

Certificate of Compliance

Certificate Number:

UL-US-L52653-111-
71708102-14

Report Reference:

E52653-20180717

Issue Date:

2024-09-27

Issued to:

**HIROSE ELECTRIC CO., LTD.
2-6-3 NAKAGAWA CHUOH
TSUZUKI-KU YOKOHAMA-SHI, Kanagawa 224-8540
Japan**

This certificate confirms 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.

UL 1977, Edition 4, Issue Date 2022-12-07

Additional Information:

See UL Product iQ® 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.



A handwritten signature in black ink that reads 'David Piecuch'.

David Piecuch
UL Mark Certification Program Owner

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact UL Solutions Customer Service at <https://www.ul.com/contact-us>.

CERTIFICATE OF COMPLIANCE

Certificate number UL-US-L52653-111-71708102-14
Report reference E52653-20180717
Date 2024-09-27

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

Model	Product Description
DF51 , DF51, followed by -2EP thru -6EP or -4DEP thru -30DEP, followed by -2C, may be followed by (01) thru (99)	Socket Type
DF51 , DF51, followed by -2S thru -7S or 4DS thru -30DS, followed by -2C, may be followed by (01) thru (99)	Socket Type
DF51 , DF51, may be followed by A, followed by -2P thru -6P or -4DP thru -30DP, followed by -2DSA or -2DS, may be followed by (01) thru (99)	Socket Type
Series DF51 , DF51B-10S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	Socket Type
DF51 , DF51B-2EP-2A(**)	Connectors
DF51 , DF51B-3EP-2A(**)	Connectors
Series DF51 , DF51B-4/10EP-2A-4PRT(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type
DF51 , DF51B-4EP-2A(**)	Connectors
DF51 , DF51B-6EP-2A(**)	Connectors
DF51 , DF51B-7EP-2A(**)	Connectors
Series DF51 , DF51BA-4S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type
Series DF51 , DF51BB-4S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type
Series DF51 , DF51BC-4S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type
Series DF51 , DF51BD-4S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type



Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact UL Solutions Customer Service at <https://www.ul.com/contact-us>.

Certificate of Compliance

Certificate Number:

UL-CA-2306811-5

Report Reference:

E52653-20180717

Issue Date:

2024-09-27

Issued to:

**HIROSE ELECTRIC CO., LTD.
2-6-3 NAKAGAWA CHUOH
TSUZUKI-KU YOKOHAMA-SHI, Kanagawa 224-8540
Japan**

This certificate confirms 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 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.

CSA C22.2 No. 182.3, 2nd Ed., Issue Date: 2016-07, Revision Date: 2021-5

Additional Information:

See UL Product iQ® 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.



David Piecuch
UL Mark Certification Program Owner



Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact UL Solutions Customer Service at <https://www.ul.com/contact-us>.

CERTIFICATE OF COMPLIANCE

Certificate number UL-CA-2306811-5
Report reference E52653-20180717
Date 2024-09-27

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

Model	Product Description
DF51 , DF51, followed by -2EP thru -6EP or -4DEP thru -30DEP, followed by -2C, may be followed by (01) thru (99)	Socket Type
DF51 , DF51, followed by -2S thru -7S or 4DS thru -30DS, followed by -2C, may be followed by (01) thru (99)	Socket Type
DF51 , DF51, may be followed by A, followed by -2P thru -6P or -4DP thru -30DP, followed by -2DSA or -2DS, may be followed by (01) thru (99)	Socket Type
Series DF51 , DF51B-10S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	Socket Type
DF51 , DF51B-2EP-2A(**)	Connectors
DF51 , DF51B-3EP-2A(**)	Connectors
Series DF51 , DF51B-4/10EP-2A-4PRT(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type
DF51 , DF51B-4EP-2A(**)	Connectors
DF51 , DF51B-6EP-2A(**)	Connectors
DF51 , DF51B-7EP-2A(**)	Connectors
Series DF51 , DF51BA-4S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type
Series DF51 , DF51BB-4S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type
Series DF51 , DF51BC-4S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type
Series DF51 , DF51BD-4S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type



Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact UL Solutions Customer Service at <https://www.ul.com/contact-us>.

File E52653
Project 4788449769

July 17, 2018

REPORT

on

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

Hirose Electric Co Ltd
Kanagawa, Japan

Copyright © 2018 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 DF51.

Cat. Nos. DF51, may be followed by A, followed by -2P thru -6P or -4DP thru -30DP, followed by -2DSA or -2DS, may be followed by (01) thru (99).

