2009 NOV 19 AM 8:49

Landis+Gyr

November 9, 2009

The Honorary Jaclyn A. Brilling
Public Service Commission
State of New York
Three Empire State Plaza
Albany, NY 12223

Dear Secretary Brilling:
In accordance with the requirements of the Rules and Regulations of the Public Service Commission of the State of New York, 16NYCRR, Part 93—Regulations Applicable to the Approval of New Types of Electricity Meters, Instrument Transformers and Auxiliary Devices, Landis+Gyr Inc. requests approval of the FOCUS AX family of solid-state residential meters.

The FOCUS AX advanced function meter provides the utility industry with a reliable, quality, solid-state meter platform that will easily adapt to smart grid technologies. This best-in-class innovative product offers open AMI communications, Demand, TOU, Load Profile that fully supports energy and demand response programs, enabling you to manage energy better.

The FOCUS AX provides reliability and accurate billing data. The FOCUS AX meter design is based on field proven digital multiplication measurement technology, which is used in several applications worldwide. The product offers an optical configuration port and a single circuit board design.

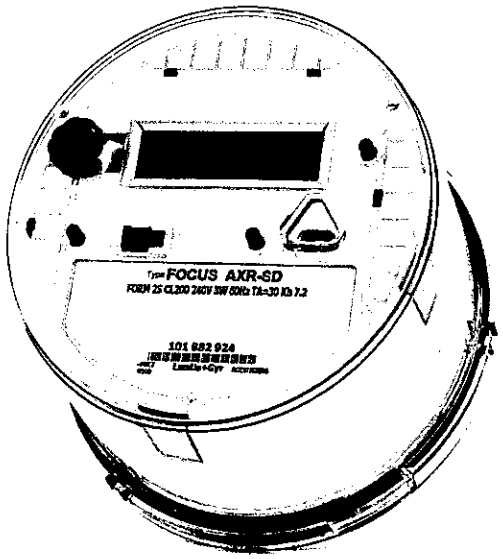
The FOCUS AX meter is designed for 20+ years of service in a quality, residential meter platform that is highly accurate and flexible. All residential forms are available (i.e., forms: 1S, 2S, 2SE, 3S, 4S, 12S and 25S). The commercial and industrial forms available are 45/5S, 8/9S, and 15/16S; 36/6S is currently going through ANSI testing with an expected commercial release of December 2009.

Dependent upon hardware configuration, electrical functionality and volume, the Landis+Gyr FOCUS meter price range is as follows:

- $100- $165 All available meter forms

APPLICATION FOR APPROVAL:

FOCUS AX Solid-State Meter Family



Manufactured by:

Landis+Gyr Inc.
Energy Measurement Products
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Lafayette, IN 47904
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(765) 429-2667 Fax
www.landisgyr.com

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General Information

Applicant

We are proud that we have been in business for over 100 years. The foundation we stand on is strong and the values of Thomas Duncan still pulse through the company.

Our beginnings were set in motion in 1892 when Thomas Duncan developed the first induction watt-hour meter to use a single disk for both the driving and braking element. He followed that invention with the development of a watt-hour meter for the Fort Wayne Electric Corporation (Indiana, U.S.A.) in 1898.

Thomas Duncan settled in Lafayette, Indiana, in 1901 and established Duncan Electric Manufacturing Company, shipping the first meters in 1902.

In 2005, Landis+Gyr was acquired by Bayard Group, currently Landis+Gyr Holdings is the leading global player in the Smart Meter market. There are two divisions of Landis+Gyr located in North America, employing over 1800 employees. All meters are produced by the Energy Measurement Products (EMP) division in North America.

We carry on Duncan's style for innovation and development, and the commitment to quality and service that began so long ago.

Centered on the metering needs of our customers and an emphasis on customer satisfaction, Landis+Gyr is concerned with providing the best metering solution in terms of capability, technology and affordability. By uniting our experience and technology with that of our strategic allies and development partners, we provided metering solutions that cover the range of utilities metering needs from residential to grid applications.

Everyone in our organization is focused on developing and improving processes to meet the highest customer standards for on time delivery of defect free products and metering solutions.

Using Landis+Gyr's robust meter technology offers the best value in opening the doors to many improvements that will enable the smart grid of the future, allowing customers to manage energy better.

Landis+Gyr Inc.
Energy Measurement Products
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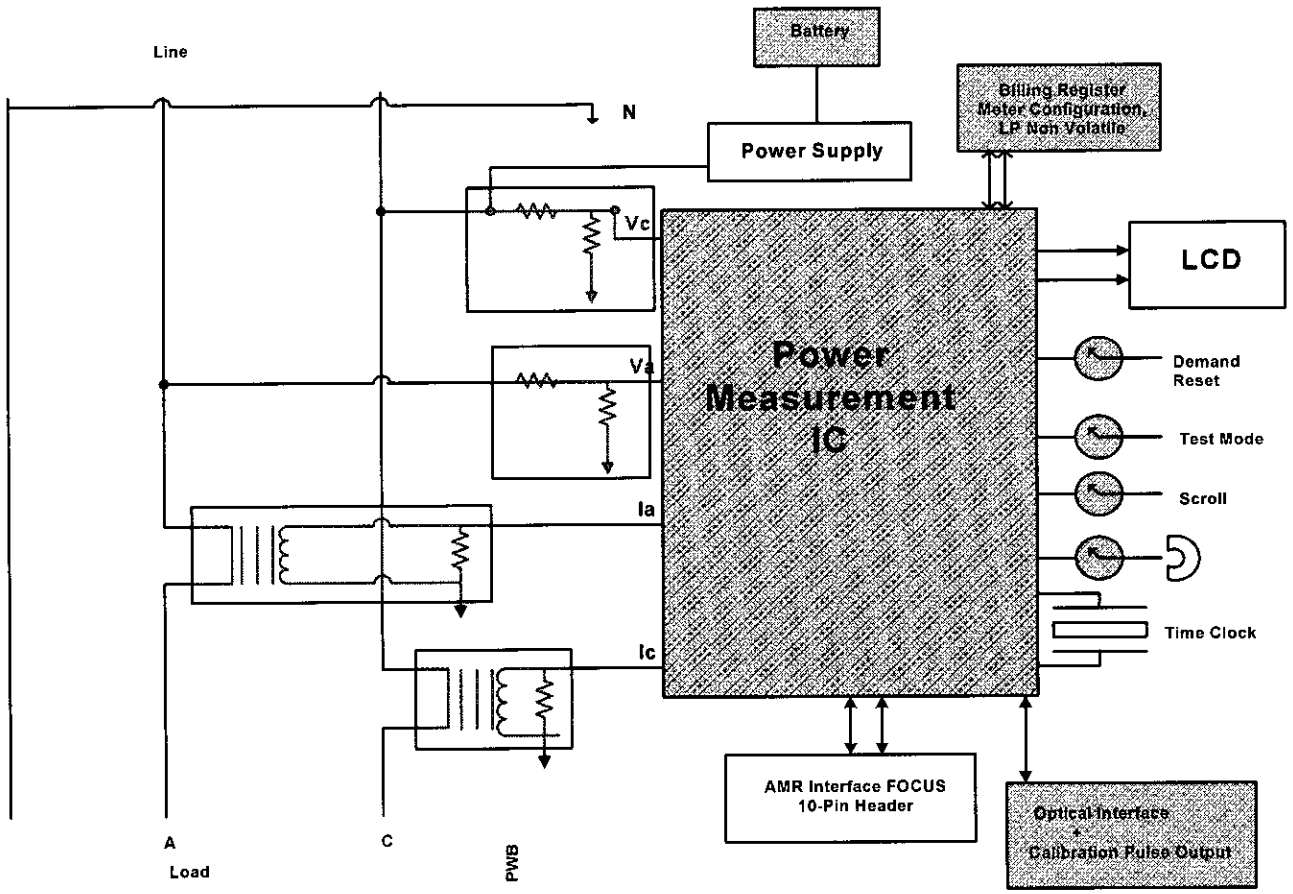
Product Overview

