

TRACE VRT

Mobile AMR System in Virtual Real Time

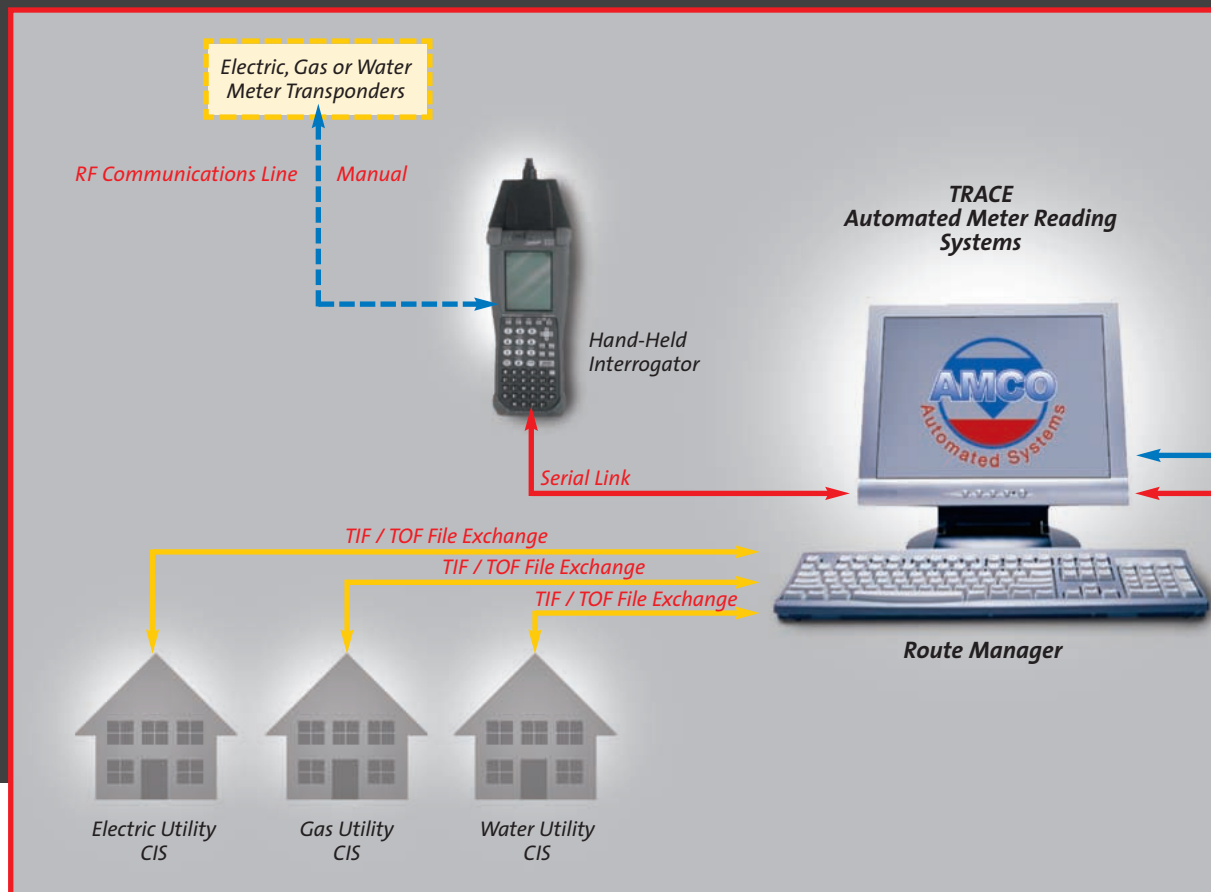
The TRACE VRT (virtual real time), mobile AMR system, processes and stores real-time data at the electric, gas or water meter transponder (Meter Interface Unit or MIU) for retrieval as required during a normal in-cycle read. Stored data includes 35 days of daily index readings (each in a separate electronic index [e-index]), up to six time-of-use (TOU) e-indexes (four for gas and water applications and six for electric) and a leak-detection alarm (water).