Cat. Nos. DF51, followed by -2S thru -7S or -4DS thru -30DS, followed by -2C, may be followed by (01) thru (99).

Cat. Nos. DF51, followed by -2EP thru -6EP or -4DEP thru -30DEP, followed by -2C, may be followed by (01) thru (99).

Cat. No. DF51B-2EP-2A(**), DF51B-3EP-2A(**), DF51B-4EP-2A(**), DF51B-6EP-2A(**) and DF51B-7EP-2A(**).

(In-Line plug) Cat. No. DF51B-4/10EP-2A-4PRT().**

(Socket) Cat. Nos. DF51B-10S-2C(), DF51BA-4S-2C(**), DF51BB-4S-2C(**), DF51BC-4S-2C(**) and DF51BD-4S-2C(**).**

(**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations

GENERAL:

These devices are multi-pole connectors intended for factory assembly on copper wire sizes as indicated in Ratings table below and printed wiring boards 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:

Connector, Cat. Nos.	Contact Type	Voltage, (Vac/Vdc)	Ampere (A)	Conductor Sizes, AWG (Str)
DF51-#P-2DSA (**) DF51A-#P-2DSA (**) DF51-#P-2DS (**) DF51A-#P-2DS (**) DF51-#DP-2DSA (**) DF51A-#DP-2DSA (**) DF51-#DP-2DS (**) DF51A-#DP-2DS (**)	Header Pin, Solder Type	30	2.0	(+)
DF51-#S-2C (**) DF51-#DS-2C (**)	DF11-22SC (*)	30	2.0	22
	DF11-2428SC (*)		1.0	24 - 28
	DF11-30SC (*)		0.5	30
DF51-#EP-2C (**) DF51-#DEP-2C (**)	DF11-EP22PC (*)	30	2.0	22
	DF11-EP2428PC (*)		1.0	24 - 28
DF51B-#EP-2A (**)	Adapter contact	30	2.0	N/A
DF51B-4/10EP-2A-4PRT (**)	Power Contact	30	2.0	N/A
	Signal Contact		2.0	N/A
*DF51B-10S-2C (**) DF51BA-4S-2C (**) DF51BB-4S-2C (**) DF51BC-4S-2C (**) DF51BD-4S-2C (**)	DF11-22SC (*)	30	2.0	22
	DF11-2428SC (*)		1.0	24 - 28
	DF11-30SC (*)		0.5	30
(+) Mounted on printed wiring boards.				

Disconnecting Use - see Sec Gen for required marking

NOMENCLATURE:

The Series DF51 are designated as follows:

Example:

<u>DF51</u>	<u>A</u>	<u>-30</u>	<u>DP</u>	<u>-2</u>	<u>DSA</u>	<u>(**)</u>
I	II	III	IV	V	VI	VII

I: - Series Name: DF51

II: - Guide Key Style

None: Guide-boss type

A: Without Guide-boss type

*B: Split signal contacts

BA to BD: Keying

III: - Number of Poles

Single-row type: 2 to 7 poles

Double-row type: 4 to 30 poles

4/10EP: both 4 poles and 10 poles

IV: - Connector Style

P: Single-row pin Header

S: Single-row Socket

EP: Single-row In-line plug

DP: Double-row pin Header

DS: Double-row Socket

DEP: Double-row In-line plug

V: - Contact Pitch

-2: 2 mm

VI: - Terminal Style

DSA: Straight pin Header

DS: Right angle pin Header

C: Crimp type

A: Adapter contact

A-4PRT: Number of ports for branch connector with adapter contacts

VII: - Customer Specifications

(01) to (99) or blank: Indicating packing differences or plating variations.

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
DF51A-30DP-2DSA Mating with DF51-30DS-2C	22	2.0	7.7	32.7
	28	1.0	6.2	31.2
	30	0.5	2.7	27.7
DF51-30DEP-2C Mating with DF51-30DS-2C	22	2.0	11.5	36.5
	28	1.0	10.5	35.5
DF51B-7EP-2A mating with DF51-7S-2C	22	2.0	4.4	29.4
DF51B-4/10EP-2A-4PRT mating with DF51B-10S-2C, DF51BA-4S-2C, DF51BB-4S-2C, DF51BC-4S-2C, DF51BD-4S-2C	22	2.0	6.4	31.4
	30	1.0	4.7	29.7
	30	0.5	2.8	27.8