FOCUS AX

The FOCUS™ AX advanced function meter family provides the utility industry with a reliable, quality, solid-state meter platform that will easily adapt to smart grid technologies. This best-in-class innovative product offers open AMI communications, Demand, TOU, Load Profile, with an optional service disconnect feature enabling you to manage energy better. The FOCUS AX family provides reliable and accurate billing data.

Technology

A single circuit board design mounted at the front of the meter, allows room for modular AMI communications or a KYZ option output board via the Landis+Gyr standard 10-pin connector. Fewer parts and connectors throughout the board design increase reliability and contribute to better overall endpoint performance. Highly accurate load performance and the use of a field-proven Digital Multiplication Measurement Technique ensure reliability and dependability during the entire life of the FOCUS AX meter. The design of the FOCUS AX meter family is a combination of technology borrowed from the time proven S4e platform and the robust FOCUS KWh meter. The diagram below represents the components used from each of the complimenting platforms.



The FOCUS AX meter family uses a power measurement chip that receives a current signal, through a current transformer, and a voltage signal. These AC signals are digitized into numeric values by a 21-bit analog to digital Delta Sigma Converter operating at a 1,724.6 Hz rate. The 21-bit digitized voltage and current samples are processed by a 32-bit digital signal processor using digital multiplication techniques to produce high accuracy voltage, amperage and, watthour values. This information is provided to a microcontroller for processing of energy accumulation, demand, time-of-use, and load profile billing information and for display on a liquid crystal display. A non-volatile data-flash memory device is employed for retention of programming and billing information when power is absent. All data is stored within ANSI C.12.19 tables. Once sampled, a single 21-bit **analog to digital converter (ADC)** digitizes the sample and transmits the data to a digital signal processor. This information is provided to a microcontroller for processing of appropriate billing information and for display using a liquid crystal display. An EEPROM memory device is employed for retention of programming and billing information when power is not present. The EEPROM memory also stores meter calibration and parameter information as part of the ANSI C.12.19 tables.

Wide Range Power Supply-Polyphase FOCUS AX Meter

The FOCUS™ AX Polyphase meter provides a cost-efficient alternative for light commercial metering applications that do not require all of the functionality of the S4e meter. As an addition to the FOCUS family of meters, the AX Polyphase brings the same proven solid-state performance utilities have come to expect from FOCUS meters, in an economical and AMI-ready platform for commercial and industrial applications.

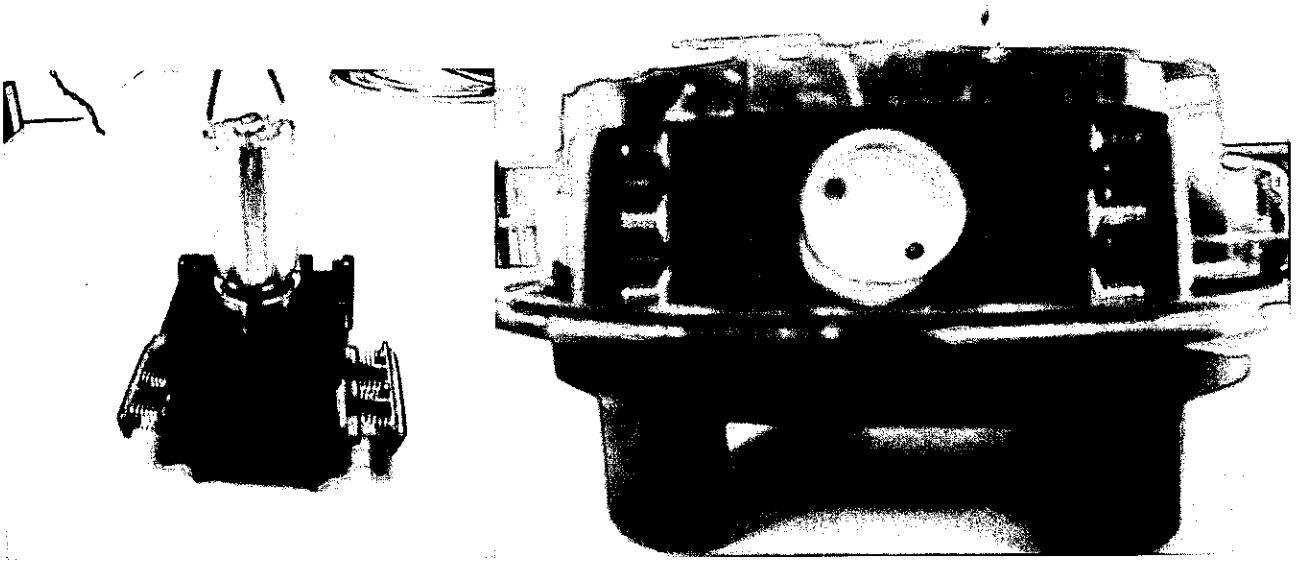
The FOCUS AX Polyphase meter contains a 120V to 277V auto ranging power supply that is suitable for 277/480V, 4W, WYE and 240/480V 4-wire Delta services. The robust design of the FOCUS AX meter exceeds the ANSI 6KV surge requirements and provides 10KV of surge protection.

