

# A3 ALPHA® Meter as an EnergyAxis® Node



## The EnergyAxis System

Elster Electricity's EnergyAxis System is an intelligent, two-way unlicensed 900 MHz radio frequency (RF) network for metering automation. The EnergyAxis System consists of the Metering Automation Server (MAS), REX single phase meters, and A3 ALPHA polyphase meters that act as local data collectors and as nodes for commercial and industrial applications. MAS communicates via a public wide area network (WAN) with the collectors. The collectors communicate with and manage up to 1,024 REX and A3 ALPHA meters within the two-way Elster RF local area network (LAN).

The components of the EnergyAxis System consist of REX and A3 ALPHA meters, making the system deployment as simple as installing a meter. No special equipment is necessary because the meters automatically determine the optimal path to the collector. If network conditions change, the meters automatically find a new communications pathway.

To optimize communications, each meter can serve as a repeater. This creates a robust, mesh communication network while maximizing the communication range of each collector.

## A3 ALPHA Meter

Together with the REX single phase meter, the A3 ALPHA meter enables thorough system coverage for residential, commercial, and industrial applications.

The A3 ALPHA meter builds on the patented strengths of Elster's ALPHA meter design. The A3 ALPHA meter uses Elster's patented digital measurement techniques that offer high accuracy, repeatability, and low ownership costs.

The A3 ALPHA meter, as a component of the EnergyAxis System, is equipped with a LAN option board with two-way 900 MHz transmit and receive capability. This option enables the A3 ALPHA meter to act as a node in the EnergyAxis System, which provides two-way communications for collecting meter readings and retrieving on-site voltage reads.

The A3 ALPHA meter may be used for kWh energy measurement, demand, time-of-use (TOU), and critical tier pricing. The A3 ALPHA meter can help lower meter reading costs, provide more accurate readings, and improve customer satisfaction by reducing the likelihood of billing questions due to incorrect readings.

## Revenue Metering

The A3 ALPHA meter is a very accurate revenue meter (ANSI C12.20 accuracy Class of 0.2). Existing ALPHA meter users will find the basic A3 ALPHA meter types familiar.

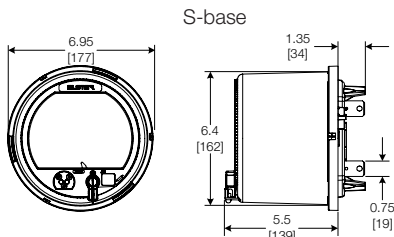
The A3D is available for energy and demand, and the A3T is used for energy and demand where TOU rates are implemented. Each measured quantity is stored in nonvolatile memory and includes energy, demand, and TOU data.

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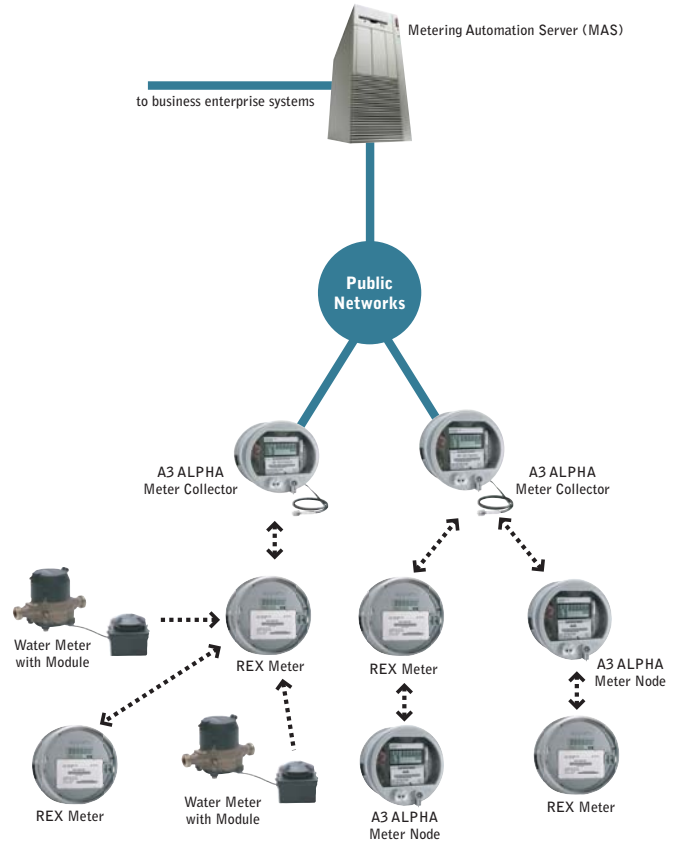
## A3 ALPHA Specifications and Technical Data

