DOCUMENT CHANGE REQUEST

DCR number 712	Changes required for: General	Originator: Steve Thacker
Date: 2013/12/05	Date sent: 2012/02/21	Organisation: ESCC Executive Secretariat
Status: IMPLEMENTED		

Title:	Relays Electromagnetic Latching 28Vdc 1A 2PDT TO5 Can		
Number:	3602/002	Issue:	1

Other documents affected:

Page:

Total reformat/re-write of ESCC 3602/002 issue 1 as part of the ongoing conversion to the ESCC format.

The changes incorporated into 3602/002 include the following:
• editorial & technical changes that reflect the content of Generic specification No.3602 issue 3 (per DCR673).
• technical changes per approved DCRs 340, 341.
• technical changes in accordance with the still relevant content of pending DCRs 289, 343, 348, 351, 353, 355, 359, 360 (as applicable).
• additional editorial and technical changes as detailed herein.

Paragraph:

See below

Original wording:

See 3602/002 issue 1

Proposed wording:

Total reformat of this Detail Specification (from the range of various ESCC Detail Specifications, 3602/xxx, for relays under Generic Specification No. 3602) as part of the ongoing conversion of ESA/SCC legacy Detail specifications to the ESCC format, as well as amendments resulting from the changes to the Generic specification No.3602 per DCR673.

Note: The proposed technical content of ESCC3602/002 issue 2 is based on the current content of ESCC3602/002 issue 1 plus amendments discussed by ESA and CNES since 2006. Many of the amendments have already been proposed in other DCRs (those already approved: DCRs 340, 341)(those still open or intended to be withdrawn: DCRs 289, 343, 348, 351, 353, 355, 359, 360). This DCR details all changes including the applicable changes from all these other DCRs.

See below for summary of changes proposed by this DCR.

Also see the attached proposed 3602/002 Issue 2 Draft A which incorporates all amendments proposed per this DCR.

Note: known support for active procurement against this specification includes the following Manufacturer:
REL-STPI/F (is willing to support procurement of all variants and is ESCC qualified for all variants).

DOCUMENT CHANGE REQUEST

DCR number 712	Changes required for: General	Originator: Steve Thacker
Date: 2013/12/05	Date sent: 2012/02/21	Organisation: ESCC Executive Secretariat
Status: IMPLEMENTED		

Summary of changes to the current format, layout and content is as follows

1) General
Rewording and restructure of various sections and paragraphs of the specification, plus other editorial changes based on the layout and editorial content of other Detail Specifications already converted to ESCC format.

2) Para 2, Reference to MIL-STD-202 is deleted (as it is not actually referenced)

3) Table 1(a) Type Variants: Coil Circuit Description and Rated coil voltage options are added to Component Type Variants table.

4) Table 1(b) Maximum Ratings.
• Contact Resistance is deleted (as Contact Resistance is not a rating; Contact Voltage Drop is specified in Room Temperature Electrical Measurements)
• Storage Temperature ratings are added (these standard ESCC ratings were missing).
• Note 3 on Coil voltage rise time and required applied duration is moved to be a note to Table 2 & 3 (Para 2.4.3 in 3602/002 draft 2A). The 3rd sentence (“Note that .. etc”) is deleted as such a general information note is considered not to be relevant to a procurement spec.

5) Figure 2,
• The drawing for Variants 04, 05, 06 is corrected to indicate only 9 leads and that the common negative coil terminal is connected to the case; A note to this effect is added (also Figure 3).
• Dimension alpha is amended to refer to BSC (for clarification purposes).

6) Figure 3.
Reference to the Reset Coil is replaced by Last energised coil (for consistency purposes).
A note is added to clarify the case/lead connection of the common negative terminal of Variants 04 to 06.

