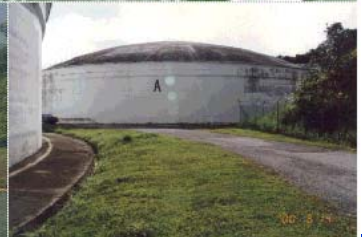
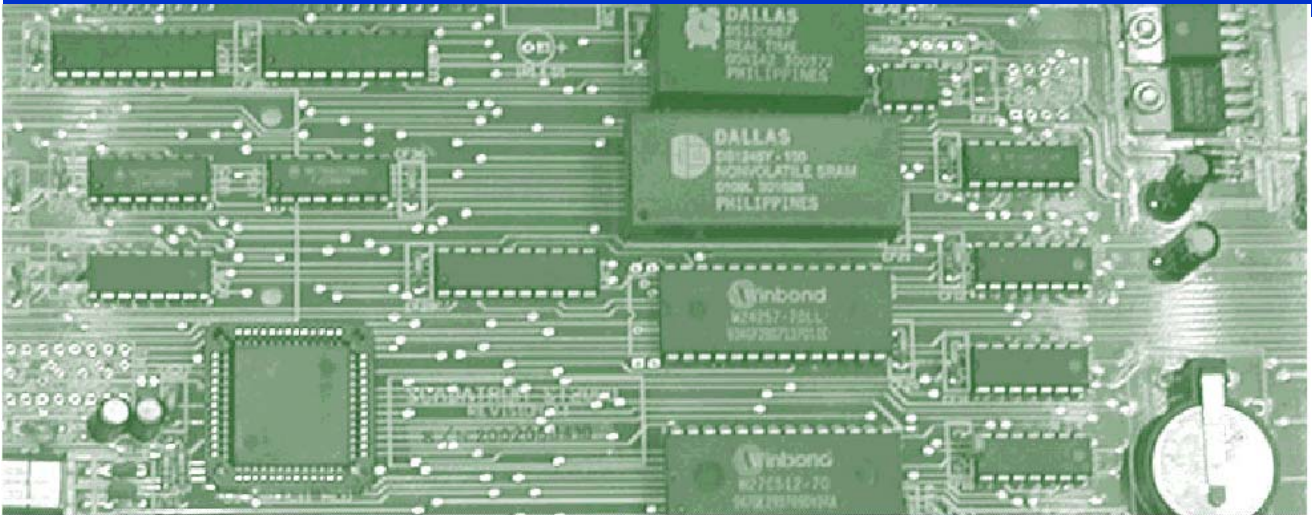


SCADATRON TELEMETRY



**ST2000
SERIES**
REMOTE TERMINAL UNIT



SCADATRON TELEMETRY APPLICATION

SCADATRON TELEMETRY is a cost effective / general purpose SCADA system developed in Malaysia and has already been put to work successfully in many application areas. The following are some of the possible application areas:

- Flood Monitoring and Warning System
- Remote Hydrological Data Collection
- Distributed Irrigation Management System
- Public Messaging / Warning System
- Light-House Monitoring System
- Reservoir/Pipeline Monitoring
- Water Quality Monitoring
- Remote Facilities Alarm Monitoring
- Building Automation System
- Dam Monitoring and SCADA System

Virtually any signals can be measured or counted can be sent over Telemetry and SCADA systems. Here are some typical signals: Water tank levels, Liquid flow totals through a pipe, High or low level alarms, Computed gas flow totals, Pipeline pressures & temperatures, Voltages and currents on a transmission system, Switch and alarm positions.

WHAT IS THE SYSTEM'S MONITORING CAPABILITY?

The range is as wide as the whole spectrum of water, irrigation and sewerage installation monitoring needs:

Pumps :	running, stopped, overload, failure
Sewerage Well :	high/low alarm, actual level
Reservoirs :	high/low alarm, high-high/low-low alarm, actual level
Treatment Plant :	water quality, filtration, chemical dosing
Motors :	running, stopped, overload, failure, hours run
Valves :	open, closed, setpoint
Pipeline :	flow rate, no flow, totalized flow
Power :	failure, low voltage, tripped
Water Quality :	Turbidity, Residual Chlorine, pH
River/Dam :	water level, flowrate, discharge gate position
Irrigation :	gate position, water level
Meteorology :	rainfall, wind speed, evaporation



User Interface through Keypad & LCD



RTU with a wall mounting IP65 chassis

REMOTE TERMINAL UNIT (RTU) STATION CONFIGURATION

The components for typical Remote Terminal Unit (RTU) Telemetry Outstations include:

- ST2000 Remote Terminal Unit (RTU) Controller Card with CPU enclosure
- IP55 wall mounting enclosure & optional IP65 weather proof housing
- Communication equipment (radio transceiver, Satellite Communicator, PSTN MODEM, GSM MODEM, etc.) & Antenna System
- Solar power supply (12V DC) or AC power supply (240V AC)

The ST2000 Remote Terminal Unit (RTU) is a micro-controller based intelligent and versatile measurement and control unit. The system is robust in design and compactly constructed to suit applications in harsh industrial environments.

Unavailability of Telecom landlines in no way precludes application of Scadatron equipment, because it can also be used over HF, VHF, UHF radio channels, GSM cellular network or satellite communications. When solar power has to be employed, Scadatron Remote Terminal Unit (RTU's) - with their low power consumption - are an ideal choice.

SCADATRON REMOTE TERMINAL UNIT (RTU) ADVANTAGES

- SCADATRON RTU (ST2000) is a compact / embedded **single board controller card** which ease the work of maintenance services.
- ST2000 has **direct connection** to radio transceiver of all brand (Motorola, Philips, Kyodo, Tait) for long distance data communication (distance > 50KM) or to GSM Modem for GSM Data Linkage or SMS Data Reporting.
- ST2000 can provide **direct connection** to low orbiting satellite equipment (ORBCOMM) or INMARSAT-C. It can be **installed anywhere in the world!**
- ST2000 has **direct connection** to most type of hydrological sensors, e.g. SEBA, Greenspan, Nohken, etc.
Parallel shaft encoder : ADC16, SEBA IWC20, etc.
Serial shaft encoder: SEBA MDS-surfloat, OTT OWK16
Pressure sensors : OTT, SEBA, Greenspan, Nohken
Ultra-sonic level sensor : MOBREY, E&H, Danfoss
- ST2000 has its pulse capturing algorithm to measure fast pulse rate from flow totaliser or slow pulse rate from rain-fall gauge.
- ST2000 has **8 channel of 4-20mA analogue input** with smart algorithm to give a stable and accurate instrumentation/sensor reading
- ST2000 comes with a standard set of keypad and LCD interface for **user friendly interface**
- ST2000 has **integrated data logging facilities** which can store up to 3 months data based on 15 minutes interval (based on 4 measured parameters with full time stamp)
- ST2000 has flexible radio communication configuration include store-and-forward (SAF), **RTU can relay data from another RTU back to Central Station!**
- The ST2000 has very **low power consumption** specially designed for solar powered operations.
- The RTU is **designed for harsh environment** which minimise the use of connectors and plug in circuit board and with built-in power-line surge protection.
- Application software embedded in the ST2000 runs under a powerful and **fast real-time multitasking operating system**. Modification on RTU's operation can be done in days by our local programmer
- It is **Year 2000 compliance**
- ST2000 RTU is **local make, high quality and low in price!**



