

Unitil Energy Systems, Inc.  
Docket No. DE 20-170  
Electric Vehicle Time of Use Rates  
Commission Record Requests

Received: January 28, 2022

Date of Response: February 4, 2022

Record Request #3

Witness: John D. Taylor

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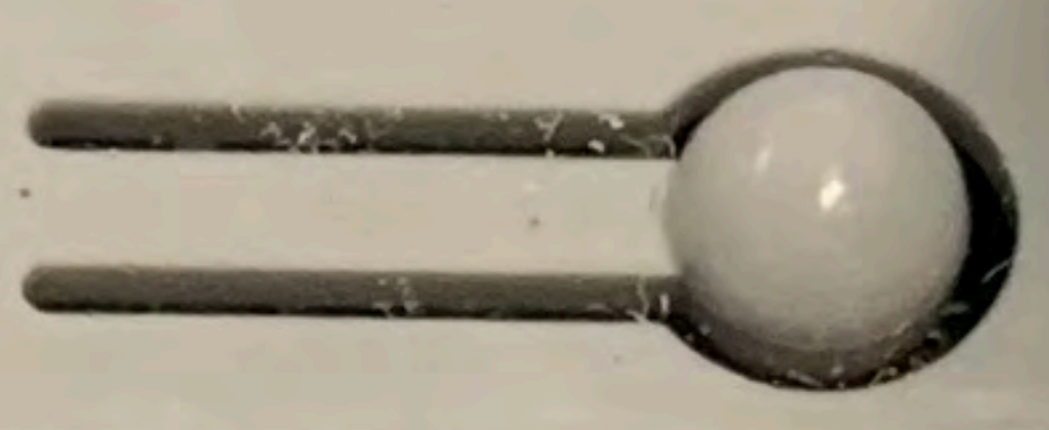
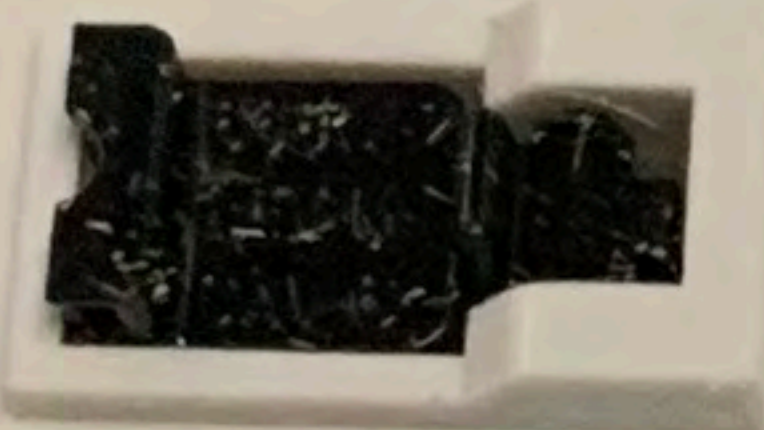
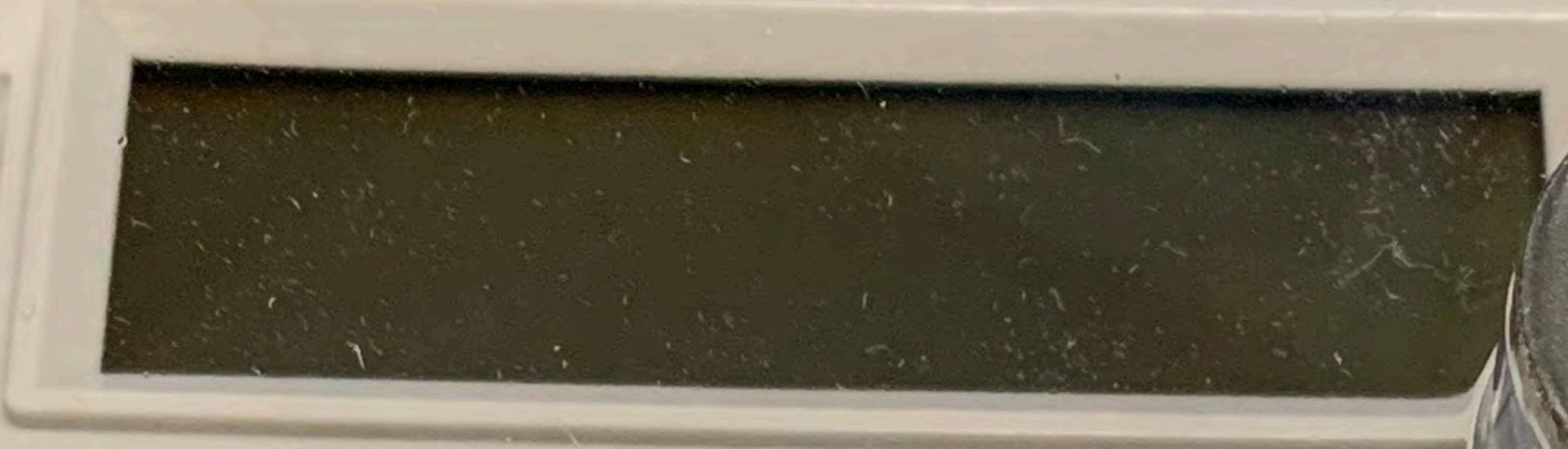
**Request:**

