PACCS-Telemetry Radio Series

What is PACCS

Platform for advanced Communication, Control and Security.
Used around the world for a decade the PACCS suite of solutions has been designed and developed by experts with advanced OEM components from the giants in telecommunications.

The Paccs-TelemetryC900, is an advanced telemetry interface. It will carry out a range of telemetry functions and is one of the world's most sophisticated remotely managed telemetry systems offering numerous advantages over alternative technologies.

It will for example provide most radio telemetry requirements both high protocol and standard logic. We also can provide for "smart" RS-232 Electricity, Gas and Water meters or directly to "dumb" pulse output meters, providing low-cost Automatic Meter Reading solutions. PACCS-TelemetryC900 is suitable for connection to AC, DC, solar and battery power supplies, making it ideal for remote electricity, gas and water meter reading applications.

What can you use it for ?

•Industrial telematics & security
•Remote control and remote sensing in industrial and utility applications
•Interfacing with external RTU and monitoring RTU as well as acting as transponder
•Can incorporate RTU circuitry/function for even greater cost-saving
•Distribution Transformer monitoring
•Load shedding
•Automatic Meter Reading (Electricity, Water& Gas)
•Services reliability monitoring and anti-theft systems
•Water Conservation
•Fleet Security Applications
•Remote Irrigation Management

Why our Product is World Class…

At the time of the PACCS-TelemetryC900's conception, we were seeking a Telemetry system that would provide some key characteristics.
•Operate with just sms if needed
• Operate in very Low network coverage
•Operate in Low signal strength in remote areas
•Operate optionally without GPRS connectivity

All these factors caused the W&W PACCS-TelemetryC900 to evolve into one of the most efficient sms/gsm based telemetry products in the world.

Design features

- 3 data transfer methods (SMS/ GPRS/ CSDC)
- High Data compression- so very low communication costs. Complex compression algorithms to ensure efficiency and integrity of data sent in each SMS message sent. over 2000 bytes of data into 1 SMS packet of 135 characters
- low cost central monitoring infrastructure simultaneously read thousands of slave-messages per hour if required
- redundant design features therefore never loses data
- operates in very low gsm signal strength- therefore installation costs are much lower and application area is larger
- integrated power supply- tolerant to loss of 2 out of 3 phases ultra low power consumption
- solar cell and Li-ion battery options
- programmable and upgradeable over the sms or gsm network-increases security, reduces labor costs
- optional sensor inputs and relay outputs enables power management, load shedding and resource management.
- Optional temperature, tamper, sensor reporting alarms can be sent to a sequential series of destinations with escalation and acknowledgement
- accurate time logging with synch feature with GPRS.
- auto re-connection and resetting
- inbuilt-tamper and event log prevent staff or consumer tampering or electricity theft
- can be expanded to provide unlimited alarms and monitoring functions with multiple alarm reporting options.

Key Feature Brief

•3 Methods of Data Transfer (SMS/GPRS/Data Call)
•Real time synchronisation via SMS (Only product in world to do this accurately)
•High Data Compression – 2000 bytes into 1 SMS.
•Smart – The PACCS-TelemetryC900 is similar to a computer
•Reprogrammable from anywhere (No need to physically be at the unit)
•SMS based data transfer (No expensive back-end GPRS servers required)
•Ability to control individual units and alarms from Mobile Phones
•Entirely user programmable
•Low installation costs (Units self initialise when switched on for the first time)

Where our technology has been used

Our PACCS range of technology has been proven and operational in Asia, the Americas, Australasia and the Middle East. The PACCS-TelemetryC900 has provided real solutions from in Asia /Australia /America.

Technical Overview

The PACCS-TelemetryC900 philosophy is based on experience gained while working with associated Power Line Carrier communications in the early 1990's.
Our packet switching technology was developed to fulfill the need for remote automatic meter reading of Electricity, Gas and Water meters.
W&W was one of the first OEMs in Australia to see the advantages of packet switched communications in a remote information gathering and control application.
The philosophy of combining data compression with a "State of the Art" microprocessor allows a project to be configured for many different applications and upgrades which may not be identified at the project design stage. Hence Whole-of-Life costs are reduced to a minimum.