Reservoir level monitoring using telemetry system

WATER SUPPLY SCADA SYSTEM

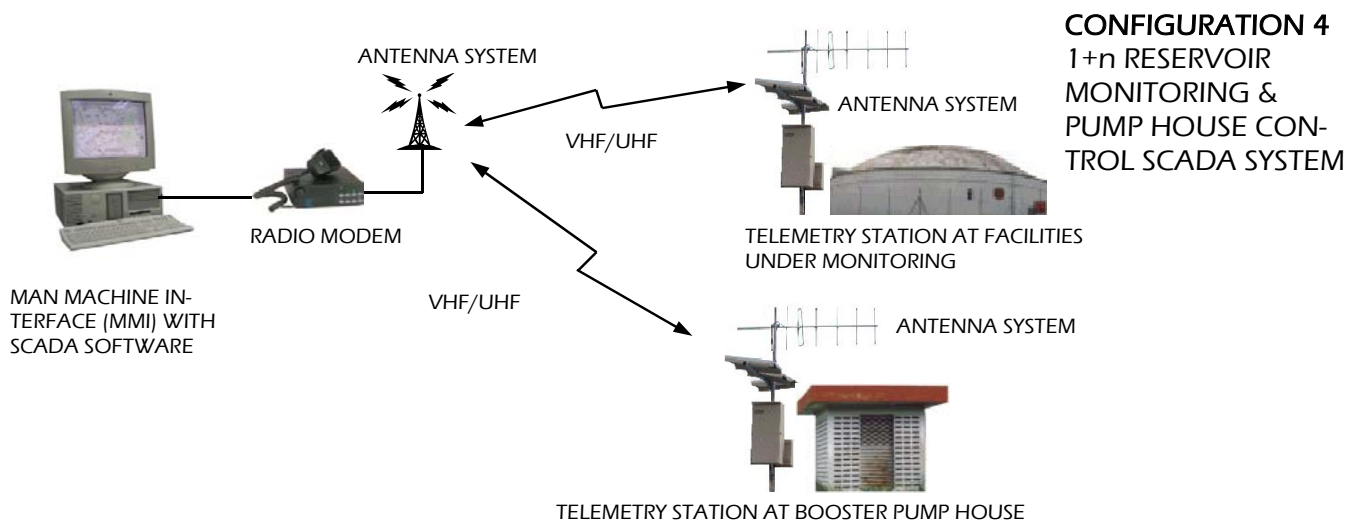
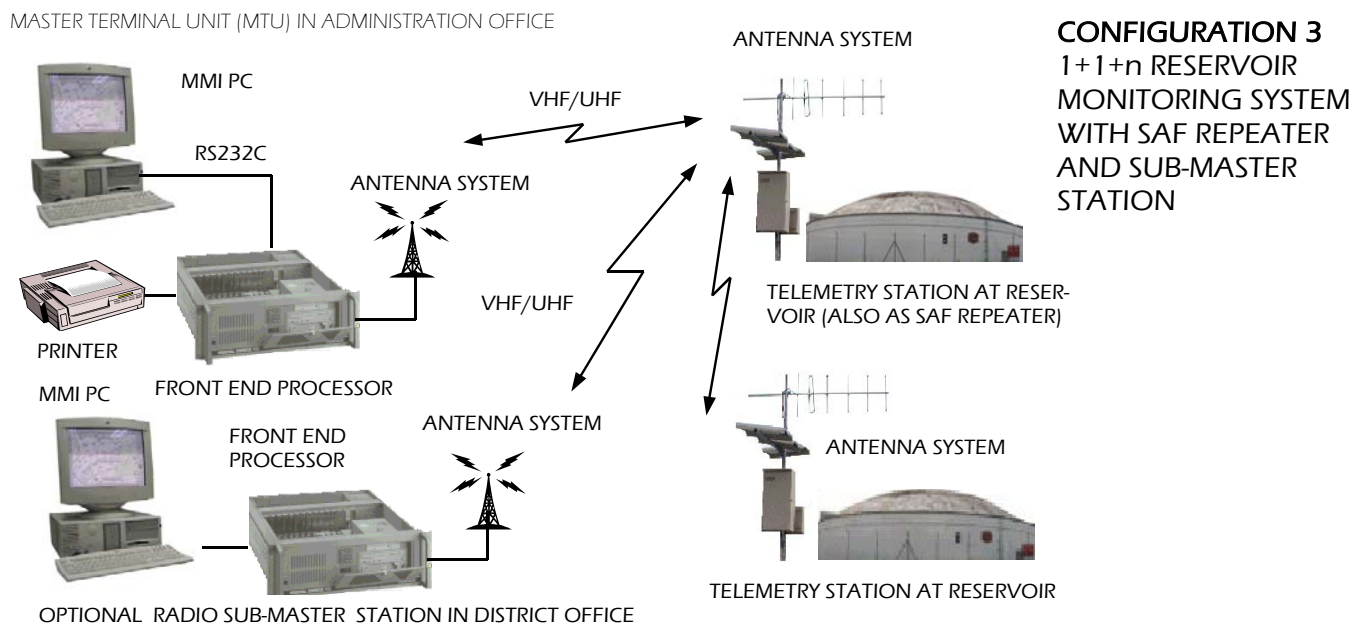
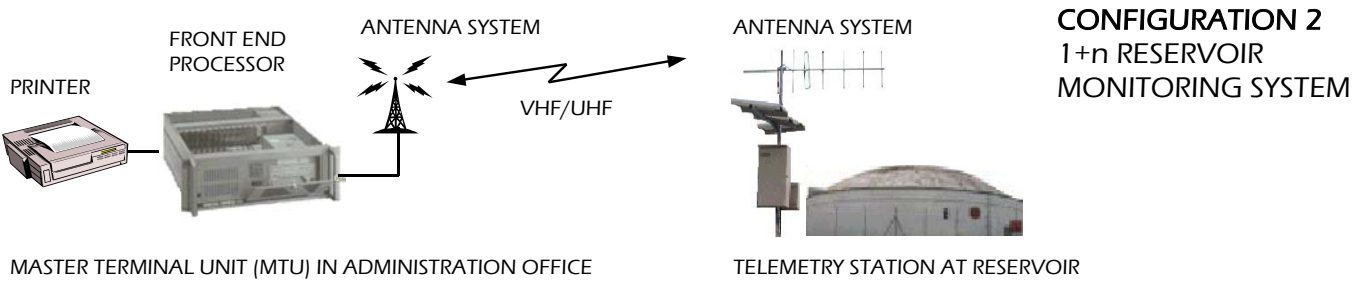
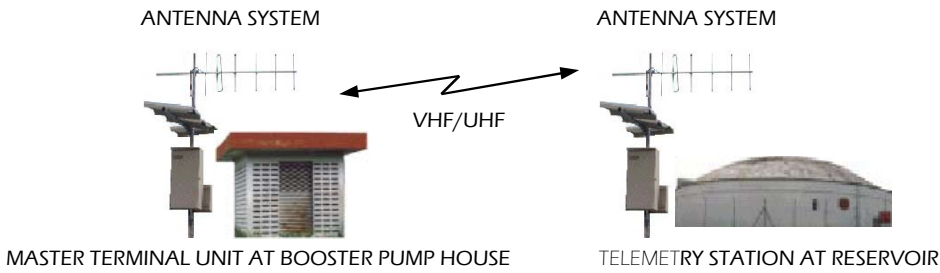
One of the major application of SCADATRON product is on water supply scheme where reservoir level, pipeline flow / pressure, water quality is monitored.

The Central Monitoring Station is normally located in the water treatment plant or water supply administration office where the water distribution is closely monitored. The purpose of having a telemetry system in such area is : management of water supply distribution, pipeline leakage detection, reservoir over-flow or under-supply detection and prevention.

