

# 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

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



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# 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



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# 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
<b>DF51</b> , DF51, followed by -2EP thru -6EP or -4DEP thru -30DEP, followed by -2C, may be followed by (01) thru (99)	Socket Type
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<b>Series DF51</b> , DF51B-10S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	Socket Type
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<b>Series DF51</b> , DF51B-4/10EP-2A-4PRT(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type
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<b>Series DF51</b> , DF51BB-4S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type
<b>Series DF51</b> , DF51BC-4S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type
<b>Series DF51</b> , DF51BD-4S-2C(**), , (**) - (01) to (99) or blank: Indicating packing differences or Insulator material color variations	In Line Plug Type



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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

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## 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 - <b>28</b>
	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:

DF51	A	-30	DP	-2	DSA	(**)
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
<b>DF51B-4/10EP-2A-4PRT</b> <b>mating with</b> <b>DF51B-10S-2C, DF51BA-4S-2C,</b> <b>DF51BB-4S-2C, DF51BC-4S-2C,</b> <b>DF51BD-4S-2C</b>	<b>22</b>	<b>2.0</b>	<b>6.4</b>	<b>31.4</b>
	<b>30</b>	<b>1.0</b>	<b>4.7</b>	<b>29.7</b>
	<b>30</b>	<b>0.5</b>	<b>2.8</b>	<b>27.8</b>