The FOCUS AX Polyphase meter is available for both self contained and transformer rated meter forms and includes the Landis+Gyr ASIC, non-volatile memory, selectable metrics, flexible display functionality an optional KYZ output, configuration port, a customer program option.

Service Disconnect Feature

With the Service Disconnect factory available option, there is a 200A relay integrated within the meter base with no change in external appearance. The combination of the FOCUS AX Service Disconnect base module and powerful AX register provides a flexible system that supports a variety of connect/disconnect and service-limiting applications. The switch can be utilized using the Landis+Gyr software and additionally there are remote disconnect and reconnect capabilities via AMI technology. The service limiter feature allows the disconnect switch to open when specified programmable limit level is exceeded. There are several choices that are selectable for closure of the switch. The Service Disconnect feature allows for load-side voltage detection when switch is open.
The Service Disconnect switch is equipped with position sensors allowing for feedback of switch status and alarm conditions.

The Service Disconnect switch is rated for a minimum of 10,000 cycles at 200 amps.



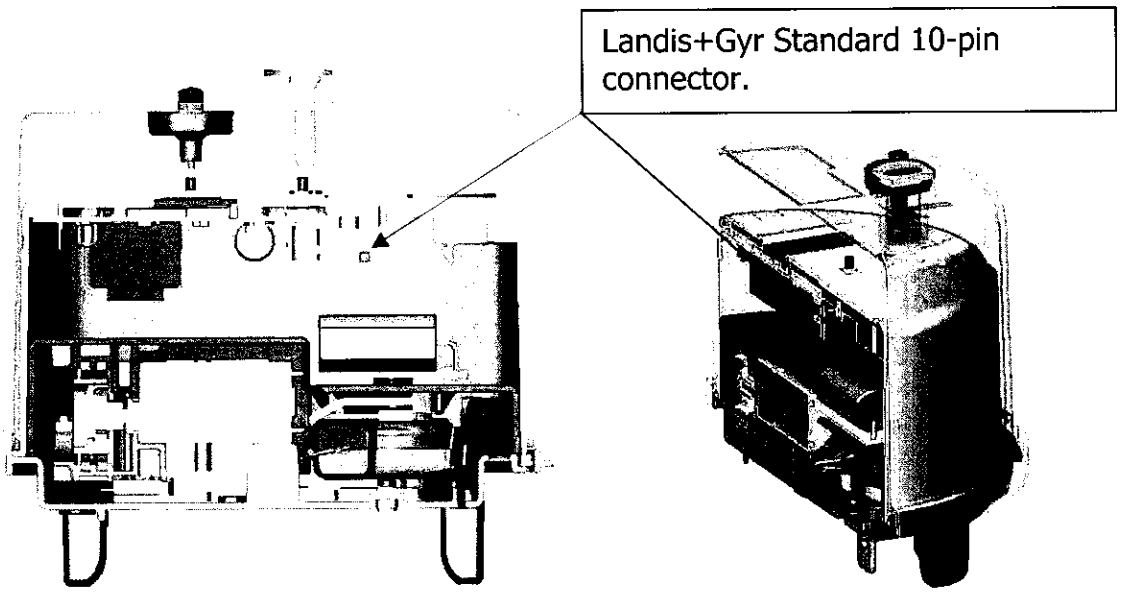
Capabilities

Meter configuration can be accomplished optically through the configuration port located on the front cover as well as any supported AMI technology.

- Select from displayable positive, negative, net and added (security) metrics
- Change the displayed information, order or digits
- Configure a CT/PT meter multiplier to obtain a direct reading
- Preset or reset kWh
- 6 digit LCD and 3 Alpha ID
- Select up to 5 TOU periods
- Configuration of up to 8 Load Profile Channels
- Functional operation without a battery with the assistance of AMI Technology
- Specified operation of service disconnect/reconnect (communications or service limiter)
- Stand-by Mode continues to record load profile data as well as still accumulating total energy summations
- Meter maintains elapsed time while in Stand-by Mode

Communications

FOCUS AX provides direct register interface to Industry Standard ANSI Tables. This allows for direct register reads for energy, demand, including time of use data. The FOCUS AX meter family allows for easy integration of AMI technologies by interfacing the module to the Landis+Gyr standard 10-pin connecter. Additionally, various manufacturer and ANSI tables can be accessed optically through the configuration port or remotely through the 10-pin connector.



Register Types

- +kWh — Energy delivered to the load
- -kWh — Energy received from the load
- NET kWh — The net energy consumed by the load, or negative kWh subtracted from positive kWh
- ADDED kWh — Negative kWh added to positive kWh, also referred to as *security* mode

Type Designation

S-Base Single Phase:
- Transformer rated: Class 10 and 20, 3S and 4S
- Self-contained: Class 100, 1S
- Self-contained: Class 200, 2S, 12S, 16S and 25S (Network)
- Self-contained: Class 320, 2SE

K-base Single Phase:
- Self-contained: Class 480, 2K

S-Base Poly Phase:
- Transformer rated: Class 20, 9S, 45S
- Self-contained: Class 200, 12S, 25S, 16S
- Self-contained: Class 320, 12SE, 25SE, 16SE

Advanced Function Service Disconnect:
- Self-Contained: Class 100, 1S
- Self-Contained: Class 200, 2S, 12S

Advanced Features

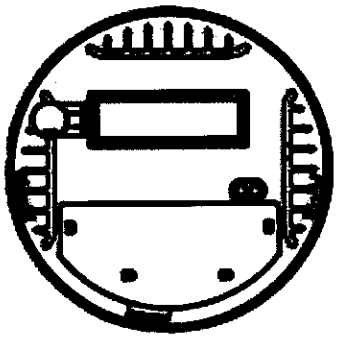
- Active energy kWh/kW/TOU meter
- Supports four energy metrics: +kWh, -kWh, Net kWh and added kWh (security)

- Digital multiplication measurement technique
- Non-volatile memory
- Super capacitor capable of holding time for 24-48 hours
- Designed for 20+ year life
- Configurable KYZ output
- Utilizes ANSI protocol (between meter and AMI device)
- 9-digit LCD
- Selectable meter multiplier up to 240 (1200:5 CT)
- Display scroll sequence programmable (factory or end user)
- Configuration port (cover does not have to be removed)
- Power consumption indicator (DRI, DPI)
- Custom meter configuration
- Meets ANSI standards for performance:

