

# SYNC 4000 Series Control Center Front End



## OVERVIEW

SYNC 4000 is a high end control center front end gateway, with protocol conversion, IEC 61131-3 based user configurable logic, and front end processing capabilities, built into one device. It can help interconnect automation systems (SCADA/EMS/DMS), connect LAN to WAN networks such as MPLS/GPRS/CDMA/UMTS/HSPA/LTE, without compromising network security.

SYNC 4000 enables communication between SCADA/EMS/DMS and remote devices even when the upstream, downstream communication protocols are not the same. Available SYNC 4000 protocol drivers communicate with remote field devices and provide data via communication protocols supported by SCADA/EMS/DMS. SYNC 4000 creates a trusted network of widely distributed automation components like PLC, RTUs, transformer monitoring units, RMU automation units, and capacitor bank control units. The security is guaranteed through a Virtual Private Network (VPN) created from site location to control center using SSL/TLS.

## FEATURES

### General

- High performance with minimum data loss and latency
- Vast protocol conversion capability - ICCP/IEC 61850, Modbus, DNP, IEC60870 etc.
- Legacy protocol capability with the support of SPT/4/SYNC 2000/3000 devices
- Multi master/SCADA communication capability
- Automatic startup and initialization following power restoration
- Disturbance and fault record collection and management
- IEC 61131 based programming logic\*
- Time synchronization using IEC 60870/DNP3/SNTP/ NTP/ IEEE1588\*
- Remote Device Management from Kalki.io
- SNMP Agent/ Manager for NMS Integration
- Assigns static IP address to the field devices thereby eliminating the requirement of fixed IP at remote location
- C37.118 data processing, time alignment and aggregation
- TCP, UCP and hybrid communication profiles for Phasor data
- Scalable to 2000 PMU connections
- Message rates up to 60 samples/sec data rate

### Security

- Supports communication security on both upstream and downstream

- Protects the system against possible intrusions with built in firewall
- Adheres to NERC-CIP security requirements#
- Offers IEC 62351 based transport layer security
- Provides SSL VPN with AES, DES or 3DES encryption
- Follows IEC 62351-5/DNP3 secure authentication process

### Scalability and Upgradability

- Expanding serial ports using terminal server option
- Seamless integration with field devices
- Supports device redundancy
- Server grade hardware

## MODELS

- SYNC 4000-M1: Control Center Gateway Server
- SYNC 4000-M2: Phasor Data Concentrator Server
- SYNC 4000-M3: Control Center Gateway Virtual Machine\*\*

