

CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-L52653-12-82216102-2
Report Reference E52653-20161228
Date 23-Oct-2020

Issued to: HIROSE ELECTRIC CO., LTD.
2-6-3 NAKAGAWA CHUOH
TSUZUKI-KU YOKOHAMA-SHI , KANAGAWA,
Japan 224-8540

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 investigated 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, 3rd Ed., Issue Date: 2016-01-07, Revision Date: 2019-08-07

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

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure 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.



Bruce Mahrenholz, Director North American Certification Program

UL LLC



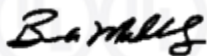
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CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-L52653-12-82216102-2
Report Reference E52653-20161228
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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
PQ50WA, PQ50WA-1U-FL-1B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-1U-FL-2B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-1U-FL-3B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-FL-1A, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-FL-1B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-FL-2A, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-FL-2B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-FL-3B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-PC2-1A may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-PC2-2A, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2UM-50S-PC1-1B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2UM-50S-PC1-2B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2UM-50S-PC1-3B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WAS-1UM-46S-PC1-1B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WAS-1UM-46S-PC1-2B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WAS-1UM-46S-PC1-3B, may be followed by (01), (11) or (51)	Connectors



Bruce Mahrenholz, Director North American Certification Program

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CERTIFICATE OF COMPLIANCE

Certificate Number UL-CA-2002804-0
Report Reference E52653-20161228
Date 23-Oct-2020

Issued to: HIROSE ELECTRIC CO., LTD.
2-6-3 NAKAGAWA CHUOH
TSUZUKI-KU YOKOHAMA-SHI , KANAGAWA,
Japan 224-8540

This is to certify that representative samples of ECBT8 - Connectors for Use in Data, Signal, Control and Power Applications Certified for Canada - Component
See Addendum Page for Product Designation(s).

Have been investigated 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: CSA C22.2 NO. 182.3, 2nd Ed., Issue Date: 2016-07-01, Revision Date: 2019-01-01

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

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark. Only the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

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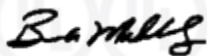
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CERTIFICATE OF COMPLIANCE

Certificate Number UL-CA-2002804-0
Report Reference E52653-20161228
Date 23-Oct-2020

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
PQ50WA, PQ50WA-1U-FL-1B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-1U-FL-2B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-1U-FL-3B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-FL-1A, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-FL-1B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-FL-2A, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-FL-2B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-FL-3B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-PC2-1A may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2U-PC2-2A, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2UM-50S-PC1-1B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2UM-50S-PC1-2B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WA-2UM-50S-PC1-3B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WAS-1UM-46S-PC1-1B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WAS-1UM-46S-PC1-2B, may be followed by (01), (11) or (51)	Connectors
PQ50WA, PQ50WAS-1UM-46S-PC1-3B, may be followed by (01), (11) or (51)	Connectors



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File E52653
Project 4787682527

December 28, 2016

REPORT

on

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

HIROSE ELECTRIC CO., LTD.
Tokyo, Japan

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DESCRIPTION

PRODUCT COVERED:

USR, CNR Component Modular Type Connector, Series PQ50WA:
(Plug)

Cat. Nos. PQ50WA-2U-PC2-1A, may be followed by (01), (11) or (51)
and PQ50WA-2U-PC2-2A, may be followed by (01), (11) or (51).

(Panel Mount Receptacle)

Cat. Nos. PQ50WA-2U-FL-1A, may be followed by (01), (11) or (51) and
PQ50WA-2U-FL-2A, may be followed by (01), (11) or (51).

*(Plug)

Cat. Nos. PQ50WAS-1UM-46S-PC1-1B, may be followed by (01), (11) or (51),
PQ50WAS-1UM-46S-PC1-2B, may be followed by (01), (11) or (51)
and PQ50WAS-1UM-46S-PC1-3B, may be followed by (01), (11) or
(51).

Cat. Nos. PQ50WA-2UM-50S-PC1-1B, may be followed by (01), (11) or (51),
PQ50WA-2UM-50S-PC1-2B, may be followed by (01), (11) or (51)
and PQ50WA-2UM-50S-PC1-3B, may be followed by (01), (11) or
(51).

(Panel Mount Receptacle)

Cat. Nos. PQ50WA-1U-FL-1B, may be followed by (01), (11) or (51),
PQ50WA-1U-FL-2B, may be followed by (01), (11) or (51) and
PQ50WA-1U-FL-3B, may be followed by (01), (11) or (51).

