Certificate of Compliance

Certificate Number(s):

UL-US-L52653-111-30219991-18

Report Reference:

E52653-19991203

Issue Date:

2025-12-17

Issued to:

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

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.

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Look for the UL Recognized Component Mark on the product.

David Piecuch
UL Mark Certification Program Manager

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CERTIFICATE OF COMPLIANCE

Certificate number(s): UL-US-L52653-111-30219991-18
Report reference: E52653-19991203
Issue Date: 2025-12-17

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

Connectors

Model(s): Series DF22, : DF22 *, followed by B, BA, S or None, may be followed by A, B, C, R, L, AR, AL, BR, BL, B/C, CR, or CL, followed by 1, 2, 3, 4, or 5, followed by S, P, DS, DEP, EP, or RS/P may be followed by alphanumeric characters.*

Model(s): Series DF22, : DF22S#F-4S-7.92C(YY), DF22B#F-4EP-7.92A-3PRT(YY) and DF22BA#F-4EP-7.92A-3PRT(YY) *, where # represents A, B, C, R, L, AR, AL, BR, BL, CR, CL, or None, and (YY) represents None or (01)-(99).*

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Certificate of Compliance

Certificate Number(s):

UL-CA-2135346-12

Report Reference:

E52653-19991203

Issue Date:

2025-12-17

Issued to:

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

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:
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Look for the UL Recognized Component Mark on the product.

David Piecuch
UL Mark Certification Program Manager

UL Solutions

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CERTIFICATE OF COMPLIANCE

Certificate number(s): UL-CA-2135346-12
Report reference: E52653-19991203
Issue Date: 2025-12-17

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

Connectors

Model(s): Series DF22, : DF22 , *followed by B, BA, S or None, may be followed by A, B, C, R, L, AR, AL, BR, BL, B/C, CR, or CL, followed by 1, 2, 3, 4, or 5, followed by S, P, DS, DEP, EP, or RS/P may be followed by alphanumeric characters.*

Model(s): Series DF22, : DF22S#F-4S-7.92C(YY), DF22B#F-4EP-7.92A-3PRT(YY) and DF22BA#F-4EP-7.92A-3PRT(YY) , *where # represents A, B, C, R, L, AR, AL, BR, BL, CR, CL, or None, and (YY) represents None or (01)-(99).*

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File E52653
Project 99SC49884

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REPORT

ON

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

Hirose Electric Co., Ltd.
Yokohama, Japan

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DESCRIPTION

PRODUCT COVERED:

USR, CNR Component - Connectors and optional retainer, Series DF22:

Cat. No. DF22, followed by B, BA, S or None, may be followed by A, B, C, R, L, AR, AL, BR, BL, B/C, CR, or CL, followed by 1, 2, 3, 4, or 5, followed by S, P, DS, DEP, EP, or RS/P may be followed by alphanumeric characters.

Cat. No. DF22B#F-4EP-7.92A-3PRT(YY), DF22BA#F-4EP-7.92A-3PRT(YY) and DF22S#F-4S-7.92C(YY),

where # represents A, B, C, R, L, AR, AL, BR, BL, CR, CL, or None, and (YY) represents None or (01)-(99).

GENERAL:

These devices are multi-pole connectors employing contacts of the crimp and solder termination type for use in electrical equipment where the acceptability of the combinations is determined by Underwriters Laboratories Inc.

ELECTRICAL RATING:

Connector Type	Crimp Contact Type	Wire Size(AWG)	USR Rating(Max), V, A	CNR Rating(Max), V, A
Retainer:				
DF22 t-rRS/P-7.92(YY)	---	--	--	--
Pin Header:				
DF22#-1P-7.92$(YY)	---	--	600, 43	600, 30
DF22#-2P-7.92$(YY)	---	--	600, 38.5	600, 28
DF22#-3P-7.92$(YY)	---	--	600, 38.5	600, 28
DF22#-4P-7.92$(YY)	---	--	600, 33.5	600, 24
DF22#-5P-7.92$(YY)	---	--	600, 33.5	600, 24

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ELECTRICAL RATING: (CONT'D)