Introduction to the PACCS-TELEMETRYC900™ unit

The PACCS-TELEMETRYC900™ field unit combines the
benefits of smart compression algorithms with local onboard processing and memory. The product is unique in being able to compress the data "On-the-Fly".
The on-board microprocessor architecture allows multi tasking and hence can be configured for user or application specific configurations. It can be used in a Stand Alone mode or with a GATEWAY which enables gathered data to be processed by PC programs.
The PACCS-TelemetryC900™ unit has been developed to
maximize packet efficiency and hence reduce operating costs of its applications. Should the signal deteriorate
(due to the source moving for example) the W&W unit is able to track message packets, which may arrive out of sequence, and then confirm message integrity.
PACCS-TelemetryC900™ offers 3 data transfer modes via either SMS/GPRS or CSDC. Positional information is available - with an optional GPS modem.
We are the only product of this class in the world, able to offer time stamping ± 5sec regardless of network latency.
Additional costs attributed to dropout are minimal. Commonly switched packed devices on losing network connection need to be switched OFF and ON for example to regain connection. The ability to maintain connection is a feature of the PACCS-TelemetryC900.

Product Features

•Dual Band GSM / GPRS Control Terminal and Serial Modem (EGSM 900 / 1800 or GSM 850 / 1900
•Hosting services for embedded applications
•Compliant with 3GPP GSM Phase 2 + (GCF-CC v3.8.1 / NAPRD v.2.7.0 standard) (Small MS)
•RF Output power
•Class 4 (2W) @ 850/900 MHz
•Class 1 (1W) @ 1800/1900 MHz
•Supply Voltage 5V – 32V
•Operating temperature range: -30°C to +75°C
Storage temperature range: -40°C to +85°C

Product Components

Superior Signal Strength

The PACCS-TELEMETRYC900™ units have the ability to
operate in extremely weak signal strengths and still maintain message integrity using specialized error-checking protocols.
Cellular network signal strengths are measured on an exponential scale (RSSI) of 1-31, with 1 being the weakest. Data calls cannot be made on a RSSI indicator of less than 19. PACCS-TELEMETRYC900™ units however, have
worked at signal strengths of 1 in 31 representing successful data transfer at signal strengths 8,000 weaker than those used for data calls.
A signal strength direction indicator module is available for maximizing signal reception in static, weak field applications, which are often found in remote monitoring.

PLC Interface

Additionally, a PACCS-TELEMETRYC900™ may also
transmit and receive data gathered by appropriate PLCs.

Supply Voltage

•90 - 600VAC (3 Phase or Single Phase)
•Optional: Battery powered with typically 2-year operational life. See sleep mode.
•A 3dB gain antenna is available.

Hazardous Location

Our PACCS-TelemetryC900s™ can be configured
with Zenner Barrier circuitry protection, making it ideal for hazardous applications such as remote Gas Metering in volatile environments.

Mechanical

•Dimensions: 140 x 110 x 35 mm
•IP65 or optional IP68
•For high humidity applications in which the Paccs-telemetry may also be subject to occasional immersion please refer to Head Office.
•FLASH Memory

Power Source

Although a DC and AC version of the Paccs-telemetry is available, some remote applications call for battery Back Up. This feature is enhanced with the capability to write important information to FLASH memory before loosing power. FLASH memory offers advantages over EEPROM memory, in that it can be over written many times.
The unit also features a sleep mode to maximize battery life.
Stainless Steel enclosures are available if required.

Electrical The following low voltage I/O are provided:
•Pulse log
•An event log
•I/O Points (Standard Arrangement)
•An analogue log
•4 x Digital In (Opto isolated)
•A Heartbeat pulse and Health status is provided.
•2 x Digital Out (Mosfet, 0 – 60V)
•2 x Analogue In. Frequency response better than 1msec.

Remote Programming

Paccs-telemetrys support remote on line programming.

Interfaces

•SIM card reader: 3V/5V interface with SIM detection
•LED interface
•Data I/Os
•HD15
•1 x full RS232 – (9-signal)
•1 x ADC/digital input
•2 x digital inputs
•2 x digital outputs
•1 x 4.8V DC output (<75mA) *
•Re-configurable as 1 x DO
•RJ12
•1 x DO (switch to GND)
•1 x DO (switch to Vin)
•1 x DI
•CSD asynchronous – non transparent up to 9.6 kbps
•HSCSD (2+1), up to 28.8 kbps
•GPRS Class B ($+1), up to 85.6 kbps*
•P channel Support

•Coding schemes CS1 – CS4
•GSM 07.10 Multiplexing protocol
•*Requires network support

Short Messages Services (SMS) features

•PDU & Text modes
•MO/MT & CBM
•Concatenation – up to 6 SMS
•Telephony

Data Security

The W&W units use multiple compression techniques, which by their nature offer secure transmissions.

