

The 469 Motor Management Relay is a microprocessor based relay designed for the protection and management of medium and large horsepower motors and driven equipment. The 469 is equipped with six output relays for trips, alarms, and start blocks. Motor protection, fault diagnostics, power metering, and RTU functions are integrated into one economical drawout package. The single-line diagram below illustrates the 469 functionality using ANSI (American National Standards Institute) device numbers.

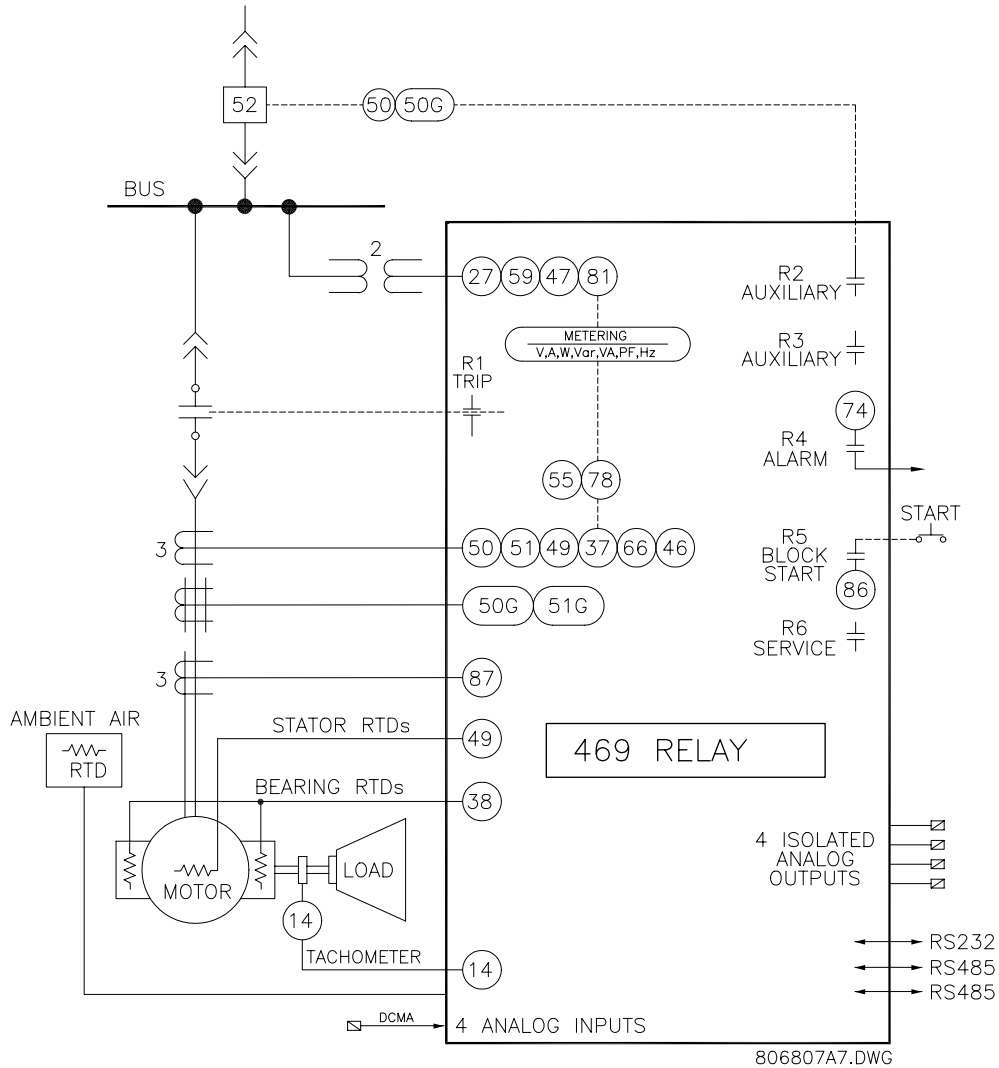


Figure 1-1: SINGLE LINE DIAGRAM

Typical applications include:

- Pumps
- Mills
- Debarkers
- Conveyors
- Blowers
- Fans
- Shredders
- Refiners
- Chillers
- Compressors
- Extruders
- Cranes
- Crushers

