Modular identification system

Application

To be able to locate a relay unit in a protective relay, the unit is identified with a unique item designation. Furthermore, the electrical connection point has a unique terminal designation. These designations are used on circuit diagrams, terminal diagrams and elsewhere to identify locations of terminals and modules.

A circuit diagram for a protective relay shows the units of which the protective relay is built up, the internal wiring between the units and the external connection of the relay. The terminal diagram shows in a simplified way the functioning of the protective relay and the external connection of the relay.

The item designations are based on a coordinate system of U and C modules and the terminal designations are based on the size of the unit. U is the height module and C is the width module. The U-module (44.45 mm, 1.75 in), derived from the 19” standard, is the vertical distance between the groups of holes in the fixing bars of cubicles. The C-module (7 mm, 0.28 in) is the horizontal distance between the mounting holes in apparatus bars.

Fig. 1 The U and C modules form a coordinate system. Note that the item designations of each unit is the combination of U and C modules covered by that unit’s upper left corner, e.g. 101 and 325.
Illustration of item and terminal designations

CombiFlex

The left unit of the protective relay in Fig. 2 has the item designation 101, where the first figure stands for the U-module position and the next two for the C-module position.

The next unit, 107, has the same U-module position but has added 6C to the C-module position. Unit 325 has added 2U and 24C to its module position.

A complete terminal designation for the protective relay shown in Fig. 2, Fig. 3, and Fig. 4 consists of e.g. the item designation 101 and the terminal designation 11 A. This terminal, 101:11 A, is encircled in the terminal diagram.

An example of the rear of a protection assembly with COMBITEST test switch is shown in Fig. 4. Terminal positions are used for internal and external connections.
MULTI-FUNCTION CURRENT PROTECTION

1), 2) BINARY INPUT PROGRAMMABLE
3)-7) RELAY OUTPUTS 1-5 PROGRAMMABLE FUNCTION
6) LOSS OF AUXILIARY VOLTAGE

PROGRAMMABLE FUNCTION FOR BINARY INPUTS;
- BLOCKING ENABLING 1>, 1>>, 1>>>;
- THERMAL RESET Ø, BREAKER FAILURE EXTERNAL START;
- ALTERNATIVE SETTINGS; RESET OF LED INDICATIONS.

PROGRAMMABLE FUNCTION FOR BINARY OUTPUTS;
- START AND TRIP 1>, 1>>, 1>>>;
- THERMAL ALARM Ø, THERMAL TRIP Ø;
- BREAKER FAILURE RE-TRIP; BREAKER FAILURE BACK-UP TRIP
- ALTERNATIVE SETTINGS; IN SERVICE.

BINARY INPUT OPTIONS;
- CIRCUIT-BREAKER CLOSED;
- CIRCUIT-BREAKER READY;
- BLOCKING OF AUTORECLOSED;

BINARY OUTPUT OPTIONS;
- AUTORECLOSING ON;
- AUTORECLOSING READY
- AUTORECLOSING STARTED;
- AUTORECLOSING PULSE TO CIRCUIT BREAKER;
- AUTORECLOSING UNSUCCESSFUL; INTERNAL OVERREACH TRIP.

Fig. 3 Terminal diagram 1MRK 001 083-HAA
Fig. 4 Terminal locations at the rear of a protection assembly

Fig. 5 Circuit diagram 1MRK 001 083-HA
Terminal bases are marked with figures and letters according to Fig. 6. The terminal designation for a relay unit depends on the size of the mounted unit, not on the terminal base.

One and the same terminal, 21 (see Fig. 7), in an RX 4 terminal base can get four different terminal designations depending on the size of the mounted relay unit.

![Fig. 6 Terminal base seen from the front](image)

**From rear side**

![Fig. 7 Terminal designation for different relay units dotted mounted on the same terminal base](image)
Fig. 8 Two of the same protective relays, the encircled 101 and 131, mounted in an equipment frame.

The terminal designation for one terminal in the left unit of the left protective relay will be 101:101. The same terminal in the right protective relay has the terminal designation 131:101 as this relay has added 30C-modules to its position 131.

Fig. 9 C-module markings

- a) Horizontal marking pipe
- b) Horizontal marking bar
- c) Marking strips on both sides of the marking bar
- d) The C-module designation for the right-hand relay in Fig. 8 together with the U-module designation 131 for the right-hand relay
Fig. 10 Vertical U-module marking tape
Contact us

ABB AB
Substation Automation Products
721 59 Västerås, Sweden
Phone: +4 6 (0) 21 32 50 00

www.abb.com/protection-control

ABB India Limited
Plot no. 4A, 5 & 6, II Phase
Peenya Industrial Area
Bangalore - 560 058, India
Phone: +91 80 2294 9632
Facsimile: + 91 80 2294 9188

Note:
We reserve the right to make technical changes or modify the contents of this document without prior notice. ABB AB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.
We reserve all rights in this document and in the subject mat illustrations contained herein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in part – is forbidden without prior written consent of ABB AB.

© Copyright 2014 ABB.
All rights reserved.