

SR 489 Firmware Revision History

FIRMWARE REVISION	BRIEF DESCRIPTION OF CHANGES	STARTING SERIAL#	RELEASE DATE	ECO#
153.000 CURRENTLY IN PRODUCTION	<ul style="list-style-type: none"> Voltage restraint on the phase overcurrent element has been changed to be blocked when a VT fuse failure is present. 		Aug 10, 2004	489-250
152.000	<ul style="list-style-type: none"> Distance Element improved to provide better accuracy at High CT ratio 		May 16, 2003	489-243
151.000	<ul style="list-style-type: none"> Main code and boot code modified for use with new LCD display module. Relays with boot code revisions 30G220A0.000 and higher, are incompatible with firmware versions earlier than 30G282A8.000. Differential algorithm improved to provide better stability during external faults. 			489-219
150.000	<ul style="list-style-type: none"> Due to component obsolescence, new hardware has been released, which will make relays with boot code revisions 32H210A0.000 and higher, incompatible with firmware versions earlier than 32H150A8.000. Neutral currents are now displayed in the event record information. 	A3211495	Dec 19, 2001	489-209
141.000	<ul style="list-style-type: none"> De-sensitized and improved the Loss of Excitation and Distance element impedance magnitude calculations. 	A3200620	June 2, 2000	489-158
140.000	<ul style="list-style-type: none"> IRIG-B Time synchronization code added. The new boot prom 32G200A0.000 activates the IRIG-B functionality. NOTE: 489 units with boot prom revisions less than 32G200A0.000 CAN be upgraded to firmware revision 140.000, but IRIG-B functionality will not be available. 489 units with boot prom revisions equal to or greater than 32G200A0.000 CAN NOT be downgraded to older firmware revisions. 5A secondary CT types selection added to Ground Current Sensing setpoints. Added initial generator running hours and added alarm for generator running hours. VT ratio range changed from 1 to 240 to 1 to 300 	A3200184	March 3, 2000	489-141

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132.000	<ul style="list-style-type: none">Loss of Excitation Offset range changed to 1.0 to 300.0 ohms secondary		Feb 05/99	489-099

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131.000	<ul style="list-style-type: none"> • Trip coil supervision element was changed to work with breaker closed or open/closed. • Pulsed output of Kwhrs and Kvarh were added. • The range for Volts/Hz pickup for trip and alarm were changed from 1.00 -1.99 to 0.50 - 1.99. As well the upper range for the trip and alarm delay setpoints were changed to 150.0 seconds. • DNP 3.0 level 2 communications protocol was added with associated setpoints. • Added enhanced waveform capture which allows partitioning of the waveform capture memory. • Reactive Power Element was enhanced to allow for separate delay times for both positive and negative reactive power alarm and trip Modbus addresses (0x2207,0x2211,0x2210, 0x220F) . Also both trip and alarm for positive and negative reactive power can be disabled by setting the maximum alarm and trip levels (2.01). The positive and negative reactive power alarm and trip levels upper range was changed from 1.5 to 2.0 x Rated. • Ground Directional Element was added. • An instantaneous High Set Phase overcurrent element was added. • Loss of Excitation using an impedance element (device #40) was added. • Ground switch digital input was added for use with supervising the ground directional and neutral overvoltage element. • Added Distance Element using two protection zones. Neutral overvoltage element was enhanced to allow for supervision using a grounding switch and two setpoints were added to allow the neutral overvoltage element to have a reset rate and use an inverse time curve or definite time for the trip. • Added all the actual values, trip pickups, alarm pickups, trip counters associated with the new elements to the relays actual values displays, memory map, last trip data and event recorder. • The following Modbus address are new - 0x00F0 (time broadcast), 0x00F2 (date broadcast), 0x264, 0x265, 0x2AC, 0x2AD, 0x2AE, 0x2AF, 0x2B0, 0x2B1, 0x335, 0x450, 0x451, 0x466, 0x7A2-0x7A7, 0x100A, 0x1015-0x1017, 0x13d0, 0x13D1, 0x1658, 0x1800-0x180A, 0x1830-0x1834, 0x20C9, 0x20CA, 0x20CB, 0x2100-0x210B, 0x2130-0x213B, 0x2210, 0x2211, 0x2AB0-0x2AB6, 0x30E9, 0x30EA, 0x30F6, 0x30F7, 0x30F8, 0x30f9, 0x3100-0x3400 (Samples Expanded for waveform capture) • The following Modbus addresses have changed description/ranges 0x202, 0x220, 0x2042, 0x2043, 0x2047, 0x2048, 0x2203, 0x2205, 0x2207, 0x220B, 0x220D 	A3270680	Dec 05/97	489-039

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120.000	<ul style="list-style-type: none"> •Dual Setpoints added for protection features S5-S9 •Neutral Overvoltage and Neutral Undervoltage elements added •Thermal Model Added •RTD trip times were optimized from 11s or more to a max. of 6.5 seconds to prevent bearing burn out •Phase angles for currents and voltages were added to the metering displays and to the memory map •Demands and Thermal Capacity added to analog outputs •Passcode protection added for each Communication's port •If a latched trip is now turned off with the condition present the relays will de-energize •RTD alarms and trips set to Latched now indicate the RTD# even after the trip condition disappears 	A3270171	Feb 20/97	489-018