



APPLICATION FOR EXTENSION OF ESCC QUALIFICATION APPROVAL

Component Title: CONNECTORS, ELECTRICAL, RECTANGULAR, MICROMINIATURE, BASED ON TYPE MDM

Executive Member: CNES

Date: 13/01/2022

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Components (including series and families) submitted for Extension of Qualification Approval:

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| ESCC COMPONENT NO. | VARIANTS | RANGE OF COMPONENTS | BASED ON | TEST VEHICLE / S | COMPONENT SIMILAR |
|--------------------|------------------|--|----------|--------------------|-------------------|
| 3401/029 | 01 & 02 | Layout : 9 - 15 - 21 - 25 - 31 - 37 - 51 Contacts Non removable crimp contacts | MDM | See Annex 1 page 4 | MDMA |
| 3401/041 | 01 to 07 | Terminaison type : AWG 26: ESCC 390101302, ESCC 390100256, ESCC 390101203 2.5 A AWG 28: ESCC 390101301, ESCC 390100261, ESCC 390101202 1.5A AWG 25 - Uninsulated rigid wire-bent and straight PCB, 2.5A | | | |
| 3401/032 | 03, 04, 07 to 17 | Nickel or Gold Plated Shells Operating Temperature Range (°C): -55 to +125 | | | |

| | | | | | |
|---|---|--|---|---|---|
| Component Manufacturer C&K Components | 2 | Location of Manufacturing Plant(s) 2, rue Berthollet 39100 DOLE - France | 3 | Date of original qualification approval: Date: 10/10/1986 Certificate Ref No. 140 | 4 |
|---|---|--|---|---|---|

| | | | | | |
|--|---|--|---|--|---|
| ESCC Specifications used for Maintenance of qualification testing: Generic: 3401 Issue: 5 Detail(s): 3401/029 Issue: 18 3401/041 8 3401/032 12 | 5 | Deviations to LVT testing and Detail Specification used: No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (supply details in Box 15) Deviation from current Specifications: No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> (Supply details) | 6 | Qualification Extension Report reference and date: D210159 10/03/2021 (connector test report) D210161 10/03/2021 (contact test report) | 7 |
|--|---|--|---|--|---|

Summary of procurement or equivalent test results during current validity period in support of this application (those to ESCC listed first)

8

| Project Name | Testing Level | LAT | Date code | Quantity Delivered |
|--------------|---------------|-----|-----------|--------------------|
| See appendix | | | | |

| | | | |
|---|---|--|----|
| PID changes since start of qualification None <input type="checkbox"/> Minor* <input checked="" type="checkbox"/> Major* <input type="checkbox"/> *Provide details in box: | 9 | Current PID Verified by: <u>Nouals François, CNES</u> Name of Executive Representative Ref No: CS-FR010 Issue: 7 rev Q Date: 13/01/2022 Rev Date: 01/05/2021 | 10 |
|---|---|--|----|

Current Manufacturing facilities surveyed by: Nouals François, CNES on 15/09/2019

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(Name of Executive Representative)

(Date)

Satisfactory: Yes No Explain

Report Reference: CRIM du 15/09/21



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Failure Analysis, DPA, NCCS available: Yes No (Supply data)

Ref. No's and purposes:

The undersigned hereby certifies on behalf of the ESCC Executive - that the above information is correct; - that the appropriate documentation has been evaluated; - that full compliance to all ESCC requirements is evidence (except as stated in box 15;) - that the reports and data are available at the ESCC Executive and therefore applies on behalf of CNES as the responsible Executive Member for ESCC qualification status to be extended to the component(s) listed herein.

