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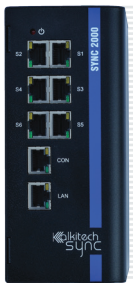
Enabling the Smart Grid

sync 2000

SYNC 2000 Series
Substation Protocol Gateway



OVERVIEW

SYNC 2000 protocol gateway series of products are substation rugged communication devices with real-time embedded linux operating system, and supports for a host of automation protocols including, DNP 3.0 IEC 60870-5-101/103/104, DLMS/COSEM, Modbus as well as proprietary protocols like SPABus, Courier and various others. Devices come with an option to add an internal plugable cellular modem, and support secure VPN connections over dynamic IP.

FEATURES

Software Features

- Support more than 40 protocols including IEC 60870-5-101/103/104, IEC 61850, DNP3.0, Modbus RTU/TCP, and DLMS/COSEM
- Automatic startup, initialization with restart notification following the power restoration
- Multi master communication capability
- Up to 10000 data point support#
- File upload/download support, remote configuration
- Time sync based on NTP/SNTP/NMEA/Protocol specific synchronization (IEC 104/DNP3.0 etc.)
- Transparent/tunneling support for remote configuration and disturbance collection
- Device management using SNMP
- Can be configured to be used as a terminal server

Reliability

- IEC 61850-3 compliant hardware#
- KEMA certified IEC 61850 server

Security

- IEC62351-3 transport layer security
- IEC62351-5/DNP3 secure authentication
- SSL based VPN with AES, DES or 3DES encryption over WAN/LAN
- Compliant to NERC-CIP security standard (refer to implementation document for details)

Enhance Capability

- Internal and external pluggable cellular modem (GPRS EDGE/CDMA/HSPA/EVDO)
- External pluggable RF/PSTN modem
- Fibre Optic Ethernet#
- Wide range of AC and DC power supply**
- Customization of existing protocol as well as addition of new protocol possible

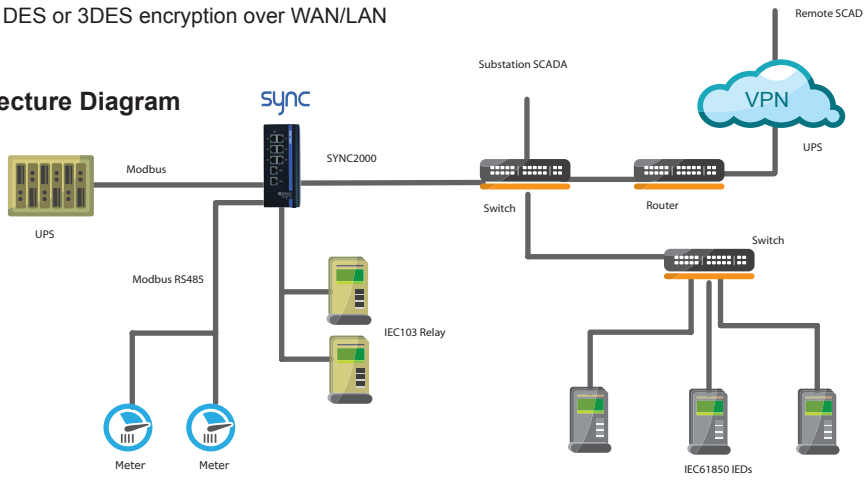
MODELS

- SYNC 2000 - M1: 2 Serial, 1 Ethernet (Copper)
- SYNC 2000 - M2: 6 Serial, 1 Ethernet (Copper)
- SYNC 2000 - M3: 4 Serial, 2 Ethernet (Copper)
- SYNC 2000 - M4: 6 Serial, 1 Ethernet (Fiber Optic)

RELATED PRODUCTS

- SYNC 4000: Control Center Gateway
- SCL Manager: Substation Engineering and Design Tool based on IEC 61850