Cat. Nos. PQ50WA-2U-FL-1B, may be followed by (01), (11) or (51),
PQ50WA-2U-FL-2B, may be followed by (01), (11) or (51) and
PQ50WA-2U-FL-3B, may be followed by (01), (11) or (51).

GENERAL:

These devices are Modular Type Connector assembled of different multi-pole connectors intended for factory assembly on copper flexible cord, size as indicated in Ratings table below where the acceptability of combinations is determined by UL LLC. The devices are identified as follows:

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.**

*

RATINGS:

For Plug, Cat. Nos. PQ50WA-2U-PC2-1A and PQ50WA-2U-PC2-2A

For Panel Mount Receptacle, Cat. Nos. PQ50WA-2U-FL-1A and PQ50WA-2U-FL-2A.

* Please refer to the conditions of acceptability for the ratings of specific products.

Disconnecting Use - see Sec Gen for required marking

For Plug, Cat. Nos. PQ50WAS-1UM-46S-PC1-1B, PQ50WAS-1UM-46S-PC1-2B, PQ50WAS-1UM-46S-PC1-3B, PQ50WA-2UM-50S-PC1-1B, PQ50WA-2UM-50S-PC1-2B, and PQ50WA-2UM-50S-PC1-3B.

Panel Mount Receptacle, Cat. Nos. PQ50WA-1U-FL-1B, PQ50WA-1U-FL-2B, PQ50WA-1U-FL-3B, PQ50WA-2U-FL-1B, PQ50WA-2U-FL-2B, and PQ50WA-2U-FL-3B.

Modular Type Connector, Cat. Nos.	Connector (Housing) Part No.	Voltage (AC/DC)	Contact Type Part No.	Current (A)	Wire Size, Cu, Str AWG
PQ50WA-2UM-50S-PC1-1B	PQ50WA-2UM-50S-PC1	600	PQ50-15SCFA	9	14
				8	15
PQ50WA-2UM-50S-PC1-2B		600	PQ50-1618SCFA	6	16
				5	18
PQ50WA-2UM-50S-PC1-3B		600	PQ50-2022SCFA	4	20
				3	22
PQ50WA-2U-FL-1B	PQ50WA-25P-UNIT (10)	600	PQ50A-15PCFA	9	14
				8	15
*PQ50WA-2U-FL-2B		600	PQ50A-1618PCFA	6	16
				5	18
*PQ50WA-2U-FL-3B		600	PQ50A-2022PCFA	4	20
				3	22
PQ50WAS-1UM-46S-PC1-1B	PQ50WAS-1UM-46S-PC1	300	PQ50S-1618SCFA or PQ50S2-1618SCFA	4	16
				4	18
PQ50WAS-1UM-46S-PC1-2B		300	PQ50S-1822SCFA or PQ50S2-1822SCFA	4	18
				3	20
				2.5	22
PQ50WAS-1UM-46S-PC1-3B		300	PQ50S-2428SCFA or PQ50S2-2428SCFA	1.5	24
				1	26
				0.5	28
PQ50WA-1U-FL-1B	PQ50WASX-46P-UNIT (10)	300	PQ50SA-1618PCFA or PQ50SA2-1618PCFA	4	16
				4	18
*PQ50WA-1U-FL-2B		300	PQ50SA-1822PCFA or PQ50SA2-1822PCFA	4	18
				3	20
				2.5	22
*PQ50WA-1U-FL-3B		300	PQ50SA-2428PCFA or PQ50SA2-2428PCFA	1.5	24
				1	26
				0.5	28

Disconnecting Use - see Sec Gen for required marking

NOMENCLATURE: The Series PQ50WA are designated as follows:

Example: Cat. No. PQ50WA-2U-PC2-1A

PQ50WA	S	-2U	-PC2	-1A	(xx)
*I	II	III	IV	V	VI

I: - Series Name, PQ50WA, **PQ50WAS**

II: - Contact Size

None: Standard

S: Small

III: - Number of Housing

-1U: 1 UNIT

-2U: 2 UNITS

***IV: - Connector Type**

-PC1: Plug type with a cable

-PC2: Plug Type with two cables

-FL: Panel Mount Receptacle Type

***V: - Contact Location and Mating Key Location**

-1A, 1B, 2B or 3B: Standard Type

-2A: High Precision Type

VI: Customer specifications -

None or (01), (11) or (51): Indicating packaging differences.