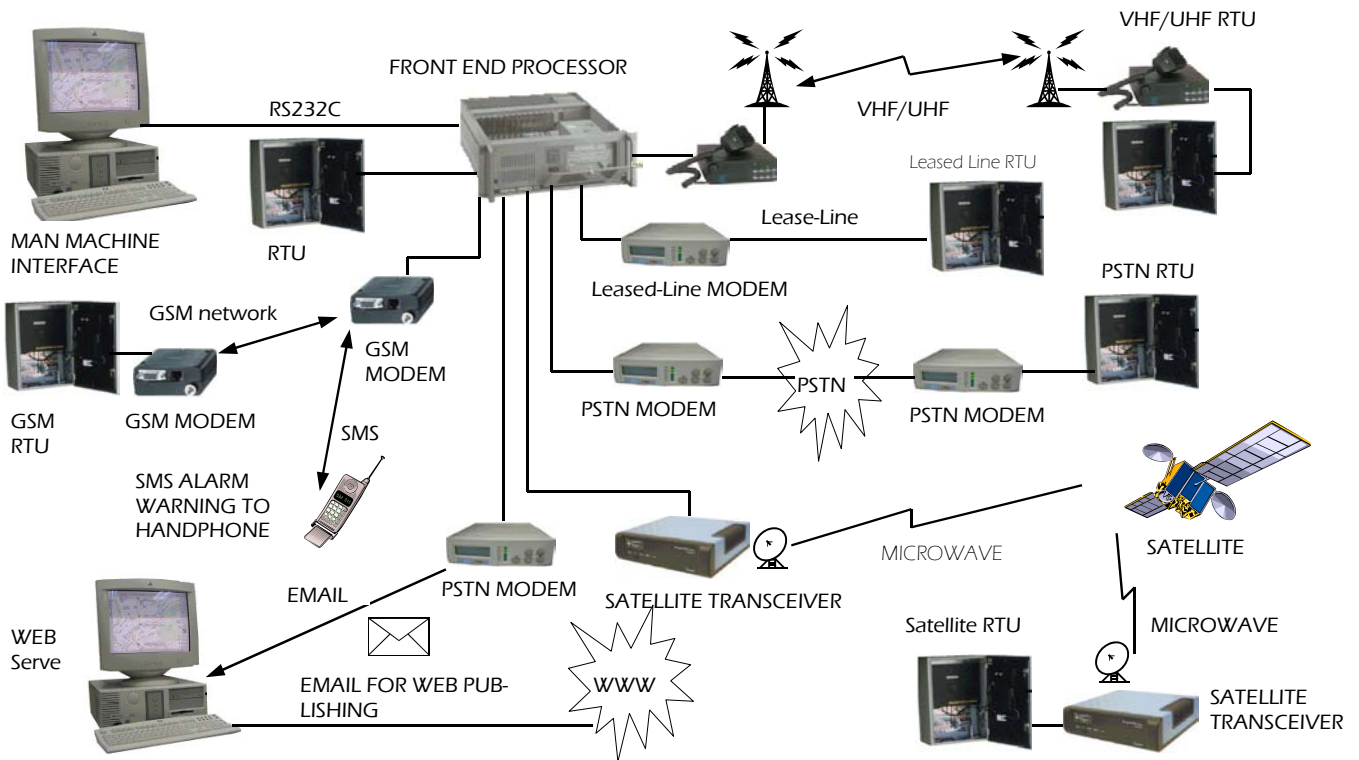
Scadatron Telemetry can provide a total SCADA solution for water supply scheme combining Man machine Interface (MMI) , Front End Processor (FEP), PLCs, RTUs, web data publishing, etc.

SAMPLE ST2000 TELEMETRY SYSTEM TOPOLOGY

CONFIGURATION 1
1+1 PUMP CONTROL SYSTEM

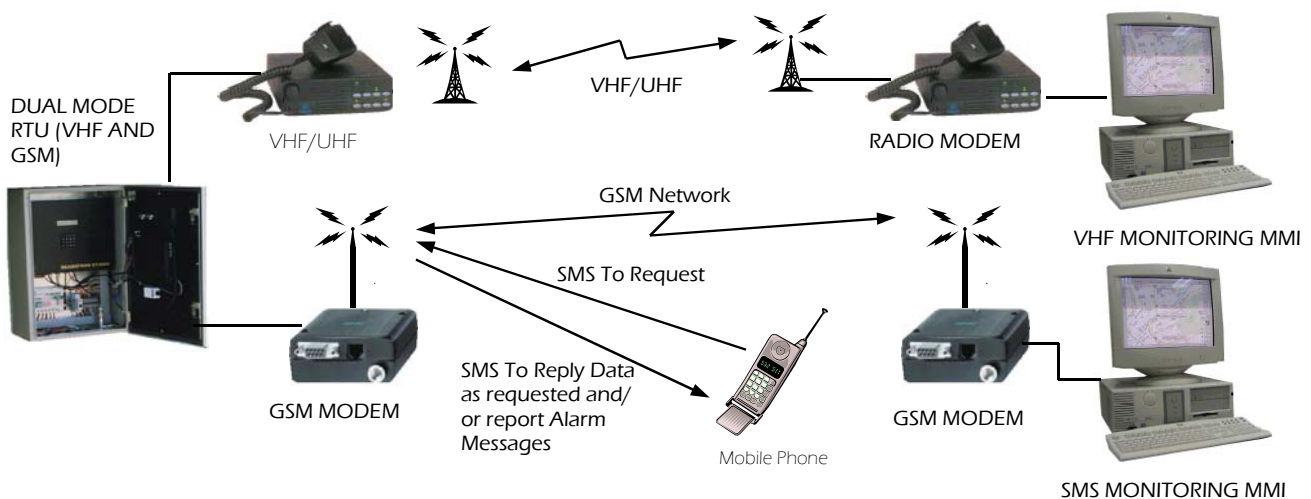


POSSIBLE ST2000 TELEMETRY SYSTEM TOPOLOGY



SCADATRON Remote Terminal Unit (RTU) is flexible in the method by which it used to communicated with the Central Monitoring Station. As shown on the diagram above, SCADATRON RTU can be fitted in many communication network such as: VHF/UHF Radio network, GSM Cellular network (with or without SMS), Satellite Communication (INMARSAT-C or ORBCOMM Low orbiting Satellite), PSTN MODEM Dial-up Link, Leased-Line MODEM connection or Direct RS232 connection, etc.

ST2000 SHORT MESSAGE SYSTEM (SMS) COMMUNICATION



Short Messaging System (SMS) is picking up as one of a popular communication media for remote alarm monitoring system. It is particularly simple in implementation with a medium monthly access fees. SCADATRON Telemetry support direct SMS reporting/ alarming to MMI computer or as a secondary link by reporting alarm and change of event to GSM mobile phone in parallel with VHF/UHF radio network.

ST2000 REMOTE TERMINAL UNIT (RTU) CONFIGURATION

HYDROLOGICAL SENSOR

POWER SOURCE

COMMUNICATION EQUIPMENT



SCADATRON ST2000 Remote Terminal Unit (RTU) can be connected to a variety of sensors instrument either simple switches, 4-20mA output sensor, digital output sensors or even intelligent sensors as illustrated in the above diagram. This diagram also illustrate the possible type of communication equipment that can be attached to ST2000 RTU such as: VHF/UHF Radio transceiver, GSM MODEM, Satellite Communicator/terminal and PSTN/Leased Line MODEM.

REMOTE MONITORING VIA ORBCOMM

The following is the some of the feature highlights for SCADATRON Telemetry Remote Monitoring via ORBCOMM:

- Uses 36 small Low earth orbiting satellite (LEOS) by ORBCOMM orbiting 825 Kilometers above the earth
- Remote two-way communications monitoring systems
- Low cost satellite communications, especially in remote locations
- Units use economical VHF electronics and simple antenna design and small package offer installation flexibility.
- Low power electronics enable extended operations using batteries, solar panels or available power.
- A complete ORBCOMM Monitoring system offered by SCADATRON consists of a ST2000 CPU, appropriate sensor, a Satellite Communicator (SC) with antenna, and power source.
- The ST2000 CPU provides continuous, onsite monitoring and data logging. Monitored data can be downloaded periodically over the satellite link. Initial service offerings available in several "windows of communications" available in a 24 hour period.
- Operational parameters can also be adjusted remotely over the link.
- The ORBCOMM System offers significant advantages over other, traditional remote monitoring solutions. Among these are lower installation cost; two-way satellite link; lower power requirements; optional position data.
- ORBCOMM is the world's first, wireless, two-way data and message communications system providing worldwide transmitted by the satellites is moved through earthbound "Gateway Earth Stations", and from there to the ORBCOMM Network Control Center.
- Data can be sent and received by the end user using a personal computer equipped with a dial-up modem.
- ORBCOMM Messaging System operation is similar in concept to cellular phone service, but is strictly for data communications. No voice capability is available.
- ORBCOMM is a federally licensed carrier. All FCC requirements are met by ORBCOMM, making universal application possible anywhere in the United States, and in many foreign countries. coverage.
- The global system includes up to 36 MicroStar Satellites
- Data is communicated to earth gateways via narrow band VHF frequencies.
- Satellite Communicators (SC) are small, lightweight devices capable of accessing the system and transferring data. They transmit at 2400 BPS and receive at 4800 BPS. These devices integrate together with data collection and monitoring equipment to provide full transfer capability to and from the ORBCOMM system, and thus to the end user.