Absolute Maximums	
<b>Voltage</b>	Continuous 528 VAC (AnyPhase option: L-L or L-N)
	ANSI C37.90.1 2.5 kV, 2500 strikes
	Oscillatory
<b>Surge voltage withstand</b>	Fast transient 5 kV, 2500 strikes
	ANSI C62.41 6 kV at 1.2/50 $\mu$ s, 10 strikes
	IEC 61000-4-4 4 kV, 2.5 kHz repetitive burst for 1 minute
<b>Current</b>	ANSI C12.1 insulation 2.5 kV, 60 Hz for 1 minute
	Continuous at Class amperes
Temporary (1 second) at 200 % of meter max. current	
Operating Ranges	
<b>Voltage</b>	Nameplate nominal range 120 V to 480 V
	Operating range 96 V to 528 V
<b>Current</b>	0 to Class amperes
<b>Frequency</b>	Nominal 50 Hz or 60 Hz $\pm$ 5 %
<b>Temperature range</b>	-40 °C to +85 °C inside meter cover
<b>Humidity range</b>	0 % to 100 % noncondensing
Operating Characteristics	
<b>Power supply burden</b>	Less than 4 W
<b>Per phase current burden</b>	0.1 milliohms typical at 25 °C
<b>Per phase voltage burden</b>	120 V 0.008 W
	240 V 0.03 W
	480 V 0.04 W
<b>Accuracy</b>	Meets ANSI C12.20 accuracy for accuracy class 0.2 %
General Performance Characteristics	
<b>Starting current</b>	Form 1S and Form 3S 10 mA for Class 20
	100 mA for Class 200
	160 mA for Class 320
<b>Creep 0.000A (no current)</b>	5 mA for Class 20
	50 mA for Class 200
<b>Primary time base</b>	80 mA for Class 320
	No more than one pulse measured per quantity, conforming to ANSI C12.1 requirements
<b>Secondary time base</b>	Power line frequency (50 Hz or 60 Hz), with selectable crystal oscillator
<b>Outage carryover capacity</b>	Meets the ANSI limit of 0.02 % using the 32.768 kHz crystal. Initial performance is expected to be equal to or better than $\pm$ 55 seconds per month at room temperature
<b>Battery (optional)</b>	6 hours at 25 °C. Supercapacitor rated at 0.1 Farads, 5.5 V
<b>Communications rate</b>	LiSOCl <sub>2</sub> battery rated 800 mAh, 3.6 V and shelf life of 20+ years, 5 years continuous duty at 25 °C
<b>ANSI Standards</b>	Optical port 300 to 28,800 bps
	Remote port 1200 to 19,200 bps
<b>Shipping Weights</b>	All values are approximate
<b>S-base</b>	Single 5.06 lbs [2.30 kg]
	4-pack 13.46 lbs [6.11 kg]
<b>A-base</b>	Single 7.38 lbs [3.35 kg]
	4-pack 26.02 lbs [11.82 kg]



Dimensions in inches [millimeters]. For reference only. Do not use in construction.

## EnergyAxis System Architecture



### Elster Electricity, LLC

Raleigh, North Carolina, USA  
+1 800 338 5251 (US Toll Free)  
+1 905 634 4895 (Canada Main)  
support@us.elster.com  
www.elsterelectricity.com

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