The utilities' physical implementation plans for all EV meters. Include a picture, description, cost, spec sheet, and capabilities for utility meter implementations in this docket. For implementations that use a customer installed meter provide physical the implementation with diagrams, descriptions, cost, and capability summaries. Include Public Service Company of New Hampshire d/b/a Eversource Energy (Eversource) 2 period meters.


**Response:** Please see the attached cover sheet, meter photographs, and meter specification sheets.

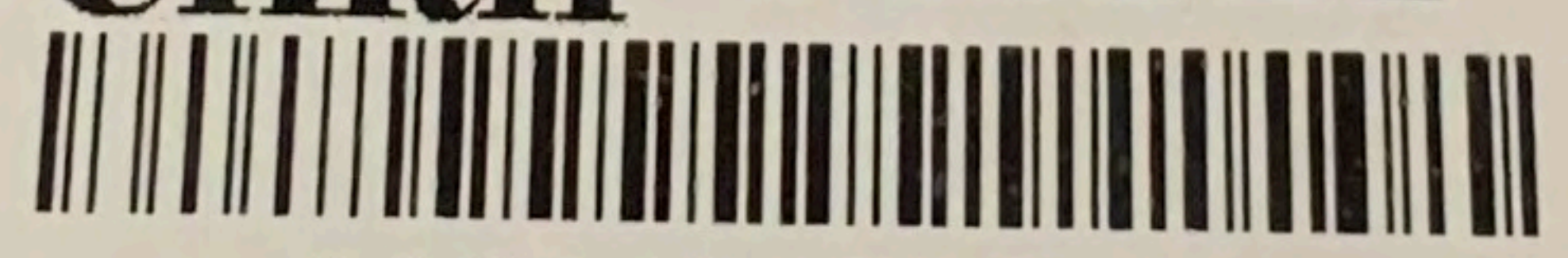
Landis and Gyr Gridstream PLX Meters	Picture	Description	Cost without OH	Cost with OH	Spec Sheets	Capabilities of Meter implementations in this docket
<b>AXRe Form 2S</b>	L+G Focus AXRe Form 2S PLX Meter - Unutil	Class 200, single phase, self-contained meter commonly installed at residential and small commercial, 120/240 volt services that are 200 amps or less	\$ 195.00	\$ 284.31	PS_FocusAXe-Metering-Platform PS_GridstreamPLXResEndpoint OV_GridstreamPLX	Remote configuration of 4 TOU rates 15 minute kWh interval data Programable for net metering (Del and Rec) that could be used for Vehicle 2 Grid applications. The meter would need to be replaced if the customer is changing from a simple EV TOU to a Vehicle 2 Grid rate to have the correct net TOU meter program
<b>AXRe SD Form 2S</b>	L+G Focus AXRe SD Form 2S PLX Meter - Unutil	Class 200, single phase, self-contained meter with remote disconnect capabilities, commonly installed at residential and small commercial, 120/240 volt services that are 200 amps or less	\$ 262.00	\$ 382.00	PS_FocusAXe-Metering-Platform PS_GridstreamPLXResEndpoint OV_GridstreamPLX	Remote configuration of 4 TOU rates 15 minute kWh interval data Programable for net metering (Del and Rec) that could be used for Vehicle 2 Grid applications. The meter would need to be replaced if the customer is changing from a simple EV TOU to a Vehicle 2 Grid rate to have the correct net TOU meter program
<b>AXRe Form 2SE</b>	L+G Focus AXRe Form 2SE PLX Meter - Unutil	Class 320, single phase, self-contained meter commonly installed at residential and small commercial, 120/240 volt services that are great 200 amps and less 400 amps	\$ 272.00	\$ 396.58	PS_FocusAXe-Metering-Platform PS_GridstreamPLXResEndpoint OV_GridstreamPLX	Remote configuration of 4 TOU rates 15 minute kWh interval data Programable for net metering (Del and Rec) that could be used for Vehicle 2 Grid applications. The meter would need to be replaced if the customer is changing from a simple EV TOU to a Vehicle 2 Grid rate to have the correct net TOU meter program