Satellite Communicator



ORBCOMM Satellite



ORBCOMM Earth Station



Network Control Center

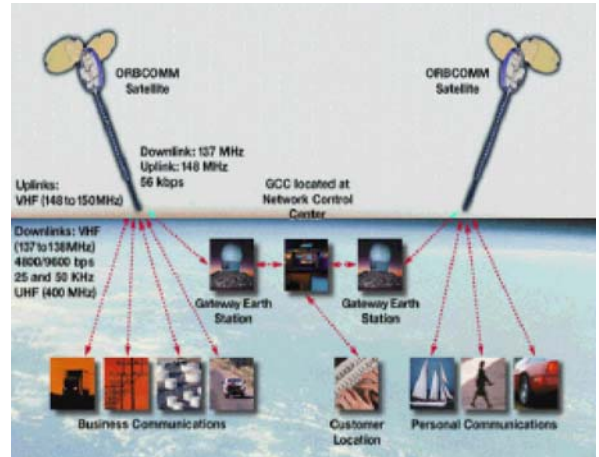


End User receive data via email

ORBCOMM SATELLITE LINK

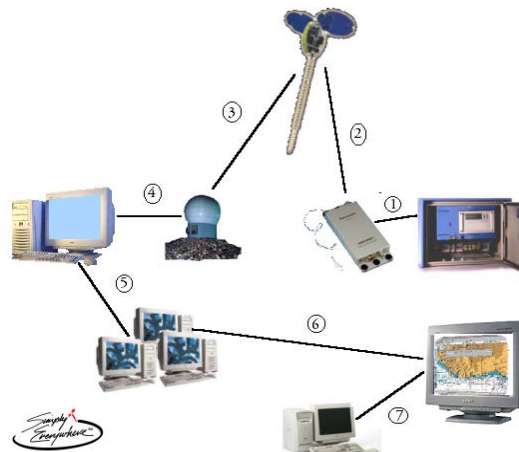


The ORBCOMM System uses Low-Earth Orbit (LEO) satellites instead of terrestrial fixed site relay repeaters to provide worldwide geographic coverage. The system is capable of sending and receiving two-way alphanumeric packets, similar to two-way paging or e-mail. The best application of ORBCOMM system is when there is no means of reliable terrestrial communication in a particular remote station. ORBCOMM Satellites Act as "orbiting packet routers" built to "grab" small data packets from ground communicators and relay them through a Gateway Earth Station (GES) to a Gateway Control Center (GCC) in Network Control Center (NCC).



TELEMETRY SYSTEM CONFIGURATION USING ORBCOMM LOW ORBITING SATELLITE SYSTEM

1. ST2000 RTU acquire data from respective sensor and send data in packet format into the a Subscriber Communicator (SC) connected to it's RS232C serial port at a prefixed interval.
2. The SC after detect a ORBCOMM Satellite passing and confirmed the Gateway Earth Station (GES) at sight will automatically send the data message through up-link to the ORBCOMM Low Orbiting Satellite (LEO) through it's VHF antenna.
3. ORBCOMM Low Orbiting Satellite after received the data packet will then down-link the data to the ORBCOMM Gateway Earth Station (GES) in Kijal, Terengganu, Malaysia.
4. Data message received in GES will be transferred to Network Control Center (NCC) in Petaling Jaya through CELCOM fiber/ microwave link.
5. Network Control Center (NCC) will then send data in form of email to Internet Service provider (ISP) email account.
6. Telemetry Master Station periodically connect to Internet Service Provider (ISP) though dial-up or leased-line to retrieve email from mail server.
7. The Data Processing Unit in Master Station then process the email received and extract telemetry data, display the data and store in database.



The satellite transceiver used by ST2000 RTU to transfer data to ORBCOMM satellite is called Subscriber Communicator (SC). One of the SC available in the market now is manufactured by Panasonic shown on the picture below.

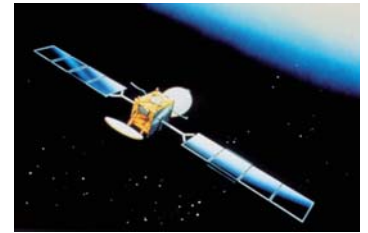


Subscriber Communicator

REMOTE MONITORING VIA INMARSAT-C

The following is some of the feature highlights for SCADATRON Telemetry Remote Monitoring e via INMARSAT-C:

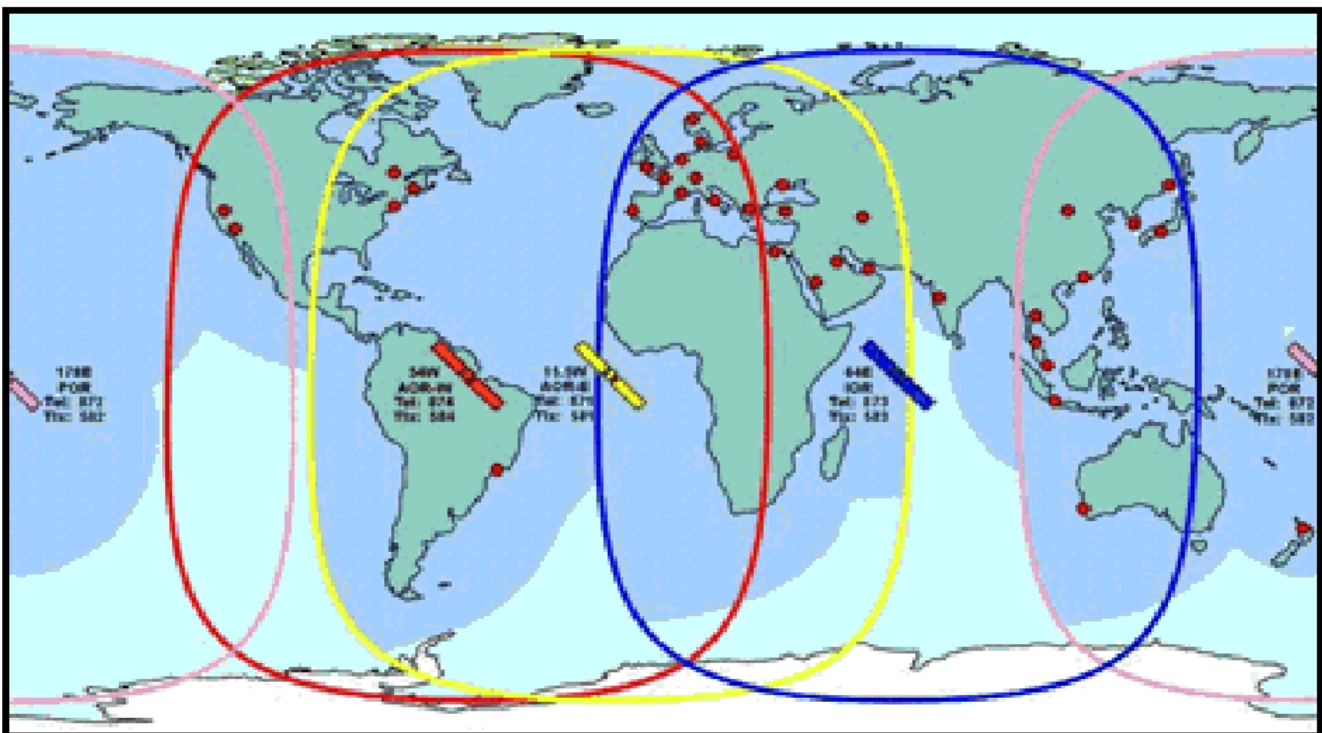
- A complete INMARSAT-C Remote Monitoring system offered by SCADATRON consists of a ST2000 CPU, appropriate sensor, a Satellite Transceiver / Land Mobile Unit with antenna, and power source.
- The ST2000 CPU provides continuous, onsite monitoring and data logging. Monitored data can be downloaded periodically over the satellite link.
- Operational parameters can also be adjusted remotely over the link.
- Inmarsat-C is a commercial geostationary system. Satellites in geostationary systems maintain orbits that coincide with the Earth's rotation allowing them to remain essentially fixed above a geographic location.
- The Inmarsat system maintains a satellite in each of four ocean regions: Atlantic Ocean East, Atlantic Ocean West, Pacific Ocean, and Indian Ocean. These satellites provide coverage throughout most of the world
- The Land Earth Stations (LES) and the Network Coordination Stations (NCS) manage and coordinate Inmarsat-C telecommunications. The Land Earth Stations are land-based receiving and transmitting stations that coordinate national and international fixed communication network.
- One Network Coordination Station resides in each of the four ocean regions to monitor and control communication traffic within each region.