Connector Type	Crimp Contact Type	Wire Size(AWG)	USR Rating(Max), V, A	CNR Rating(Max), V, A
Socket:				
DF22#-1S-7.92C(YY)	DF22a-1012SC#(YY)	10	600, 43	600, 30
		12	600, 38	600, 25
	DF22a-1416SC#(YY)	14	600, 26	600, 20
		16	600, 21	600, 15
DF22@#-2S-7.92C(YY), and DF22@#-3S-7.92C(YY)	DF22a-1012SC#(YY)	10	600, 38.5	600, 28
		12	600, 32	600, 20
	DF22a-1416SC#(YY)	14	600, 23	600, 18
		16	600, 21	600, 15
DF22#-4S-7.92C(YY) DF22S#F-4S-7.92C(YY)	DF22a-1012SC#(YY)	10	600, 33.5	600, 24
		12	600, 30	600, 18
	DF22a-1416SC#(YY)	14	600, 22	600, 15
		16	600, 19	600, 13
DF22#-5S-7.92C(YY)	DF22a-1012SC#(YY)	10	600, 33.5	600, 24
		12	600, 30	600, 18
Plug:				
DF22#-2EP-7.92C(YY), and DF22#-3EP-7.92C(YY)	DF22a-1416PC#(YY)	14	600, 23	600, 18
		16	600, 21	600, 15
DF22#-4EP-7.92C(YY), and DF22#-4DEP-7.92C(YY)	DF22a-1416PC#(YY)	14	600, 22	600, 15
		16	600, 19	600, 13
DF22#-1EP-7.92C(YY)	DF22a-1416PC#(YY)	14	600, 26	600, 20
		16	600, 21	600, 15
Adapter:				
DF22@#-2EP-7.92A-3PRT(YY), DF22@#-3EP-7.92A-3PRT(YY)	--	--	600, 38.5	600, 28
DF22@#F-4EP-7.92A-3PRT(YY)	--	--	600, 33.5	600, 24

Disconnecting Use (see Sec Gen for required marking).

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Nomenclature –

Pin Header

DF22#-nP-7.92$(YY)

DF22: Series name
#: keying, R, L or None
n: number of contact 1-5
P: type (Pin Header)
7.92: contact pitch
$: kind of terminal: DSA (straight pin header) DS (right angle pin header)
(YY): customer specifications, None or (01)-(99)

Socket

(1) DF22@#%-nS-7.92C(YY)

DF22: Series name
@: lock type, S(side lock) or None(center lock)
#: keying, A, B, C, R, L, AR, AL, BR, BL, CR, CL, or None
%: F (finger protect type) or blank (non-finger protect type)
n: number of contact 1-5
(For center lock type) 1-5
(For side lock type) 2, 3 or 4
S: type (Socket)
7.92: contact pitch
C: solderless terminal case
(YY): customer specifications, None or (01)-(99)

(2) DF22#-4DS-7.92C(YY)

DF22: Series name
#: keying, A, B, C, R, L, AR, AL, BR, BL, CR, CL, or None
4: number of contact 4
DS: type (Socket)
7.92: contact pitch
C: solderless terminal case
(YY): customer specifications, None or (01)-(99)

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Nomenclature – Cont'd.

Plug

(1) DF22#-qEP-7.92C(YY)

DF22: Series name
#: keying, A, R, L, AR, AL, or None
q: number of contact 1-3
EP: type (plug)
7.92: contact pitch
C: solderless terminal case
(YY): customer specifications, None or (01)-(99)

(2) DF22#-4DEP-7.92C(YY)

DF22: Series name
#: keying, A, R, L, AR, AL, or None
4: number of contact 4
DEP: type (plug)
7.92: contact pitch
C: solderless terminal case
(YY): customer specifications, None or (01)-(99)

Adapter

DF22@#-nEP-7.92A-3PRT(YY)

DF22: Series name
@: Kind of adapter type, B(flange type) or BA(non-flange type)
#: keying, A, B, C, R, L, AR, AL, BR, BL, CR, CL, or None
%: F (finger protect type) or blank (non-finger protect type)
n: number of contact 2, 3 or 4
EP: type (plug)
7.92: contact pitch
A: branch adapter case
3: number of branches
PRT: branch adapter case
(YY): customer specifications, None or (01)-(99)

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Nomenclature – Cont'd.

Crimp Contact

DF22a-wb#(YY)

a: crimp type:
A (longer insulation crimp section)
None (shorter insulation crimp section)
w: wire size:
1012 (10 or 12 AWG for Socket contact only)
1416 (14 or 16 AWG)
b: contact type/packing type
SCF (socket contact, reel)
SC (socket contact, bulk)
PCF (plug contact, reel)
PC (plug contact, bulk)
#: contact plating
A (gold plating)
None
YY: customer specification, None or (01)-(99)

Retainer

DF22t-rRS/P-7.92(YY)

DF22: Series name
t: RS/P, B/C or none: stands for applicable connector (DF22) type.
r: number of contact 1-5
7.92: contact pitch
(YY): customer specifications, None or (01)-(99)

