Concentrator

ChoiceConnect Network Solution

When installed in the Itron ChoiceConnect Network, the Concentrator makes the link between the metering device and the metering data collection system. It is designed to exceed the minimum performance requirements for reliability and latency to provide systems with a better overall cost of ownership. It offers more robust RF channel assessments and link layer control to work around interference or congestion and creates the opportunity for Itron solution to perform better in the same environment as others. Itron also augmented and extended its Concentrator with capabilities and features that improve performance of the system above what can be achieved in the market.

KEY BENEFITS

ChoiceConnect Network Concentrator supports:

» Two-way communication to collect on-demand reads, issue network commands and synchronize meters

» Robust collection of time stamped data

» Time-synchronization of meters clocks

» Retrieval of missing meter data in the event of a network outage through the optical port

» A compact device footprint that is lightweight and unobtrusive

» Flexible installation and diversed mounting topologies

» Low power consumption

» Locations where hard-wired power is not readily available

» Multiple communication options for public and private WAN backhauls

DESCRIPTION

The ChoiceConnect Network Concentrator reads data from the new Gallus Net and RF1 Net smart meters. It can provide better receive performances on the standard wM-Bus signals. It includes as well options for frequency error corrections that are not available to single channel based systems.

The Concentrator supports three primary system interfaces to manage the required data flows: the LAN(RF 169 network) interface, the WAN (cellular-based WAN, broadband or a private WAN supporting IP-addressable packet data) interface and the local interface (Optical port).

In the standard operation of the solution, data uploads from the Concentrator occur at scheduled intervals. Moreover, on-demand requests when needed can also be applied. In addition to the main power, the Concentrator is equipped with a backup battery in case of power loss. In the event of an outage, the Concentrator sends an alarm to the Itron network management software with information describing various events, including power loss, restoration, and low-battery conditions.

FUNCTION

Data Collection and Commands Management

The Concentrator collects data from meters and also provides the possibility to send commands to the meters. Commands are received from the Head End and are queued in the Concentrator until the meter transmits a message by pushing data. The Concentrator sends then the command to the meter. Data and responses from the meter are kept in the concentrator until the Head end collects them.

Broadcast

The Concentrator manages broadcast windows to perform meter firmware upgrades. The broadcasting function is

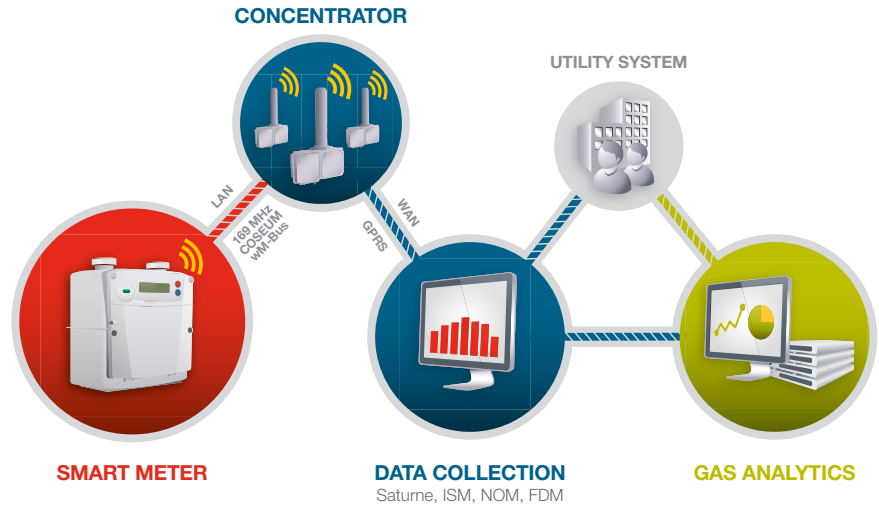based on communication windows and only occurs during specific times of the day.

Network Management information

The Concentrator keeps lists of meters that it sees over the network and manages as directed by the Head End. These lists also carry all the needed network quality information (signal strength, detection times, last communication etc), for the NOM to operate properly.

Security

The Concentrator supports the most advanced security mechanisms to authenticate itself and encrypt data over the LAN and WAN. The security model is end to end between the meter and the Head End so there is no need for the Concentrator to store the keys of the meters.

SOLUTION ARCHITECTURE

CONCENTRATOR

UTILITY SYSTEM

LAN
169 MHz CoSEM WM-Bus

WAN

GPRS

SMART METER

DATA COLLECTION
Saturne, ISM, NOM, FDM

GAS ANALYTICS

SPECIFICATIONS

Functional

» Power Requirements
  • Power source: 90VAC to 264VAC/ 47 Hz to 63 Hz or 12VDC
  • Power consumption: 21.7 Watts Maximum (Peak when battery charging); 8.1 Watts Typical
  • Power connectors: watertight and keyed
  • Backup battery: 6 VDC, lead acid
» Operating Environment
  • Operating temperatures: -10°C to +55°C
  • Storage temperatures: -40°C to +60°C
  • Operating humidity: 0 to 95% non-condensing relative humidity
» Product Details
  • Product life: 20 years
  • Remote antenna
  • Option: GPS modem
  • Product identification: numeric and bar code serial number
  • IP67

Operational

» Optical port EN62056-21
» Concentrator Transceiver Operating Frequency:
  • 169.4-169.475 MHz
  • Max power: 500 mW ERP
  • Duty cycle: 10%, according to ETSI 300 220-1
» Backhaul Specifications
  • Ethernet
  • Flexible Private LAN options via Ethernet connection
  • GSM (850 MHz/900 MHz/ 1800 MHz/1900 MHz)

Regulatory and Standards

» CE Certified
» Safety: IEC60950-1; IEC60950-22
» CIG standards: UNITS11291
» R&TTE certified

Physical

» Dimensions 29.5 cm x 16.0 cm x 12.3 cm
» Weight: 2.9 kg with the back-up battery

Host Processing Software

» Optional Hosted Services
» Meter data collection software (Saturne), Network operation manager (NOM)

Mounting Options

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