Date: 17/01/2022

JP. BUSSENOT

(Signature of the Executive Coordinator)

Continuation of Boxes above:



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Non compliance to ESCC requirements:

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| No.: | Specification | Paragraph | Non compliance |
|------|---------------|-----------|----------------|
| | | | |

Additional tasks required to achieve full compliance for ESCC qualification or rationale for acceptability of noncompliance:

16

Executive Manager Disposition

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Application Approval: Yes No

Action / Remarks:

Date:

Britta Schade Digitally signed
by Britta Schade
Date: 2022.01.28
11:22:57 +01'00'

B. Schade: Head of the Product Assurance
and Safety Department



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ANNEX 1: LIST OF TESTS DONE TO SUPPORT EXTENSION OF QUALIFICATION

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Tests conducted in compliance with:

- ESCC 3401 generic specification; Chart V (for ESCC/QPL parts);
- Or PID-TFD (for ESCC/QML parts)

Tests vehicle identification/description:

See page 4/6 document D210159C

Environmental Subgroup

| Traceability | N° | Connector Description | C&K Part Number | Date Code | Contact Description / C&K Part Number | Date Code | Termination Type | Wiring | Crimp Tool | Locator | Selector Position |
|--------------|-----|-----------------------------|-----------------|-----------|--|-----------|---|----------------|------------------------------|-----------|-------------------|
| Appendix 3 | 1.1 | MDMA9P-FO 340107701B | C115373-2100C | 2105B | 9 Contacts Pin 340107803B C331-8754-000H | 2105A | Removable Crimp Contacts (9)AWG 24 | Applicable | M22520/2-01 | CK-MDMA-P | 2 |
| | | MDM 9SFR116 340102901B | C115366-8451C | 2108A | 9 Contacts Skt Tube | / | Straight Pigtail Terminations | Not applicable | / | / | / |
| Appendix 4 | 1.2 | MDM 15PFR114 340102901B | C115366-8359C | 2109A | 15 Contacts Twist Pin | / | Harness Type AWG 28 cable 390101301B | Not applicable | / | / | / |
| | | MDMA15S-FO 340107701B | C115373-2103C | 2105A | 15 Contacts Skt 340107802B C252-8838-000H | 2107B | Removable Crimp Contacts (15) AWG 28 | Applicable | M22520/2-01 | CK-MDMA-S | 2 |
| Appendix 5 | 1.3 | MDMA21P-FO 340107701B | C115373-2104C | 2107A | 21 Contacts Pin 340107803B C331-8754-000H | 2105A | Removable Crimp Contacts (21)AWG 26 | Applicable | M22520/2-01 | CK-MDMA-P | 2 |
| | | MDM 21PS 340104103B | C115366-8844C | 2107A | 21 Contacts Savers | / | Solid Uninsulated AWG 25 | Not applicable | / | / | / |
| | | MDM 21SFR164 340102901B | C115366-9129C | 2107A | 21 Contacts Skt Tube | / | Solder Bucket contacts | Applicable | Solder Iron with wires AWG26 | | |
| Appendix 6 | 1.4 | MTB1 8PFR116C 340103101B | C115366-1200C | 2107A | 4 Contacts Twist Pin + 2 cavities for guide posts and 2 cavities for epoxy-filled | / | 90° Bent PCB Terminations | Not applicable | / | / | / |
| | | MTB1 8SFR112 340103101B | C115366-8589C | 2108A | 4 Contacts Twist Pin + 2 cavities for guide posts and 2 cavities for epoxy-filled | / | Harness Type AWG 26 cable 390101302B | Not applicable | / | / | / |
| Appendix 7 | 1.5 | MTB1 12PFR114 340103102B | C115366-8956C | 2108A | 7 Contacts Twist Pin + 2 cavities for guide posts and 2 epoxy-filled cavities at either end plus 1 cavity for latching | / | Harness Type AWG 28 cable 390101301B | Not applicable | / | / | / |
| | | MTB1 12SFR164 340103102B | C115366-1170C | 2107A | 7 Contacts Skt Tube + 2 cavities for guide posts and 2 epoxy-filled cavities at either end plus 1 cavity for latching | / | Solder Bucket contacts | Applicable | Solder Iron with wires AWG28 | | |