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***TECHNICAL** CONSIDERATIONS (NOT FOR UL REPRESENTATIVE'S USE):

* Use - For use only on complete equipment where the acceptability of the combination is determined by **UL LLC.**

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.
*

* Conditions of Acceptability - **For use only in (or with) complete equipment where the acceptability of the combination is determined by UL LLC.**

1. These devices should be used only where they will not interrupt the current.

2. Pin Header Model DF2#-2P-7.92$(YY) mated with Socket Model DF22#-2S-7.92C(YY) have been investigated for a current of 15 A using No. 16 AWG connectors (carried by each pole) with a maximum temperature rise of 21°C and a current of 18 A using No. 14 AWG connectors (carried by each pole) with a maximum temperature rise of 23°C.

3. The placement of these devices within the equipment enclosure should be such that spacings between the live parts and the equipment are suitable for the particular application.

4. The factory assembly contacts shown in Ills. 2, 3A and 6 have been investigated for the following wire ranges (and maximum tensile forces.)

Contact No.	Wire Range (AWG)	Tensile Force (lb)
DF22a-1416PC#(YY)	14	20
DF22a-1416PC#(YY)	16	20
DF22a-1012SC#(YY)	10	20
DF22a-1012SC#(YY)	12	20

5. Contact No. DF22a-1416SC#(YY) shown in Ill. 3 was not subject to a Conductor Secureness Test. Consideration should be given to conduct this test in the end product.

6. USR: The 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 85°C.

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7. CNR: The operating temperature rise of these devices should not exceed 30°C.

8. Plug Model DF22#-4dep-7.92C(YY) mated with Socket Model DF22#-4DS-7.92C(YY) have been investigated for a current of 13 A using No. 16 AWG connectors (carried by each pole) with a maximum temperature rise of 23.5°C.

9. Plug Model DF22#-3EP-7.92C(YY) mated with Socket Model DF22#-3S-7.92C(YY) have been investigated for a current of 15 A using No. 16 AWG connectors (carried by each pole) with a maximum temperature rise of 26.1°C and a current of 18 A using No. 14 AWG connectors (carried by each pole) with a maximum temperature rise of 29.6°C.

10. Plug Model DF22#-1EP-7.92C(YY) mated with Socket Model DF22#-1S-7.92C(YY) have been investigated for a current of 20 A using No. 14 AWG connectors with a maximum temperature rise of 24°C.

11. These devices have been subjected to the Temperature test described in UL 1977, the Standard for Component Connectors for Use in Data, Signal, Control and Power Applications, with the rated currents and maximum temperature rise values tabulated below. The conductors terminated by the device and other associated components are to be reviewed in the end-use to determine whether the temperature rise from the connector exceeds their maximum operating temperature ratings.

Connector Model	Contact Model	No. AWG	USR/CNR Current	USR/CNR Max. Temp Rise
DF22#-3S-7.92C	**DF22a-1012SC#(YY)**	**10**	**38.5 A/28 A**	**85°C/30°C**
DF22#-5S-7.92C	DF22a-1012SC#(YY)	10	**33.5 A/24 A**	**85°C/30°C**
DF22#-5S-7.92C	DF22a-1012SC#(YY)	12	25 A/20 A	42°C/28°C

*

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11a. The following devices have been subjected to the Temperature test described in UL 1977, the Standard for Component Connectors for Use in Data, Signal, Control and Power Applications, with the rated currents and max temperatures recorded.

Connector Model	Contact Model	No. AWG	USR Current	USR/Max. Temp
DF22#-1S-7.92C(YY)	DF22-1416SC#(YY)	14	26 A	64.5
DF22#-1S-7.92C(YY)	DF22-1416SC#(YY)	16	21 A	58.6
DF22#-2S-7.92C(YY)	DF22-1416SC#(YY)	14	23 A	81.0
DF22#-3S-7.92C(YY)	DF22-1416SC#(YY)	14	23 A	81.0
DF22#-2S-7.92C(YY)	DF22-1416SC#(YY)	16	21 A	81.0
DF22#-3S-7.92C(YY)	DF22-1416SC#(YY)	16	21 A	65.3
DF22#-4S-7.92C(YY)	DF22-1416SC#(YY)	14	22 A	76.5
DF22#-5S-7.92C(YY)	DF22-1416SC#(YY)	14	22 A	76.5
DF22#-4S-7.92C(YY)	DF22-1416SC#(YY)	16	19 A	69.6
DF22#-5S-7.92C(YY)	DF22-1416SC#(YY)	16	19 A	69.6
DF22#-4DS-7.92C(YY)	DF22-1416SC#(YY)	16	19 A	69.6
DF22#-1S-7.92C(YY)	DF22a-1012SC#(YY)	12	38 A	81.1
DF22#-1S-7.92C(YY)	DF22a-1012SC#(YY)	10	43 A	65.7
DF22#-2S-7.92C(YY)	DF22a-1012SC#(YY)	10	38.5 A	85.0
DF22#-3S-7.92C(YY)	DF22a-1012SC#(YY)	10	38.5 A	85.0
DF22#-2S-7.92C(YY)	DF22a-1012SC#(YY)	12	32 A	77.8
DF22#-3S-7.92C(YY)	DF22a-1012SC#(YY)	12	32 A	77.8
DF22#-4S-7.92C(YY)	DF22a-1012SC#(YY)	10	33.5 A	85.0
DF22#-5S-7.92C(YY)	DF22a-1012SC#(YY)	10	33.5 A	85.0
DF22#-4S-7.92C(YY)	DF22a-1012SC#(YY)	12	30 A	67.7
DF22#-5S-7.92C(YY)	DF22a-1012SC#(YY)	12	30 A	67.7

