



Abbreviation index

Abbreviation	Description
AC	Alternating Current
DC	Direct Current

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1 Purpose of document

This document will provide technical information about the ABB earth fault detection unit US C016 A.

2 Features

- Potentially-free detection of ground currents
- Measuring range ± 20 A
- Constant overcurrent 300 A
- Alarm and trip signals
- Adjustable settings for pick-up level and operating time
- Local display of actual currents
- Heater for low temperature applications
- Industry 4.0 ready by Modbus TCP interface for condition-based monitoring*
- Ground connection monitoring*

* *advanced version*

3 Brief description

The earth fault detection unit is designed for the potential free detection of earth fault currents. The earth fault detection unit is integrated into the electrical system by running the main grounding cable of the equipment through it.

It monitors AC and DC current variables and generates the following signals: Alarm AC, trip AC, alarm DC, trip DC and power supply ok. Display units are provided to show actual current readings & settings and to set up the threshold levels and time delays.

The earth fault detection unit comprises a dust and splash-water-proof casing, a LEM current transformer, an auxiliary supply unit, measuring & signal transducers and a circuit breaker. Optionally a Modbus TCP communication interface or a ground loop supervision relay can be installed. A tube passes through the casing forming a bushing for the ground conductor. The auxiliary supply and signal cables enter the casing via cable glands. Terminal blocks are provided for the signal leads.

Both AC and DC are detected by the current transformer and then compared with the set threshold limits. Actual currents and relay status are indicated with display units. The latching relays for alarm and trip maintain their operated status until the fault has been cleared and reset locally. Pressing the reset buttons has no effect as long as the fault is still active and being detected by the Earth Fault Detection Unit. DC alarm and trip signals are configured in a working current principle not to trip in case of power loss.

4 Technical data

4.1 Auxiliary supply

Supply voltage	85...264 V _{AC} 90...300 V _{DC}
Frequency	45...65 Hz
Input current	< 1 A _{AC/DC}

4.2 Current input

Rated current I _N	± 20 A _{AC/DC}
Measuring range	± 300 A _{AC/DC}

4.3 Contact ratings

4.3.1 Current supervision contacts

Utilization category	AC15	AC15	DC-13	DC-13	DC-13
Rated operational voltage	120 V	230 V	24 V	110 V	230 V
Rated operational current	3 A	3 A	2 A	0.2 A	0.1 A
Minimum contact rating	1 mA at AC/DC 24 V				

4.3.2 Earth link supervision

Advanced version only					
Utilization category	AC13	AC14	DC-12	DC-12	DC-12
Rated operational voltage	230 V	230 V	24 V	110 V	220 V
Rated operational current	5 A	3 A	1 A	0.2 A	0.1 A
Minimum contact rating	1 mA at AC/DC ≥ 10 V				

4.4 Settings

Current threshold setting range	0...20 A
Time delay setting range	0...3600 s in 1 s steps

4.5 Resetting

Each contact individual through display units

4.6 Protection class

According to IEC 60529.

Casing (IP66) and cable glands IP 65 ¹⁾²⁾.

¹⁾ After the cables have been terminated, the tops of the pressure screws must be sealed with a suitable compound and seals placed over the threads of the glands.

²⁾ Dust and splash-water-proof.

4.7 Ambient conditions

Ambient temperature	Operating	-40 °C...+55 °C (-10 °C without heater)
	Storage	-25 °C...+75 °C

5 Mechanical data

5.1 Mechanical design

Dimensions	600 x 380 x 210 mm
Ground conductor bushings	Inner diameter 27 mm
Power supply terminals	0.14...4.0 mm ²
Signal terminals	0.14...2.5 mm ²
Ground loop monitoring terminals	0.14...4.0 mm ²
Ground conductor	Recommended gauge 150 mm ²
Weight	Approx. 11 kg
Material	Sheet steel (casing 1.38 mm, door 1.5 mm)
	Dip coat primed, outside powder-coated
Color	RAL 7035
Mounting holes	Diameter 8 mm

5.2 Drawing

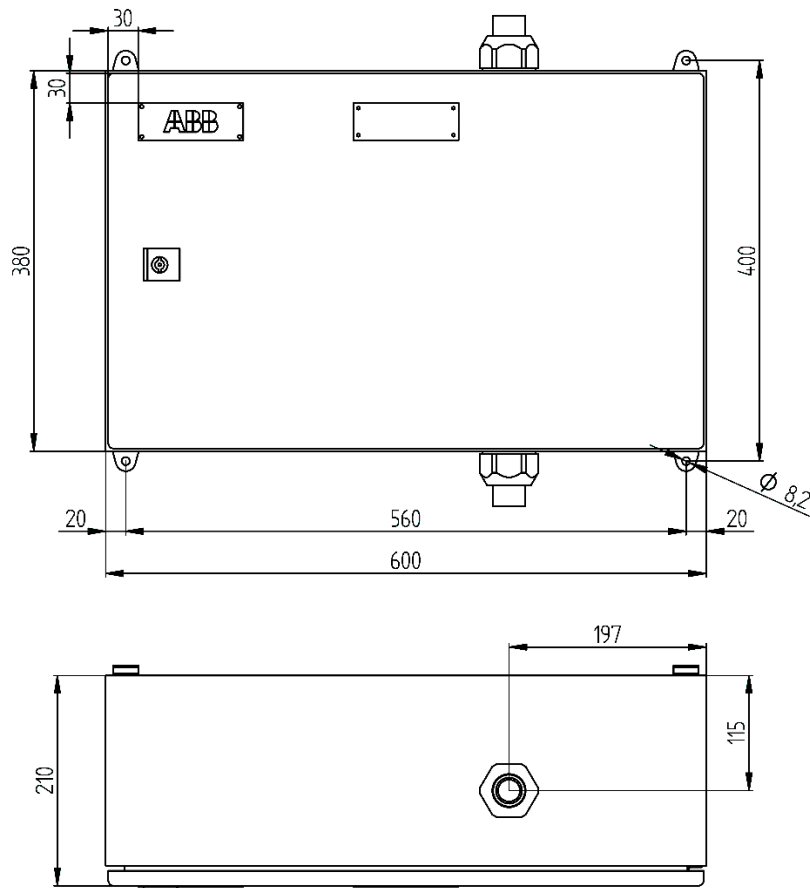


Figure 1: Mechanical drawing

6 Ordering data

Basic version	US C016 A0001	3BHE057078R0001
Advanced version	US C016 A0002	3BHE057078R0002

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