FANOX

sync 2000

SYNC 2000
Protocol Gateway

OVERVIEW

SYNC 2000 Protocol Gateways support more than 40+ protocols and is 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 are some of the standard protocols supported in the product in addition to common proprietary protocols like SPABus, Courer, SEL used by legacy utility grid 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 10000 data points supported#
- Time sync based on NTP/SNTP/NMEA/protocol specific synchronization (IEC 104/DNP3.0 etc.)
- Transparent/tunneling support for remote configuration and disturbance record collection
- Remote device management from Kalki.io
- SNMP Agent/ Manager for NMS integration
- Can be used as terminal server

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

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 cellular modem (GPRS EDGE/ CDMA/HSPA/EVDO)^
- External pluggable RF/PSTN modem
- Fiber Optic Ethernet#
- Wide range of AC and DC power supplies

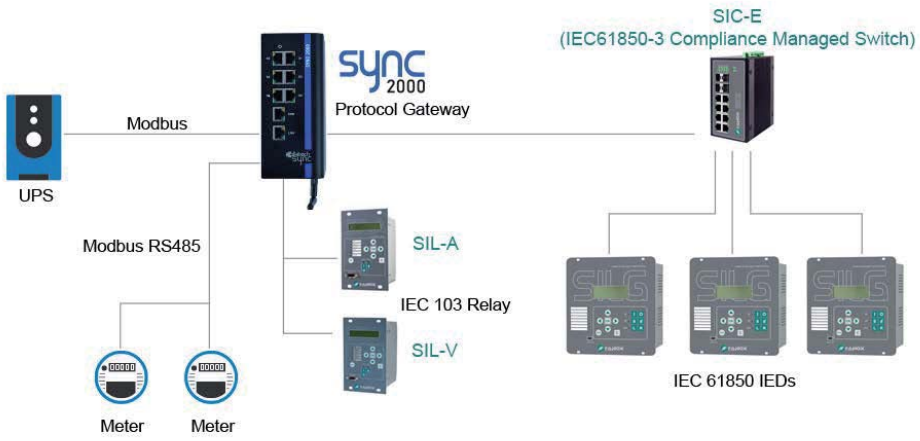
MODELS

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

RELATED PRODUCTS

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

Sample Architecture Diagram



Specifications		SYNC 2000 - M1 (S2R1)	SYNC 2000 - M2 (S6R1)	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		
	SMS Based Alarm	Available*		
	Certifications	IEC 61850-10 KEMA, 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		
	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	
	Devices Supported			
	SPA, IEC 61850	20		
	DNP3, IEC60870, Modbus and other Proprietary Protocols	50		
	Datapoints Supported			
	SPA, IEC 61850	800		
	DNP3, IEC 60870, Modbus and other Proprietary Protocols	5000		
	Serial			
	Connector	2 RS232/485 - RJ45	4 RS232/485 - RJ45 2 RS232 - RJ45	
	Data Rate	110bps - 38.4kbps		
	Ethernet			
	Connector	1 RJ45	1 RJ45	1 x ST Fiber
	Physical Layer	10/100 Mbps		
	Isolation	1500VAC min per IEEE802.3/ANSI X3.263		
	Fiber Optic Option^	NA	NA	Multi Mode Fiber
	FO Range	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	NA	GPRS/EDGE/CDMA/HSPA/EVDO^	
	External	NA	RF modem, PSTN modem (not a production option/accessory)	
Physical	Dimensions (H x W x D)	164mm x 71mm x 140mm		
	Weight (In grams)	1000 (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 seperately; # Model dependent