INMARSAT Satellite



Land Earth Station



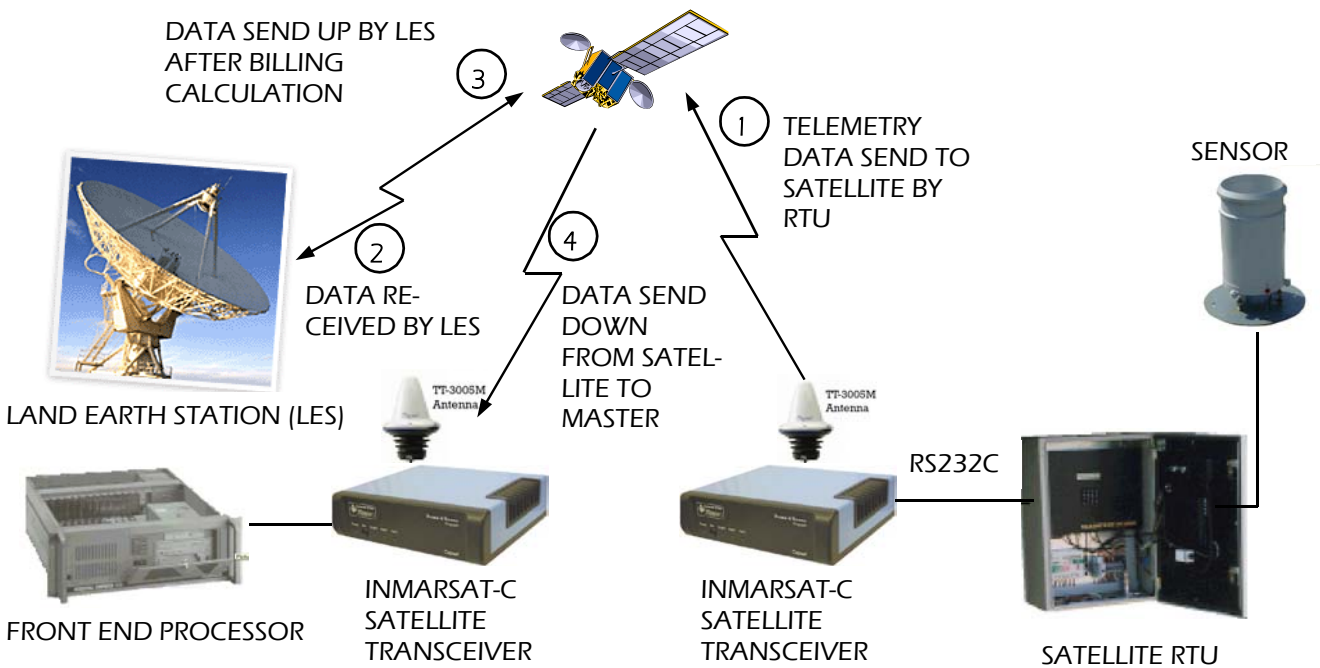
Unit Of global beam coverage for Inmarsat A,B,C,D,E,M

- Pacific Ocean Region
- Atlantic Ocean Region - West
- Atlantic Ocean Region - East
- Indian Ocean Region

Inmarsat Phone Coverage



SCADATRON TELEMETRY INMARSAT-C SATELLITE LINK



The Satellite Link configuration diagram above shows two segment of data transmission. The first segment shows telemetry data is transmitted from Remote Station's RTU toward the INMARSAT-C satellite and repeated down to the Land Earth Stations (LES). After managed by the Network Coordination Stations (NCS) in LES, the second segment shows data is transmitted from Land Earth Stations (LES) back to the satellite and repeated down to the Central Monitoring Station satellite transceiver to be received and recorded by the Front End Processor.

THRANE & THRANE SATELLITE TRANSCEIVER/ LAND MOBILE

The Thrane & Thrane Land Mobile TT-3020C supports all Inmarsat communication modes, including e-mail, position reporting, fax, telex, x.25, and mobile-to-mobile communications, mobile-to-land fax services, the standard PU/PA programming formats, as well as an advanced reporting format with multiple DNID's, independent reporting timers and global ocean area pre-programming.

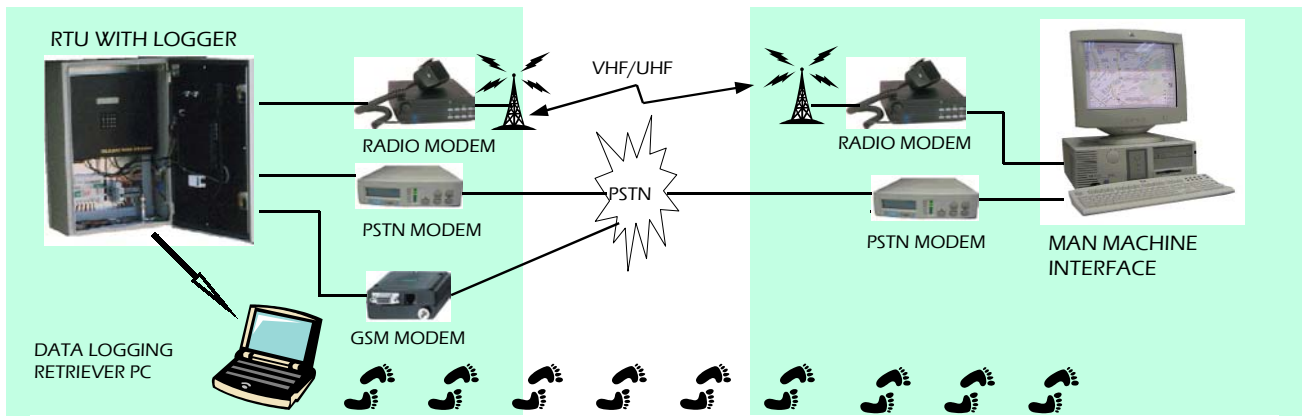


INMARSAT-C SATELLITE TRANSCEIVER

The TT-3020C, Transceiver can be supplied with our compact omni-directional TT-3005M, Antenna, integrating both Inmarsat-C and GPS operation into one single unit. The transceiver also includes a number of parallel control ports, standard NMEA 0183 nav/data interface and an advanced ArcNet local network interface for connection of up to several ArcNet printers and alarm panels. The TT-3020C supports PC base Capsat® Manager Program for fleet tracking and fleet management.

The Inmarsat-C satellite communications system offers global access to the Inmarsat-C service using the omni-directional Inmarsat-C/12-channel GPS antenna. It is also compliant with the latest Inmarsat-C specifications for non-SOLAS distress calling and international fisheries standards.

