# Certificate of Compliance

Issued to:

#### **Certificate Number:**

UL-US-L52653-111-62108102-10

#### **Report Reference:**

E52653-20180126

**Issue Date:** 2024-01-25

#### 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.

David Piecuch UL Mark Certification Program Manager

Solutions

### CERTIFICATE OF COMPLIANCE

Certificate number Report reference Date

UL-US-L52653-111-62108102-10 E52653-20180126 2024-01-25

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
Series DF60F, DF60F-2EP-10.16C(**)	Connectors
Series DF60F, DF60F-2P-10.16DSA(**)	Connectors
Series DF60F, DF60F-2S-10.16C(**)	Connectors
Series DF60F, DF60F-3EP-10.16C(**)	Connectors
Series DF60F, DF60F-3P-10.16DSA(**)	Connectors
Series DF60F, DF60F-3S-10.16C(**)	Connectors
Series DF60F, DF60FR-2EP-10.16C(**)	Connectors
Series DF60F, DF60FR-2P-10.16DSA(**)	Connectors
Series DF60F, DF60FR-2S-10.16C(**)	Connectors
Series DF60F, DF60FR-3EP-10.16C(**)	Connectors
Series DF60F, DF60FR-3P-10.16DSA(**)	Connectors
Series DF60F, DF60FR-3S-10.16C(**)	Connectors
Series DF60F, DF60FS-2S-10.16C(**)	Connectors
Series DF60F, DF60FS-3S-10.16C(**)	Connectors
Series DF60F, DF60FSR-2S-10.16C(**)	Connectors
Series DF60F, DF60FSR-3S-10.16C(**)	Connectors

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David Piecuch UL Mark Certification Program Manager



# Certificate of Compliance

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 <u>https://iq.ulprospector.com</u> 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 Manager

**U** Solutions

Certificate Number:

UL-CA-2308697-3

**Report Reference:** 

E52653-20180126

Issue Date:

2024-01-25

### CERTIFICATE OF COMPLIANCE

Certificate number Report reference

Date

UL-CA-2308697-3 E52653-20180126 2024-01-25

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
Series DF60F, DF60F-2EP-10.16C(**)	Connectors
Series DF60F, DF60F-2P-10.16DSA(**)	Connectors
Series DF60F, DF60F-2S-10.16C(**)	Connectors
Series DF60F, DF60F-3EP-10.16C(**)	Connectors
Series DF60F, DF60F-3P-10.16DSA(**)	Connectors
Series DF60F, DF60F-3S-10.16C(**)	Connectors
Series DF60F, DF60FR-2EP-10.16C(**)	Connectors
Series DF60F, DF60FR-2P-10.16DSA(**)	Connectors
Series DF60F, DF60FR-2S-10.16C(**)	Connectors
Series DF60F, DF60FR-3EP-10.16C(**)	Connectors
Series DF60F, DF60FR-3P-10.16DSA(**)	Connectors
Series DF60F, DF60FR-3S-10.16C(**)	Connectors
Series DF60F, DF60FS-2S-10.16C(**)	Connectors
Series DF60F, DF60FS-3S-10.16C(**)	Connectors
Series DF60F, DF60FSR-2S-10.16C(**)	Connectors
Series DF60F, DF60FSR-3S-10.16C(**)	Connectors

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David Piecuch UL Mark Certification Program Manager



File E52653 Project 4788271763

January 26, 2018

REPORT

On

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

Hirose Electric Co Ltd Kanagawa, Japan

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File E52653	Vol. 11	Sec. 35	Page 1	Issued:	2018-01-26
		and Report		Revised:	2024-01-22

DESCRIPTION

PRODUCT COVERED:

USR, CNR Component Connector, Series DF60F

Cat. Nos. DF60F-3P-10.16DSA(\*\*), DF60FR-3P-10.16DSA(\*\*), DF60F-3S-10.16C(\*\*), DF60FR-3S-10.16C(\*\*), DF60FR-3EP-10.16C(\*\*), DF60FS-3S-10.16C(\*\*), DF60FS-3S-10.16C(\*\*) and DF60FSR-3S-10.16C(\*\*).

Cat. Nos. DF60F-2P-10.16DSA(\*\*), DF60FR-2P-10.16DSA(\*\*), DF60F-2S-10.16C(\*\*), DF60FR-2S-10.16C(\*\*), DF60FR-2EP-10.16C(\*\*), DF60FS-2S-10.16C(\*\*), DF60FS-2S-10.16C(\*\*), DF60FS-2S-10.16C(\*\*).

