# RODE – Recloser Interface Discussion Group Meeting Minutes

October 7, 2019 – San Diego, California

**Chair**: Mark Feltis

## Meeting Minutes

**1. Call to Order** — Mark Feltis

Order was called at 3.47 pm

**2. Patent concerns reminder** — Mark Feltis

Reviewed IEEE patent slides

Reminder was given that in this informal discussion group (to "see where we have been as an industry"), we discuss various manufactures' existing recloser interfaces. No "promotion" or "degradation" is intended in such discussions.

**3. Introduction of Members and Guests** — Mark Feltis

Introductions were made

**4. Attendance** — Mark Feltis

Routed an attendance sheet; 19 attendees total (See Annex)

**5. Review Minutes** — Mark Feltis

Minutes of past Discussion Group meeting (October 17, 2018) were reviewed.

Motion to accept: Francois Soulard; Second: Brendan Kirkpatrick

**6. New Table: Common and redundant signals/pins for triple-single reclosers**

Quickly reviewed existing document of existing, known recloser interfaces in North America. Then reviewed new table "Common and redundant signals/pins for triple-single reclosers" (included in the Annex of these minutes). This comparison table is an initial attempt to answer the action items from the last meeting [October 17, 2018 (Kansas City, Missouri)]:

- What signals/pins are common across the various recloser interfaces?
- What signals/pins might seemingly be redundant within given recloser interfaces?

Only "triple-single trip/close" capable reclosers were considered in the comparison table put together by Mark Feltis. Thus, 14-pin (Eaton), 19-pin (Eaton), and 32-pin (Tavrida) were eliminated from the comparison, as they are "three-phase-only trip/close" reclosers (the 14-pin and 19-pin interfaces are the oldest of all the recloser interfaces).

Most of the newer "triple-single trip/close" capable reclosers are nominal 155 Vdc for the trip and close circuits. In discussion, the following point was made: if there was a common recloser interface with a standard trip/close voltage (e.g., 155 Vdc), then there probably would be

differences in trip/close current draw levels (due to recloser actuator circuit differences). Thus, any trip/close circuit through a common recloser interface (with a standard trip/close Vdc) would need to be designed for some maximum trip/close current draw (for a decided maximum cable length).

There were no direct corrections/updates given for the comparison table.

**7. Other discussion**

Discussion turned to seeing if there were other recloser interfaces used in North America that weren't part of the document of existing, known recloser interfaces in North America:

- Whipp&Bourne (likely referring to the GVR model, which is a "three-phase-only trip/close" recloser)
- NOJA Power (they have an OSM recloser model that is "triple-single trip/close" recloser)
- Other foreign vendors (e.g., from Japan or Korea), but no one had particular names

Discussion turned to self-diagnostics for things going on up in the recloser switch (e.g., leakage current indicating insulation problems, vacuum bottles losing vacuum), but such are not necessarily serviceable/realizable by routing extra signals/pins through a recloser interface. Of particular interest was continuously monitoring trip and close circuits for continuity … could some signals/pins be brought through the recloser interface that would be useful in realizing such continuous monitoring?

**8. Action item … for everyone**

Between now and the spring 2020 meeting, the action item for everyone is to provide written input for the following questions:

- Why move to a common recloser interface?
- What are we giving up by going to such a common interface?

Answer the questions from your vantage point … utility, consultant, manufacturer, etc.