    - ANSI C12.1 - Electricity metering
    - ANSI C12.10 - watt-hour meters
    - ANSI C12.18 – Protocol Specification for Type 2 Optical Port
    - ANSI C12.19 – Protocol Specification for Utility Industry End Device Tables
    - ANSI C12.20 – Electricity Meters – 0.2 and 0.5 Accuracy Classes
    - ANSI C12.21 – Protocol Specification for Telephone Modem Communication
    - CAN3-C17-M84 Canadian specifications for approval of type of electricity meters
    - CAN3-Z234.4-79 Canadian specifications for all-numeric dates and times
    - IEC 687 - Electrical Specifications
    - FCC Class B Emissions

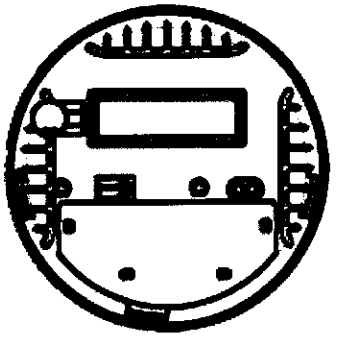
Cover Options

FOCUS AX Advanced Function Meter



71812-4

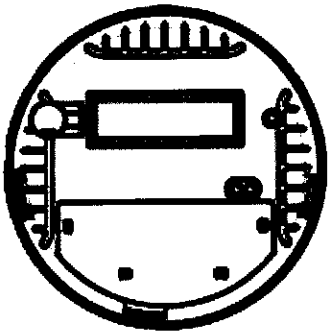
Standard or Low Profile Polycarbonate Cover with configuration port only, no buttons.



71812-2

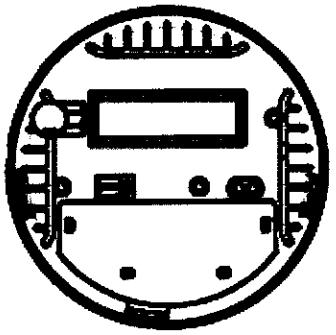
Standard or Low Profile Polycarbonate cover with demand reset, test mode lever and scroll button.

FOCUS AX-Service Disconnect Option



71812-3

Standard and Low Profile Polycarbonate cover with reconnect button only.



71812-1

Standard and Low Profile Polycarbonate cover with optical port, demand reset and reconnect button.

Technical Specifications

Available Forms-Single Phase

Self-Contained Meter Forms

Form	Class	Test Amps	Volts	Wire	Kh
1S	100	15	120	2	1.8
2S	200	30	240	3	7.2
2S	200	50	240	3	7.2
2SE	320	30/50	240	3	12.0
2K	480	30/50	240	3	14.4
12S	200	30	120	3	14.4
25S	200	30	120	3	14.4

Transformer Rated Meter Forms

Form	Class	Test Amps	Volts	Wire	Kh
3S	10	2.5	120	2	.3
3S	20	2.5	120	2	.3
3S	10	2.5	240	2	.6
3S	20	2.5	240	2	.6
4S	10	2.5	240	3	.6
4S	20	2.5	240	3	.6

Available Forms-Poly Phase

Self-Contained Meter Forms

12S	200	30/50	120-277V	3	14.4
12SE	320	50	120-277V	3	14.4
25S	200	30/50	120-277V	3	14.4
25SE	320	50	120-277V	3	14.4
16S	200	30/50	120-277V	4	21.6
16SE	320	50	120-277V	4	21.6

Transformer Rated Meter Forms

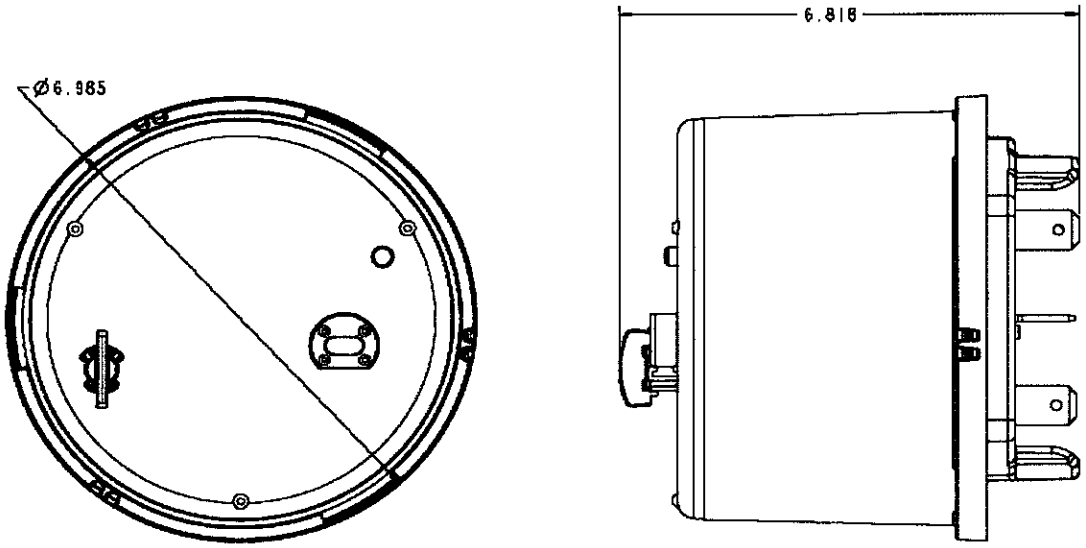
Form	Class	Test Amps	Volts	Wire	Kh
9S/8S	20	2.5	120-277V	4	1.8
45S (5S)	20	2.5	120-277V	3	1.2

Available Forms-Service Disconnect

1S	100	15	120	2	1.8
2S	200	30	240	3	7.2
12S/25S	200	30	120	3	14.4

Product Measurements

Meter Specific



Packed Box Measurements

Form	Net lbs.	Single Pack Weight	Single Pack Dimensions	Four Pack Weight	Four Pack Dimensions
1S	1.8	2.74 lbs.	8 ¾" x 8 ¾" x 9 ¼"	9.5 lbs.	15 x 15 x 7 ½
2S(E)	1.9	2.78 lbs.	8 ¾" x 8 ¾" x 9 ¼"	9.6 lbs.	15 x 15 x 7 ½
2K	3.4	5.50 lbs.	13" x 13" x 9"	N/A	N/A
3S	1.8	2.73 lbs.	8 ¾" x 8 ¾" x 9 ¼"	9.5 lbs.	15 x 15 x 7 ½
4S	1.9	2.78 lbs.	8 ¾" x 8 ¾" x 9 ¼"	9.7 lbs.	15 x 15 x 7 ½
12S, 25S	2.0	2.94 lbs.	8 ¾" x 8 ¾" x 9 ¼"	10.3 lbs.	15 x 15 x 7 ½
16S(E)	2.1	2.94 lbs.	8 ¾" x 8 ¾" x 9 ¼"	10.3 lbs.	15 x 15 x 7 ½
9S/8S	2.2	2.94 lbs.	8 ¾" x 8 ¾" x 9 ¼"	10.3 lbs.	15 x 15 x 7 ½
45S/5S	2.0	2.94 lbs.	8 ¾" x 8 ¾" x 9 ¼"	10.3 lbs.	15 x 15 x 7 ½

LCD Display

The FOCUS AX display shows the digital power indicator, nominal service voltage and kWh digits. Instantaneous voltage and meter error codes can also be displayed. The LCD has a high contrast that allows visibility from 6-foot and from a 150-degree right-to-left angle. The LCD accommodates a 6-digit format, including decimal points between digits, along with a three-digit alphanumeric indicator, available through programming.

