




ARB® UTILITY MANAGEMENT SYSTEMS™ WATER | GAS | ELECTRIC



# AMR/AMI System Functionality

Three Systems. ONE SOLUTION.



 **ARB**® Mobile™

 **ARB**® FixedBase™

 **ARB**® Hybrid™

*Get the freedom to work the way you want.*



# NEPTUNE TECHNOLOGY GROUP

## ARB® UTILITY MANAGEMENT SYSTEMS™






# AMR and AMI System Functionality



## Comments

## Value

Billing					
Absolute accurate readings	●	●	●	With absolute encoders the remote meter reading matches the meter register odometer 100% of the time.	Comparable with all absolute encoder based systems. Advantageous over pulse-based systems – no potential for synchronization issues.
Billing read (monthly, bi-monthly, quarterly)	●	●	●	Available with all systems.	Cost of increased reading frequency is negligible with the ARB® FixedBase™ System. ARB® Mobile™ Systems require reading cycles which are similar to most utilities' current practices.
Eliminate estimated meter reads	●	●	●	Eliminate access issues.	Advantageous over manual keyed entry or reading of direct read meters.
Improve cash flow – move to monthly meter reading from bi-monthly or quarterly	●	●	●		Cost of delinquent accounts is reduced as reading/billing frequency increases (problem accounts are identified more quickly and bills are more manageable). Cost to read more frequently is virtually zero with an ARB® Hybrid™ or ARB® FixedBase™ System.
Improve cash flow from Industrial, Commercial, and Institutional (ICI) accounts – read and bill meters daily for high-revenue accounts or transfer meters	◐	●	●	ARB® Hybrid™ and ARB® FixedBase™ allow a Utility to read its high-revenue or transfer meters daily.	Transfer meters and some high-value ICI meters often have billing structures and penalties that require daily monitoring. Cost to read more frequently is virtually zero with an ARB® Hybrid™ or ARB® FixedBase™ System.

-  meets or exceeds functionality
-  partially meets functionality
-  does not meet functionality

# AMR and AMI System Functionality



## Comments

## Value

### Customer Service

Move-ins/Move-outs – Off-cycle reads



<sup>1</sup> Must be scheduled and handled manually.

Typical customer churn is about 15% per year and manual off-cycle reads can cost up to \$50. ARB® Mobile™ Systems can handle “off-cycle” routes. On the other hand, ARB® FixedBase™ Systems can typically provide these readings at no added cost.

Graphical depiction of consumption data



Usage graphs display monthly, daily to hourly consumption depending on the level of data available.

Easily handle billing disputes, identify consumption problems (leaks, etc.), check right-sizing of meters.

<sup>1</sup> E-Coder)R900/™ with data logging functionality (DL) logs a rolling 96 days of hourly data. Requires visiting MIU for manual collection of data.

24-hour consumption data – hourly data



<sup>1</sup> E-Coder)R900/™ with data logging functionality (DL) logs a rolling 96 days of hourly data. Requires visiting MIU for manual collection of data.

Easily handle billing disputes, identify consumption problems (leaks, etc.), check right-sizing of meters.

<sup>2</sup> Using Hybrid Gateways for targeted applications reading ProRead™ or E-Coder® with R900®, or E-Coder)R900/™.

<sup>3</sup> ARB® FixedBase™ provides a meter reading time-stamped at midnight, plus 24-hour consumption data for every meter on a daily basis.

Daily Reads



<sup>1</sup> Must be scheduled and handled manually using ARB® Mobile™ Systems; E-Coder)R900/™ with data logging functionality (DL) provides a rolling 96 days of hourly reads.

Incremental cost of daily reads is negligible for meters read with ARB® FixedBase™ or ARB® Hybrid™ Systems.

<sup>2</sup> Daily reads are available with Hybrid Gateways.

<sup>3</sup> Meter readings taken at midnight for entire system are available daily with ARB® FixedBase™.

