214
Date	28-Feb-2023
Issued to:	TYCO Electronics Corp 2901 Fulling Mill Rd Middletown, PA 17057 United States
This is to certify that representative samples of	ECBT2 - Connectors for Use in Data, Signal, Control and Power Applications - Component See Addendum Page for Product Designation(s).
	Have been evaluated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.
Standard(s) for Safety:	UL 1977, Edition 4, Issue Date 2022-12-07
Additional Information:	See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information

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Certificate Number UL-US-2308735-0
Report Reference 40TE28476-20230214
Date 28-Feb-2023

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

Model	Category Description
NTSeal, 1-2350890, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 1-2350891, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2-2350891, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2-2366509, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2350890, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2350891, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2366494, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2366509, may be followed by -1, -2, -3, or -4	Connectors

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CERTIFICATE OF COMPLIANCE

Certificate Number	UL-US-2332106-0
Report Reference	40TE28476-20230214
Date	28-Feb-2023

Issued to:

TYCO Electronics Corp
2901 Fulling Mill Rd
Middletown, PA 17057
United States

This is to certify that representative samples of

ECBT2 - Connectors for Use in Data, Signal, Control and Power Applications - Component

See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.

Standard(s) for Safety: UL 1977, Edition 4, Issue Date 2022-12-07

Additional Information: See the UL Online Certifications Directory at https://iq.ulprospector.com for additional information

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Recognized Component Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

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CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2332106-0
Report Reference 40TE28476-20230214
Date 28-Feb-2023

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

Model	Category Description
NTSeal, 1-2350890, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 1-2350891, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2-2350891, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2-2366509, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2350890, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2350891, may be followed by -1, -2, -3, or -4	Connectors
NTSeal, 2366494, may be followed by -1, -2, -3, or -4	Connectors
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File E28476

Project 4790275100

February 14, 2023

REPORT

on

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

TYCO ELECTRONICS CORP
MIDDLETOWN,PA

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DESCRIPTION

PRODUCT COVERED:

USR – Component Connectors, NTSeal Series (20 position) 2350890, 2350891, 1-2350890, 1-2350891, 2-2350891 followed by -1, -2, -3 or 4.

USR – Component Connectors, NTSeal Series (48 position) 2366494, 2366509, 2-2366509 followed by -1, -2, -3 or 4.

GENERAL:

These devices are multi-pole hybrid connectors intended for factory assembly on stranded copper conductors where the acceptability of combinations is determined by Underwriters Laboratories Inc. The devices are identified as follows:

USR indicates investigation to the standard as indicated in the test record.

Disconnecting Use - see Sec Gen for required marking

Electrical Ratings: CURRENT NOT ASSIGNED, 24Vac/dc

NOMENCLATURE:

20 Position

1	-	2350890	-	1
I		II		III

I. Optional – May be blank or 1

II. Series - May be:
2350890 – Hybrid Socket Assembly
2350891 – Hybrid Pin Assembly

III. Indicates Polarization Code
May Be:
1- Code A
2- Code B
3- Code C
4- Code D

48 Position

2	-	2366494	-	1
I		II		III

I. Optional – May be blank or 1

II. Series - May be:
2366494 – Hybrid Socket Assembly
2366509 – Hybrid Pin Assembly

III. Indicates Polarization Code
May Be:
1- Code A
2- Code B
3- Code C
4- Code D

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

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

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 not been subjected to the current test and must be tested for any current in the end product.

Insulating Materials

3. The insulating materials used in these devices are only suitable for use in Type 0 Applications and shall be evaluated for flammability in the end use application exceeding Class 2 (max 100VA) energy_applications.

4. 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. All materials in NC may be colored with NBXXXXXXXX in any color where the flame class for the combination is not assigned.

Part	Insulating Material	Manufacturer	Tyco Raw Material PN	Flame Class	HWI	HAI	RTI Elec, ºC	Max Operating Temp, ºC
Housing	TE Proprietary			NR	-	-	75	75
Rear Cap				NR +	-	-	75	75
20 Position Plug TPA				NR	-	-	75	75
20 Position Rcpt TPA				NR +	-	-	75	75
48 Plug/Rcpt TPA				NR	-	-	75	75
CPA				NR +	-	-	75	75

NR – Not rated
(+)_- The material may be used up to 15% regrind.

5. The Maximum 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 75°C.

Terminations

6. The following crimp contacts have been evaluated for the wire sizes as tabulated below:

Stamped and Formed Type -

Contact Size	Pin / Socket	Wire Size, AWG	Force, lbf
16	1060-14-01XX / 1062-14-01XX	14-18	20
	1060-16-01XX / 1062-16-01XX	14-18	20
	1060-16-06XX / 1062-16-06XX	16-18	20
		20	8
	1060-16-07XX / 1062-16-07XX	14-18	20
	1060-16-12XX / 1062-16-12XX	12-16	20
	- / 1062-16-14XX Sleeveless	12-16	20
20	1060-20-01XX / 1062-20-01XX	16-18	20
		20-22	8
	1060-20-02XX / 1062-20-02XX	16-18	20
		20-22	8
	- / 1062-20-03XX Sleeveless	16-18	20
		20-22	8
	1060-20-06XX / 1062-20-06XX	14-16	20

Solid Type -

Contact Size	Pin / Socket	Wire Size, AWG	Force, lbf
16	0460-202-16XX / 0462-201-16XX	16-18	20
		20	8
	0460-215-16XX / 0462-209-16XX	14	20
20	0460-202-20XX / 0462-201-20XX	20	8
	0460-010-20XX / 0462-005-20XX	16-18	20