The following display enunciations are available:

- Meter/AMI Module/optical communications indicator
- DPI (Digital Power Indicator)
- Alternate and test mode indicator
- Current TOU rate indicator
- EOI (End-of-Interval) indicator
- Service Voltage (120V or 240V)

Display Scroll Sequence

The maximum number of programmed displays allowed in forty-eight. The total number of available display choices is over thirteen hundred. Included in these display choices are KWh, up to 5 Time-of-Use rates, demand, up to 5 self-reads, and 8 user-defined displays. Also available is the option of event alarms, diagnostics and service disconnect status.

Duplicate display choices are permitted as long as the total number of display choices in the scroll sequence does not exceed forty-eight. The time of display can be programmed from one to 15 seconds in one-second increments.

The active digital power indicator (DPI or "caterpillar") segment check illuminates all LCD billing digit segments without affecting the DPI segments. This permits a user to use the DPI for timing when a segment check is being displayed during a scroll sequence.

A three character programmable alphanumeric label can be associated with each display except the active DPI segment check, which has all segments in the alphanumeric field, illuminated. This three-character field is used to identify the energy displayed. It can be left blank if desired.

Display Format

The display accommodated the following digit formats:

- 4 x 1
- 5 x 1
- 6 x 1
- 4 x 10
- 5 x 10
- 6 x 10

Digital Power Indicator

The FOCUS AX has a digital power indicator similar to the Landis+Gyr traditional "caterpillar" and consists of six segments.

The DPI moves from left to right at a rate proportional to energy delivered to the load and moves from right to left at a rate proportional to the energy received from the load.

The DPI makes one revolution for each Kh of metered energy.

Each DPI segment on/off transition is observable when occurring at a maximum rate of one on/off transition each .45 second at -20 degrees Celsius and above.

Configuring the Meter

The ability to configure the meter is provided through a secure meter configuration port. A cover mounted optical configuration port accommodates meter configuration by the user. The configuration port is designed to be used in a meter shop ambient environment, requiring that it function in a room temperature environment under room ambient lighting conditions. The configuration port interface supports a read/write security function. Landis+Gyr supports the five levels of security for meters with the ANSI protocol.

Initial Power-up and Operation

FOCUS AX meters can be factory programmed or programmed by the customer utilizing Landis+Gyr 1132 software.

Billing Data Reset/Preset

The contents of the –kWh and +kWh accumulation registers are user programmable through an optical configuration port. In its simplest form, this feature allows the user to reset the contents of the +kWh and –kWh accumulation registers. This feature also enables the user to clear any accumulated energy following meter verification testing.

The user also has the ability to enter initial energy values into the +kWh and –kWh accumulation registers. This feature allows a user to pre-load energy values into a replacement meter before it goes into service. The user can perform this function in a meter shop.

Display Multiplier

The user has the ability to program a display multiplier. KWh values contained in the energy registers are multiplied by the display multiplier prior to being displayed in the LCD. The display multiplier does not affect the contents of the internal energy registers. If direct reading is desired on transformer rated installations, it can be accommodated via this programmable multiplier.

The display multiplier multiplies the displayed energy value(s) by N for $1<N<240$. N is an integer value.

Pulse Outputs

Pulse Initiator Output

The FOCUS AX offers one optional solid-state KYZ output. The solid-state pulse initiator output emits pulses in accordance with +kWh, -kWh or added kWh as configured by the user. The pulse output-scaling factor is programmable by the user. Each KYZ output relay is assigned an independent Ke constant that represents the quantity of energy for the output pulse. The meter is programmed with a Ke value in units per pulse depending on the functionality of the relay. The minimum value of Ke is Kh/12 and is selectable in increments of

meter Kh/12. A value of zero disables the KYZ output. All energy measured by the meter is accounted for in the KYZ pulses emitted by the meter for all valid Ke values.

The un-terminated KYZ output cable passes through a hole in the six o'clock position in the meter base.

The pulse initiator output responds in accordance with energy delivered to the load. No pulses are emitted when energy is received from the load.

The pulse initiator option is user installable in a meter shop environment.

Enhanced Functionality

AMI Technology

Landis+Gyr utilizes a standard procedure for interfacing with AMI partners on all of the products. The 3rd party company is granted the rights and a development kit to use for work on interfacing with the meters. Once the interface is complete and the results are provided to Landis+Gyr showing the success of this integration, the 3rd party company then is considered to be an OEM partner. The next level of partnership would be evaluated once market opportunity is met; at that point, the partner becomes a factory integrated partner. Once this status is received, Landis+Gyr, along with the partnering company complete a rigorous set of tests, including first article testing (FAT), ANSI PAC requirement testing and first piece acceptance(FPA) testing. This intense amount of testing ensures our customer is getting a quality built product. The current integration partners who have achieved this level of partnership for the FOCUS AX family of meters are:

Silver Springs Networks

Silver Spring Networks creates the critical networking infrastructure for the Smart Grid, known as a Smart Energy Network. Based on the Internet Protocol (IP) suite, it addresses the challenges of running multiple applications and devices on a common networking infrastructure using multiple transport technologies, dramatically improving efficiency, lowering costs and ensuring the reliable delivery of services. This smarter, more efficient grid could cut the growth rate of worldwide energy consumption by more than half over the next 15 years and drastically reduce carbon emissions. Silver Spring Networks was named a Technology Pioneer at the 2008 World Economic Forum in Davos, Switzerland and was a recipient of the GoingGreen and Brilliant Innovation Awards in 2007. For additional information, visit us at **www.silverspringnetworks.com.**

Available Forms

Form	Volts	Class
1S-SD	240	100
2S-SD	240	200
12S-SD/25S-SD	120-277	200

Landis+Gyr Gridstream RF Mesh Solution

Gridstream provides intelligent automation for utility advanced metering and consumer energy management programs. The RF mesh endpoint provides a direct read of the meter register to efficiently take advantage of advanced functionality. The endpoint transmits and receives data through a robust and self healing mesh network utilizing the 902 to 928 MHz unlicensed frequency. This premier digital endpoint can prioritize messages based on application, expand to millions of endpoints, and provide control through a user-friendly browser based interface for network and data management.

