IEC 61850 SUBSTATION IMPLEMENTATION

Company: Provincial Electricity Authority (PEA)

Location: Thailand

Year: 2018

Success Story

INTRODUCTION

Thailand is the 1st ASEAN country to roll out their masterplan for their existing substations and new substations as well. PEA has finalized their structure in 2018, which includes the high standard technical specifications for ethernet switch to comply with IEC61850 2nd edition, such as IEC61850 GOOSE and MMS with HSR/ PRP redundancy and IEEE1588v2 for time synchronization. The Live demo with interoperability test were also required to make sure the stability.

SYSTEM REQUIREMENTS

- IEC61850-3 Certified
- Operable over a wide temperature range of -40 to 85°C (-40 to 185°F) with long MTBF
- Dual Redundant Power Supply, hot-swappable
- Full Gigabit Layer 3 Ethernet Switch with up to 28 ports, Modular design
- Hardware IEEE1588 supported
- IEC62439-3 (HSR/PRP) supported

IEC 61850 Substation Implementation

OUR SOLUTION

SICOM3028GPT:

SICOM3028GPT is an intelligent modular platform which is an All-in-One solution integrating IEEE1588v2, HSR/PRP, full gigabit, and both layer 2 & Layer 3 availability specifically designed to operate reliably in electrically harsh and climatically demanding utility substation and industrial environments. SICOM3028GPT supports up to 28 gigabit fiber/copper ports, meets the IEC61850 and IEEE1613 standards. KEMA, CE, FCC, EN50155/EN50121, NEMA-TS2.

Product Detail:

www.klgsmartec.com/product/sicom3028gpt/

Ruby3A:

Ruby3A from Kyland is specially designed for reliable industrial networking realizing both PRP (Parallel Redundancy Protocol) and HSR (High-availability Seamless Redundancy) which are defined in IEC62439-3. The Ruby3A provides the ultimate in network reliability and zero failover time from network faults. Full FPGA hardware solution enables Kyland Ruby3A low switching latency and PRP/HSR is selectable via software with the same hardware platform. Precision time synchronization in accordance with IEEE 1588v2 is supported on Kyland Ruby3A.
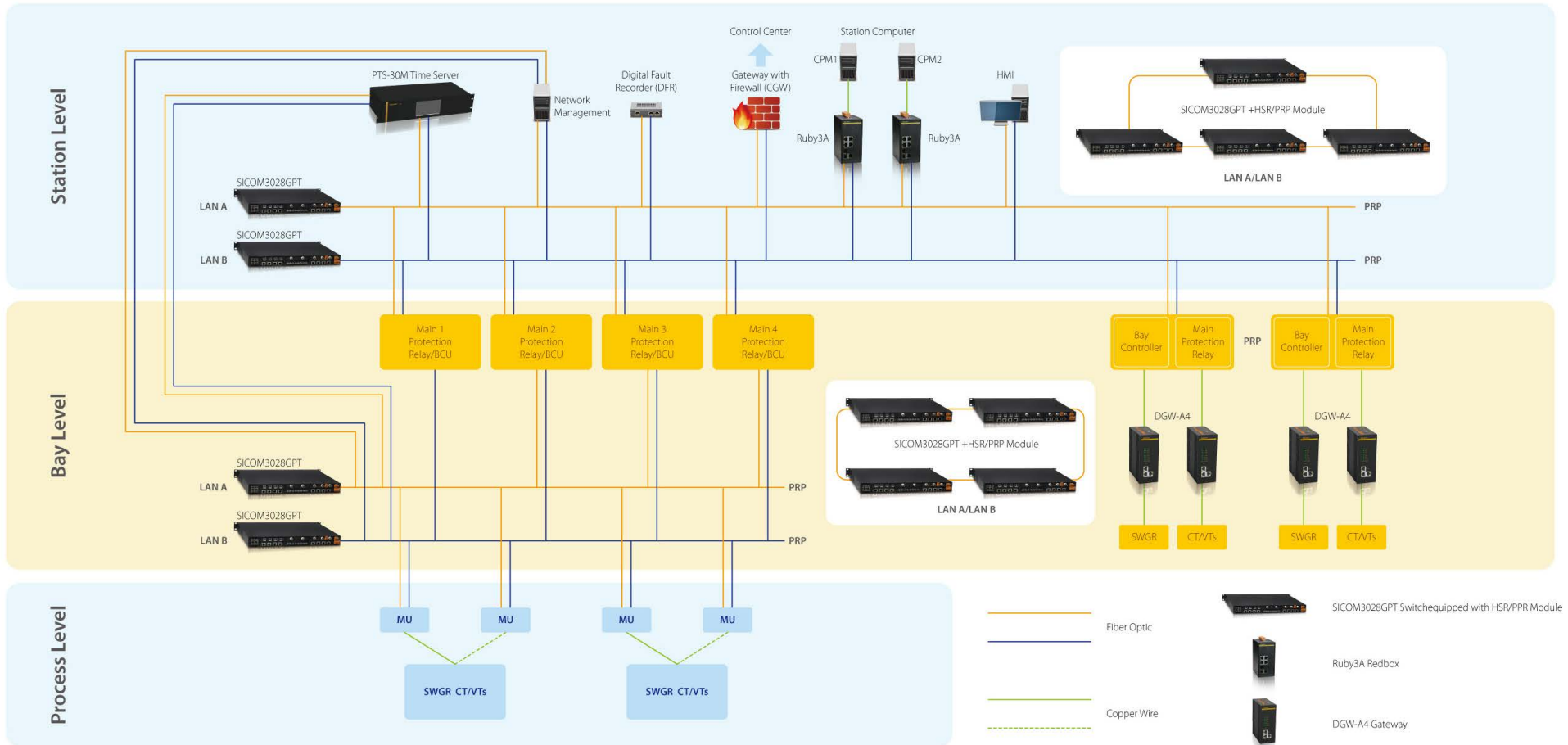
Product Detail:

www.klgsmartec.com/product/ruby3a/

PTS-10:

PTS-10 is a modular-designed multifunction time server. It provides nanosecond accuracy time service for any industry fields. It supports GPS (Global Positioning Service), BDS (Chinese Satellite System), and GLONASS (Russian Satellite System) as sky time sources and PTP (Precision Timing Protocol), IRIG-B as ground time sources. PTS-10 also can generate accurate GOOSE signal to trigger an event to monitor IED time status in power system and provides GOOSE subscriber to send time status by IEC61850 MMS. It has been widely deployed in power, industrial automation and other industries.

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www.klgsmartec.com

IEC61850 Digital Substation with IEEE1588 time sync & HSR/PRP

Station Level

PTS-30M Time Server

Network Management

Digital Fault Recorder (DFR)

Control Center

Gateway with Firewall (CGW)

Station Computer

CPM1 CPM2

HMI

Ruby3A Ruby3A

SICOM3028GPT +HSR/PRP Module

LAN A/LAN B

SICOM3028GPT
LAN A

SICOM3028GPT
LAN B

PRP

PRP

Bay Level

Main 1 Protection Relay/BCU

Main 2 Protection Relay/BCU

Main 3 Protection Relay/BCU

Main 4 Protection Relay/BCU

Bay Controller

Main Protection Relay

PRP

Bay Controller

Main Protection Relay

SICOM3028GPT +HSR/PRP Module

LAN A/LAN B

DGW-A4

DGW-A4

SICOM3028GPT
LAN A

SICOM3028GPT
LAN B

PRP

PRP

SWGR CT/VTs

SWGR CT/VTs

Process Level

MU MU MU MU

SWGR CT/VTs

SWGR CT/VTs

Fiber Optic

Copper Wire

SICOM3028GPT Switchequipped with HSR/PPR Module

Ruby3A Redbox

DGW-A4 Gateway

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