(\*\*) - may be followed by 01 thru 99

#### GENERAL:

These devices are multi-pole connectors intended for factory assembly on copper wire sizes 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.

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RATINGS:

			Conductor			
Contact type	Voltage	U	SR	CNR		Sizos
contact type	(Vac/Vdc)	2	3	2	3	AWG Str
		poles	poles	poles	poles	11110 001
Header Pin, Solder Type	600	65	55	45	42	(+)
DF60-8SCA DF60-8SCFA	600	65	55	45	42	8
DF60-1012SCA DF60-1012SCFA	600	55	50	35	34	10
	600	40	40	28	28	12
DF60S-8SCA DF60S-8SCFA	600	65	55	45	42	8
DF60S-1012SCA	600	55	50	35	34	10
DF60S-1012SCFA	600	40	40	28	28	12
DF60-1012PCA(07) DF60-1012PCFA(07)	600	65	55	45	42	8
DF60-1012PCA(07)	600	55	50	35	34	10
DF60-1012PCFA(07)	600	40	40	28	28	12
	Contact type Header Pin, Solder Type DF60-8SCA DF60-8SCFA DF60-1012SCA DF60-1012SCFA DF60S-8SCFA DF60S-8SCFA DF60S-1012SCFA DF60S-1012SCFA DF60-1012PCFA(07) DF60-1012PCFA(07) DF60-1012PCFA(07)	Contact type      Voltage (Vac/Vdc)        Header Pin, Solder Type      600        DF60-8SCA DF60-8SCA      600        DF60-1012SCA      600        DF60S-8SCA      600        DF60S-1012SCFA      600        DF60-1012PCA(07)      600        DF60-1012PCA(07)      600        DF60-1012PCA(07)      600	Contact type      Voltage (Vac/Vdc)      Uter 2 poles        Header Pin, Solder Type      600      65        DF60-8SCA DF60-8SCFA      600      65        DF60-1012SCA DF60-1012SCFA      600      40        DF60S-8SCFA      600      55        DF60S-1012SCFA      600      40        DF60S-1012SCFA      600      55        DF60S-1012SCFA      600      65        DF60S-1012SCFA      600      65        DF60S-1012SCFA      600      65        DF60S-1012PCA(07)      600      65        DF60-1012PCA(07)      600      55        DF60-1012PCA(07)      600      55        DF60-1012PCA(07)      600      40	Contact type      Voltage (Vac/Vdc)      USR        Header Pin, Solder Type      2      3        DF60-8SCA DF60-8SCFA      600      65      55        DF60-1012SCA DF60-1012SCFA      600      55      50        DF60S-8SCFA      600      40      40        DF60S-1012SCFA      600      55      50        DF60S-1012SCFA      600      40      40        DF60S-1012SCFA      600      55      50        DF60S-1012SCFA      600      55      50        DF60S-1012SCFA      600      55      50        DF60S-1012SCFA      600      55      50        DF60S-1012PCA(07)      600      65      55        DF60-1012PCA(07)      600      65      50        DF60-1012PCA(07)      600      55      50        DF60-1012PCA(07)      600      40      40	Contact type      Voltage (Vac/Vdc)      Ampere (A)        Header Pin, Solder Type      2      3      2        DF60-8SCA      600      65      55      45        DF60-8SCFA      600      65      55      45        DF60-1012SCA      600      55      50      35        DF605-8SCFA      600      65      55      45        DF605-1012SCA      600      55      50      35        DF605-8SCFA      600      65      55      45        DF605-1012SCA      600      40      40      28        DF605-1012SCFA      600      55      50      35        DF605-1012SCA      600      65      55      45        DF605-1012SCFA      600      65      55      45        DF605-1012SCFA      600      65      55      45        DF605-1012PCA(07)      600      65      55      45        DF60-1012PCA(07)      600      55      50      35        DF60-1012PCA(07)      600      55      50 <t< td=""><td>Contact type      Voltage (Vac/Vdc)      Usr      CNR        2      3      2      3        poles      poles      poles      poles      poles        Header Pin, Solder Type      600      65      55      45      42        DF60-8SCA DF60-8SCFA      600      65      55      45      42        DF60-1012SCA DF60-1012SCFA      600      55      50      35      34        DF60s-8SCFA      600      65      55      45      42        DF60s-1012SCFA      600      40      40      28      28        DF60s-1012SCFA      600      55      50      35      34        DF60s-1012SCFA      600      40      40      28      28        DF60s-1012SCFA      600      40      40      28      28        DF60s-1012SCFA      600      65      55      45      42        DF60s-1012SCFA      600      65      55      45      42        DF60s-1012PCA(07)      600      65      55      45      42</td></t<>	Contact type      Voltage (Vac/Vdc)      Usr      CNR        2      3      2      3        poles      poles      poles      poles      poles        Header Pin, Solder Type      600      65      55      45      42        DF60-8SCA DF60-8SCFA      600      65      55      45      42        DF60-1012SCA DF60-1012SCFA      600      55      50      35      34        DF60s-8SCFA      600      65      55      45      42        DF60s-1012SCFA      600      40      40      28      28        DF60s-1012SCFA      600      55      50      35      34        DF60s-1012SCFA      600      40      40      28      28        DF60s-1012SCFA      600      40      40      28      28        DF60s-1012SCFA      600      65      55      45      42        DF60s-1012SCFA      600      65      55      45      42        DF60s-1012PCA(07)      600      65      55      45      42