Endurance subgroup

| Traceability | N° | Connector Description | C&K Part Number | Date Code | N° of Contacts / Contact Type | Date Code | Termination Type | Wiring | Crimp Tool | Locator | Selector Position |
|--------------|-----|-----------------------------|-----------------|-----------|--|-----------|---|----------------|------------------------------|-----------|-------------------|
| Appendix 8 | 2.1 | MDMA25P-FO 340107701B | C115373-2106C | 2105A | 25 Contacts Pin 340107803B C331-8754-000H | 2105A | Removable Crimp Contacts (25) AWG 24 | Applicable | M22520/2-01 | CK-MDMA-P | 2 |
| | | MDM 25SFR116 340102901B | C115366-8453C | 2107A | 25 Contacts Skt Tube | / | Straight Pigtail Terminations | Not applicable | / | / | / |
| Appendix 9 | 2.2 | MDM 37PFR112A 340102902B | C115366-7010C | 2108A | 37 Contacts Twist Pin | / | Harness Type AWG 26 cable 390100256B | Not applicable | / | / | / |
| | | MDMA437S-FO 340107702B | C115373-2161C | 2107A | 37 Contacts Skt 340107804B C252-8844-000H | 2107B | Removable Crimp Contacts (37)AWG 26 | Applicable | M22520/2-01 | CK-MDMA-S | 2 |
| Appendix 10 | 2.3 | MTB1 8PFR116C 340103101B | C115366-1200C | 2107A | 4 Contacts Twist Pin + 2 cavities for guide posts and 2 cavities for epoxy-filled | / | 90° Bent PCB Terminations | Not applicable | / | / | / |
| | | MTB1 8SFR112 340103101B | C115366-8589C | 2108A | 4 Contacts Twist Pin + 2 cavities for guide posts and 2 cavities for epoxy-filled | / | Harness Type AWG 26 cable 390101302B | Not applicable | / | / | / |
| Appendix 11 | 2.4 | MTB1 12PFR114 340103102B | C115366-8956C | 2108A | 7 Contacts Twist Pin + 2 cavities for guide posts and 2 epoxy-filled cavities at either end plus 1 cavity for latching | / | Harness Type AWG 28 cable 390101301B | Not applicable | / | / | / |
| | | MTB1 12SFR164 340103102B | C115366-1170C | 2107A | 7 Contacts Skt Tube + 2 cavities for guide posts and 2 epoxy-filled cavities at either end plus 1 cavity for latching | / | Solder Bucket contacts | Applicable | Solder Iron with wires AWG28 | | |

Contacts référence

| Level | N° | Contact Type | C&K Part Number | Batch N° | Date Code | Tracability |
|-------|---------|------------------------------|-----------------|----------|-----------|-------------|
| 2 | 1 to 10 | CTPIN-MDMA-AWG24 340107803B | C331-8754-000H | 256 | 2105A | Appendix 2 |
| | 1 to 10 | CTPINMCR2626AS EQ SAVER 3401 | C031-9092-000S3 | 273 | / | Appendix 3 |
| | 1 to 10 | CTPINMCR2626AS-TWIST | C031-9092-000 | 21-0214 | / | Appendix 4 |

