

PHASOR MEASUREMENT UNIT MODELLING AND TESTING

GTNETx2 FOR FASTER, MORE POWERFUL NETWORK COMMUNICATION

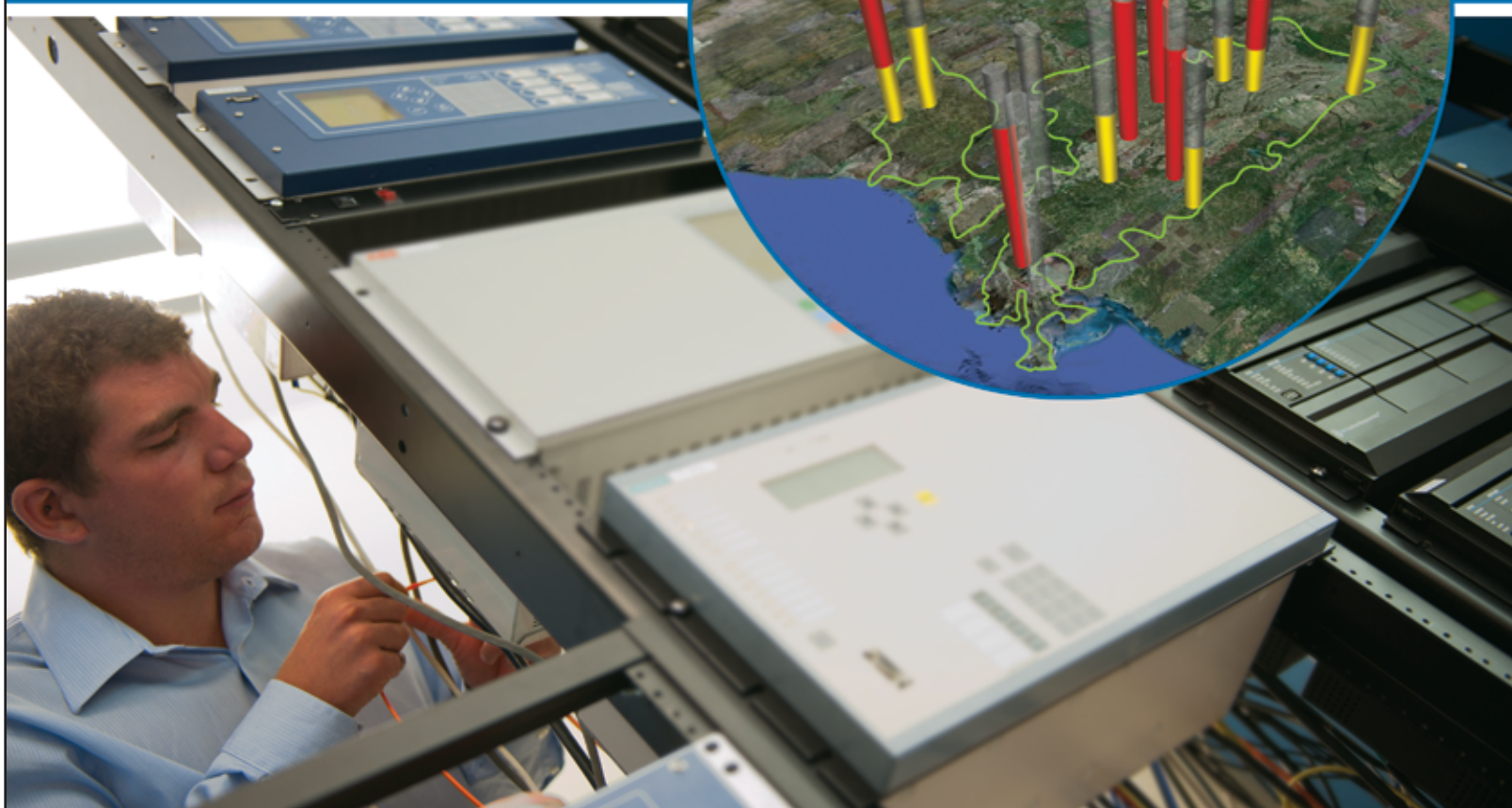
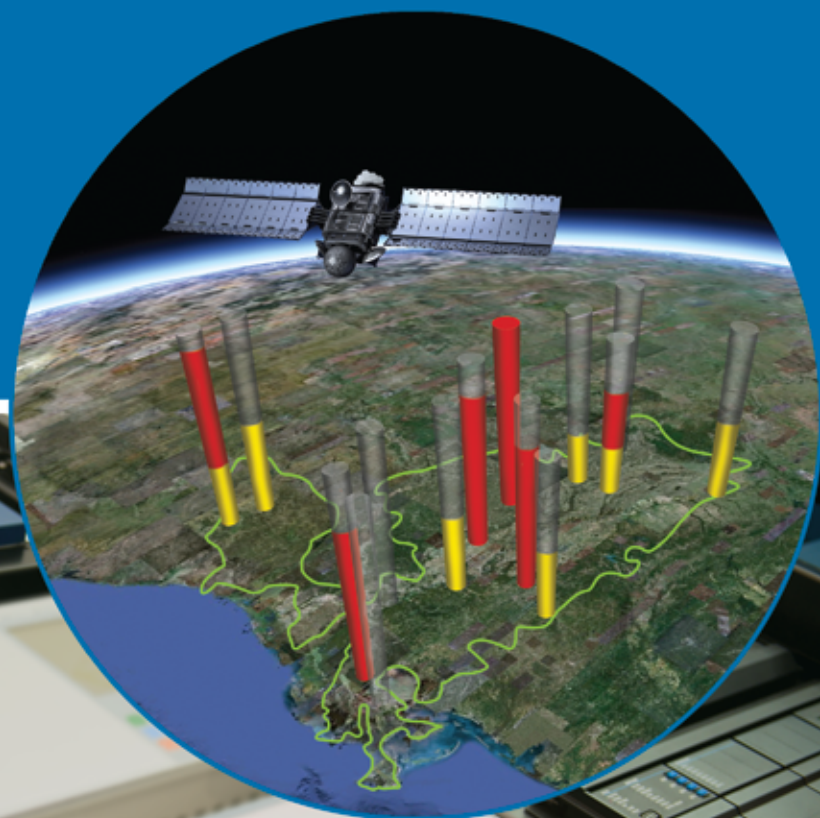
- Second generation GTNET card, used for interfacing network protocols with the RTDS Simulator
- Up to two network protocols can be operated simultaneously from one card
- All existing protocols are supported (SV, GSE, PMU, PB, DNP3, 104)
- Socket (SKT) protocol added - used to interface with external software and physical equipment over a LAN/WAN connection using TCP/UDP sockets
- Choose from three Ethernet connection options (100/1000 Copper, 100BASE-FX, 1000BASE-SX)