Sample Architecture Diagram



Applications

- Substation Protocol Gateway
- SMS Gateway

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Specification Sheet		SYNC 2000 - M1 (S2R1)	SYNC 2000 - M2/M4 (S6R1/S6F1)	SYNC 2000 - M3 (S4R2)
General	Management	EasyConnect configuration utility/web server/SNMP & SSH Interface over secure network		
	Maintenance	Direct over debug port or console port		
	System Protocols	TCP/IP, UDP/IP, SMTP, POP, HTTP, FTP, SNMP, ICMP, DHCP, BOOTP, Telnet, DNS,ARP, PPPoE, DDNS		
	Device Security	NERC/CIP compliant (refer to implementation document for details), SSHv2		
	Communication Security	IEC62351-3 and -5 (DNP3 secure authentication), 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		
	Redundancy	Downstream/upstream communication		
	SMS Based Alarm	Available*	Available*	Not available
	Certifications	IEC61850-10 KEMA, IEC61850-3, CE		
Communication Capability	Standard Protocols	IEC 60870-5-101/103/104, DNP3 serial/TCP, Modbus RTU/ASCII/TCP, IEC62056-DLMS, IEC61850**, SFTP, SNMP, SNTP		
	Proprietary Protocols	ABB - RP570, 571, SPA bus SEL - SEL451, 421, 311, 300G Schneider - SEPAM Modbus**	Areva - Courier RTK**, EXCOM**, CMC Master**, SPORT** Triguard peer to peer**	
	Additional Protocol	Refer to the full list of protocols at http://www.ase-systems.com/protocol/		
	Multi-master Protocol	No, one-to-one conversion	Yes, many-to-many conversion	
	Devices Supported			
	SPA	20	20	25
	DNP3, IEC60870, Modbus and other Proprietary Protocols	50	50	64
	Datapoints Supported			
	SPA	800	800	1600
	DNP3, IEC60870, Modbus and other Proprietary Protocols	5000	5000	10000
	Serial			
	Connector	2 RS232/485 - RJ45	4 RS232/485 - RJ45 2 RS232 - RJ45	4 RS232/485/422 - RJ45
	Data Rate	110bps - 38.4kbps		
	Ethernet			
	Connector	1 RJ45	1 RJ45/ST FO**	2 RJ45
	Physical Layer	10/100 Mbps		
	Isolation	1500VAC min per IEEE802.3/ANSI X3.263		
	Fiber Optic Option**	NA	1 multi mode fiber with ST connector	NA
	FO Range	NA	1200 meter	NA
IO Interfaces	Analog	Via R485 expansion module		
	Digital	Via R485 expansion module		
Power Requirements	Power Supply	Option 1 (SYNC 2000 PS-DC1): 19 - 58VDC		12-48VDC
		Option 2 (SYNC 2000 PS-ACDC1) 85 - 264VAC 50 - 60Hz, 120 - 370VDC		
	Consumption			
	Main Card	10W		
	Internal Plug-in Modem	8W peak		NA
Plug-in Modem Options	Internal	NA	GPRS/EDGE/CDMA/HSPA/EVDO	NA
	External	NA	RF modem, PSTN modem	NA
Physical	Dimensions (H x W x D)	164mm x 71mm x 140mm	164mm x 71mm x 140mm	60mm x 137mm x 100mm
	Weight (In grams)	1000 (excluding modem)	1000 (excluding modem)	530
	LED Indications	Power, LAN link/status, serial port RX/TX		
	Mounting	DIN Rail		
Environmental	Operating Temperature	-20°C to 70°C		
	Storage Temperature	-40°C to 80°C		
	Relative Humidity	5% - 95% RH non-condensing		
Emission	Conducted Emission	EN 55022:2006+A 1:2007 Class A		
	Radiated Emission	EN 55022:2006+A 1:2007 Class A		
Immunity	Electrostatic Discharge	IEC 61000-4-2:2001 - +/- 8 kV Contact Discharge, +/- 15 kV Air Discharge		
	Radiated Susceptibility	IEC 61000-4-3: 2006 - 20 V/m		NA
	Electrical Fast Transient/ Burst	IEC 61000-4-4:2004 - +/- 4 kV signal ports @ 2.5kHz, +/-4kV DC power ports, +/- 4 kV earth ground ports 3		NA
	Surge Protection	IEC 61000-4-5:- 2005 +/- 2kV line-to-earth, +/- 1 kV line-to-line		NA
	Induced (Conducted) RFI	IEC 61000-4-6: 2004 - 10V signal ports, 10V DC power ports, 10 V earth ground ports 3		NA
	Magnetic Field	IEC 61000-4-8: 2001 - 40A/m continuous, 1000 A/m for 1s enclosure ports		NA
	Voltage Dips & Interrupts	IEC 61000-4-29: 2000 - 30% for 0.1s, 60% for 0.1s, 100% for 0.05s		NA
	Damped Oscillatory	IEC 61000-4-12: 2001 - 2.5kV common, 1kV diff. Mode @ 1 MHz signal ports and DC power ports		NA

* Available when packet data is not used; ** Need to be ordered seperately; # Model dependent

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