

# C37.62 – Fault Interrupters

April 29<sup>th</sup>, 2019 – Burlington, VT



**Chair:** Antone Bonner  
**Secretary:** Frank DeCesaro

## Meeting Minutes

### 1. Call to order and introduction:

Call to order at 8:00 AM. Introductions were made, and the attendance list was sent around. It was noted that the member roster was reviewed and members that missed two or more consecutive meetings were changed to “Guest” status. The working group now has (19) members

### 2. Roster Check:

Attendance included 11 Working Group members and 22 guests. Refer to the Annex for the attendance list.

### 3. Previous Meeting Minutes:

Francois moved Karla seconded. Minutes approved.

### 4. Meeting Highlights:

The IEEE Patent Slides were displayed, and the chair asked if there were any concerns by the group. None was raised.

The status of the ballot was displayed.

Work left to do:

Editorial corrections, normative references verified, bibliography expanded and verified, Annexes expanded, and resolution of remaining technical issues.

Normative references:

Since this came from an older standard we need to see if the references are still valid and if the newest version is still relevant to us. For group members that want to help but don't have access to IEEE Explore, we can get standards via IEEE if we post it on password protected site. We need to contact Ashley to do this. Send your requests to [antone.bonner@ieee.org](mailto:antone.bonner@ieee.org) if you are working on this and need standards.

The IEEE representative stated that if we don't use items in our standard they should be in the bibliography not be in the normative reference section.

## Tolerances of measured values for tests – Presented by Harm Bannink

Harm developed a tolerance table as assigned at the Fall 2018 WG meeting, using information from the C37.60-2012 standard. The table is the same with changes made to clause references as applicable. This information is needed by laboratories assure consistent testing. Nenad Uzelec moved to adopt the tolerance table to the standard as a normative annex and that the final values will be verified via the working group via e-ballot prior to sending it in for recirculation. Dave Beseda seconded. We had discussion. It was a unanimous vote to accept.

Several unresolved ballot comments were then presented, listed by the line numbers of Drat 6.1. The comments received from the ballot were displayed and discussed. The highlights of this discussion were:

### Line 145 and 146:

Several Balloter Comments were received proposing that all reference to the cutout mounted fault interrupter should be removed from the standard since a cutout mounted FI that meets the standard's requirements is not currently being produced, i.e. there is no cut-out mounted FI that does not require dependent manual operation to close (this standard does not cover dependent manual operation, as stated in the Scope, clause 1.1). There was a comment that a product that fits the standard requirements, i.e. fits the requirements for a cutout mounted FI which does not have dependent manual operation is available on the market. Dave Beseda moves that we accept the wording in the standard as is and decline the comment. IEC 60050-441-1984 has a definition of dependent manual operation. Old C37.100 also has a definition. Don Martin seconded. Motion passed unanimously of all members present.

### Line 177

Balloter comment: 60 Hz wet test for overhead gear - We have traditionally used the power frequency withstand 10 second wet test method for RODE equipment standards. Commenter proposes that the standard should specify the standard test per IEEE 4, which a 1 minute withstand test. C37.60-2019 uses the 1 minute test. Discussion of the WG: It was commented by the group that the test voltage, water conductivity and flow rate, and pass criteria are different in the 1 minute test versus the 10 second duration test. The IEEE 4-2013 Table 5 was displayed to show the differences between the IEEE Standard test procedure and the previous practice in USA. Karla Trost proposes that Table 2, column 5 be changed to the values of the Standard Test Procedure of IEEE 4-2013, with appropriate reference to IEEE 4. This agrees with the balloter's comment. Francois Soulard seconded. Brian moved that we modify the motion to include wording allowing testing to Previous Practice in USA method besides the Standard Test Procedure. Larry Putnam seconded. Motion for the amendment had (4) yeas, (3) Nays (rest) abstain. Therefore, amendment motion failed. The original motion as stated had (8) yeas, (0) Nay, rest abstentions. The Motion passed. The balloter's comment will be implemented. (Note: Yea counts were reduced by one after the voting because one person erroneously thought they were a member but were not).

### Line 248

Balloter comment: The normal rated operating sequence for fault interrupters should be O or CO. The rated operating sequence for FI should be open to either O or CO. WG discussion: The "operating sequence" terminology comes from C37.60. Other standards refer to it as rated operating duty. The WG felt that the rated operating sequence should represent the minimum capability for the device. It does not need to list other capabilities. Therefore, CO is the correct operating sequence. Due to

conversations at the meeting, the balloter, who proposed this change, requested that the committee reject his comment and leave the clause as it is.

