

# SYNC 2000- Field IO and Communication Gateway Datasheet

## Overview

SYNC Field Gateways are versatile communication controller for Smart Grid, M2M, AMI, FRTU applications. This controller comes with real-time embedded linux operating system, IEC 60870-5-101/104, DLMS, Modbus and a host of other smart grid protocols, and supports secure VPN connections over dynamic IP, which support GPRS/CDMA and 3G technologies. The SYNC Gateways support Expansion IO's as well as Push / Pull and last mile data concentration for meter data.

The SYNC gateways are flexible to support other power system protocols like IEC 61850 enabling Utilities to exchange data with SCADA / Local Monitoring systems if required.

The SYNC hardware platform provides extensive security and is flexible for future upgrade to 3G networks without any change in the existing infrastructure, except for the communication module.

## Features

- IEC 60870-5-101/104, IEC 61850, Modbus RTU / TCP and DLMS COSEM protocols supported.
- TCP/IP, UDP, SMTP, POP, FTP, HTTP, SNMP Support
- File Upload / Download support, remote configuration
- SSL VPN with AES, DES or 3DES encryption over WAN
- 256 MB Non Volatile Memory and 32/64 MB Memory
- Inbuilt IO and Modbus IO expansion support
- MFT support on Modbus and DLMS
- IEC 61850-3 compliant interfaces
- 2 and 6 RS232/485 configurable ports and 1 10/100 ethernet port
- Transparent Channel / Tunneling support for the communication module.
- Integrated GPRS / CDMA Support, External Modem Support

## Applications

### Substation

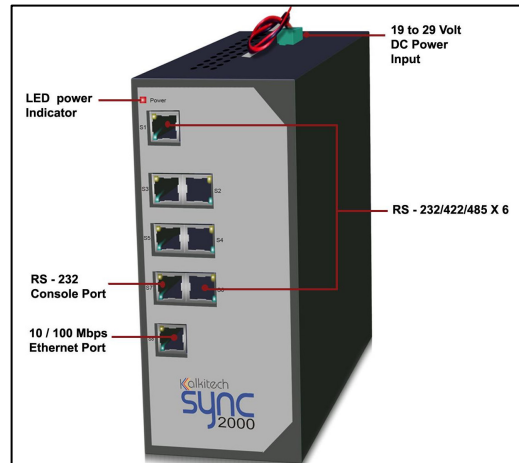
- Protocol Converters and Protocol Gateways for IEC 61850, IEC 60870-5-10X, DNP3, Modbus, DLMS, Courier, SPA, SEL etc.,
- Sub-station to control center gateway
- IEC61850 Substation Data Concentrator
- Sub-Station PDC and Converter

### AMI / Smart Grid / Metering

- AMI/Demand Side Controller Gateways
- Smart Grid Protocol Converter
- Sub-Station Metering Data Concentrator
- DLMS – COSEM / Modbus / ANSI Gateway

### SCADA/DMS

- FRTU / Pole Top RTU
- Communication Gateway for FRTU/FPI with M2M Gateway Substation Gateway and Protocol Converter.



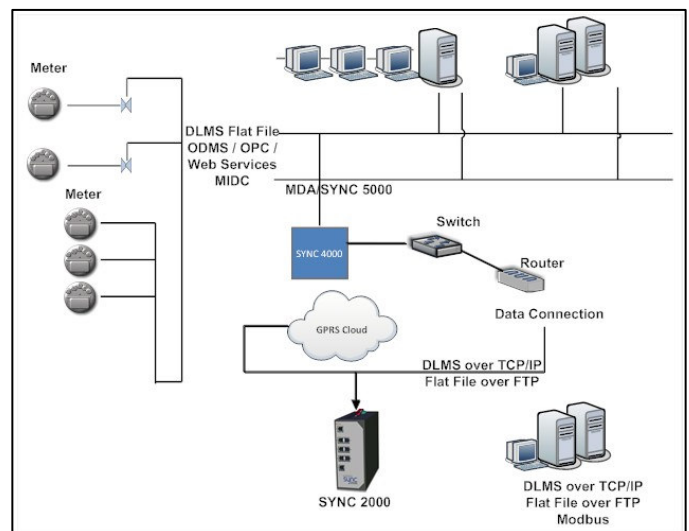
SYNC 2000- S6R1

### Model

- SYNC 2000

### Related Products

- SYNC 1000
- SYNC 4000 Head End, M2M VPN
- CIM Adapters / ICCP Gateway
- SYNC IO Expansion Modules