REAL TIME DATA ACQUISITION AND DATA LOGGING

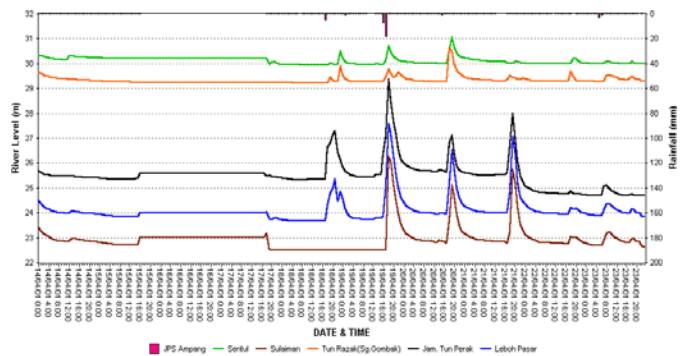
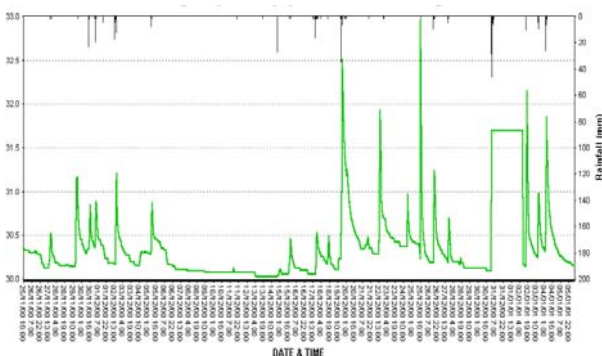


Logged Data can be retrieved via PSTN/GSM/Radio MODEM or directly via data retriever notebook carried to site

Data Acquisition can be divided into two broad classifications – real time data acquisition and data logging. Real time data acquisition is when data acquired from sensors is used either immediately or within a short period of time, such as when controlling a process. Data logging on the other hand is when data acquired from sensors is stored for later use. In reality, there is a continuum of devices between real time data acquisition and data logging that share the attributes of both of these classifications.

SCADATRON ST2000 can support both real time data acquisition and data logging over most of the available communication network. For data logging acquisition, no data shall be lost over the transmission network to Central Station due to intermittence in communication provided that Acknowledge (ACK) and Negative Acknowledge (NACK) is used. Windows based Data Logging Retriever Software can be obtained for installation in notebook to retrieve logged data from the RTU via RS232C serial port. Retrieved data is stored in Microsoft Access database (MDB) and also Comma Separated Variable (CSV) file. The data log trigger mechanism can be time base (from 1 second, 1 minute to 24 hours), state of change (any of 16-bits digital inputs) or rainfall tips/ pulse event triggered.

ST2000 has a integrated 128K non-volatile SRAM memory for continuous data logging up to 362 days based on 4 measurement parameters and hourly time base logging . It reduced to 90 days for data logging every 15 minutes. Logged data format is in DD/MM/YYYY HH:MM:SS, location id and 4 other measured value such as cumulative rainfall/totalised pulse, daily rainfall/pulse intensity, 16 bits digital input status, sensor measured data in engineering values. It is possible for the retrieved logged data (in MDB or CSV) to be export to other format such as talida for analysis.



Optional graphical data presentation software is available to show data logging water level hydrograph and rainfall bar chart after retrieved from individual RTU station or from different RTU stations.

WAVECOME DUAL BAND GSM MODEM

Tough enough for any environment or application, the WaveCom external modem lets you network equipment and systems instantly, anywhere. Whether it's to replace existing modems or set up a network in the most remote location, this rugged solution offers simple, ready-to-connect GSM functionality for any situation.



Wavecome GSM MODEM Module



GSM MODEM SIM Card Holder



Other Wavecom MODEM Model available

FEATURES

- Dual Band GSM 900/1800 MHz
- Designed for data, fax, SMS and voice applications
- GPRS and WAP compliant
- SIM with sliding SIM card holder
- Power supply interface
- Remote control by AT commands
- V 24 & audio mini sub-D connector
- Compliant with ETSI GSM Phase 2+ specifications
- Sliding SIM holder
- 3V-5V SIM

CHARACTERISTICS

- Power Output:
 - 2W-Class 4, for GSM 900
 - 1W-Class 5, for GSM 1800
- Input voltage: 5V-32V
- Input current:
 - <10mA idle, 200mA speech for GSM 900
 - <4.8mA idle, 100mA speech for GSM 1800
- Operating Temperatures: -20°C - +55°C
- Overall dimensions: 98 x 54 x 25mm
- Weight: 130g
- Housing: Aluminium Profile

OTHER FEATURES

- Telephony
- Emergency calls
- Full Rate, Enhanced Full Rate and Half Rate
- Dual Tone Multi Frequency function (DTMF)
- A5/1 and A5/2 encryption algorithms
- SMS: MT/MO/CB/PDU modes

INTERFACE

- RS-232 and audio through 15-pin mini sub-D
- Remote control by AT commands (GSM 07.07 and 07.05)
- Baud rate from 300 to 115,200 bits/s
- Autobauding (300 to 38,400 bits/s)
- Power supply through micro-FIT 4-pin connector
- SMA antenna connector
- Sliding SIM holder (3V/5V SIM interface)

PHOTO GALLERY OF REMOTE STATIONS INSTALLATION



Solar Powered Remote Terminal unit (RTU) installed on top of a reservoir



Internal view of the RTU housing shows Controller, radio and ultrasonic sensor



Solar powered early flood warning siren VHF RTU Installation on 12m siren mast



Typical Rainfall Outstation shows RTU Housing, solar panels, antenna and rainfall sensor



ST2000 REMOTE TERMINAL UNIT SPECIFICATION

Processor

CPU	Motorola MC68HC11A1FN microcontroller
CPU Speed	7.3728 MHz
RAM	32K basic CMOS static RAM (backup by Lithium battery up to 1 year) 128K extended non-volatile RAM (for data logging) 256 byte internal to MCU
EPROM	Standard 32K CMOS EEPROM Optional 64K CMOS EEPROM divided into 2 bank of 32K each.
EEPROM	512 bytes EEPROM internal to MCU for storing system parameters.
SIM card	Optional external 32K/64K/128K SIM card for data logging
Real Time Clock	Nonvolatile DS12C887 RTC backup by lithium battery for 10 years operation. RTC format: sec/min/hour/weekday/day/month/year Hardware Year 2000 compliance
LCD display	2 rows x 20 characters Liquid Crystal Display (LCD)
Keypad	4 x 4 matrix medium duty keypad

Communication

Serial Port	2 serial port (1 CPU port and 1 ACIA port)
COMM1 : CPU/SCI port Interface	Internal to MCU. For laptop programming / interrogation / logged data retriever. RS485 for multidrop RTU using 2 or 4 wire communication system RS232C or 4 wire RS485
RS-232 connector type	DE-9 male with retention screws (DTE)
Data length	7 or 8 data bits
Data Parity	None
Baud Rate	50,300,600,1200,2400,4800,9600, 19200 baud programmable
COMM 2 : ACIA port	CMOS 65C51 Asynchronous Communication Interface Adapter For dial-up modem / radio transducer interface
Interface	RS232C or FSK modem (1200 BPS over long distance)
RS-232 connector type	DE-9 male with retention screws (DTE)
Duplex	Full or half with RTS/CTS/DTR/DCD handshaking
Data length	7 or 8 data bits
Data Parity	Odd, even or none
Baud Rate	50,300,600,1200,2400,4800,9600,19200 baud programmable
FSK Interface port	Single chip Frequency Shift Keyed (FSK)MODEM meet CCITT/ITU V23 standard
FSK Signal Interface	Transmit Pair (4V Vpp Max Adjustable), Receive Pair (2mVpp -4 Vpp Sensitivity)
Data Rate	Forward channel at 600/1200 baud
Duplex	Full or half with RTS/PTT handshaking
LED indicators	TxD, RxD, RTS
Transmitted frequency	Mark/High 1300Hz, Space/Low 2100Hz in 1200 baud
Special feature	Carrier Detect to avoid data collision

ST2000 RTU SPECIFICATION, CONTINUE ...