Note \* - denoting number of contact

(+) - Mounted on printed wiring boards.

Disconnecting Use - see Sec Gen for required marking

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NOMENCLATURE:

The Series DF60F are designated as follows:

Example:

DF60F	S	R	-3	Р	-10.16	DSA	(**)
I	II	III	IV	V	VI	VII	VIII

- I: Series Name: DF60F
- II: connector style
  None: Standard
  S: side feed
- III: Guide Key Style None: Left guide key R: Right guide key
- IV: Number of Poles -2: 2 poles -3: 3 poles
  - V: Connector Style P: Pin Header S: Socket EP: In-line plug
- VI: Contact Pitch -10.16: 10.16 mm
- VII: Terminal Style DSA: Straight pin header C: Crimp type
- VIII: Customer Specifications
   (01) to (99) or blank: Indicating packing differences or Insulator
   material color variations.

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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:

	Wire Maximum Tempe		perature °C	
	Size,			Recorded
Cat Nos.	AWG	Current, A	Rise	Temperature
	0	55 (for USR)	32.5	57.5
	8	42 (for CNR)	19.4	44.4
DF60F-3P-10.16DSA	1.0	50 (for USR)	40.8	65.8
Mating with DF60F-3S-10.16C	10	34 (for CNR)	20.3	45.3
	1.0	40 (for USR)	41.0	66.0
	12	28 (for CNR)	20.0	40.0
DF60F-3EP-10.16C	0	55 (for USR)	46.0	71.0
	ŏ	42 (for CNR)	27.4	52.4
	10	50 (for USR)	51.7	76.7
Mating with DF60F-3S-10.16C		34 (for CNR)	25.5	50.5
	12	40 (for USR)	54.1	79.1
		28 (for CNR)	27.0	52.0
	8	65 (USR)	42.2	67.2
DF60F-2P-10.16DSA		45 (CNR)	19.9	44.9
Mating with DF60F-2S-10.16C	1.0	55 (USR)	40.3	65.3
	ΤŪ	35 (CNR)	14.2	39.2
	0	65 (USR)	47.2	72.2
DF60F-2EP-10.16C	X	45 (CNR)	21.9	46.9
Mating with DF60F-2S-10.16C	1.0	55 (USR)	68.0	93.0
	10	35 (CNR)	19.5	44.5

(CONT'D)

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	Wire		Maximum Tem	perature °C
Cat Nos.	Size, AWG	Current, A	Rise	Recorded Temperature
DF60FS-3S-10.16C Mating with DF60F-3EP-10.16C		55 (for USR)	44.2	69.2
	8	42 (for CNR)	26.8	51.8
	1.0	50 (for USR)	65.3	90.3
	10	34 (for CNR)	27.4	52.4
	12	40 (for USR)	56.3	81.3
		28 (for CNR)	30.0	55.0
	8	65 (for USR)	57.9	82.9
DF60FS-2S-10.16C Mating with DF60F-2EP-10.16C		45 (for CNR)	27.4	52.4
	1.0	55 (for USR)	62.0	87.0
	10	35 (for CNR)	25.1	50.1
Note: Test results of Header w	ere represe	ented by test res	sults of In-lin	e Plug.

#### (CONT'D)