<b>AXRe SD Form 12S</b>	L+G Focus AXRe SD Form 12S PLX Meter - Unutil	Class 200, single phase, self-contained meter with remote disconnect capabilities, commonly installed at residential and small commercial, 120/208 volt services that are 200 amps or less	\$ 325.00	\$ 473.85	PS_FocusAXe-Metering-Platform PS_GridstreamPLXResEndpoint OV_GridstreamPLX	Remote configuration of 4 TOU rates 15 minute kWh interval data Programable for net metering (Del and Rec) that could be used for Vehicle 2 Grid applications. The meter would need to be replaced if the customer is changing from a simple EV TOU to a Vehicle 2 Grid rate to have the correct net TOU meter program
<b>E650 S4x RXR Form 4S</b>	L+G E650 S4x RXR Form 4S PLX Meter - Unutil	Class 20, single phase, transformer rated meter commonly installed on residential and small commercial, 3-wire, primary metered services	\$ 550.00	\$ 801.90	PS_FocusAXe-Metering-Platform PS_GridstreamPLXResEndpoint OV_GridstreamPLX	Remote configuration of 4 TOU rates 15 minute kWh interval data Programable for net metering (Del and Rec) that could be used for Vehicle 2 Grid applications. The meter would need to be replaced if the customer is changing from a simple EV TOU to a Vehicle 2 Grid rate to have the correct net TOU meter program
<b>E650 S4x RXR Form 16S</b>	L+G E650 S4x RXR Form 16S PLX Meter - Unutil	Class 200, 3 phase, self-contained meter is most commonly used to meter 4 wire services rated at 200 amps or less	\$ 605.00	\$ 882.09	PS_GridstreamPLXC-lendpoints Commercial 2020.05 COL PDT E6504xPolyphase OV_GridstreamPLX	Remote configuration of 4 TOU rates 15 minute kWh interval data Programable for net metering (Del and Rec) that could be used for Vehicle 2 Grid applications. The meter would need to be replaced if the customer is changing from a simple EV TOU to a Vehicle 2 Grid rate to have the correct net TOU meter program
<b>E650 S4x RXR Form 16SE</b>	L+G E650 S4x RXR Form 16SE PLX Meter - Unutil	Class 320, 3 phase, self-contained meter is most commonly used to meter 4 wire services rated more than 200 amps and less than 400 amps	\$ 634.00	\$ 924.37	PS_GridstreamPLXC-lendpoints Commercial 2020.05 COL PDT E6504xPolyphase OV_GridstreamPLX	Remote configuration of 4 TOU rates 15 minute kWh interval data Programable for net metering (Del and Rec) that could be used for Vehicle 2 Grid applications. The meter would need to be replaced if the customer is changing from a simple EV TOU to a Vehicle 2 Grid rate to have the correct net TOU meter program
<b>E650 S4x RXR Form 9S</b>	L+G E650 S4x RXR Form 9S PLX Meter - Unutil	Class 20, three phase, transformer rated meter primarily installed on large commercial, 4 wire, primary metered services rated for more than 400 amps	\$ 605.00	\$ 882.09	PS_GridstreamPLXC-lendpoints Commercial 2020.05 COL PDT E6504xPolyphase OV_GridstreamPLX	Remote configuration of 4 TOU rates 15 minute kWh interval data Programable for net metering (Del and Rec) that could be used for Vehicle 2 Grid applications. The meter would need to be replaced if the customer is changing from a simple EV TOU to a Vehicle 2 Grid rate to have the correct net TOU meter program