Detail Specification reference: 34010029

| Test or Group | ESCC 3401 | N° Tested | N° Passed | N° Failed | Remarks |
|--|-----------|-----------|-----------|-----------|--|
| | | | | | |
| PLANT NAME AND ADDRESS : C & K components SdS. B.P. 359 39105 DOLE CEDEX FRANCE | | | | | |
| Generic specification number : - Generic specification ESCC 3401 - Issue 5 - March 2018 | | | | | |
| Detail specification number : - Detail specification ESCC 3401/029 - Issue 1 - October 2020 - Detail specification ESCC 3401/031 - Issue 8 - November 2017 - Detail specification ESCC 3401/041 - Issue 8 - December 2019 - Detail specification ESCC 3401/077 - Issue 8 - January 2019 - Detail specification ESCC 3401/078 - Issue 7 - April 2016 - Applicable documents : ECSS-Q-ST-70-26C - 15 March 2017 - Applicable documents : ECSS-Q-ST-70-08C - 6 March 2009 | | | | | |
| Test report number : D210159C | | | | | |
| Test report date : March 10th 2021 | | | | | |
| Product : Connectors : MDM / MDMA / MTB | | | | | |
| Test or Group | ESCC 3401 | N° Tested | N° Passed | N° Failed | Remarks |
| LEVEL 1 | | | | | |
| Wiring | § 9.10 | | | | Appendix 1 pages 1 to 6 |
| - low level contact resistance | § 9.1.1.3 | | | | Not Applicable Electrical measurements chart IV only |
| Climatic sequence : dry heat | § 9.13.2 | | | | Appendix 1 page 7 |
| - insulation resistance | § 9.1.1.1 | | | | Appendix 1 page 8 |
| Climatic sequence : damp heat | § 9.13.3 | | | | Appendix 1 page 9 |
| Climatic sequence : cold test | § 9.13.4 | | | | Appendix 1 page 10 |
| Climatic sequence : low air pressure | § 9.13.5 | | | | Appendix 1 page 11 |
| - voltage proof | § 9.1.1.2 | | | | Appendix 1 page 12 |
| Climatic sequence : damp heat | § 9.13.6 | 11 | 11 | 0 | Appendix 1 page 13 |
| - insulation resistance | § 9.1.1.1 | | | | Appendix 1 page 14 |
| - voltage proof | § 9.1.1.2 | | | | Appendix 1 page 15 |
| - visual examination | § 9.13.7 | | | | Appendix 1 page 16 |
| Permanence of marking | § 9.19 | | | | Appendix 1 page 17 |
| Corrosion | § 9.22 | | | | Appendix 1 pages 18 & 19 |
| - visual examination | § 9.22 | | | | Appendix 1 page 20 |
| Seal test | § 9.9 | | | | Appendix 1 page 21 |
| Plating thickness | § 9.14 | | | | Appendix 1 page 22 |
| LEVEL 2 | | | | | |
| Wiring | § 9.10 | | | | Appendix 2 pages 1 to 5 |
| - low level contact resistance | § 9.1.1.3 | | | | Not Applicable Electrical measurements chart IV only |
| Rapid change of temperature | § 9.16 | | | | Appendix 2 page 6 |
| - visual examination | § 9.16 | | | | Appendix 2 page 9 |
| - insulation resistance | § 9.1.1.1 | | | | Appendix 2 page 7 |
| - voltage proof | § 9.1.1.2 | | | | Appendix 2 page 8 |
| Contact retention | § 9.17 | | | | Appendix 2 pages 10 to 13 |
| ⇒non-removable contacts | § 9.17 | | | | |
| Maintenance aging | § 9.27 | | | | Appendix 2 pages 14 & 15 |
| ⇒removable contacts | § 9.27 | | | | |
| - visual examination | § 9.27 | | | | Appendix 2 page 16 |
| - contact retention | § 9.17 | | | | Appendix 2 pages 17 & 18 |
| - contact insertion and withdrawal forces | § 9.27 | | | | Appendix 2 pages 19 & 20 |
| Endurance | § 9.18 | 8 | 8 | 0 | Appendix 2 page 21 |
| <i>Initial measurements :</i> | | | | | |
| - low level contact resistance | § 9.1.1.3 | | | | Appendix 2 pages 24 to 27 |
| - mated shell conductivity | § 9.1.1.4 | | | | Appendix 2 page 30 |
| - mating / unmating forces | § 9.20 | | | | Appendix 2 page 22 |
| <i>Final measurements :</i> | | | | | |
| - visual examination | § 9.18 | | | | Appendix 2 page 23 |
| - mating / unmating forces | § 9.20 | | | | Appendix 2 page 22 |
| - low level contact resistance drift | § 9.1.1.3 | | | | Appendix 2 pages 24 to 27 |
| - mated shell conductivity | § 9.1.1.4 | | | | Appendix 2 page 30 |
| - insulation resistance | § 9.1.1.1 | | | | Appendix 2 pages 28 |
| - voltage proof | § 9.1.1.2 | | | | Appendix 2 pages 29 |
| Seal test | § 9.9 | | | | Appendix 2 page 31 |
| Joint strength | § 9.15 | | | | Appendix 2 pages 32 & 33 |