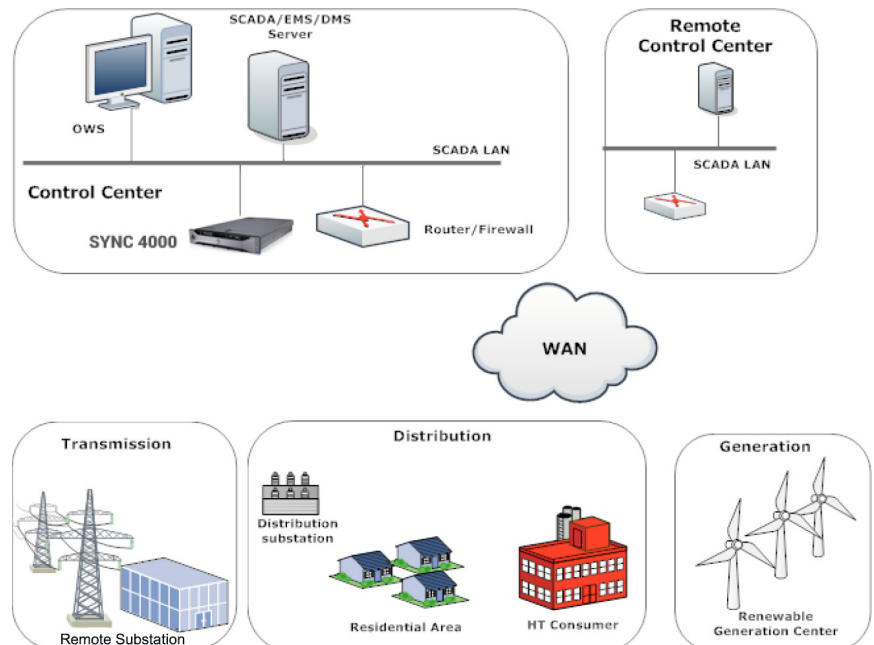
## RELATED PRODUCTS

- Kalki.io: Energy IoT Platform

## APPLICATIONS

- Control center gateway
- Phasor data concentrator

### Sample Application Case - Diagram



SPECIFICATIONS	SYNC 4000
<b>General</b>	
Management	EasyConnect configuration utility/Web server/SNMP & SSH interface over secure network
System Protocols	TCP/IP, UDP/IP, SMTP, POP, HTTP, FTP, SNMP, ICMP, DHCP, BOOTP, Telnet, DNS, ARP, PPPoE, DDNS
Device Security	NERC/CIP Compliant <sup>†</sup> , SSHv2
Communication Security	SSL based VPN tunnel using Blowfish/AES/3DES
Logic Programming	AND/OR/NOT/Bit SHIFT/Split/Index support for digital and analog data, delay operations IEC 61131-3*
Redundancy	Communication redundancy Device Redundancy*
SMS based Alarm	Available on request*
<b>Certifications &amp; Approvals</b>	
Green Product	RoHS
Others	CE
<b>Communication Interface</b>	
RS232 Serial Ports (DB9)	1 (9-pin, DTE, 16550-compatible)
Copper Ethernet Port (10/100/1000 Mbps)	4
Expansion Slot	2 PCIe
USB	4 (One 9-pin, USB 3.0-compliant, Three 4-pin, USB 2.0-compliant)
<b>Power Supply</b>	
Input Primary Supply	100-240 V, 50/60 Hz, 7.4 A-3.7 A
Hot-plug, redundant power supply (Order Code: SYNC4000-PS-R)	100-240 V, 50/60 Hz, 7.4 A-3.7 A
Consumption	495W, 750W or 1100W AC power supply; 1100W DC power supply
<b>Physical</b>	
Mounting	Rack Mounting
Form factor	1U rack
Dimension	42.8 mm x 482.4 mm x 607 mm (with rack latches), 42.8 mm x 434mm x 607 mm (without rack latches)
Weight (approx)	19.9 kg (43.87 lb)
<b>Applications</b>	
<b>Control Center Gateway (APP-CCG)</b>	
Available Master/Client Protocol (licensable)	DNP3.0 Serial and TCP, IEC101, IEC104, IEC61850/ICCP, SNMP Manager, Modbus, DLMS
Available Slave/ Server Protocol (licensable)	DNP3.0 Serial and TCP, IEC101, IEC104, IEC61850/ICCP, SNMP Agent, Modbus, DLMS
Supporting Modules (licensable)	Web HMI, IEC61131, Simple logic, SNTP peer, VPN Server (M2M Server), Transparent Tunnel
Additional Protocols	Refer full list of protocols at <a href="https://www.kalkitech.com/knowledge-center/protocols/">https://www.kalkitech.com/knowledge-center/protocols/</a>
<b>Phasor Data Concentrator (APP-PDC)</b>	
Available Master/Client Protocol (licensable)	IEEE C37.118 (2005 and 2011)
Available Slave/ Server Protocol (licensable)	IEEE C37.118 (2005 and 2011)
Supporting Modules (licensable)	SNTP/NTP, IEEE1588*
Additional Protocols	All other protocols supported in other SYNC devices are available on request
IEEE C37.118 profiles	UDP, TCP/IP, UDP_T
Data processing	Phase shifting of selected data, data format conversion, data type conversion, re-sampling before streaming
Diagnostics	Each input and output streams monitoring and statistics logging
Event Detection	Frequency related event (f, df/dt, f+ df/dt) Voltage magnitude related event (v, dv/dt, V + a x dv/dt) Voltage phase angle difference related event detection (ang diff, ang diff rate) Other real-time event detection criteria - symmetric and asymmetric fault occurrence
Number of Direct connected PMU	400 PMU directly each having 25 frame/sec
Number of Indirect connected PMU	2000 PMU Indirectly each having 25 frame/ sec
Number of output streams	10 or more (depends upon application and link available)

\* Available on request

\*\* Hardware Not Included in Product. Hence number of nodes, data point, storage shall depend upon installed hardware machine. Hardware specification sheet in second page does not apply to M3 Model

† Refer to Compliance document for details