Kalkitech

SYNC 2000



SYNC 2000
Protocol Gateway

OVERVIEW

SYNC 2000 Protocol Gateways support more than 40 protocols which are used across utility applications. It features substation rugged hardware with a real time embedded Linux operating system. DNP3.0, IEC 60870-5 101/103/104, DLMS-COSEM, Modbus, MQTT OPC UA are some of the standard protocols supported in the product, in addition to common proprietary protocols like SPABus, Courer, SEL etc., which are used by legacy utility devices.



FEATURES

Software Features

- Supports more than 40 utility protocols
- Automatic startup, initialization with restart notification following power restoration
- Multi-master communication capability
- Up to 5000 data points supported#
- Time sync based on NTP/SNTP/NMEA/protocol specific synchronization (IEC 104/DNP3.0 etc.)
- Transparent/tunneling support for remote configuration
- Remote device management from Kalki.io
- SNMP Agent/ Manager for NMS integration
- Can be used as terminal server
- Web HMI#

Reliability

- IEC 61850-3 compliant hardware#
- DNV certified IEC 61850 server
- Hot-Standby redundancy#

Security

- IEC 62351-3 transport layer security
- IEC 62351-5/DNP3 secure authentication
- SSL based VPN with AES, DES or 3DES encryption over WAN/ LAN

Enhanced Capability

- Internal and external pluggable dual SIM cellular modem (GPRS EDGE/ HSPA/ LTE)^#
- External pluggable RF/PSTN modem
- Fiber Optic Ethernet termination#
- Wide range of AC and DC power supplies

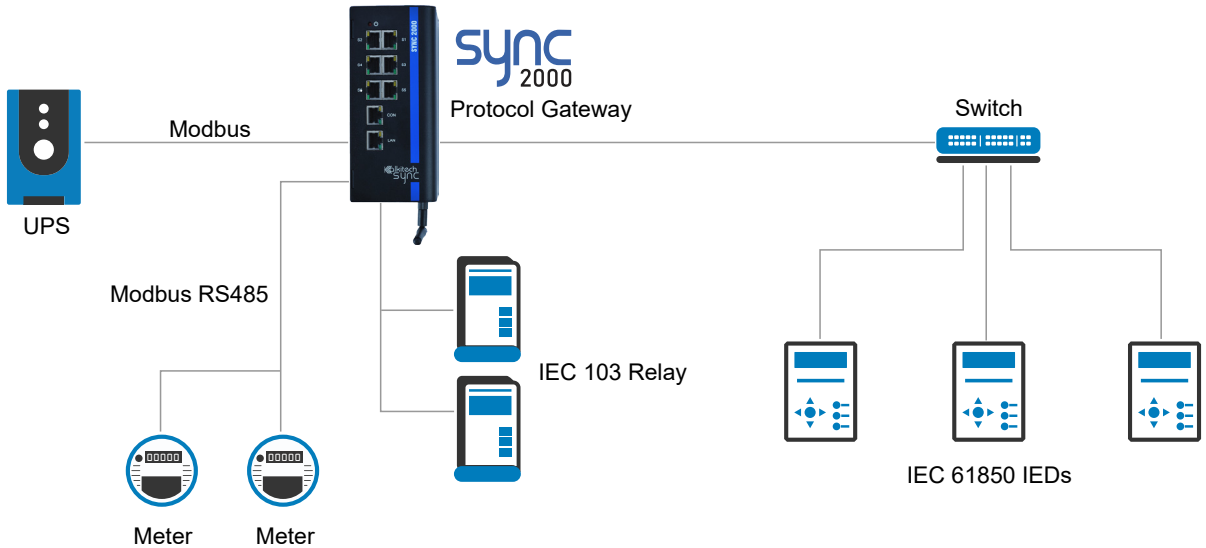
ORDERING OPTIONS

- SYNC 2000: 2 Serial ports, 1 Copper Ethernet port (M1/S2R1)
- SYNC 2000: 6 Serial ports, 1 Copper Ethernet port (M2/S6R1)
- SYNC 2000: 4 Serial ports, 2 Copper Ethernet ports (M3N/S4R2)
- SYNC 2000: 6 Serial ports, 1 Fiber Optic Ethernet port (M4/S6F1)

