

IEEE Standards Interpretation for IEEE Std C37.06™-2000 IEEE Standard for AC High-Voltage Circuit Breakers on a Symmetrical Current Basis-Preferred Ratings and Related Required Capabilities

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Interpretation Request #1

Relevant Clause: Table 8; Footnote 2

Does Table 8, footnote 2, apply to the dc powered protective relays and auxiliary relays covered by IEEE Std C37.90™ that are installed in the tripping and closing circuits of circuit breakers covered by this IEEE Std C37.06?

Interpretation Response

Table 8 of IEEE Std C37.06-2000 gives the rated control voltage and their ranges for circuit breakers. Footnote 2 applies to the Direct Control Voltage Range and the Alternating Current Voltage Ranges for the Closing, Tripping, and Auxiliary Functions. Footnote 2 states that "Relays, motors, or other auxiliary equipment that functions as a part of the control device shall be subject to the voltage limits imposed by this standard, whether mounted at the device or at a remote location."

The requirements of IEEE C37.06-2000 Table 8 and its Footnote #2 apply to the auxiliary relays that command the trip coils and closing coils of the circuit breaker, to the extent that they are an integral part of the control of the circuit breakers as indicated in IEEE Std C37.11. The external devices including protective relays are excluded from IEEE Std C37.04, IEEE Std C37.06, IEEE Std C37.11, et. al., for following reasons:

- 1) Protective relays as a general category do not fall under the charter of the Switchgear Committee.
- 2) The protective relays are outside the scope of the above cited documents but are cov-

ered by the requirements of IEEE Std C37.90.

The requirements of IEEE Std C37.06, Table 8, Footnote #2 apply to those relays and devices that are necessary to make a circuit breaker work, such as trip coils and anti-pump relays. In contrast, an overcurrent protective relay or a bus differential relay is not covered by IEEE Std C37.06, Table 8, Footnote 2, as it is not an integral part of a circuit breaker itself. Rather, it is part of the overall design of the protection and control scheme of the substation and transmission system.

The functions attached to the logic of circuit breaker control are listed in IEEE Std C37.11. In particular, please note this quotation taken from the Scope (1.1) of IEEE Std C37.11-1997: "Only the basic control elements of the circuit breaker, including reclosing where required are included in this standard. This standard does not include devices or circuits for protective relaying, special interlocking, etc, since these are dependent upon the specific applications of a particular circuit breaker."

Interpretation Request #2

Does the answer to Interpretation Request #1 make a difference whether the IEEE C37.90 relays are installed in the breaker cabinet or installed remotely?

Interpretation Response

No, in the answer to Interpretation request #1, it does not make a difference where the IEEE C37.90 relays are located.

Interpretation Request #3

Does the answer to Interpretation #1 make a difference whether the IEEE C37.90 relays are provided by the breaker manufacturer as a package or installed by the end user?

Interpretation Response

No, in the answer to Interpretation request #1, it does not make a difference where the IEEE C37.90 relays are provided by the breaker manufacturer as a package or installed by the end user.

Interpretation Request #4

Does a circuit breaker manufacturer have a choice to use auxiliary tripping relays that meet either the IEEE C37.90 or the IEEE C37.06 voltage requirements?

Interpretation Response

No, according to 6.7.4 of IEEE Std C37.04-1999:

6.7.4 Shunt release (trip) device with necessary control auxiliary switches. A shunt release coil with necessary control auxiliary switches shall be capable of tripping the circuit breaker when any voltage throughout the control voltage range is applied (see ANSI C37.06-1997).

Therefore, the circuit breaker manufacturer does not have a choice to use IEEE C37.90 voltage limits versus those in IEEE Std C37.06. If the relays are an integral part of the control of the circuit breaker as outlined in IEEE C37.11™, they shall comply with IEEE C37.06 requirements. If they are not part of the control of the circuit breaker, they should comply with IEEE C37.90 requirements.

Interpretation Request #5

Can the Committee provide any more guidance to where IEEE C37.06 and IEEE C37.90 begin and end in this regard? IEEE Std C37.06 reaches out to even remotely installed devices per Footnote #2, while the scope and definition clauses of IEEE Std C37.90 would seem to apply it to even the closing and anti-pumping relays of circuit breakers.

Interpretation Response

Yes, IEEE C37.11 makes the distinction clear. See the quotation taken from the Scope (1.1) of IEEE Std C37.11, given in the answer to Interpretation Response #1. One of the reasons IEEE Std C37.11 was created was to clarify the requirements relative to just these types of questions. IEEE Std C37.06 addresses only those devices required for the functional performance of circuit breakers. IEEE Std C37.90 addresses protective relays other than those that are part of the functional control of the circuit breaker as defined in IEEE Std C37.11.