Landis+Gyr+ GRIDSTREAM PLX  
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Model 25-2530 PLX



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FORM 2S CL200 240V 3W 60Hz TA=30 Kh 7.2

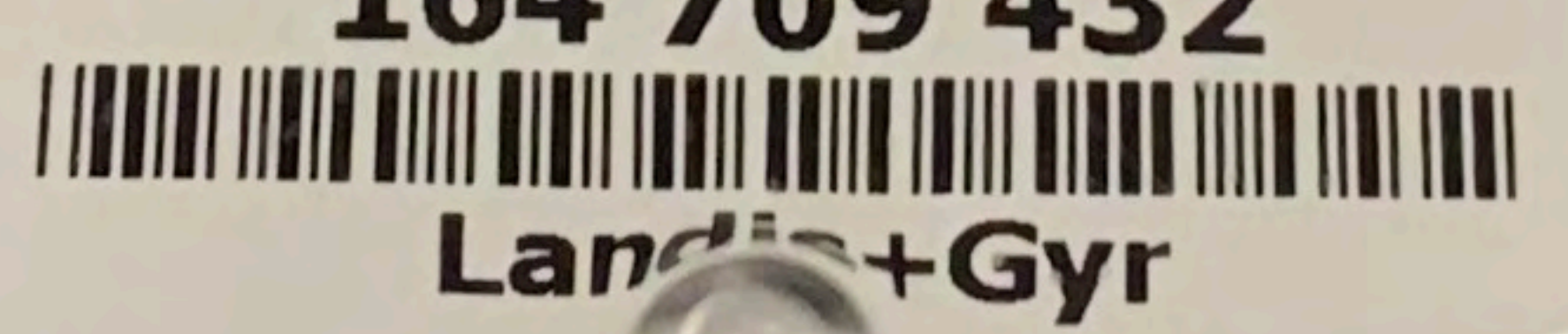
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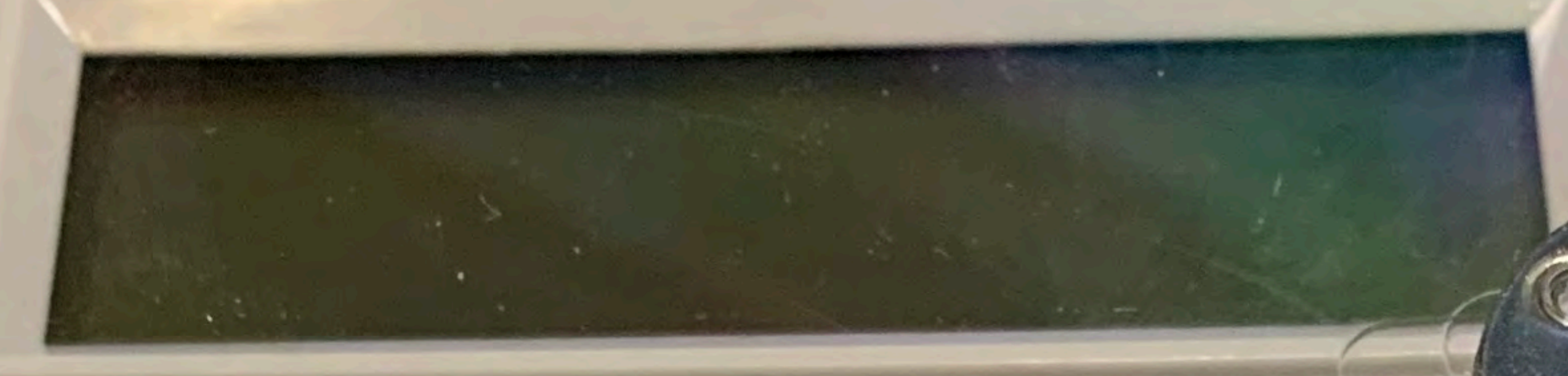
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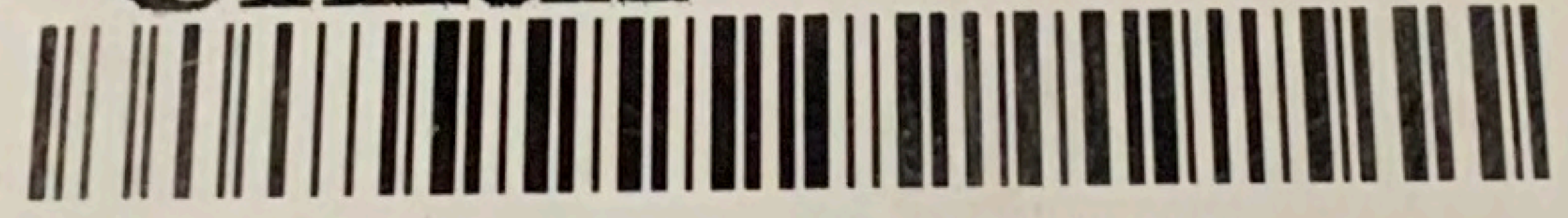
Landis+Gyr

Landis+Gyr+ **GRIDSTREAM PLX**  
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**FORM 2S CL200 240V 3W 60Hz TA=30 Kh 7.2**