In addition to kWh, kW and voltage readings, the RF mesh endpoint reports load profile and time-of-use periods for engineering and customer service applications. The endpoint also features ZigBee® Home Area Network communication technology. The available endpoint in the FOCUS AX-SD platform comes with integrated service disconnect, visit us at **www.landisgyr.com**

Available Forms

Form	Volts	Class
2S-SD	240	200
12S-SD/25S-SD	120-277	200
16S(E)	120-277	200

Aclara PLS

The Aclara brand represents the industry's leading Intelligent Infrastructure™ technologies for providing device networking, data-value management, and customer communications to water, gas, and electric utilities globally. Over 500 utilities in nine countries rely on proven Aclara solutions to connect with their customers. Aclara is part of the Utility Solutions Group of ESCO Technologies Inc. (NYSE: ESE), St. Louis. Capturing data. Liberating knowledge.™ **www.Aclara.com**

Available Forms

Form	Volts	Class
2S-SD	240	200

Trilliant

Trilliant provides intelligent network solutions and software to utilities for advanced metering, demand response, and Smart Grid management. With more than twenty years experience solving meter communications needs, our company focuses on the adoption of open standards-based technologies for electric, gas, and water utilities. Our advanced metering infrastructure (AMI) solutions enable utilities to develop time-of-use (TOU) metering and demand response programs, transforming the traditional customer-utility relationship through interval based consumption data and 2-way messaging. Also these solutions are used by utilities to drive down operational costs and improve customer satisfaction through much improved awareness and data on distribution system performance. Our Energy Services meet the needs of electric and natural gas utilities with meter reading services, utility data profiling, and online presentment. We have secured contracts for more than three million meters to be supported by network solutions and services. www.trilliantinc.com

Available Forms

Form	Volts	Class
2S-SD	240	200

Calibration Test Procedures

Calibration Verification and Testing

Calibration of voltage, current and phase angle of the FOCUS AX meter is accomplished through calibration constants stored in non-volatile memory. These constants cannot be changed, except by recalibration at the factory.

Verification of Watt Calibration

FOCUS AX calibration may be verified using standard testing procedures via the calibration LED output. The watt calibration LED is the left LED located inside the optical configuration port on the face of the meter. The calibration test probe for detecting the output pulse is attached to or held against the cover in front of the optical port. The infrared output pulses from the LED can be changed via the 1132 PROG/COM programming software. The optical LED output pulse rate can be selected to be either 1 pulse per complete DPI transition on the LCD (standard), 6 pulses per a complete DPI transition or 12 pulses per transition.

Calibration LED

The FOCUS AX has an infrared light emitting diode (LED) that emits energy pulses. The calibration LED is deactivated 24 hours after the meter powers up. Once reactivated, the calibration LED remains active for 24 hours.

The calibration LED is accessible from the front of the meter cover. The user can fix an LED pickup device to the front of the meter.

The calibration LED produces stable pulses in no more than five seconds following meter power up.

The calibration LED produces pulses in response to energy whether it is delivered to the load or received from the load.

Registration verification testing requires no less than 30 seconds at full load.

The calibration LED is visible in meter shop lighting and room temperature conditions.

Test Times

The minimum test time required to obtain accurate verification of FOCUS calibration for the Watthour metric at Test Amps is at least 40 seconds @ unity Power Factor. This test time holds for all PF and TA values.

When testing calibration, the test board being used should have a 12 second settling time programmed. This will allow 12 seconds for the calibration pulse output to stabilize after the current has been applied.

Field Testing

This can be performed by one of two standard methods, depending upon the degree of accuracy required. A stopwatch may be used to time DPI transitions (as historically performed on the rotating disk in electromechanical meters) while under a known load. Calibration testing may also be performed with more accuracy by removing the meter from service, applying a known load, and testing pulse outputs against a watthour standard as is performed in the meter shop.

Pass/Fail Calibration Limits*

SFL +/-0.15
SPF +/-0.30 relative to SFL
SLL +/-0.2 relative to SFL

*Please note, these limits are currently applied to all FOCUS forms.

Quality Practices

In-Process Verification

As part of the normal manufacturing process of the meter, each operator is required to perform a visual verification process. This process checks for Critical to Quality Features (CTQ's) based on the operation(s) performed on the meter just prior to the operation being performed. This assures that two sets of eyes have performed the visual inspection, one during the assembly operation and one in the subsequent operation. This also assures that any defects are detected as early in the process as possible.

Calibration

The following steps are performed during the calibration operation:

1. If a customer program is required, it is loaded to the meter optically.
2. Three-phase calibration is performed on the meter. Series Full Load (SFL), Series Power Factor (SPF), Series Light Load (SLL) and single element Full Load and Power Factor calibration results are written to the meter.
3. Functional Testing is performed on options such as KYZ and Modems. In the case where the meter requires additional RAM, the calibration rack tests for presence and proper size of the ram with respect to the catalog number scanned at the beginning of the calibration operation.

First Piece Quality Check

Please note, a first piece audit is performed on all meters requiring a specific customer program.

The first piece quality check is basically the same process performed at audit. However, special attention is focused on peculiar customer options and programs. This is the point where a printout is made of the data from the customer program and compared with the master customer program book.

Upon the completion of this process, manufacturing is notified with the results and the first piece audit is documented on the first piece log maintained at the audit station.

Meter Audit

The following steps are performed as part of the meter audit process. Presently, meters are audited 100%.

1. Verify that the nameplate information is correct
2. Verify that all the special customer requirements are met by comparing meter configuration with that of the Bill of Materials (B.O.M.) and the Catalog Document.
3. Read out meter program information and compare with that of the First Piece Audit printout.
4. Verify correct factory data such as Class, Form and Firmware Revision.

5. Verify meter configuration by comparing Program ID with Master Program Book and assuring program data as well as display configuration is correct.
6. Check 3 Phase calibration data written to the meter from the calibration operation. Compare to calibration limits table found in applicable audit work instruction.
7. Perform Single Phase Full Load Calibration check and compare results to tolerances identified in applicable audit work instruction.
8. Test options as applicable
9. Reset Kwh to zero.

Frequently Asked Questions

1. What is your procedure for testing and calibrating electronic meters?

In manufacturing, Landis+Gyr tests and calibrates all solid-state meters at 120V, at test amps (TA), 60 degree lagging power factor at TA and at 10% of TA.

