

Model 6 Low Voltage MCC High Resistance Ground Unit



Now, more than ever, reliability is foremost on the minds of those designing and operating industrial, low voltage power systems. Unexpected power loss can create serious production problems, have an adverse environmental impact, and result in substantial economic damage for the unprepared.

Ungrounded power systems were once used, in the belief that they were more reliable. Consistent with our history of developing innovative solutions, we have developed a high resistance ground unit (HRGU) intended for systems where continuity of service is very important. This assembly provides a path for ground current through a resistor bank, which limits the ground-fault current flow to a value equal to, or slightly greater than, the capacitive charging current of the system. This means fewer outages and less downtime.

High resistance grounding offers many of the advantages of both solidly grounded and ungrounded systems, including:

- Partial suppression of transient overvoltages
- Reduction of equipment damage due to ground fault
- Ability to continue to operate the system with a ground fault present on one of the phases

The Model 6 low voltage motor control centers (LVMCC) high resistance ground unit complements existing Model 6 LVMCC equipment, as part of a complete motor control system.

Applications

The Model 6 LVMCC high resistance ground unit was designed for use in 480 and 600 V ungrounded delta, and ungrounded wye 50 and 60 Hz systems. A separate 500 va control power transformer is included to supply voltage to high resistance ground unit controls.

The high resistance ground unit is available for both 3-phase, 3-wire wye and delta power systems. Systems with a neutral connection available do not require a grounding transformer.

The fundamental purpose of high resistance grounding is to provide sufficient system damping to overcome the negative effects of arcing ground faults, and at the same time retain all the advantages of an effectively ungrounded system. A Model 6 LVMCC high resistance ground unit is the ideal solution for industrial or commercial customers who need the capacity to:

- Continue operation of a facility during the first phase to ground fault
- Easily locate a fault
- Effectively plan for repairs
- Provide system stability
- Minimize overvoltages by damping high frequency system oscillations
- Detect and warn when the first ground fault occurs in the system
- Monitor the condition of the system voltage
- Pulse the ground fault current, so its path can be traced
- Enable the system to continue operation with a single line-to-ground fault



HRGU Indication/Control Panel

HRGU Indication/Control Panel Features

- “System Normal” pilot light (green) indicates system is operating normally
- “Fault” pilot light (red) indicates a fault has occurred in the system
- “Normal-Pulse” selector switch
- “Test” pushbutton
- “Fault Reset” pushbutton

The Model 6 LVMCC high resistance ground unit facilitates a controlled, sequential process shutdown, thereby reducing the adverse effects resulting from an uncontrolled shutdown.

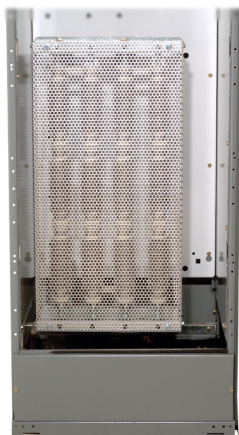
This system is invaluable to the following industries:

- Petroleum & Chemical
- Water & Waste Water Treatment
- Pulp & Paper
- Other continuous process industries

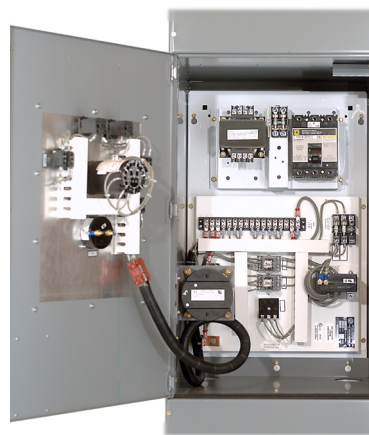
Significant Design Features

- Resistor bank limits overvoltages by grounding the system neutral through impedance
- High resistance ground indication/control panel provides a user interface for the system (see sidebar for more information)
- Grounding transformers are supplied when the customer’s installation does not have neutral connections available, and provide an artificial neutral for zero-sequence currents
- Pulsing contactor provides a method for tracing a ground fault to its source – the contactor is used to bypass a portion of the grounding resistor, so the current, proportional to resistance in the circuit, will rise, and the resulting current pulse is detectable with a handheld, clamp-on ammeter
- Voltmeter relay (single-setpoint meter/relay) with an adjustable voltage pickup to monitor current through grounding resistors
 $V \text{ (voltage)} = I \text{ (current)} \times R \text{ (resistance in ohms)}$

Rest assured with a Model 6 LVMCC high resistance ground unit as part of your power quality solution, over 100 years of experience give Square D the knowledge and insight necessary to protect your electrical system from the damage caused by sudden and unexpected power loss.



Resistor Bank



Pulsing Contactor

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