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 for the specific circuits indicated below, when all poles are loaded simultaneously:

Modular Type Connector, Cat. Nos.	Location ID	Connector Part No.	Current, A	Maximum Temperature °C	
				Rise	Recorded Temperature
<u>(Plug)</u> PQ50WA-2U-PC2-1A mated with <u>(Receptacle)</u> PQ50WA-2U-FL-1A	B	PQ50WA/S- 10S/34 (x) -UNIT	11.2	(Plug) : 26.8 (Rece) : 28.8	(Plug) : 51.8 (Rece) : 53.8
			8.5		
			2.6		
			1.2		
	A	PQ50WA/S- 10S/34 (x) -UNIT	1.2	(Plug) : 12.3 (Rece) : 12.3	(Plug) : 37.3 (Rece) : 37.3
<u>(Plug)</u> PQ50WA-2U-PC2-2A mated with <u>(Receptacle)</u> PQ50WA-2U-FL-2A	B	PQ50WA/S- 10S/34 (x) -UNIT	11.2	(Plug) : 19.9 (Rece) : 22.8	(Plug) : 44.9 (Rece) : 47.8
			8.5		
			7.5		
			2.6		
	A	PQ50WA/S- 10S/34 (x) -UNIT	1.2	(Plug) : 13.1 (Rece) : 13.3	(Plug) : 38.1 (Rece) : 38.3
Note: (x) represents "S" or "P"					

Table (CONT'D):

*Modular Type Connector, Cat. Nos.	Contact Part No.	Wire AWG	Current A	Maximum Temperature °C	
				Rise	Recorded Temperature
PQ50WA-2UM-50S-PC1-1B mated with PQ50WA-2U-FL-1B	PQ50-15SCFA/ PQ50A-15PCFA	14	9	16.8	41.8
		15	8	13.5	38.5
PQ50WA-2UM-50S-PC1-2B mated with PQ50WA-2U-FL-2B	PQ50-1618SCFA/ PQ50A-1618PCFA	16	6	14.4	39.4
		18	5	16.3	41.3
PQ50WA-2UM-50S-PC1-3B mated with PQ50WA-2U-FL-3B	PQ50-2022SCFA/ PQ50A-2022PCFA	20	4	15.3	40.3
		22	3	21.7	46.7
PQ50WAS-1UM-46S-PC1-1B mated with PQ50WA-1U-FL-1B	PQ50S-1618SCFA/ PQ50S2-1618SCFA/ PQ50SA-1618PCFA/ PQ50SA2-1618PCFA	18	4	19.0	44.0
PQ50WAS-1UM-46S-PC1-2B mated with PQ50WA-1U-FL-2B	PQ50S-1822SCFA/ PQ50S2-1822SCFA/ PQ50SA-1822PCFA/ PQ50SA2-1822PCFA	18	4	19.3	44.3
		20	3	18.6	43.6
		22	2.5	19.7	44.7
PQ50WAS-1UM-46S-PC1-3B mated with PQ50WA-1U-FL-3B	PQ50S-2428SCFA/ PQ50S2-2428SCFA/ PQ50SA-2428PCFA/ PQ50S2-2428PCFA	24	1.5	12.4	37.4
		26	1	8.8	33.8
		28	0.5	3.6	28.6

Modular Type Connector, Cat. Nos.	Location ID	Connector Part No.	Terminal ID (#1)	Voltage (Vac/dc)	Max. Ampere (A)	Conductor Sizes, AWG, Str	Contact Type, Part No.
(Plug) PQ50WA-2U- PC2-1A	B	PQ50WA/S- 10S/34S- UNIT	A1, A2, A4, A5 B1, B5	600	11.2	17	PQ50- 1618SCFA
			B3	600	2.6	17	
			A3	600	1.2	17	
			B2, B4	600	N/A (Ground)	17	
			C6, C7 D6	600	11.2	17	PQ50S- 1822SCFA or PQ50S2- 1822SCFA
			C1 D1, D2 E7 F6, F7	600	8.5	17	
			C3, C4, D4 E2, F1, F2 G1, G2, G3	600	2.6	17	
			C5 D5 E3 F3 ,F5 G5 ,G6	600	1.2	17	
	C2 D3 ,D7 E1 G4	600	N/A (Ground)	17			
	A	PQ50WTSX- 46S-UNIT	b1 to b6 c1 to c6 d1 to d6 e1 to e6 f1 to f6 g1 to g6	600	1.2	23	
Note (#1): Refer to ILL. 19 for location of Terminal ID.							