For a self-contained 200 amp rated polyphase meter this would be:
- 120V, 30A unity power factor
- 120V, 30A 60 degree lagging power factor
- 120V, 3A unity power factor

2. Upon what reference standard(s) do you base your calibration practices?

Landis+Gyr uses WECO test racks for all solid-state meters. WECO test racks contain Radian RM-10 standards for performing watt-hour comparisons. Landis+Gyr has found Radian standards to be the most stable and accurate standards available.

3. What is your procedure in determining the measurement uncertainty of your testing and calibration practices?

Landis+Gyr tests the factory calibration racks monthly. The calibration racks accuracy is verified using RM-11 transfer standards. The WECO racks are yearly certified for accuracy.

4. What is the total measurement uncertainty of Landis+Gyr's laboratory?

The RM-11 transfer standards used by Landis+Gyr have a manufacturer's maximum error specification of 0.02% error. The manufacturer's specified typical error is below 0.005%. We have found their error to be within the typical 0.005% for our internal accuracy transfers between test rack and master reference.

The RS-703 master reference standard has a manufacturer's maximum error of 0.005% unity, 0.01% power factor traceable to NIST. The typical error specified by the manufacturer is 0.0005% (5 ppm). The RS-703 is calibrated annually by the manufacturer who is traceable to NIST.

5. How does Landis+Gyr ensure a high standard of accuracy in meters?

All meters are 100% calibrated and tested. The test results from our automatic calibration/test racks are recorded on our company database server. Our shipping

department is tied into the same database. Our company wide software does not allow a meter to ship that has not been tested and found to pass all testing.

6. **What is Landis+Gyr's optimal calibration tolerance before deciding that the meters are ready for delivery?**

   Calibration is performed under computer control on our WECO calibration racks. No human interaction is involved for calibrating a solid-state meter.

   Landis+Gyr require the accuracy of a solid-state meter to be within +/- .15% on our calibration racks. Meters outside of this limit are rejected. However, the majority of our meters are well within +/- 0.05% limits.

7. **How does Landis+Gyr ensure the quality of meters in the production line?**

   Landis+Gyr is an ISO-9001:2000 registered manufacturer. Please see the attached ISO certificate.

Applicant Test Procedure

The FOCUS AX solid-state, electricity meter has been thoroughly tested and meets ANSI standards. Please note the following:

- All ANSI testing has been conducted by personnel with thorough practical and theoretical knowledge of the meters and adequate training in making precision measurements.
- The test equipment employed in these tests conforms to the applicable requirements specified within Standards and Standardizing Equipment, of the latest version of ANSI C12.
- The accuracy of the test equipment has been established by comparison with standards whose accuracy is traceable to the National Institute of Standards and Technology.

ANSI Test Documentation

The following ANSI C12 tests were passed by FOCUS AX*:

- No Load
- Starting Load
- Load Performance
- Effect of Variation of Power Factor
- Effect of Variation of Voltage
- Effect of Variation of Frequency
- Equality of Current Circuits
- Effect of Internal Heating
- Effect of Variation of Ambient Temperature
- Effect of Relative Humidity
- Effect of Operating Temperature
- Effect of Temporary Overloads—Accuracy
- Effect of Temporary Overloads—Mechanical Structure and Insulation
- Effect of Current Surge in Ground Conductor
- Weather Simulation Test
- Salt Spray Test
- Raintightness
- Insulation
- Voltage Interruption Test
- Static Turn on/Turn off
- Incremental Power Cycling
- Overvoltage Withstand
- Electrical Fast Transient/Burst
- Surge Withstand Capability
- Effect of High Voltage Line Surges
- Effect of Radio Frequency Interference—Basic Radiation Susceptibility Test
- Effect of Radio Frequency Interference from Hand-Held Transmitter
- Radio Frequency Conducted and Radiated Emissions Tests
- Effect of Electrostatic Discharge (ESD)
- Effect of External Magnetic Field
- Configuration Port Communications at Temperature Extremes
- Configuration Port Communications in Sunlight
- AMR Serial Bus Communications at Temperature Extremes
- Mechanical Shock
- Vibration
- Transportation Drop
- Transportation Vibration
- Potential Terminal Contact Resistance
- PCB-Level Environmental Stress Screening (ESS)
- Baseplate Assembly
- Mounting Device Insertion

- Blowing Sand Evaluation
- Baseplate T-Seal Hole Strength
- Visual Display
- LCD Visibility Over Temperature
- Meter Assembly/Disassembly
- Internal Meter Losses
- Temperature Rise
- Internal Temperature Profile

*Please note, supporting documentation is housed on the included CD-ROM.

UNDERWRITERS LABORATORIES INC.

CERTIFICATE OF REGISTRATION

ISO 9000

Landis+Gyr Inc.

2800 Duncan Road
Lafayette, IN 47904-5012

Landis + Gyr S.A. de C.V.

Brecha E-99 Norte Parque Industrial Reynosa
C.P. 88700
Reynosa Tamps Mexico

Underwriters Laboratories Inc.® (UL) issues this certificate to the Firm named above, after assessing the Firm's quality system and finding it in compliance with

ISO 9001:2000

EN ISO 9001:2000; BS EN ISO 9001:2000; ANSI/ASQ Q9001:2000

for the following scope of registration

3825 (US) : Instruments for Measuring and Testing of Electricity and Electrical Signals

The design, development and manufacture of electronic electricity measuring meters.

The remote location at Lafayette performs the following primary functions: sales, design and development of electronic electricity measuring devices.

The remote location at Reynosa performs the following primary functions: manufacture of electronic and mechanical electricity measuring devices.

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2000 requirements may be obtained by consulting the organization.