GPRS Networks

Additionally a hard-wired TCP/IP connection allows for a fast local traffic capability.
The W&W Paccs-telemetrys available with GPRS/SMS and CSDC capability.

•Emergency calls
•Full Rate, Enhanced Full Rate and Half Rate (FR/EFR/HR)
•Dual Tone Multi Frequency function (DTMF)
•Fax features
•Fax Group 3, Class 1 & 2

Embedded Applications

Intrinsic functions: to support applications such as SCADA, Security, Telematics Automatic Metering Reading, and Vending:
•OTA script download
•E-Maintenance
•TCP/IP
•Intrinsic TCP/IP protocol stack
•GSM Supplementary Services
•Call forwarding
•Call hold, waiting and multiparty
•Calling/called number identification
•Advice of charge
•USSD
•Alternate line service
•Customer service profile
•Preferred networks
•Operator selection
•Network registration
•Call barring
•Call transfer
•Power save mode
•Vin (input voltage) surveillance feature
•ME + SIM phone book management – read/write/find, call screening, groups, personal rings, settings
•SIM Application Toolkit Class 2
•Real Time Clock
•Software upgradeable
•Audio control
•Fixed dialing number
•UCS2 16 bit data supported
•GPS interoperability

GATEWAY OR MASTER MODULE

Introduction to the GATEWAY unit:

For larger installations there is a need to gather the field units' data to a single unit that is connected to a PC. This allows, for example, data logging.

In addition the Gateway module allows remote reprogramming of field units. This benefit can minimize the expense of Service Technicians and traveling costs.

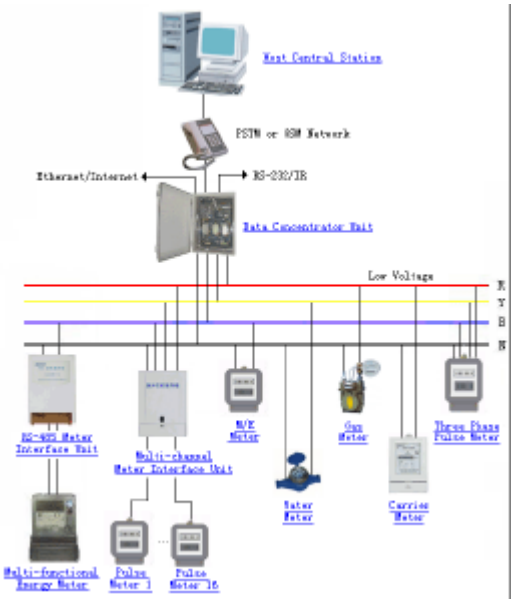
GATEWAY configuration

The Gateway module is available in two configurations:

•Supporting 100 Paccs-telemetrys

•Supporting 500 PACCS-TelemetryC900s

TCP/IP Networking provides for more gateways.



GATEWAY functionality

The Gateway is a Server with the following functionalities

•An Alarm Server

•A Data Gatherer

•A Service Gateway

The Gateway would typically be connected to a PC and allows data gathered by the Gateway unit from the PACCS-TELEMETRYC900™ units to be displayed in a convenient form.

Software

To handle and automate the handling of messages we have an integrated software product that is purpose built.

Remote configuration of field units including for example, the I/O or Event Log is available. This feature alone, for some applications, can justify the cost of a PACCS-TELEMETRYC900™.

GATEWAY software

Management software that allows for predetermined actions to occur on the receipt of alarms or other definable events or text is available. This software includes an Email and e-Commerce capability. The software supports 15 Gateways. Note that a modem supports a GATEWAY, which in turn supports either 100 or 500 PACCS-TelemetryC900s. This is a huge network capability.

Windows based configuration software is also available.