Some of the protection highlights are detailed here; a complete list is shown below. Four assignable digital inputs may be configured for a number of different features including tachometer or generic trip and alarm with a programmable name. The thermal model incorporates unbalance biasing, RTD feedback, and exponential cooling. In addition to the 15 standard overload curves, there is a custom curve feature and a curve specifically designed for the starting of high inertia loads, when the acceleration time exceeds the safe stall time. A second overload curve is provided for two-speed motors. Ground faults or earth leakage as low as 0.25 A may be detected using the GE Power Management 50:0.025 Ground CT. CT inputs for phase differential protection are also provided. The 12 RTD inputs provided may be individually field programmed for different RTD types. Voltage transformer inputs allow for numerous protection features based on voltage and power quantities. Four 4 to 20 mA analog inputs may be used for tripping and alarming on any transducer input such as vibration, pressure, flow, etc.

ANSI		Trip	Alarm	Block Start	Control
51	Overload	●	●	●	●
86	Overload Lockout			●	
66	Starts/Hour & Time Between Starts			●	
	Restart Block (Anti-Backspin Timer)			●	
50	Short Circuit & Short Circuit Backup	●		●	
	Mechanical Jam	●		●	●
32	Reverse Power	●	●	●	
37	Undercurrent/Underpower	●	●	●	
46	Current Unbalance	●	●	●	
50G/51G	Ground Fault & Ground Fault Backup	●	●	●	
87	Differential	●		●	
	Acceleration	●		●	
49	Stator RTD	●	●	●	
38	Bearing RTD	●	●	●	
	Other RTD & Ambient RTD	●	●	●	
	Open RTD Alarm		●		
	Short/Low RTD		●		
27/59	Undervoltage/Overvoltage	●	●	●	
47	Phase Reversal	●		●	
81	Frequency	●	●	●	
	Reactive Power	●	●	●	●
55/78	Power Factor	●	●	●	●
	Analog Input	●	●	●	
	Demand Alarm: A kW kvar kVA		●		●
	SR469 Self-Test, Service		●		
	Trip Coil Supervision		●		
	Welded Contactor		●		
	Breaker Failure		●		
	Remote Switch	●	●	●	
14	Speed Switch & Tachometer Trip	●	●	●	
	Load Shed Switch	●		●	
	Pressure Switch	●	●	●	
	Vibration Switch	●	●	●	
19	Reduced Voltage Start				●
48	Incomplete Sequence (Reduced Voltage Start)	●		●	●
	Remote Start/Stop				●
	Over Torque		●		
	Forced Relay Operation				●

PROCTLA5.CDR

Figure 1–2: PROTECTION FEATURES

Fault diagnostics are provided through pretrip data, event record, trace memory, and statistics. Prior to issuing a trip, the 469 takes a snapshot of the measured parameters and stores them with the cause of the trip. This pre-trip data may be viewed using the **NEXT** key before the trip is reset, or by accessing the **A1 STATUS / LAST TRIP DATA** actual values. The 469 event recorder stores up to 40 time and date stamped events including the pre-trip data. Each time a trip occurs, the 469 stores a trace of 8 cycles pre-trip and 8 cycles post-trip for all measured AC quantities. Trip counters record the number of occurrences of each type of trip. Minimum and maximum values for RTDs and analog inputs are also recorded. These features enable the operator to pinpoint a problem quickly and with certainty.

Power metering is built into the 469 as a standard feature. The table below outlines the metered parameters available either through the front panel or communications ports.

The 469 is equipped with 3 fully functional and independent communications ports. The front panel RS232 port may be used for 469 setpoint programming, local interrogation or control, and upgrading of 469 firmware. The Computer RS485 port may be connected to a PLC, DCS, or PC based user interface program. The Auxiliary RS485 port may be used for redundancy or simultaneous interrogation and/or control from a second PLC, DCS, or PC software.

There are also four 4 to 20 mA or 0 to 1 mA (as specified with order) transducer outputs that may be assigned to any measured parameter. The range of these outputs is scalable.

Additional features are outlined in the table below.

Table 1–1: METERING AND ADDITIONAL FEATURES

METERING	ADDITIONAL FEATURES
Voltage	Drawout case (for ease of maintenance/testing)
Current and amps demand	Reduced voltage starting control for single transition
Real power, kW demand, kW power consumption	Trip coil supervision
Apparent power and kVA demand	Flash memory for easy firmware updates
Reactive power, kvar demand, kvar consumption/generation	
Frequency	
Power Factor	
RTD	
Speed in RPM with a key phasor input	
User-programmable analog inputs	