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11b. 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:

Connector, Cat Nos.	Socket Contact, Part No.	STR/CU Wire Size, AWG	Current, A	Maximum Temperature °C	
				Rise	Recorded Temperature
(Socket) DF22S-3S-7.92C mating with (Adapter) DF22BA-3EP-7.92A-3PRT	DF22a-1012SCF	10	38.5(USR)	32.6	57.6
			28(CNR)	17.9	42.9
		12	32(USR)	27.9	52.9
			20(CNR)	12.5	37.5
	DF22a-1416SC	14	23(USR)	26.6	51.6
			18(CNR)	22.2	47.2
		16	21(USR)	25.9	50.9
			15(CNR)	13.7	38.7
(Socket) DF22SF-4S-7.92C mating with (Adapter) DF22BF-4EP-7.92A-3PRT	DF22A-1012SCF	10	33.5(USR)	37.4	62.4
			24(CNR)	16.8	41.8
		12	30(USR)	40.2	65.2
			18(CNR)	13.3	38.3
	DF22A-1416SCF	14	22(USR)	38.9	63.9
			15(CNR)	16.2	42.1
		16	19(USR)	31.7	56.7
			13(CNR)	15.4	40.4

12. Model DF22t-rRS/P-7.92(YY) is an optional retainer piece for use with DF22 Series connector. The retainer does not act as an enclosure or provide support of live parts.

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13. 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.

Cat. No.	Insulating Material (#)	RTI (Elec)	RTI (Str)	Max Operating Temp, °C
DF22#-nS-7.92C(YY), DF22#-4DEP-7.92C(YY), DF22#-qEP-7.92C(YY)	C	130	85	85
DF22t-rRS/P-7.92(YY)	A, B	120	105	85

Mold Stress testing was performed at 95°C for 7 hours.

Cat. No.	Measured Minimum Thickness	Insulating Material (#)	Flame Class	HWI	HAI	RTI (Elec)	Max Operating Temp, °C
DF22#-1P-7.92DSA(YY)	0.6	A	V-0	0	-	125 (++)	85
		B	V-0	0	-	120 (++)	
		E	V-0	-	-	105 (++)	
DF22#-2P-7.92DSA(YY)	0.65	A	V-0	0	-	125 (++)	
		B	V-0	0	-	120 (++)	
		E	V-0	-	-	105 (++)	
DF22#-nP-7.92DSA(YY) (For 3 ~ 5 Poles)	0.68	A	V-0	0	-	125 (++)	
		B	V-0	0	-	120 (++)	
		E	V-0	-	-	105 (++)	
DF22#-nP-7.92DS(YY)	0.45	A	V-0	0	-	125 (++)	
		B	V-0	0	-	120 (++)	
		E	V-0	-	-	105 (++)	
DF22S#-nS-7.92C(YY) (for 2~3 poles)	0.4	F	(+)	-	-	130 (++)	
DF22S#F-4S-7.92C(YY)	0.3	H	(+)	-	-	75 (++)	75
DF22@#-nEP-7.92A-3PRT (for 2~3 poles)	0.75	G	V-0	3	0	130 (++)	85
DF22@#F-4EP-7.92A-3PRT(YY)	0.6	G	(+)	-	-	130 (++)	

Note:

(#) – Code for Insulating Body Material.
(+): Thickness is less than the minimum Recognized material thickness, as such no assigned Flame class. UL 746C (12mm) Flammability test conducted.
(++): These PLCs are based on the minimum Recognized material thickness.

(CONT'D)

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