Input/Output

Digital input points	16 opto isolated digital input points, 16 TTL level digital input points
Digital output points	6 volt-free contact outputs, rating 12V 2A each.
Analog input channels	8 differential analog input channels (4-20mA) (with 200R 1% resistor) Configuration to except voltage input from 0-5V or 0-10V range Using MAXIM A to D converter, 12 bit resolution. 1% accuracy
Analog output channels	4 current output channels, output range 4-20mA. Maximum load 450ohm per channel. Using MAXIM D to A converter, 12 bit resolution.
High Speed Counter	2 channels, maximum response 1 KHz Opto-coupler isolation of each channel provided.

Data Logging

Data logging	Standard 4 sensor readings with date & time stamping (optional 8)
Data Type	4 parameters configurable from Pulse Input 1 or 2, Digital Input Event Sequence Logging, level shaft encoder channel 1 or 2, any of 8 channels of 4-20mA analog Input after conversion to engineering value
Time Interval	1 second, 1 minute, between 1 minute .. 24 hours
Processing	Event trigger / Change Of State / Time Trigger
Memory Capacity	136K Byte for 362 days of continuous data logging (based on every hour) Or 90 days of continuous data logging (based on every 15 minutes)
Local data view	Yes, converted to engineering data on LCD display
Interface	Through RS232 Serial Port, COMM PORT 1 or COMM PORT 2

Fail Save Features

Watchdog timer	External watchdog timer with 1.6S time-out period
Internal watchdog timer	An COP watchdog timer system on-chip of MCU

Power Supply

Supply	12V DC or 24V DC unregulated supply
Regulator	On-board 5V regulator from unregulated 12VDC supply Separate 5V, 12V regulated supply for ADC and DAC
Overvoltage protection	27V varistor on unregulated supply voltage and 6.8V zener diode on regulated 5V supply
Battery backup	3V Litium Battery to backup memory (CR2032)
Power consumption (RTU card only)	Typical 75mA (without ADC, DAC and all indicators not active), maximum 460mA (with ADC, DAC and all indicators turned ON)

Status Indication

Power supply status	Power ON LED
Processor status	Processor Running / Watch-dog LED, Processor reset LED
Fault Indicator	LED Blinking when RTU on-board fault is found
Status enable/disable	Status LED to show onboard LED indicator is enable or disabled
Digital input status	32 LEDs indicators for 2 channel of 16 points digital inputs
Digital output status	6 LEDs indicators for 6 replay contact output
Pulse Input status	2 LEDs indicators for 2 pulse input points
Modem activity status	TxD, RxD, RTS LEDs for each serial port

Second 16 channels Digital Inputs (DI) with Opto-isolation for Remote Alarm Monitoring or Second 16-bits channel of digital encoder input. These 16 DI channels also provide Report By Exception to Central Monitoring Station on any change of state.

First 16 channels Digital Input (DI) with high impedance TTL Input normally for 16-bits digital encoder input

LED Indicators for pulse input and pulse output

2 channels high speed pulse output

LED indicator for first 16-channel digital input

2 channel high speed pulse input / counter

Card Version Num-

Opto-coupler for digital input isolation

LED indicators for 2nd 16 channel digital input

LCD Panel contrast adjust

4x4 Keypad connector

2 rows x 20 characters LCD Display connector

Expansion Ribbon Socket for interface to expansion Cards

Parallel Interface Adapter (PIA) for expansion port

Optional 128KByte SRAM card socket for data logging

Motorola MC68HC11 one of the most common industrial grade micro-controller

Commonly available High Speed CMOS (HCMOS) Integrated Circuit Chips (ICs) provide a open design architecture and highly serviceable even by 3th parties

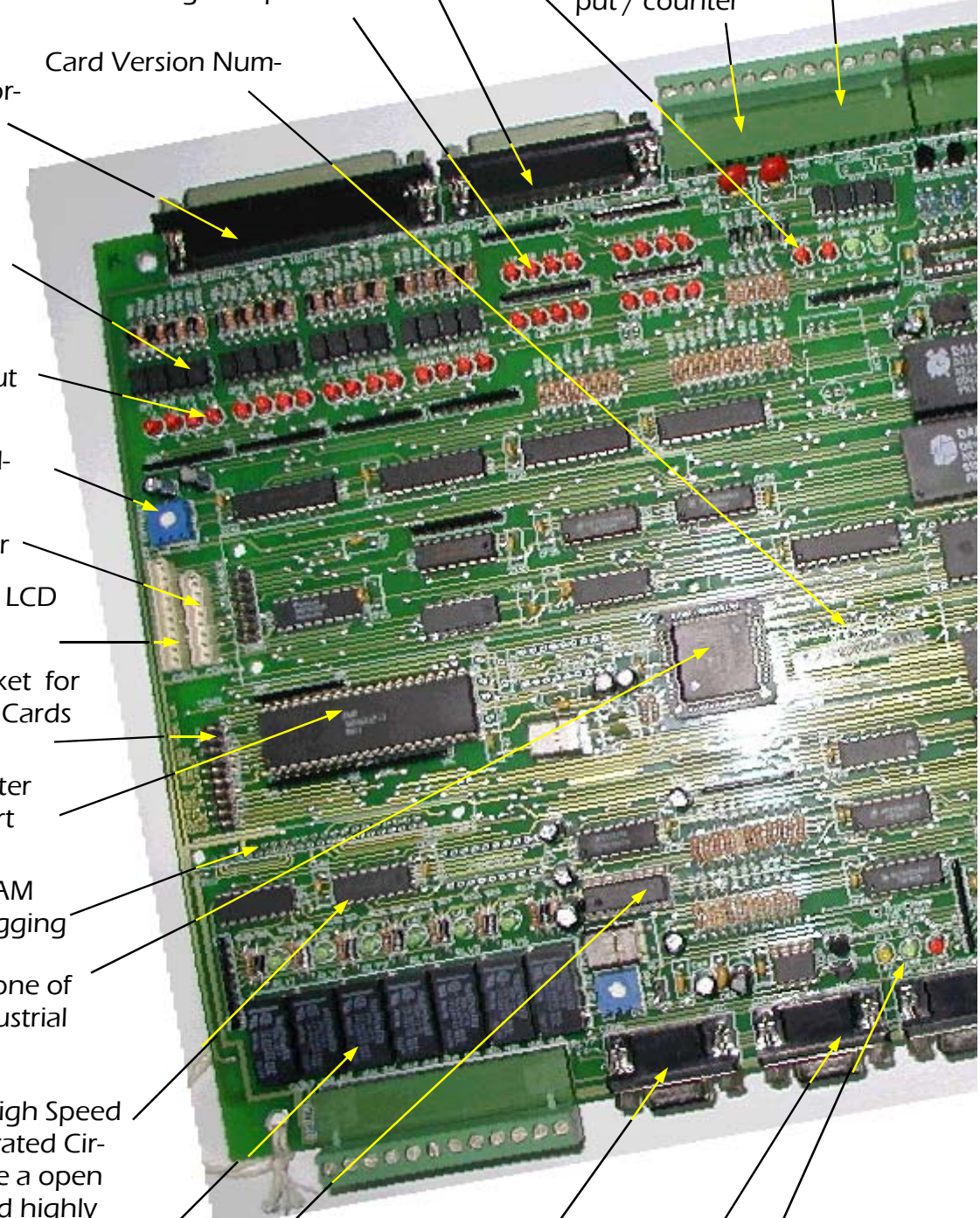
6 channels of Volt Free Relay Output as for general control purposes