Application Highlight

Specification		SYNC 2000					
<b>General</b>							
<b>Management</b>		Kalkitech EasyConnect Configuration utility / Web Server & SSH Interface over Secure Network					
<b>System Protocols</b>		TCP/IP, UDP/IP, SMTP, POP, HTTP, FTP, SNMP					
<b>Power System / Metering Protocols</b>		IEC 60870-5-101/104, Modbus RTU, Modbus TCP, DLMS, IEC 61850 Full List of Protocols available at - <a href="http://www.kalkitech.com/offerings/sync-field_protocol_io_gateways/">http://www.kalkitech.com/offerings/sync-field_protocol_io_gateways/</a>					
<b>LEDs</b>		LAN Ready(orange: link status, green: read/write), Data Transfer; Serial Port RX/TX, Power					
<b>Security</b>		NERC/CIP Compliant, SSL Tunnel, SSHv2					
<b>VPN</b>		SSL based VPN with Blowfish /AES/3DES					
<b>Logic</b>		AND/OR/NOT Logic Support					
<b>Dimensions</b>		165 (length) x 135 ( width) x 70 (Height)					
<b>Weight (Controller)</b>		600 Grams					
<b>Datapoints</b>		<b>Devices (IEC61850/ICCP/SPA)</b>		<b>Data-points (IEC61850/ICCP/SPA)</b>		<b>Data-points (Other)</b>	
		20		800		3000	
<b>CPU</b>		ARM926EJ-S™ ARM core 190Mhz					
<b>Non Volatile Storage</b>		256 MB Flash					
<b>Volatile Storage</b>		32MB/64MB SDRAM					
<b>Operating System</b>		Embedded Linux Kernel Version 2.6					
<b>Maintenance</b>		Direct over Debug Port or Console Port / Remotely Over TCP/IP over GPRS/CDMA					
<b>Alarms</b>		Configurable SMS Alarms for key events within Sub-Station					
<b>Certifications</b>		CE / IEC 61850-3 / IEC 61850 - KEMA					
<b>Interfaces</b>		<b>Serial</b>		<b>Ethernet</b>		<b>Environment</b>	
<b>Cellular</b>	GPRS / CDMA With external Modem	<b>Ports</b>	4 RS232/485 and 2 RS232	<b>Ports</b>	1 RJ45 / FO Port (Multi Mode Fiber with ST Connector)	<b>Operating Temperature</b>	-10 to 70 °C ( -14 to 158 °F)
<b>Digital IO Interfaces</b>	16 DI / 8 DO	<b>Throughput</b>	115.2 KBPS	<b>Physical Layer</b>	10/100 Base-T / 10/100 Base-F	<b>Storage Temperature</b>	-20 to 80 °C (-4 to 176 °F)
<b>Analog IO Interfaces</b>	Via Expansion Modules	<b>Signal Support</b>	S1 Full Modem, S2-S4 TXD, RXD, RTS, CTS, S5-S6 TXD,RXD	<b>Data Rate</b>	10/100 Mbps (auto-sensing)	<b>Relative Humidity</b>	5% – 95% RH non condensing
<b>IO Expansion</b>	AI/DI/DO/AO Expansion up to 512 IO's	<b>Pass-Through Channel</b>	Pass-Through / Transparent Channel support	<b>Mode</b>	Full or Half-Duplex (auto-sensing)	<b>Ethernet Isolation</b>	1500VAC min per IEEE802.3/ANSI X3.263
<b>Power Requirements</b>							
<b>Power Input</b>		19-29 VDC / 40-56 VDC*					
<b>Power Supply</b>		Optional adapters for 85-330 VAC and 12/24/48/110/220 VDC					
<b>Power Consumption (Main CPU)</b>		4 W					
<b>Emission</b>							
<b>Conducted Emission</b>		EN 55022:2006+A 1:2007 Class A					
<b>Radiated Emission</b>		EN 55022:2006+A 1:2007 Class A					
<b>Immunity</b>							
<b>Electrostatic Discharge</b>		IEC 61000-4-2:2001 – +/-8 kV Contact Discharge, +/-15 kV Air Discharge					
<b>Radiated Susceptibility</b>		IEC 61000-4-3: 2006 - 20 V/m					
<b>Electrical Fast Transient / Burst</b>		IEC 61000-4-4:2004 - +/- 4 kV Signal Ports @ 2.5kHz, +/-4kV DC Power Ports, +/- 4 kV Earth ground ports 3					
<b>Surge Protection</b>		IEC 61000-4-5:- 2005 +/- 2kV line-to-earth, +/- 1 kV line-to-line					
<b>Induced (Conducted) RFI</b>		IEC 61000-4-6: 2004– 10V Signal Ports, 10V DC Power Ports, 10 V Earth Ground Ports 3					
<b>Magnetic Field</b>		IEC 61000-4-8: 2001 – 40A/m continuous, 1000 A/m for 1s Enclosure Ports					
<b>Voltage Dips &amp; Interrupts</b>		IEC 61000-4-29: 2000 – 30% for 0.1s, 60% for 0.1s, 100% for 0.05s					
<b>Damped Oscillatory</b>		IEC 61000-4-12: 2001 – 2.5kV common, 1kV diff. Mode @ 1 MHz Signal Ports and DC Power Ports					

\* The 40-56 VDC is through external adapter.

For more information on Kalkitech products, services and part numbers visit: [www.kalkitech.com](http://www.kalkitech.com)

#### India Asia Pacific

Kalki Comm Tech Limited,  
#147 5th Main Road, Sector 7 HSR Layout,  
Bangalore 560102  
Phone-+91-80-40527900  
[support@kalkitech.com](mailto:support@kalkitech.com)  
[sales\\_ap@kalkitech.com](mailto:sales_ap@kalkitech.com)

#### Europe, Middle East & Africa

Kalkitech FZE  
Hamariyah Free Trade Zone  
Sharjah, UAE  
Phone- +971-50-4832 890  
[support@kalkitech.com](mailto:support@kalkitech.com)  
[sales\\_me@kalkitech.com](mailto:sales_me@kalkitech.com)

#### North & South America

Kalkitech Inc.,  
9900 Westpark  
Dr, Suite 283  
Houston TX, 77063,  
Phone-+1-832-922-8910  
[support@kalkitech.com](mailto:support@kalkitech.com)  
[sales\\_us@kalkitech.com](mailto:sales_us@kalkitech.com)