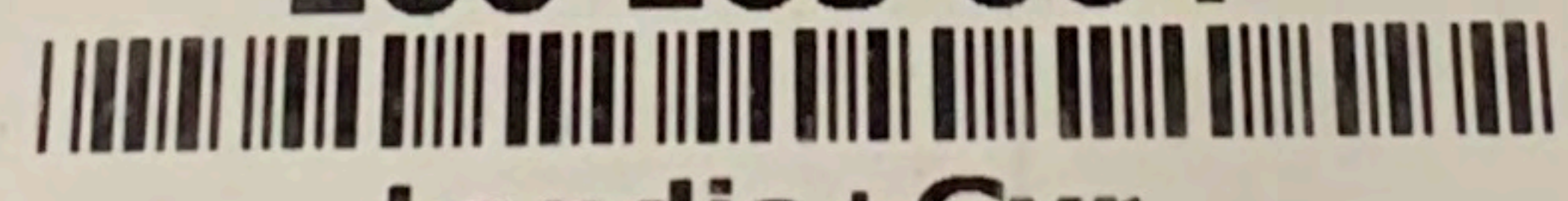
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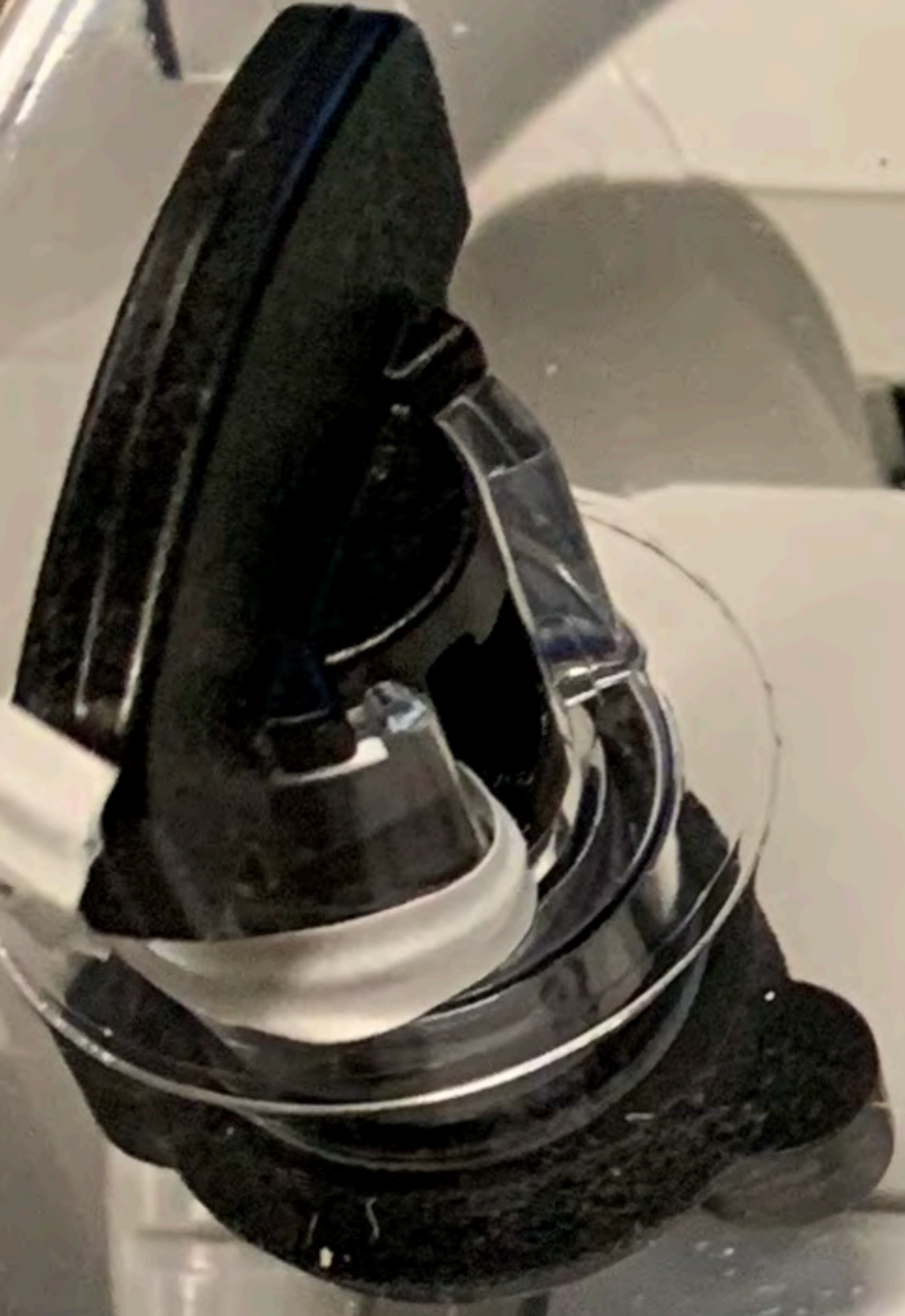
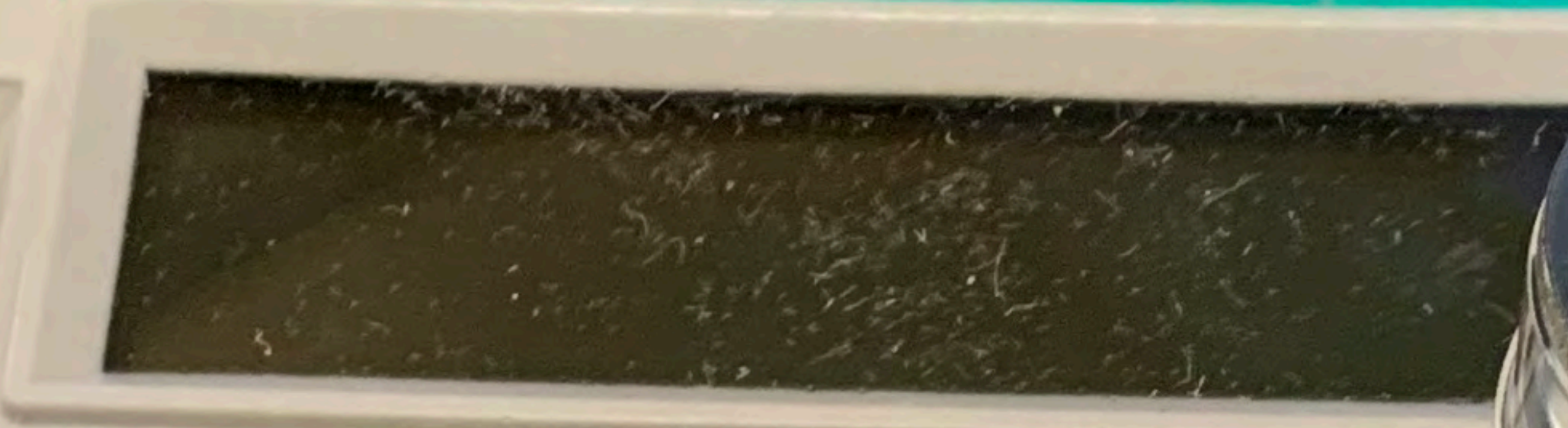
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**Landis+Gyr**