Provide feedback on these action items (and any corrections/additions to these minutes) to Mark Feltis (mark_feltis@selinc.com). Meeting was adjourned at 5:25pm

**9. Next Meeting**

Spring 2020: Peppermill Resort, Reno, Nevada (May 3-7, 2020)

# Annex

**Common and redundant signals/pins for triple-single reclosers**

| feature | 24-pin (ABB) | 26-pin (Eaton) | 27-pin (Joslyn) | 32-pin (G&W et al) | 37-pin (Eaton) | 40-pin (Siemens) | 42-pin (G&W et al) |
|---|---|---|---|---|---|---|---|
| 4-wire current | X | X | | X | X | | X |
| 6-wire current | | | X | | | X | |
| 3 – 52a | X | X (1) | X | X | X | X | X |
| 3 – 52b | X | X (1) | | | X | X | X |
| 3 – 69a | | | | | X | | |
| 3 – 69b | | X (2) | | | | X | |
| 1 – 69a | | | X | | | | X (3) |
| 1 – 69b | X | | | | | | |
| 1 – three parallel 69b's | | | | X | X | | X (3) |
| 1 – Vdc whetting | X | X | X | X | X | | X |
| 3 – Vdc whetting | | | | | | X | |
| 1 – Ground | | X | | X | X | | X |
| 2-wire heater Vac power | X | | | | | X | |
| 2-wire LEA Vdc power | | | | | X | | X |
| 4-wire LEA (source side) | X | | | X | X | | X |
| 3-wire LEA (source side) | | X | | | | | |
| 4-wire LEA (load side) | | | | X | X | | X |
| 1 – LEA shield | | | | | X | | |
| 6-wire H-bridge trip/close | X | | | X | X | X | X |
| 3-wire alternate trip/close | | | | | X | | |
| Trip/close Vdc | 53 | 53 | 155 | 155 | 155 | 155 | 155 |
| Redundant signals/pins (?) | | Trip/close power | Current returns (5); | LEA neutral (6) | LEA neutral | Current returns | LEA neutral (three each |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | and return (4) | Trip/close return (4) | | (6); two Ground wires | (5); Vdc whetting | side, source and load) |

(1): 52a and 52b contacts embedded in trip and close circuits, respectively.
(2): 69a contacts embedded in yellow lockout handle circuitry, producing effective 69b behavior.
(3): single 69a contact for Tavrida OSMAl_4; three parallel 69b's for other reclosers
(4): probably needed for trip/close current ampacity
(5): function of 6-wire current (two wires each phase)
(6): wiring convenience for 4-wire LEA (separate source and load neutral connections at control)

| Attendance | | | |
|---|---|---|---|
| **First Name** | **Last Name** | **Representing** | **Oct 7, 2019** |
| Mark | Feltis | Schweitzer Engineering Labs | x |
| Kate | Cummings | G&W Electric | Excused |
| Nenad | Uzelac | G&W Electric | |
| David | Beseda | S&C Electric | |
| Pete | Meyer | S&C Electric | x |
| Brendan | Kirkpatrick | Southern California Edison (SCE) | x |
| Harry | Hirz | G&W Electric | x |
| Chris | Ambrose | Federal Pacific | x |
| Ian | Rokser | Eaton | x |
| Travis | Johnson | Xcel Energy | |
| Anil | Dhawan | ComEd | x |
| Paul | Found | BC Hydro | x |
| Robert | Foster | Megger | |
| Francois | Soulard | Hydro-Quebec | x |
| Jacob | Midkift | Dominion Energy | x |
| Brad | Lewis | American Electric Power (AEP) | |
| Steve | Pell | Siemens | x |
| Edwin | Almeida | Southern California Edison (SCE) | |
| Mohit | Chhabra | S&C Electric | |
| Brian | Roberts | Southern States, LLC | x |
| Karl | Fender | Southern States, LLC | |
| Roberto | Olivares | Siemens | |
| Karla | Trost | G&W Electric | |
| Bharat | Jagadeesan | Southern States, LLC | |
| Jason | Cunningham | Southern States, LLC | |
| Nadia | Elkhattabi | Hydro-Quebec | x |
| Dan | Busilan | Dominion Energy | x |
| Peter | Glaesman | PCore Electric | x |
| Michael | Culhane | Eaton | x |
| Don | Martin | G&W Electric | x |
| Robert | Hanna | ABB | x |
| Srikant | Venkatesh | Schweitzer Engineering Labs | x |