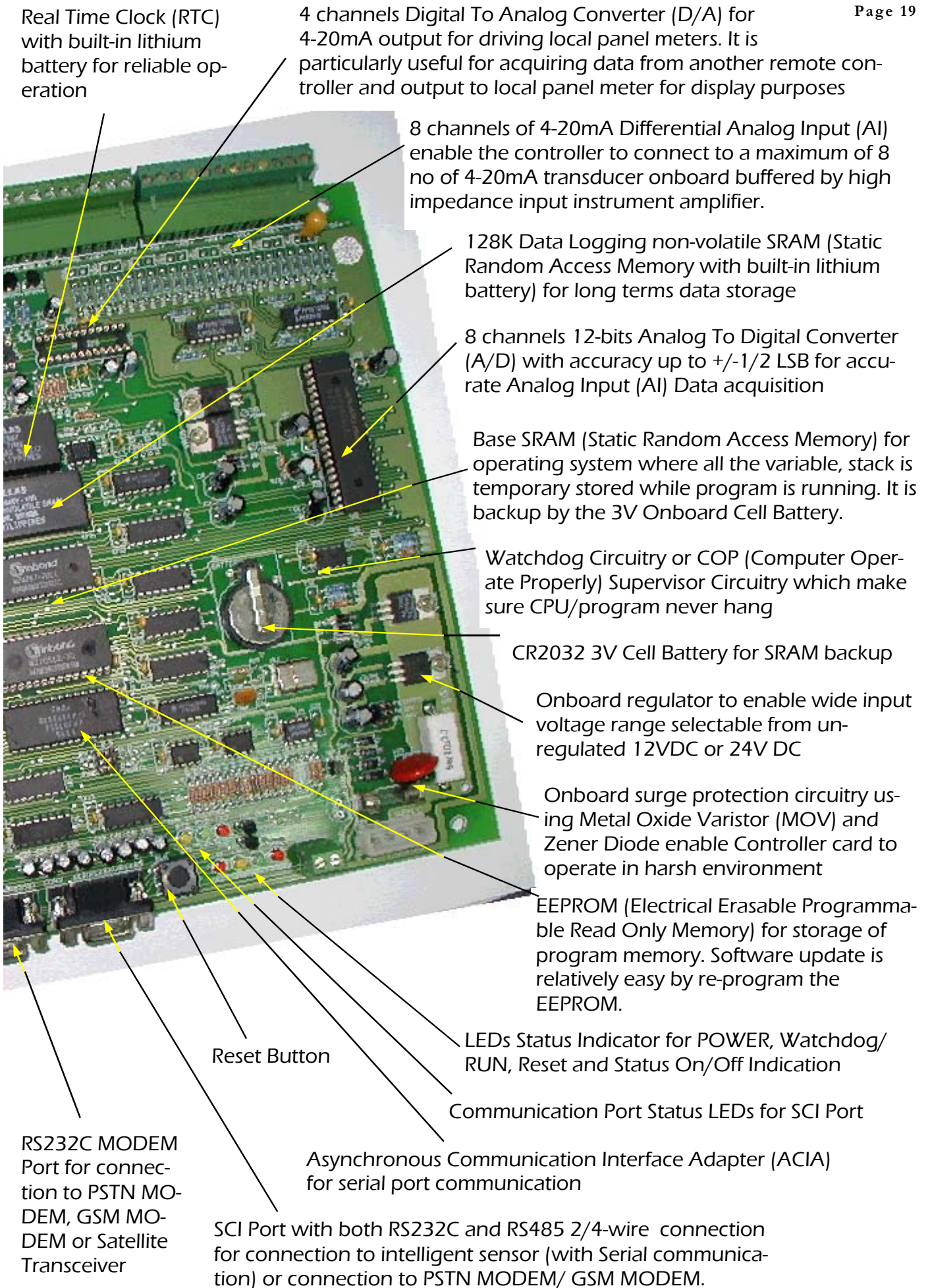
Onboard V.23 FSK (Frequency Shift Keyed) MODEM Chip for direct interface to VHF/UHF/trunk radio

MIC (Microphone) Connector for data/voice switch-over

Radio Port for interface to VHF/UHF/Trunk Radio Transceiver

Com2 Serial Port Status LEDs such as TXD, RXD, RTS





Real Time Clock (RTC) with built-in lithium battery for reliable operation

4 channels Digital To Analog Converter (D/A) for 4-20mA output for driving local panel meters. It is particularly useful for acquiring data from another remote controller and output to local panel meter for display purposes

8 channels of 4-20mA Differential Analog Input (AI) enable the controller to connect to a maximum of 8 no of 4-20mA transducer onboard buffered by high impedance input instrument amplifier.

128K Data Logging non-volatile SRAM (Static Random Access Memory with built-in lithium battery) for long terms data storage

8 channels 12-bits Analog To Digital Converter (A/D) with accuracy up to +/-1/2 LSB for accurate Analog Input (AI) Data acquisition

Base SRAM (Static Random Access Memory) for operating system where all the variable, stack is temporary stored while program is running. It is backup by the 3V Onboard Cell Battery.

Watchdog Circuitry or COP (Computer Operate Properly) Supervisor Circuitry which make sure CPU/program never hang

CR2032 3V Cell Battery for SRAM backup

Onboard regulator to enable wide input voltage range selectable from un-regulated 12VDC or 24V DC

Onboard surge protection circuitry using Metal Oxide Varistor (MOV) and Zener Diode enable Controller card to operate in harsh environment

EEPROM (Electrical Erasable Programmable Read Only Memory) for storage of program memory. Software update is relatively easy by re-program the EEPROM.

LEDs Status Indicator for POWER, Watchdog/RUN, Reset and Status On/Off Indication

Communication Port Status LEDs for SCI Port

Reset Button

Asynchronous Communication Interface Adapter (ACIA) for serial port communication

RS232C MODEM Port for connection to PSTN MODEM, GSM MODEM or Satellite Transceiver

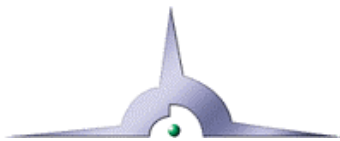
SCI Port with both RS232C and RS485 2/4-wire connection for connection to intelligent sensor (with Serial communication) or connection to PSTN MODEM/ GSM MODEM.



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Scadatron technical expert are ready to help to explain how we can help with the monitoring, control and management of your water supply, flood monitoring, irrigation or sewerage system need. Contact our personal who for technical clarification

contact: 019-3325031



What is Telemetry ?

Telemetry is the mechanism by which information is interchanged with remotely separated locations to a device on which the reading can be indicated or recorded for the purpose of monitoring and/or control through communication network (Radio, Leased Line, PSTN, Satellite, Direct-linked etc.). The term "tele" means "at a distance" and "metry" refers to measurement: measurement at a distance. All of these measurements are first converted to digital data (ones and zeroes); they are arranged into "data packets" to be transferred by the communication media to the data collection center.

What is SCADA ?

The acronym SCADA, means Supervisory Control and Data Acquisition. It is comprised of one or more computers, providing an interface to the physical communication network (and hence to the RTUs), and an operator interface to the data obtained from RTUs. This data may be massaged, stored for later retrieval, analysed and transferred to other computer systems. A SCADA system often provides a control interface for sending data to RTUs. This can be by way of operator commands, automatic sequences reactive to data from RTUs, or information received from other computer systems. SCADA systems have provided the means for controlling and monitoring remote devices for several decades.

WHY USE SCADATRON ?

Scadatron is designed and manufactured locally in Malaysia. The quality is assured because it is designed to satisfy local and overseas market. Scadatron is designed by system experts after years of experience in telemetry systems and SCADA application with the know how in software & hardware design of Embedded Controller for critical control & monitoring requirement. Experience in communication equipment and media helps us to provide the best linkage solutions for most of our client needs.

Epeteknik is committed to give full support on the Scadatron software or hardware packages to the customer satisfaction. The experts in Epeteknik have the capability to recommend the best system to suit the client requirement based on their experience in this field. Besides, they also have the capability to customise-design to cater for any possible upgrading work which utilise existing equipment and so reducing the cost involved.

Every Scadatron system comes with complete operations & maintenance manuals and a summarised operation instruction page. The philosophy of the company is not to supply a system which can only be maintained by the manufacturer but to supply a system which can be maintained by the users themselves.