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Executive Member: CNES

Date: 13/01/2022

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NOTES ON THE COMPLETION OF THE APPLICATION FORM FOR ESCC QUALIFICATION EXTENSION APPROVAL**ENTRIES**

| | |
|----------------|---|
| Form heading | shall indicate: - the title of the component as given in its detail specification or the name of the series, family; - the Executive Member; - the entering date; - the certificate number and its sequential suffix. |
| Box 1 | shall provide details given in the table; in particular there shall be listed: - the variants or range of variants; - the range of components (the ESCC code is recommended to indicate the values or values range, the tolerance, the voltage, etc); the designation given in the detail specification as 'base on'; - under Test Vehicle enter either an ESCC code or the specific characteristic capable of identifying the component tested (e.g., voltage of coil for a relay); - under component similar enter a cross if relevant. |
| Box 2; 3 and 4 | As per QPL entry; otherwise, an explanation of the changes must be supplied. |
| Box 5 | Will show the ESCC Generic and Detail specifications, including issue number and revision letter, current at the time the tests reported were performed. If the specifications are different from those current on the date of the application, see Box 6. |
| Box 6 | Will show the deviations from the Generic and Detail Specifications listed in Box 5, in particular deviations from testing. In case of deviations this must be listed in Box 15. In case the referenced specification in Box 5 have currently a different issue and/or revision indicate also whether the test data deviates or not from such current documents. |
| Box 7 | Must reference the report(s) supplied in support of the application. |
| Box 8 | Should provide the details of procurement to the full ESCC System, documentation of all of which should already have been delivered to the ESCC Executive under the terms of the relevant Generic Specification. An appropriate table has been drawn in this box. |
| Box 9 | If the PID evolved after the Original Qualification or after the last Extension of Qualification, adequate details of such evolution shall be provided together with the reasons for the changes. Major changes shall be clearly marked. |
| Box 10 | Identify the current PID issue status, date and actual date of verification. The date of verification of the current PID should be arranged as close as possible to the required date of extension. |
| Box 11 | This box can be completed only after a physical visit to the plant to confirm that no unexplained changes occurred and that the practices, procedures, material, etc. used in manufacturing the components are as described in the PID. This survey shall be carried out in accordance with the requirements of ESCC Basic Specification No. 20200 and its findings shall be recorded. |
| Box 12 | Provide details of, or reference to, any Destructive Physical Analysis (DPA) and Failure Analysis reports as well as any Nonconformance(s) (NCCS) occurred during the qualification validity period, stating if established corrective action have produced satisfactory results. |
| Box 13 | Enter only the name of the Executive Member (i.e., CNES, DLR, ESTEC, etc.) and the signature of the responsible Executive Coordinator. |
| Box 14 | To be used when there is a need to expand any of the boxes from 1 through 12. Identify box affected and reference the Box 14 in the relevant Box. Box 14 can be broken into 14a, 14b, etc. if several boxes have to be expanded. |
| Box 15 | Fill in Table as requested. |
| Box 16 | Any additional action deemed necessary by the Executive Member to bring the submitted data to a standard likely to be accepted by the ESCC Executive should be listed herein or the reason(s) to accept the noncompliance. |
| Box 17 | All Executive Manager recommendations on the application itself, special conditions or restrictions, modifications of the QPL or QML entry, letters to the manufacturer, etc. shall be entered clearly in Box 19, signed by the representative for ESA, and dated. |
| Box 18 | Fill in Table as requested. |
| Box 19 | Confidential Details of PID changes including those of a confidential nature, shall be provided. |
| Box 20 | State noncompliance with reference to specification(s) and paragraph(s). To simplify reference in Box 16 each nonconformance shall be sequentially numbered. If relevant state 'None'. |
| Box 21 | Any additional action deemed necessary by the Executive Member to bring the submitted data to a standard likely to be accepted by the ESCC Executive should be listed herein or the reason(s) to accept the noncompliance. |
| Box 22 | Additional Comments. |