GE Multilin Releases Channel Asymmetry Compensation Feature for the L90 Line Current Differential Relay

New feature saves customers time and money by relaxing requirements for digital communications, expanding application areas and reducing the overall installation cost

Markham, ON, July 2, 2002 – GE Multilin announces major enhancements to its best-selling Line Current Differential Relay, the L90 Universal Relay (UR). The improvements cover several important areas beginning with channel asymmetry compensation, faster scheme synchronization, faster frequency tracking, addition of single-pole dual-breaker autorecloser and several new monitoring functions that provide more flexible relay applications.

Bogdan Kasztenny, UR Project Manager for GE Multilin, says that, “The L90 is an innovative and well-recognized product. It was one of the first widely applied digital line current differential relays in the world. Self-synchronizing of L90 devices over their main communications channels is one of the major innovations facilitating the L90’s success. This revolutionary feature allows L90 intercommunications without time referencing via the Global Position System (GPS), but imposes a strict requirement of zero channel asymmetry for the communications channels (difference in the transmit-receive channel delays). Since the introduction of the relay in late ’90s, utilities have expanded their communications networks tremendously, offering more and more digital communications channels for prospective applications of digital line current differential schemes. These channels, however, are often multiplexed such as in the SONET system, and cannot guarantee zero channel asymmetry (Channel asymmetry as high as 6msec has been reported by some GE customers). GE Multilin, recognizing the importance of applying the L90 relay over lower-quality communications links, has released the GPS-based channel asymmetry compensation feature.”

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According to Ilia Voloh, GE Multilin’s Senior Application Engineer for the L90, the new channel asymmetry compensation feature provides the user with several key benefits: “The GPS-derived time reference required for channel asymmetry compensation is brought into the L90 relay via a regular IRIG-B input. The L90 does not require a dedicated GPS source, and will accept any time reference complying with the IRIG-B standard and meeting accuracy requirements of 250 microseconds. This results in considerable cost savings as a single GPS receiver may supply – via an off-the-shelf distribution network – several L90s or other relays in a given bay or substation.” With the channel asymmetry feature enabled, the L90 protection scheme could cope with channel asymmetry as high as 10 milliseconds, vastly expanding applications areas for the relay.

Two important metering functions have been added, providing the user with extra monitoring tools related to communications and allowing more flexible and efficient protection applications. First, with the GPS time reference established, the L90 scheme continuously measures channel asymmetry. The measurement can be used for user-programmable alarms, or for controlling desired behavior of the L90 scheme should the GPS signal be subsequently lost. Second, the round-trip delay time and its rate of change are measured. Again, this can be used for monitoring the communications system, and for implementation of a required “fallback” strategy should the GPS time reference be lost.

The relay can be applied with or without channel asymmetry compensation as the feature can be dynamically switched on and off. The dynamic condition can be programmed to suit a variety of protection philosophies and may include factors such as: fail-safe relay of the GPS receiver, time accuracy alarm of the GPS receiver, pre-existing channel asymmetry, rate of change in the round-trip time delay, etc. The solution adopted by GE Multilin allows for maximum flexibility and user programmability. For example, the relay could be programmed to continue protecting the line – should the GPS time reference be lost – using the last valid channel asymmetry correction until the step change in the round-trip delay is detected.

Faster synchronization of the L90 system going on-line (after supply power fail, communications fail, relay being taken out of service, etc.) is yet another important enhancement. The L90 can now synchronize and start protecting the line within 10 seconds, as compared with several minutes required so far.

A fine-tuned frequency tracking mechanism allows the L90 scheme to track power system frequency faster, thus increasing accuracy of the relay’s measuring and protection functions under off-nominal frequency conditions.

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A state-of-the-art single-pole / three-pole dual-breaker autorecloser expands applications areas of the L90 to single-pole tripping and breaker-and-a-half installations.

Jeff Mazereeuw, Global Technology Manager for GE Multilin, comments that, “With the recent enhancements to our best-selling L90 relay, we re-confirm our position as the provider of one of the best line current differential protection systems in the world.

About GE Multilin:
GE Multilin, a division of GE Industrial Systems, is a global leader in the design, manufacture, sales and service of protection, metering, control and automation systems, as well as telecommunication networks for utility, industrial and general industry applications. For more information, visit the website at http://www.geindustrial.com/Multilin.

About the UR:
GE Multilin UR products are microprocessor-based solutions that support the open standard EPRI UCA™ MMS/Ethernet protocol. All UR products combine peer-to-peer high-speed communication capabilities with modularity, flexibility and field-programmable FlexLogic™ control for simplified substation automation. UR products include the F35 Feeder Protection Relay, the F60 Feeder Management Relay, the C30 Controller, the L90 Line Differential Relay, the C60 Breaker Management Relay, the T60 Transformer Management Relay, the L60 Phase Comparison Relay, the B30 Bus Differential Relay, the D60 Line Distance Relay, and the M60 Motor Management Relay.

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