GTNET-PMU FOR PHASOR MEASUREMENT UNIT MODELLING

- Simulate multiple PMUs operating independently
- Enable up to 12 phasors for each PMU, including positive, negative, and zero sequence values - plus frequency and rate of change of frequency
- Reporting rate for each PMU selectable from 1 to 240 frames per second
- Models and data stream output follow IEEE C37.118 format
- Cbuilder source code for both the P and M class reference models from Annex C of IEEE C37.118.1-2011 is provided should the user wish to try implementing their own algorithms

GTSYNC FOR EXTERNAL TIME REFERENCE SYNCHRONIZATION

- Used to synchronize the simulation timestep to an external time reference (e.g. GPS clock) and to synchronize devices under test
- Supports IRIG-B and 1 Pulse Per Second (1PPS) over BNC coax or ST type fibre connectors and IEEE 1588 over RJ45 or ST fibre connectors
- Critical for PMU testing



CLOSED-LOOP PROTECTIVE RELAY TESTING USING IEC 61850



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GTNET-GSE FOR IEC 61850 GOOSE MESSAGING

- Supports up to 4 RX/TX modules to simulate between 1 and 4 individual IEDs
- Each module can publish up to 64 points, or 32 points with Quality
- Each module can subscribe to up to 64 points, or 32 points with Quality, from up to 16 unique external IEDs
- GOOSE messaging is easily configured using RSCAD's built-in SCD editor
- GTNET-GSE conformance tested and certified by KEMA

GTNET-SV FOR SAMPLED VALUE MESSAGING

- Provides IEC 61850-9-2 sampled value messaging for voltages and currents
- In IEC 61850-9-2 LE mode, each GTNET-SV protocol can transmit 2 data streams, each with 8 signals (4 V + 4 I), simultaneously
- The sampling rate for 2 streams of sampled values is 80 samples per cycle, or one data stream can be output at 256 samples per cycle
- In non-9-2 LE mode, based on IEC 61869-9 and the Chinese National Standard for SV merging units, one GTNET-SV can publish 1 data stream for up to 24 voltages or currents at a rate of 80 samples per cycle, with < 10 μ s jitter between samples
- Alternatively, GTNET-SV can subscribe to 61850-9-2 messaging at 80 or 256 samples per cycle