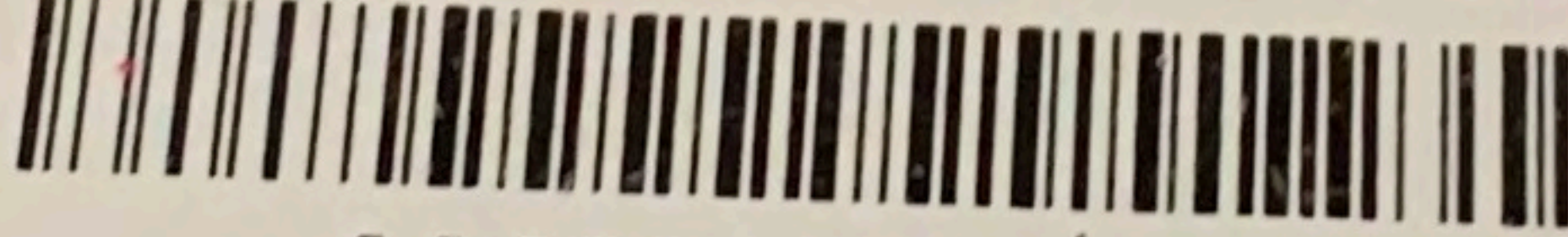


Landis+Gyr **GRIDSTREAM PLX**  
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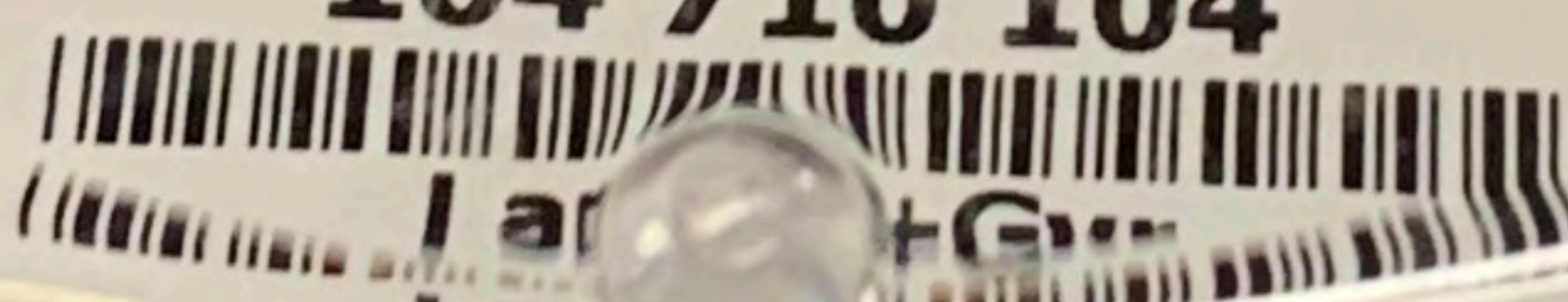
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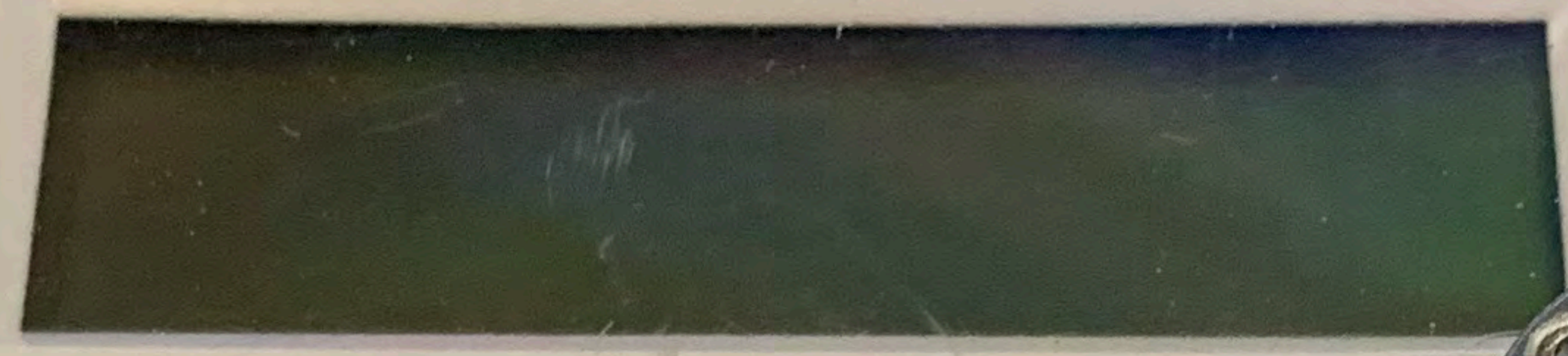
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Landis+Gyr



Landis+Gyr+ **GRIDSTREAM PLX**  