7) Para 4.2, Deviations from the generic spec are removed (no longer needed as the detail spec is now compliant with the generic spec)

8) Para 4.5.1, Marking, item (a) & Para 4.5.2, Lead Identification is deleted from the list of mandatory marking items (Terminal identification is actually specified by reference to the case tab, as specified in Para 1.6).
Note - The Manufacture is still permitted to mark a circuit schematic on the body of the relay, if space permits, under the Marking category of ‘Manufacturer’s Own Marking’.

9) Para 4.5.4, nominal coil resistance values are deleted (as redundant information)

10) Para 4.7.1 & Table 4, Miss Test is renamed ‘Run-in’ and Table 4 is used to specify Parameter Drift Values.
Miss Test Contact Resistance limit is deleted from Table 4 and replaced by Latch Voltage & Reset Voltage drift values (+/- 15%)

DCR number 712	Changes required for: General	Originator: Steve Thacker
Date: 2013/12/05	Date sent: 2012/02/21	Organisation: ESCC Executive Secretariat
Status: IMPLEMENTED		

11) Table 2 & Table 6, Voltage Proof Leakage Current test is added whenever Voltage Proof is tested (ref DCR340; note that the Voltage Proof test is retained)

12) Table 2 & Table 3, Contact Voltage Drop test current is specified (=100mA to be consistent with the generic spec). Delete the condition of the measurement distance from the header (as this is already specified in the Generic spec)

13) Table 2, Coil Resistance; Reference to 'Latch', RBL & 'Reset', RBR are deleted. Reference to "Both coils" is added to the test condition (Only a single limit for RB for each coil is specified; the 2 coils are not actually differentiated as 'Latch' & 'Reset').

14) Table 2 note 1 & Appendix A for REL-STPI (Voltage matching requirement of Latch & Reset Voltages) : Delete note/requirement & Appendix (Matching appears to be a non-standard requirement and is in any case made not applicable to the one spec supporting Manufacturer RED-STPI, by the Appendix A of 3602/002 issue 1)

15) Table 3, Latch & Reset Voltages: the max limits only apply to the high temperature test, and the minimum limits only apply to the low temperature test.

16) Table 3, Note 2 is deleted. The low temperature tests are performed at -65C (instead of -55C). Switching Time tests (tL tR tB) and Contact Voltage Drop are performed at both high & low temperatures.

17) Figure 4, Figure 5(a), Figure 5(b) are deleted (Not applicable)

18) Table 5(a), the 3 high, low and room temperature conditions for Run-in (= "Miss Test") are replaced by a single test temperature of 22C.

19) Table 5(b) is deleted (Generic Spec No.3602 default test conditions apply).

20) Table 6, tests that do not include electrical measurements are removed from the table (i.e. Terminal Strength). Only electrical tests are included in the Table (i.e. references to Contact Monitoring, Fuse continuity, visual examination are removed from the Table).

21) Table 6, Salt Spray test is deleted (ref. DCR341; Note that Solderability is not added to this table)

22) Table 6, Addition of drift values (for Latch & Reset Voltages, +/-15%) during the following tests:
- Vibration (= Low Level Sine Vibration)
- Mechanical Shock (= Low Level Mechanical Shock)
- Overload
- Intermediate Current
- Operating Life Resistive (= Resistive Life)
- Operating Life Low Level Load and Mechanical Shock (= Low Level Life)
- Random Vibration (new test)
- High Level Sine Vibration (new test)
- High Level Mechanical Shock (new test)

DOCUMENT CHANGE REQUEST

DCR number 712	Changes required for: General	Originator: Steve Thacker
Date: 2013/12/05	Date sent: 2012/02/21	Organisation: ESCC Executive Secretariat
Status: IMPLEMENTED		

Note 1 is added to permit an additional measurement (of drift parameters) prior to the test in question in order to facilitate the drift calculation.

