DOCUMENT CHANGE REQUEST

DCR number 1139	Changes required for: General	Originator: Steve Thacker
Date: 2018/02/27	Date sent: 2018/02/27	Organisation: ESCC Executive Secretariat
Status: IMPLEMENTED		

Title:	Relays Electromagnetic Latching 28Vdc 10A 2PDT		
Number:	3602/001	Issue:	2

Other documents affected:

Page:

All pages; see below & attached

Paragraph:

All paragraphs; see below & attached

Original wording:

See 3602/001 issue 2

Proposed wording:

At the same time as this specification, ESCC 3602/001 issue 2, is republished (by DCR922) it is also subjected to a total reformat/re-write as part of the ongoing conversion of ESA/SCC legacy Detail specifications to the ESCC format.

The changes proposed to be incorporated into 3602/001 issue 3 include the following:
• editorial & technical changes that reflect the content of the current Generic specification No. 3602 issue 4.
• technical changes similar to those already implemented in other 3602/xxx Detail Specifications (e.g. per DCR709 on ESCC Detail Spec 3602/009.
• additional editorial and technical changes as detailed below.

The attached proposed 3602/001 Issue 3 Draft B 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 variants 03, 04, 05, 06, 07, 08)

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) & Figure 2. Delete unsupported/obsolete Variants 01, 02 and add new variants 07 & 08.

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4) Table 1(a), Figure 2
The description of package & terminals for all Variants is amended as follows (to be consistent with MIL terminology and other similar ESCC Detail Specs):
• “Horizontal Flange Mount” changed to “Raised Vertical Flange Mount”
• “Vertical Flange Mount” changed to “Horizontal Flange Mount”
• “Plug-in Terminals” changed to “Solder Pin Terminals”
• “Solderable Hook-end Terminals” changed to “Solder Hook Terminals”

5) Table 1(b) Maximum Ratings
6V coil voltage option is deleted (also in Para 4.5.4, Table 2 & Table 3)
Maximum Coil voltage for the 12V option is changed to be 14.5V (was 14.8V) (to be consistent with other similar Detail specs).
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 Tables 2 & 3 (Para 2.4.3 in 3602/001 draft 3)

6) Figures 2(c) 2(d) 2(e) 2(f)
Dimensions as follows are amended (see attached draft spec for Details):
• Figure 2(c), Variant 03: D D1 F H M P Q R
• Figure 2(d), Variant 04: D D1 E F G H M P Q S
• Figure 2(e), Variant 05: D D1 E F I M P Q R
• Figure 2(f), Variant 06: D D1 E F G I M P Q S

In addition:
• The positioning of Dims. P & Q for all Figures/Variants is changed to reflect the hole envelope dimensions (instead of centre lines)
• Figure 2(c) & 2(e), Silicone Gasket (& Dim. B1) is deleted.
• Dia.G clarified to be the inner diameter for figures 2(d), 2(f)
• E1 is new in Figures 2(d), 2(e) & 2(f)
• Figure 2(e) & 2(f), Dim. I is redefined as Dim. H
• Figure 2(e), Dim Dia.R is redefined as Dim. Dia.F1

7) Figure 3, Circuit schematic & notes are amended to clarify terminals & connections.

8) Para 4.2 (& Table 6)
Deviations from the generic spec are removed (no longer needed as the detail spec is now compliant with the generic spec)

9) Para. 4.3.3, nominal dimension reference for thinner terminals is changed to be 0.8mm (was 0.7mm)

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10) Para 4.4.1
Case description is amended (to be consistent with other ESCC relay Detail specs).
2nd sentence, “Neither electro-plated tin nor any paint shall be used.” is deleted (as it is considered redundant).

11) Para 4.4.2, Terminal finish is amended to be type 3 or 4 per ESCC 23500 (was type 4 only) (to be consistent with other similar ESCC Detail Specs).

12) Para. 4.4.3 Gaskets, is deleted.

13) Para 4.5.1, Marking item (a) & Para 4.5.2
Terminal Identification is deleted from the list of mandatory marking items (Terminal identification is actually specified by use of a colour reference bead as specified in Paras 1.6.1 to 1.6.6).
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’.

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

15) 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).

16) Table 2, Latch and Reset Voltages minimum limit for the 28V option is amended to be 8V (was 9.1V)

17) Table 2 & Table 3, Latch & Reset Time: maximum limit is amended to be 15ms (was 10ms)

18) Table 2 Note 1, Voltage Proof: a minimum limit of 350Vrms is added for the test between between latch and reset coils. The applicable test voltage between open contacts is amended to be 1250Vrms (was 1000Vrms)

19) Table 2 & Table 6, Voltage Proof Leakage Current test is added whenever Voltage Proof is tested.