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Mod. 25-0500 PLX



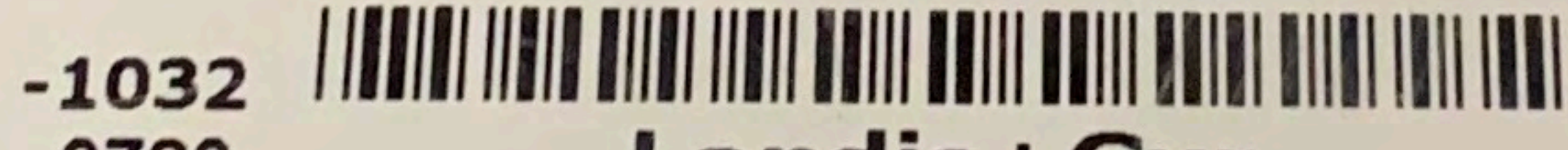
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 **Unitil 503361**



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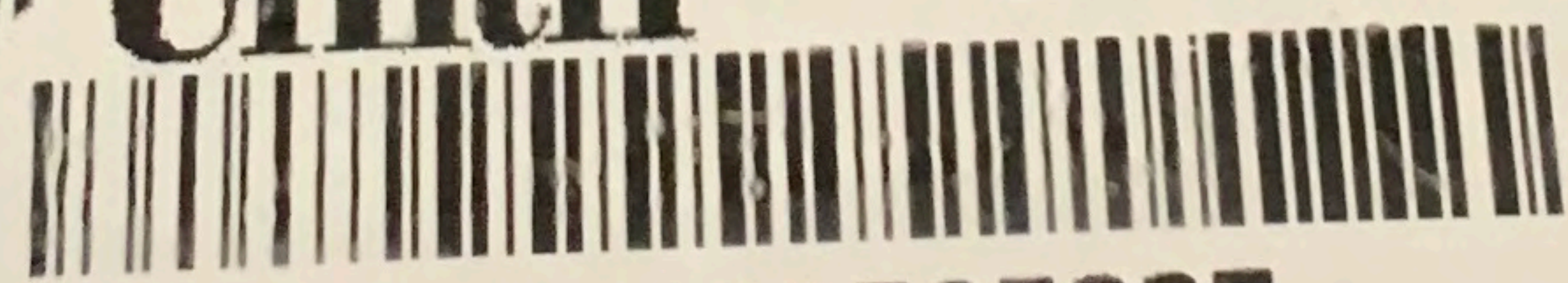
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**Landis+Gyr**