23) Table 6, some Contact Voltage Drop limits are amended.
i.e.
• Overload: 400mV during monitoring (was 1.4V); 20mV during final measurements (was 40mV)
• Intermediate Current: 20mV during monitoring (was 300mV); 20mV during final measurements (was 40mV per DCR157)
• Operating Life Resistive (= Resistive Life): 200mV during monitoring (was 2.8V); 20mV during final measurements (was 40mV)

24) Table 6, Coil Life, Random Vibration, High Level Sine Vibration & High Level Mechanical Shock electrical measurement requirements are added (to be consistent with the Generic Specification per DCR672)

25) Appendix A for REL-STPI: delete appendix as note 1 to Table has been deleted

Justification:

a) Part of the ongoing activity of conversion of legacy ESA/SCC specifications to the ESCC format. Amendments are made to the format and editorial content in order to be consistent with various other ESCC Detail Specifications.

b) To make the detail spec fully consistent with the requirements and content of the ESCC Generic spec 3602 issue 3 (per DCR672).

c) To incorporate specific technical changes as detailed in the relevant change item above. All changes are for the purposes of technical improvement and have been previously discussed with CNES/ESA.

d) Implement drift measurement limits for Latch Voltage & Reset Voltage during Screening (over Run-in) and during Qualification and Periodic Testing on specific tests (see items 10 & 22 above).
Note - This change has not yet been agreed with the ESCC QPL Manufacturer REL-STPI/F.

Attachments:

3602002_draft_2b_in_review.pdf, null

Modifications:

The above DCR text is amended as follows:
Note – Modifications as follows include those requested by REL-STPI/F, as agreed by ESA & CNES.

The proposed draft specification is changed to be 3602/002 draft 2B which incorporates all changes per this DCR including these modifications.

Item 10) Delete item and replace with the following:
13) Para 4.7.1 & Table 4, Miss Test is renamed 'Run-in' and Table 4 is used to specify Parameter Drift Values.
Miss Test Contact Resistance limit is deleted from Table 4 and replaced by Latch Voltage & Reset Voltage drift values. Drift value limits are not specified at this time. Drift values are to be recorded for information purposes only in order to amass data so that suitable drift value limits can be specified at a later date (in a later revision).

Item 22) Delete item and replace with the following:
24) Table 6, Addition of drift values (for Latch Voltage & Reset Voltage) during the following tests:
Note - Drift value limits are not specified in the table at this time. Drift values are to be recorded for information purposes only in order to amass data so that suitable drift value limits can be specified at a later date (in a later revision). Note 1 is added to clarify this position.

- Vibration (= Low Level Sine Vibration)
- Mechanical Shock (= Low Level Mechanical Shock)
- Overload
- Intermediate Current
- Operating Life Resistive (= Resistive Life)
- Operating Life Low Level Load and Mechanical Shock (= Low Level Life)
- Random Vibration (new test)
- High Level Sine Vibration (new test)
- High Level Mechanical Shock (new test)

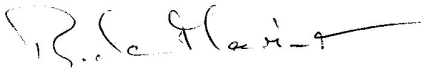
Note 1 also permits an additional measurement (of drift parameters) prior to the test in question in order to facilitate the drift calculation.

Item 23) Table 6.
Replace the Operating Life Resistive bullet with the following:
- Operating Life Resistive (= Resistive Life): 2.8V during monitoring (clarification only; no actual change); 20mV during final measurements (was 40mV)

Replace the Intermediate Current bullet with the following:
- Intermediate Current: 300mV during monitoring (clarification only; no actual change); 20mV during final measurements

In the Justification section amend 'd) Implement drift measurement' to read as follows:

d) Implement drift measurement for Latch Voltage & Reset Voltage during Screening (over Run-in) and during Qualification and Periodic Testing on specific tests (see items 10 & 22 above). Limits have not been specified at this time due to lack of applicable performance data. Measurements will now be recorded for information purposes so that suitable drift value limits can be specified at a later date in a further revision of this specification. This change has been agreed with the ESCC QPL

Manufacturer REL-STPI/F.
Approval signature:

Date signed:
2013-12-05