20) Table 3, Latch and Reset Voltages
Minimum limits for both the 28V & 12V options are deleted.
Maximum limit for the 28V option is amended to be 18V (was 19.8V)

21) Table 2 & Table 3, Contact Voltage Drop
Contact Voltage Drop test current is specified (= 100mA minimum to 10A maximum to be consistent with the generic spec). The VD max limit is specified as 0.015 x ITEST (based on 15mOhm value from Table 1(b) for contact resistance and the test current of 100mA to 10A).
Table 3: Contact Voltage Drop test is clarified as being applicable at both high & low temperatures (consistent with other 3602/xxx Detail Specs).

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22) Table 3 Note 2 is deleted. The low temperature tests are performed at -65C (instead of -55C). All tests in Table 3, except Insulation Resistance, are performed at both high & low temperatures.

23) Figure 4, Figure 5(a), Figure 5(b) are deleted (not applicable)

24) 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.

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

26) Table 6, tests that do not include electrical measurements are removed from the table (i.e. Terminal Strength). Only the specific electrical measurement tests called up by the generic spec are included in the Table (i.e. references to contact monitoring, fuse continuity & visual examination are removed from the Table).

27) Table 6, Thermal Shock
Electrical test item 6 (Insulation Resistance) at +125C during the 5th Cycle is deleted (to be consistent with the Generic Spec).

28) Table 6, Salt Spray test is deleted (to be consistent with the Generic Spec).

29) Table 6, Inductive Life, Resistive Life, Overload: Voltage Proof: a minimum limit of 350Vrms is added for the test between between latch and reset coils.

30) Table 6, Contact Voltage Drop limits
The following Contact Voltage Drop limits are clarified:
• Overload: 2.8V maximum during monitoring (clarification only; no actual change w.r.t. 3602 issue 2); 0.0175 x ITEST (= 175mV) maximum during final measurements (clarification only; no actual change w.r.t. 3602 issue 2).

• Intermediate Current: 175mV, 30mV, 18mV, 6mV (as applicable to the 4 Poles per the generic spec) during monitoring (is an actual change for pole 2); 0.0175 x ITEST (= 175mV) maximum during final measurements (clarification only; no actual change w.r.t. 3602 issue 2).

• Operating Life Resistive (= Resistive Life): 2.8V maximum during monitoring (clarification only; no actual change w.r.t. 3602 issue 2); 0.0175 x ITEST (= 175mV) maximum during final measurements (clarification only; no actual change w.r.t. 3602 issue 2).

• Inductive Life: 2.8V maximum during monitoring (clarification only; no actual change w.r.t. 3602 issue 2); 0.0175 x ITEST (= 175mV) maximum during final measurements (clarification only; no actual change w.r.t. 3602 issue 2).

• Mechanical Life: 0.0175 x ITEST (= 175mV) maximum during final measurements (clarification only; no actual change w.r.t. 3602 issue 2).

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31) Table 6, High Level Sine Vibration & High Level Mechanical Shock electrical measurement requirements are added (to be consistent with the Generic Specification)

32) Table 6, Addition of drift values (for Latch & Reset Voltages) during the following tests:
• Vibration (= Low Level Sine Vibration)
• Mechanical Shock (= Low Level Mechanical Shock)
• Overload
• Intermediate Current
• Operating Life Resistive (= Resistive Life)
• Inductive Life
• Mechanical Life
• High Level Sine Vibration (new test)
• High Level Mechanical Shock (new test)

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 and also to permit an additional measurement (of drift parameters) prior to the test in question in order to facilitate the drift calculation.

33) Appendix B for REL STPI
Add Appendix to detail the following deviation:
Deviations to Chart F4: Coil Life subgroup test sequence (under Endurance Subgroup 1): Coil Life and the subsequent tests shall only be performed for Qualification. They are not required for Periodic Testing except in the case of any significant change to the design (as applied for other REL STPI supported Detail Specifications)

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 this recently republished detail spec fully consistent with the requirements and content of the current ESCC Generic spec 3602 issue 4

c) To incorporate specific technical changes as detailed in the relevant change item above. All changes are for the purposes of technical improvement and are consistent with changes made in other 3602/xxx Detail Specifications (e.g. 3602/009 per DCR709).

d) Implement drift measurement for Latch & Reset Voltages during Screening (over Run-in) and during Qualification and Periodic Testing on specific tests (see items 13 & 27 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.

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e) To add new Variants (07 & 08) at the request of Manufacturer REL STPI.

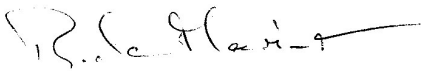
Attachments:

3602001_draft_3b_in_review.docx

Modifications:

N/A

Approval signature:



Date signed:

2018-02-27