#### Line 371

This line had been discussed at the Fall 2018 WG meeting, but specific wording was left to the WG editor. The proposed wording was presented to the WG. Karla Trost moved that we accept the drafted wording of 6.14.3 with the change that we add 2005 to C57.12.29 reference. Seconded by Nenad Uzelac. (9) yeas, (0) nays rest abstentions. Motion passed.

#### Line 700

Various balloters had recommended that with regards to line and cable charging current interruption, the standard should reference IEEE C37.100.2 and should replace references to IEEE 1247 with IEEE C37.30.3 or C37.30.4. Frank DeCesaro volunteered to look into how this affects our standard and we will have the working group ballot the recommendations. Deadline for results is end of next week, May 10.

#### Line 920

T100 currents 90% to 100%; Is one shot at 100% sufficient? WG members agreed that the tester should not be able to intentionally test at the lowest end of the range, i.e. 90%. However, from a practical perspective, when testing on generators, it was voiced that the tester should be able to do multiple shots in succession to speed up the testing. Antone Bonner will work on a proposal for this and get approval via email ballot.

#### Table 9

Per assignment from the Fall 2018 WG meeting, a suggested change to Table 9 was presented by Chris Morton and Harm Bannink. A lot of items changed. WG members will need to review and comment.

Total number of unit operations: Separating the unit operations into 2 columns, O and CO, for each current level test provides needed clarity.

Note a: Is Table 9 referenced in the sections?

The group should look Table 9 over and comment on it.

#### Line 1420

Balloter comment: Questioned whether the word "greater" should be "lesser" instead. Antone Bonner will check this out and reply back to the group for a final resolution.

#### References to C37.06

Many balloters proposed that the date for C37.06 be updated throughout the c37.62. However, it has been determined that C37.06 will be withdrawn and all content has been moved to C37.04. Therefore, all c37.06 references have been converted to C37.04.

#### Line 91

Definition of Accessible. The definition provided does not fit the usage in the C37.62 and the usage was clear and did not need definition to add clarity. It was suggested that the definition be removed. There were no objections to remove the definition.

#### Line 95

Definition of Fault Interrupter. There were comments that it is not clear that it must interrupt a fault, only implied. The recommended change to the definition was displayed and discussed. Don Martin moved that the definition is modified to also say It includes at a minimum an assembly of control elements to detect overcurrent's and open the interrupter. Larry Putnam seconded.

#### Figure 1

The title of Figure 1 was changed to reflect that it represents a unit operation as referred to in Table 9. The WG agreed to this with no discussion.

Three items not covered:

Line	Topic
270	1.5 tk changed to 1.0 tk
315	Cap. operation of shunt release
415	Temp rise or cont current?

These three items need to be looked at in the D7 redline sent to all WG members. Please respond with comments, if any.

#### **5. New Business;**

None.

#### **6. Next meeting:**

Fall 2019 (06 Oct – 10 Oct), Catamaran Resort, San Diego, CA

#### **7. Adjournment**

Meeting was adjourned at 12:03 PM.

## Annex: Member Attendance

Role	First Name	Last Name	4/29/2019
Guest	Robert	Smith	X
Secretary	Frank	DeCesaro	X
Member	Donald	Martin	X
Member	Francois	Soulard	X
Guest	Peter	Glaesman	X
Member	Jeffrey	Gieger	X
Guest	Harold	Hirz	X
Member	Herman	Bannink	X
Chair	Antone	Bonner	X
Guest	Brian	Gerzeny	X
Member	Wangpei	Li	X
Member	Paul	Found	X
Guest	Brendan	Kirkpatrick	X
Member	Nenad	Uzelac	X
Member	David	Beseda	X
Member	Karla	Trost	X
Guest	Anil	Dhawan	X
Guest	James	Ruebensam	X
Guest	Christopher	Morton	X
Guest	Benson	Lo	X
Guest	Caryn	Riley	X
Guest	Jacob	Midkiff	X
Member	Larry	Putman	X
Guest	Michael	Culhane	X
Guest	Stephen	Pell	X
Guest	Thomas	Ballard	X
Guest	Mohit	Chhabra, Ph.D.	X

Note: Chris Ambrose was excused.

Submitted by:

Name Antone Bonner

Date May 9, 2019