A real-time clock in the transponder allows time-based data collection. The daily index-read-time is factory and field programmable, as is the start and stop times of each TOU e-index and the duration of the leak-detection monitoring interval and threshold level. Data is read from mobile interrogators, using two-way RF (radio frequency) communication technology. TRACE VRT transponders are addressed individually by serial number, followed by a series of commands to retrieve specific daily readings and time-of-use data, as well as the usual accumulated volume and alarms.

TRACE VRT is a complete system, comprised of meter transponders, hand-held and or vehicle-mounted interrogators and host software that integrate utility CIS systems with metering data in the field.

TRACE VRT host software, Route Manager VRT:

- ▶ accepts customer account and route data files from one or more electric, gas and/or water utility Customer Information Systems (CIS)
- ▶ stores the CIS data in a MS SQL server database
- ▶ supports the management of the read routes stored in the SQL database
- ▶ assigns and downloads read routes to interrogation devices
- ▶ uploads meter data from interrogation devices
- ▶ stores up to 13 months of meter data in the SQL database for local validation, editing and analysis using built-in ODBC applications or Microsoft Office applications such as Excel
- ▶ uploads meter-data files to one or more utility CIS's



Hand-held interrogators are used to read electric, gas or water routes following address-sequenced routes with each meter reading initiated by an operator. The Mini-Mobile Interrogator (MMI) is a vehicle-transported device that can be used to read electric, gas and/or water routes automatically based on the geographical location of the vehicle and individual meters. The Vehicular Interactive Display (VID) displays real-time vehicle and meter locations, as well as the reading status of each meter.

Some of the additional hardware components are:

Direct Gas Transponder (DGT)

The DGT is designed for use with most residential and small commercial diaphragm meters from American Meter Company®, Rockwell/Equimeter/Invensys®/Sensus, and Sprague/Schlumberger/Actaris®. The DGT mounts directly on a meter, incorporating the mechanical index and index cover supplied as part of the meter.

Pit Water Transponder (PWT)

The PWT is designed for use with water meters installed below grade in pits and is compatible with most AMCO/ABB, Sensus/Rockwell, Neptune, Badger, Hersey and Metron-Farnier water meters. The PWT is extremely compact and is installed on the underside of the pit lid with the antenna extending through the standard 1-3/4" hole and held in place by a low-profile cap from the top-side of the lid.

Remote Water Transponder (RWT)

The RWT is designed for use with water meters installed above grade. It can be wall mounted indoors or outdoors and is compatible with most AMCO/ABB, Sensus/Rockwell, Neptune, Badger, Hersey and Metron-Farnier water meters.

Direct Electric Transponder (DET)

The DET is planned for use with most residential, single-phase, Form-2S watt-hour meters from Elster Electric/ABB, Schlumberger/Sangamo, General Electric and Landis and Gyr. The DET directly mounts in the meter (under glass).

Mini-Mobile Interrogator (MMI) VRT

The MMI is a Radio Frequency (RF), drive-by interrogator that establishes two-way communications with electric, gas and water meters equipped with TRACE and TRACE VRT transponders based on the geographical location of the MMI and the meters that are within range of the MMI.

Vehicular Interactive Display (VID) VRT

The VID displays real-time street maps marking the location of the meters and the MMI as the vehicle moves through the route. As each meter is read by the MMI, the graphical representation of the meter on the VID display changes to show that it has been read.

TRACE VRT Hand-Held Interrogator

The TRACE VRT Interrogator, using the DAP Microflex CE 5240 hand-held computer, is a Radio Frequency (RF) Automated Meter Reading (AMR) solution for TRACE equipped electric, gas, and water meters that also supports electronic meter reading (EMR) through the manual entry of readings from meters that do not have TRACE transponders.

Short-Range Programmer (SRP) VRT

The SRP is a hand-held programmer/interrogator intended for use during the installation of electric, gas and water TRACE and TRACE VRT transponders. The SRP is used to: (1) verify that a transponder is functioning correctly and (2) initialize the starting values of various transponder indexes (e-indexes) and associated settings.

Route Manager VRT The Route Manager

VRT is software that integrates TRACE VRT transponders and interrogators into an AMR system and provides the interface between the TRACE VRT AMR system and a utility company's customer-information system.

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