Overview

Publishing of Sampled Values (SV) in IEC 61850 are defined in the sub-section “9-2 LE Implementation Guide - Digital Interface for Instrument Transformers”.

The PIS-11 IEC 61850-9-2 LE Sampled Value Publisher is a hardware platform specific sampled value publisher application for the Smart Grid IoT Platform from Novtech using the Altera (now part of Intel) dual core ARM/FPGA Cyclone V SoC.

This Smart Grid IoT Platform provides eight high precision analogue inputs. The A/D converter is directly controlled by the FPGA producing the sampling rate required for the SV publisher, which is implemented in one ARM core.

The Sampled Values are published at a rate of 4000 frames per second for a grid frequency of 50Hz and 4800 frames per second for 60 Hz.

An eight channel VT/CT interface module is also available from SystemCORP Embedded Technology allowing a direct connection of the Smart Grid IoT Platform to 110 V VTs and 5 A CTs.

Integration

SystemCORP Embedded Technology offers system implementation engineering services for software and hardware development projects using the Smart Grid IoT Platform with various real-time operating systems and hardware interface requirements.

Our services include design consulting, partial and turn-key product design. Please contact us for more information regarding these services.

PIS-11 Key Features

- Support for IEC61850 9-2 LE fixed model with 4 CTs and 4 VTs values per sample transmitted
- 80 samples per cycle for 50Hz and 60 Hz power systems
- SV control block according to IEC 61850 7-2 (16.2)
- Configurable grid frequency of 50Hz or 60 Hz
- Default scale factors 0.001 for current and 0.01 for voltage as per IEC 61850-9-2 LE (7.1.4) – however configurable
- Integer sampled values on accuracy steps of 10mV and 1mA
- Configurable Multicast Address for standard SV range as per IEC 61850-9-2 Annex C
- Configurable VLAN Tagging
- Board Configuration via XML file
- No software development for IEC 61850 SV publisher required

Application

Interface the Altera SMART GRID IoT Platform to primary VT/CT circuit in a substation or to any protection relay test system for merging unit or any other design.
Development Strategy

device Functional Specification → Use Smart Grid IoT Development Board evaluating the feasibility of design → Activate IEC 61850-9-2 LED Sampled Value Publisher No Design Required → Add all additional hardware and software components to design → Design testing and verification

Sampled Value Publisher Output graphically presented by an IEC 61850 SV subscriber test tool.

Online Help and Links

http://www.systemcorp.com.au
http://www.flexibilis.com
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