RELATED PRODUCTS

- Kalki.io: Energy IoT Platform
- SYNC 4000: Control Center Gateway

Sample Architecture Diagram



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Specifications			SYNC 2000 (M1/S2R1)	SYNC 2000 (M2/S6R1)	SYNC 2000 (M3N/S4R2)	SYNC 2000 (M4/S6F1)
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		IEC 62351-3 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			
		Hot-Standby#	NA		Optional	NA
	SMS Based Alarm		Available*			
	Web HMI#		NA		Optional	NA
	Certifications		IEC 61850-10 DNV GL, IEC61850-3#, CE			
Communication Capability	Standard Protocols^		IEC 60870-5-101/103/104, DNP3 serial/TCP, Modbus RTU/ASCII/TCP, IEC 62056-DLMS, IEC 61850^, SFTP, SNMP, SNTP, MQTT, OPC UA			
	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 https://www.kalkitech.com/knowledge-center/protocols/			
	Multi-master Protocol		No, one-to-one conversion	Yes, many-to-many conversion		
	Datapoints Supported#					
	SPA, IEC 61850		800		800	800
	DNP3, IEC 60870, Modbus and other Proprietary Protocols		5000		5000	5000
	Serial					
	Ports - Connector		2 x RS232/485 - RJ45	4 x RS232/485 - RJ45 2 x RS232 - RJ45	3 x RS232/485 - RJ45/TB 1 x RS232 – DB9/TB	4 x RS232/485 - RJ45 2 x RS232 - RJ45
	Data Rate		200 bps – 115.2 kbps			
	Ethernet					
	Connector		1 x RJ45	1 x RJ45	2 x RJ45	1 x ST Fiber
	Physical Layer		10/100/1000 Mbps#			
	Isolation		1500VAC min per IEEE802.3/ANSI X3.263			
	Fiber Optic Option^		NA	NA	NA	Multi Mode Fiber
	FO Range		NA	NA	NA	1200 meter
I/O Interfaces	Analog		Via R485 expansion module			
	Digital		Via R485 expansion module			
Power Requirements	Power Supply#		Option 1 (SYNC 2000 PS-DC1): 19 - 58VDC			
			Option 2 (SYNC 2000 PS-ACDC1) 85 - 264VAC 50 - 60Hz, 100 - 370VDC			
	Consumption					
	Main Card		10W			
	Internal Plug-in Modem		8W peak			
Plug-in Modem Options	Internal		GPRS/EDGE/CDMA/HSPA/EVDO/LTE^ across all models			
	External		NA	RF modem, PSTN modem (not a production option/accessory)		
Physical	Dimensions (max)		164mm x 71mm x 140mm			
	Weight		1000 grams (excluding modem)			
	LED Indications		Power, LAN link/status, serial port RX/TX			
	Mounting		DIN Rail			
Environmental	Cold Temperature test		As per IEC 60870-2-2 tested at -40°C			
	Hot Temperature test		As per IE C60870-2-2 tested at 70°C			
	Humidity test		As per IEC 60870-2-2 95% RH 25°C and 55°C for 4 days			
	Barometric Pressure test		IEC 60870-2-2 Ed 1.0 Test range 0 (91.6 kPa) to 3000m (70.0 kPa)			
	Vibration test		As per IEC 60870-2-2, Class Bm, 5-500 Hz- displacement 3mm 5-9Hz+A1, acceleration 1g for 9Hz-200Hz, 1.5g for 200Hz-500Hz			
	Shock test		As per IEC 60870-2-2 10g in X,Y, Z axis			
Emission	Conducted Emission		EN 55022: 2006+A 1: 2007 Class A			
	Radiated Emission		EN 55022: 2006+A 1: 2007 Class A			
Immunity	Radiated Susceptibility		IEC 61000-4-3: 2006 80-100MHz: 10V/m 80% AM, 1 kHz sine wave			
	Electrical Fast Transient		IEC 61000-4-4: 2004 ±4 kV serial ports, Ethernet port, DC Power Ports			
	Electrostatic Discharge		IEC 61000-4-2: 2001 ±6 kV Contact Discharge, ±15 kV Air Discharge			
	Surge Protection		IEC 61000-4-5: 2011 Serial port ±4kV, 1.2/50 µs for common mode, Etherrnet port ±2kV, 1.2/50 µs for common mode DC Power port ±2kV, 1.2/50 µs for common mode, ±1 kV, 1.2/50 µs for differential mode AC Power port ±4kV, 1.2/50 µs for common mode, ±2 kV, 1.2/50 µs for differential mode			
	Induced (Conducted) RFI		IEC 61000-4-6: 2004 0.15 - 80 MHz: 10 Vrms 1 kHz, 80%AM for DC power, serial and Ethernet port			
	Power Frequency Magnetic Field immunity		IEC 61000-4-8: 2001 30 A/m continuous & 1000 A/m for 1 sec			
	Damped Oscillatory Magnetic fields immunity test		IEC 61000-4-10 Magnetic field strength 30 A/m @ Oscillation frequency 1MHz			
	Damped Oscillatory Wave immunity		IEC 61000-4-18 Damped Oscillatory Frequency: 1 MHz Common Mode: up to ±2.5 kV Differential Mode: up to ±1.0 kV for power port 1 MHz Common Mode: up to ±2.5 kV for serial port and Ethernet port			
	Impulse voltage Immunity		IEC 60255-5 2000-12, Ed2.0 ±5kV for power port and earth			
	Conducted Common mode disturbances Immunity		IEC 61000-4-16 Ed 1.1 30/300V at 50Hz, 3V/30V at 15 to 150kHz			
Power Supply	DC Voltage Dips & Interrupts		IEC 61000-4-29: 2000 - 0% short interruption for 0.03 sec, 40% and 70% dips for 0.3 sec, 80% & 120% variation for 3 sec			
	Ripple on DC power line immunity test		IEC 61000-4-17 10% of the Nominal DC voltage AC line frequency 50Hz on DC power port			
	AC Voltage Dips & Interruption		IEC 61000-4-11 - AC Power port 0% short Interruption for 250 cycles, 0% of AC mains voltage for 0.5 cycles and 1 cycles, 40% dips for 10 cycles, 70% dips for 25 cycles, 80% dips for 250 cycles			
	AC Voltage Range and Tolerance test		IEC 60870-2-1 Ed 2.0 176 Vac (-20 %) to 253 Vac (+15%)			

* Available when packet data is not used; ^ Required to be ordered separately (Dual SIM model available for M2 and M4 variants); # Model dependent

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