# AMR and AMI System Functionality



## Comments

## Value

Operations					
Eliminate service calls due to estimated reads, access problems, etc.				Comparable with all absolute encoder based systems because they greatly reduce access issues and eliminate reading errors. Advantageous over manual keyed entry or reading of direct read meters.	
Tamper Detection	1	2	3	Cut wire tamper flag is available with all systems. In addition, E-Coder® provides a rolling 35 days of reverse flow and consecutive days of zero consumption information to flag reversed and removed meters – 1 every time the route is read via Mobile technology, 2 daily using Hybrid Gateways, and 3 daily to immediate notification using ARB® FixedBase™ data collection.	Reduced latency of ARB® Hybrid™ and ARB® FixedBase™ Systems results in quicker response to tamper conditions and reduced opportunity for theft.
Virtual Turn-on/Turn-offs	1			1 The CIS system must be able to mark an account inactive. ARB® Mobile™ will track any consumption and pass this to the CIS. ARB® FixedBase™ provides daily reads and software that tracks meter readings for positive consumption to flag usage supporting virtual turn-offs.	Reduced latency of ARB® Hybrid™ and ARB® FixedBase™ Systems results in quicker response to unauthorized water use conditions and reduced opportunity for theft.
Reverse flow/backflow events	1,2	3	4	1 E-Coder® provides the past 35 days of reverse flow event monitoring every time the route is read via Mobile technology, 2 E-Coder)R900™ with data logging functionality (DL) logs a rolling 96 days of hourly reads and dates and time-stamps reverse flow events providing reverse flow event information upon interrogation of the MIU, 3 hourly/daily using Hybrid Gateways, and 4 daily to immediate notification using FixedBase data collection – ProRead™ and E-Coder®.	All systems provide this benefit; however, ARB® Hybrid™ and ARB® FixedBase™ Systems provide this information with greatly reduced latency or lag-time. This reduced latency allows for quicker response which can reduce the magnitude of the problem. Furthermore, an ARB® Hybrid™ or ARB® FixedBase™ System can more accurately identify when the issue first occurred and its duration.
Time-synchronized reads (midnight)				Only available with ARB® FixedBase™ System.	Provides an accurate means of determining Non-Revenue Water. Estimates required by other approaches reduce their value.
Read cycle alarm capability	1	1		1 Using E-Coder® or E-Coder)R900™ and AMR Permalog®	All systems can provide E-Coder® and AMR Permalog®-based alarms when these system are interrogated. The value of the data is increased as latency is reduced with ARB® Hybrid™ or ARB® FixedBase™ Systems.

## AMR and AMI System Functionality



## Comments

## Value

### Operations (continued)

Daily alarm capability				<b>1</b> Using E-Coder® or E-Coder R900i™ and AMR Permalog®.	ARB® Hybrid™ and ARB® FixedBase™ Systems can provide daily alarms. Priority alarm with immediate notification functionality.
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Priority alarm with immediate notification functionality				<b>1</b> Using E-Coder®.	Eliminate access problems and hazards.
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### Non-Revenue Water

Residential Leak Detection				High resolution leak detection (1/10 gal, 1/100 ft <sup>3</sup> , 1/1000 m <sup>3</sup> ) using E-Coder® or E-Coder R900i™. Alarm flags are set in providing notification of residential leaks – <b>1</b> when routes are read using Mobile data collection equipment, <b>2</b> daily to hourly when read by Hybrid Gateway devices, and <b>3</b> daily to immediate notification with ARB® FixedBase™.	Accessibility and latency are improved with ARB® Hybrid™ or ARB® FixedBase™ Systems, enhancing the customer service value of the system.
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Data Logging				<b>1</b> E-Coder R900i™ with data logging functionality (DL) logs a rolling 96 days of hourly data. Requires visiting MIU for manual extraction of data. <b>2</b> Using Hybrid gateways for targeted applications reading ProRead™ or E-Coder® with R900®, or E-Coder R900i™. Meter readings are logged in the host software. <b>3</b> ARB® FixedBase™ provides a meter reading time-stamped at midnight, plus 24-hour consumption data for every meter.	ARB® Hybrid™ and ARB® FixedBase™ Systems do not require a special visit to access the data, saving up to \$50 for each meter where data logging is required. Furthermore, the data may already be available to the customer service representative should a customer call to request this information.
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Distribution line leak monitoring				Available with ARB® Mobile™, ARB® Hybrid™, and ARB® FixedBase™ data collection – <b>1</b> when using AMR Permalog® and R900® and <b>2</b> when using AMR Permalog® and R450™.	Reduced latency of reading the leak sensors provided by ARB® Hybrid™ and ARB® FixedBase™ Systems means that leaks can be identified and repaired more quickly. The value of this improved response is proportional to the size of the leak and the reduction in response time.
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District Metering Zone monitoring				ARB® FixedBase™ provides a meter reading time-stamped at midnight.	ARB® FixedBase™ provides an accurate means of determining Non-Revenue Water by comparing the synchronized readings of supply and consumption meters increasing the FixedBase value compared with other approaches.
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**TAKE CONTROL**

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