Modular Type Connector, Cat. Nos.	Location ID	Connector Part No.	Terminal ID (#1)	Voltage (Vac/dc)	Ampere (Amax)	Conductor Sizes, AWG, Str	Contact Type, Part No.
(Receptacle) PQ50WA-2U-FL-1A	B	PQ50WA/S-10S/34P-UNIT	A1, A2, A4, A5 B1, B5	600	11.2	18	PQ50A-1618PCFA
			B2, B4	600	N/A (Ground)		
			B3	600	2.6	20	PQ50A-2022PCFA
			A3	600	1.2	20	
			C6, C7 D6	600	11.2	16	PQ50SA-1822PCFA or PQ50S2-1822PCFA
			C1 D1, D2 E7 F6, F7	600	8.5	16	
			C2, D7	600	N/A (Ground)	16	
			C5 F2, F4 G6	600	1.2	20	
			C3, C4 D4 E2 F1, F2 G1, G2, G3	600	2.6	23	
			D5 E3 G5	600	1.2	23	
	D3 E1 G4	600	N/A (Ground)	23			
	A	PQ50WTSX-46P-UNIT	b1 to b4 c1 to c3	600	1.2	23	PQ50SA-2428PCFA or PQ50SA2-2428PCFA
			b5, b6 C4, c5, c6 d1 to d6 e1 to e6 f1 to f6 g1 to g6	600	1.2	25	
	Note (#1): Refer to ILL. 19 for location of Terminal ID.						

Modular Type Connector, Cat. Nos.	Locatio n ID	Connector Part No.	Terminal ID (#1)	Voltage (Vac/dc)	Ampere (Amax)	Conductor Sizes, AWG, Str	Contact Type
(Plug) PQ50WA-2U- PC2-2A	B	PQ50WA/S- 10S/34S- UNIT	A4, A5 B5	600	11.2	17	PQ50- 1618SCF A
			A1, A2 B1	600	8.5	17	
			B3	600	2.6	17	
			A3	600	1.2	17	
			B2, B4	600	N/A (Ground)	17	PQ50S- 1822SCF A or PQ50S2- 1822SCF A
			C1, D1, D2	600	8.5	17	
			C6, C7 D6	600	7.5	17	
			E4, E5, E7 F4, F6, F7	600	2.6	17	
	C3, C4, D4 E2, F1, F2 G1, G2, G3	600	1.2	17	PQ50S- 2428SCF A or PQ50S2- 2428SCF A		
	C5 D5 E3 F3 G5, G6	600	N/A (Ground)	17			
	D3 E1, E6	600	1.2	23			
	b1 to b6 c1 to c6 d1 to d6 e1 to e6 f1 to f6 g1 to g6	600	1.2	23			
Note (#1): Refer to ILL. 19 for location of Terminal ID.							

Table (CONT'D):

Modular Type Connector, Cat. Nos.	Location ID	Connector Part No.	Terminal ID (#1)	Voltage (Vac/dc)	Ampere (Amax)	Conductor Sizes, AWG, Str	Contact Type
(Receptacle) PQ50WA-2U-FL- 2A	B	PQ50WA/S- 10S/34P- UNIT	A1, A2, A4, A5 B1, B5	600	11.2	16	PQ50A- 1618PCFA
			B2, B4	600	N/A (Ground)		
			B3	600	2.6	20	PQ50A- 2022PCFA
			A3	600	1.2	20	
			C1 D1, D2	600	8.5	16	PQ50SA- 1822PCFA A or PQ50S2- 1822PCFA
			C6, C7 D6 E4, E5, E7 F4, F6, F7	600	7.5	16	
			E6	600	N/A (Ground)	16	
			C3, C4 D4 E2, F1, F2 G1, G2, G3	600	2.6	20	
			C5 F3 G6	600	1.2	20	
			D3 E1 G4	600	N/A (Ground)	20	
			D5 E3 G5	600	1.2	23	PQ50SA- 2428PCFA or PQ50SA2- 2428PCFA
	A	PQ50WTSX- 46P-UNIT	b1 to b4 c1 to c3	600	1.2	23	PQ50SA- 2428PCFA or PQ50SA2- 2428PCFA
			b5, b6 c4, c5, c6 d1 to d6 e1 to e6 f1 to f6 g1 to g6	600	1.2	25	

Note (#1): Refer to ILL. 19 for location of Terminal ID.