W&W PACCS-TelemetryC900

Application

•3 in 1; Logger, **GSM** Communications & I/O
•Monitoring, Alarming, Functional Control & Data Acquisition.
•Remote Distance Configuration Changes
•Automatic predetermine Data Transmission
•Bidirectional Communications from anywhere
SAM - Stand Alone (Operate independently)
INM - Network through Web or LAN
Wake Mode & Sleep Mode option

Logging Memory: 2Mbyte Compression Technology, 33 days phase, analogue &
Digital with 28 days Events

Communications: Ericsson GSM Modem, Dual Band & SMS

Power Management: Very low power consumption at 35mAmps continuous, DC 7 to
24Volt or AC input single & three phases

Digital Input: Two TTL input, 1 temper, PC software Configurable Heart-Beat (new) + Pulse

Analogue Input: One Analogue inputs, 4 to 20mAmps or 0 to100mVolts (optional - able to convert to digital input)

Digital Output: Two TTL output used for control (0 to 5V)

Security Hardware Hardware Tamper protection, Software Security selective

& Software: Administration

Time Date Stamp Clock: Uses network software clock, no battery requirement.

Programming Language: DOS with ASCll protocol, Masterlog for Windows XP, SMS load
& others

Two RS 232 ports: Comport one used as GSM modem & comport two used as programming Others port used as RS232 camera support

Call Commands: Has many call commands used with SMS solution

Microprocessor: Small powerful CPU with additional room for expansion HITACHI processor H8/3006

Compression: A resolution of 96 daily reading into 1 packet SMS (equivalent to 3kilobyte of data)

Force SMS: Transmit alarms during peak period within 1min

Operational Cost: Very low operational cost due to 3Kbyte compression

Master Gateway Specifications

Application

•Data storage 500 devices, GSM Communications & I/O
•Performs Alarm handling and decompression of Data
Acquisition.
•Performs Remote Distance Configuration Changes
•Failure to deliver watchdog on non delivery of data
SAM - Stand Alone Mode (Operate independently)
INM – Integrated Network Mode, Alarm handling & events
Modes - Wake mode and Sleep mode available

STORAGE Memory: 2MB Compression Technology, 500 devices per day at 15- minute intervals (COMPRESSED STORAGE)

Communications: E-GSM Modem, Dual Band, GPRS & SMS

Power Management: Very low power consumption at 25mAmps continuous, DC 7 to 24Volt or AC input single phase 90Vac to 240Vac

Decompression Output: Data and Events decompressed into CSV and TXT files

Programming Language: DOS with ASCll protocol, Masterlog for Windows XP, SMS load & others

Security Hardware Hardware Tamper protection, Software Security selective

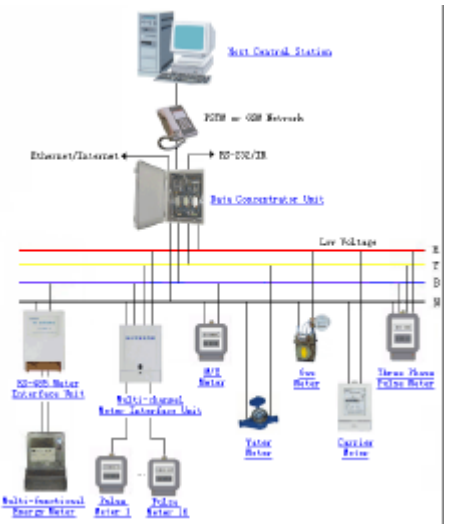
& Software: Administration

Time Date Stamp Clock: Uses network software clock, no battery requirement. Use atomic clock sync through web free software.

Call Commands: Has many call commands used with SMS solution

Force SMS: Alarm handling during peak period and accountability. No confusion. Removes alarm if not contactable and leaves event reminder.

Remote Management Upgrade or exchange the configurations files via SMS and GPRS. No need to go to site.



About W&W Solutions International

International Head Office: SYDNEY, AUSTRALIA

W&W innovations provide new and better ways to control and protect your future. With over 20 years of engineering experience W&W has a proven record of unmatched excellence in providing scalable industrial solutions, from personal monitoring, to large corporate and public utility applications. Specialising in wireless telemetry, W&W prides itself on our ability to tailor unique solutions for your remote monitoring needs. Utilising cutting edge wireless technology through our product PACCS-TelemetryC900™, our engineering team can provide solutions that suit your needs. Contact us:

www.wwsinternational.net
info@wwsinternational.net