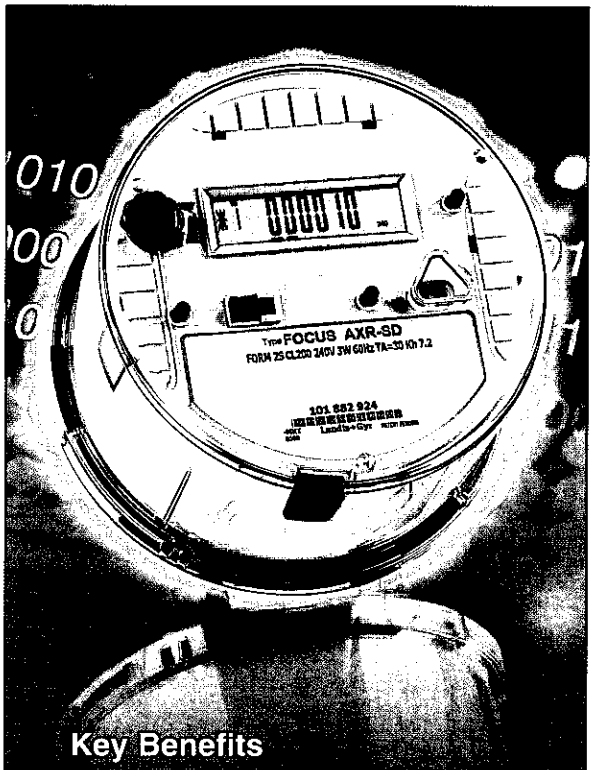
This quality system registration is included in UL's Directory of Registered Firms and applies to the provision of goods and/or services as specified in the scope of registration from the address(es) shown above. By issuance of this certificate the firm represents that it will maintain its registration in accordance with the applicable requirements. This certificate is not transferable and remains the property of Underwriters Laboratories Inc. ®.

File Number: A6977
Volume: 1
Original Certification Date: April 6, 1999
ISO 9001:2000 Issue Date: April 12, 2002
Revision Date: October 31, 2008
Recertification Date: April 6, 2009
Renewal Date: April 5, 2012

John H. Schmidt
Senior Vice President, Chief Development Officer

UL® REGISTERED FIRM

E330 FOCUS AX + E350 AX SD Singlephase



The Next Generation of Advanced Residential Metering

The FOCUS® AX SD is an advanced meter platform with features that rival any meter in its class. With available service disconnect integrated into the meter base, utilities can take advantage of the 200 Amp relay to disconnect power or limit service remotely using an advance metering technology or manually at the meter. The combination of the FOCUS Service Disconnect base module and powerful AX register provides a flexible system that supports a variety of connect/disconnect and service-limiting applications.

A single circuit board design, mounted at the front of the meter, allows room for modular advanced metering communications or a KYZ option output board. Fewer parts and connectors throughout the board design increase reliability and contribute to better overall endpoint performance. Highly accurate load performance and the use of a field-proven Digital Multiplication Measurement Technique ensure reliability and dependability during the entire life of the FOCUS meter.

Meter reconfiguration can be accomplished optically through the configuration port located on the front cover.

- Select from displayable positive, negative, net and added (security) metrics
- Change the displayed information, order or digits
- Configure a CT/PT meter multiplier to obtain a direct reading
- Preset or reset kWh

With a focus on customer satisfaction, we are committed to providing the best metering solution in terms of capability, technology and affordability. By utilizing our experience and technology with that of our strategic allies and development partners, we provide metering solutions that cover the range of utilities' residential metering needs.

Key Benefits

- Digital Multiplication Measurement technique
- Non-volatile memory
- Designed for a 20+ year life
- Meets or exceeds industry and ANSI standards
- Uses ANSI protocol (between meter and advanced metering device)
- 6 digit LCD and 3 Alpha ID
- Selectable meter multiplier
- Service limiter function
- Event log of 500+ entries
- 77 kb of load profile memory, 1–8 channels
- Advanced second generation over-the-air-flashable firmware

Landis+Gyr
manage energy better

E330 FOCUS AX Polyphase

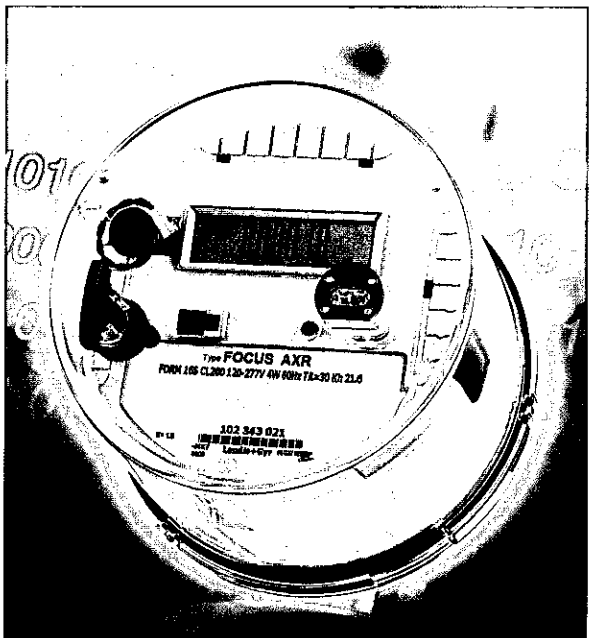
Economical and Reliable Option for Light Commercial Applications

The FOCUS® AX Polyphase meter provides a cost-efficient alternative for light commercial metering applications that do not require all of the functionality of the S4e meter. As an addition to the FOCUS family of meters, the AX Polyphase brings the same proven solid-state performance utilities have come to expect from FOCUS meters, in an economical and AMI-ready platform for commercial and industrial applications.

A single circuit board design, mounted at the front of the meter allows room for modular AMI communications or a KYZ output board. Highly accurate load performance and the use of field-proven Digital Multiplication Measurement Technique ensure reliability and dependability during the entire life of the meter. The FOCUS AX Polyphase meter is available for both self-contained and transformer-rated meter forms and includes the ASIC, non-volatile memory, selectable metrics, flexible display functionality, an optional KYZ output, configuration port, and a customer program option.

The FOCUS AX Polyphase meter contains a 120V to 277V auto-ranging power supply that is suitable for both 277/480V, 4W, WYE and 240/480V 4-wire Delta services. The robust design of the FOCUS AX meter exceeds the ANSI 6KV surge requirements and provides 10KV of surge protection.

With customer satisfaction as our top priority, we are committed to providing the best metering solution in terms of capability, technology and affordability. By uniting our experience and technology with that of our strategic allies and development partners, we provide metering solutions that cover the range of utilities' light commercial and industrial need.



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Landis+Gyr
manage energy better

nationalgrid

September 30, 2009

The Honorable Jaclyn Brilling
Public Service Commission
State of New York
Three Empire State Plaza
Albany, N.Y. 12223

Dear Honorable Brilling:

In accordance with the requirements of the Rules and Regulations of the Public Service Commission of the State of New York, 16 NYCRR, Part 93 – Approval of New Types of Electricity Meters, Instrument Transformers and Auxiliary Devices, the National Grid USA Service Company, Inc. is submitting this letter in support of the approval process of the Landis+Gyr Focus AX family of advance function solid-state meters.

It is our understanding that Landis+Gyr is submitting a formal approval request for this meter line and this letter is to confirm our intention to utilize this line of solid state electric meters in our customer billing applications, if approved.

Sincerely,

Chris Kelly
Director of Protection and
Meter Engineering