Landis+Gyr+ Gridstream PLX  
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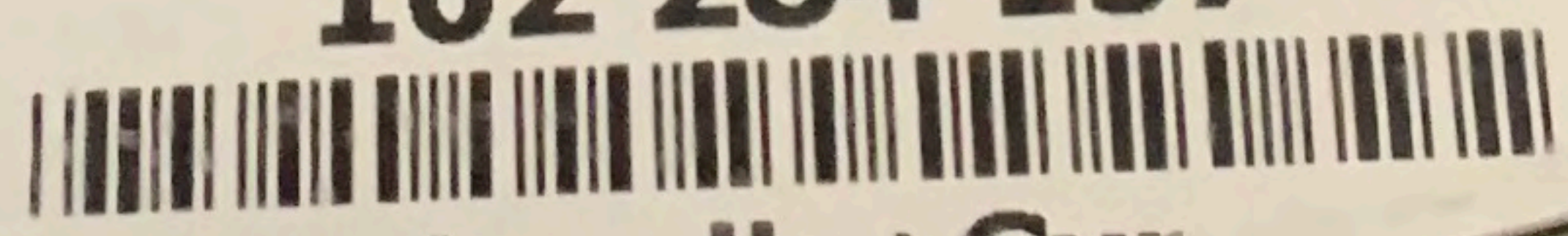
 Unitil 505237



AAC0000505237

162 284 157

K=1.8




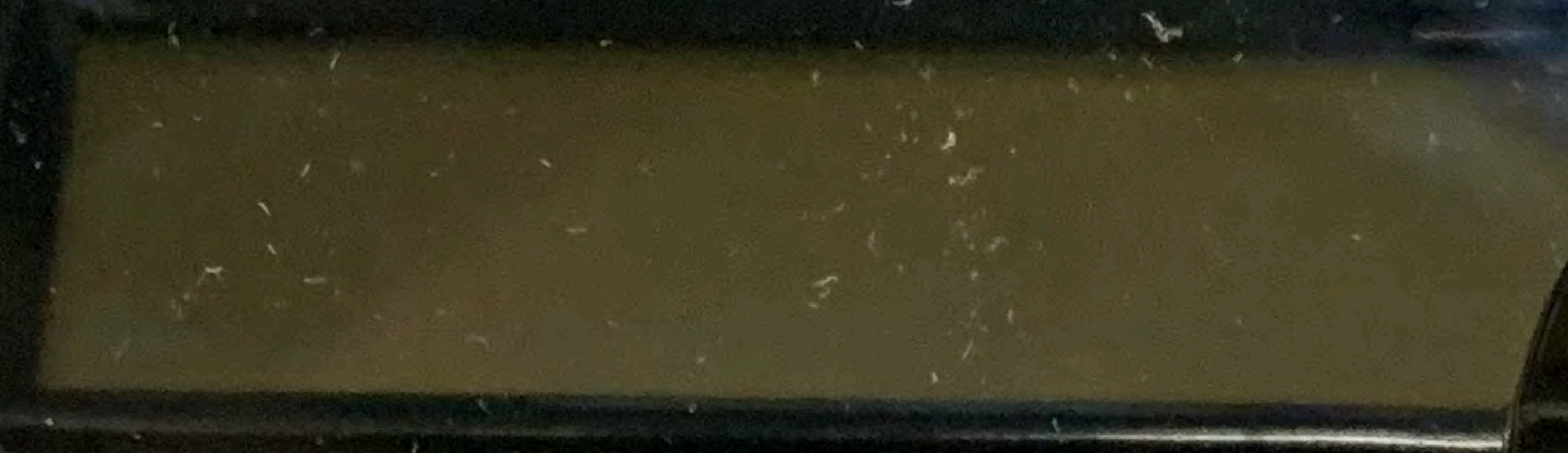
Landis+Gyr

Landis+Gyr+ Gridstream PLX  
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Module Model 26-2542

Type E650 S4x RXR  
FORM 16S/15S CL200 120-277V 4W 60Hz TA=30 Kh 21.6 YΔ  
 Unitil 505226  
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K=1.8  
162 284 098  
Landis+Gyr

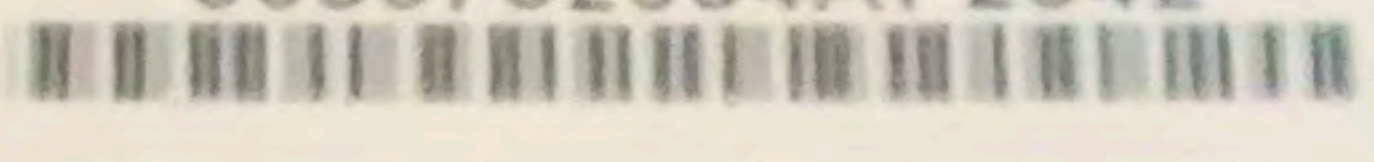


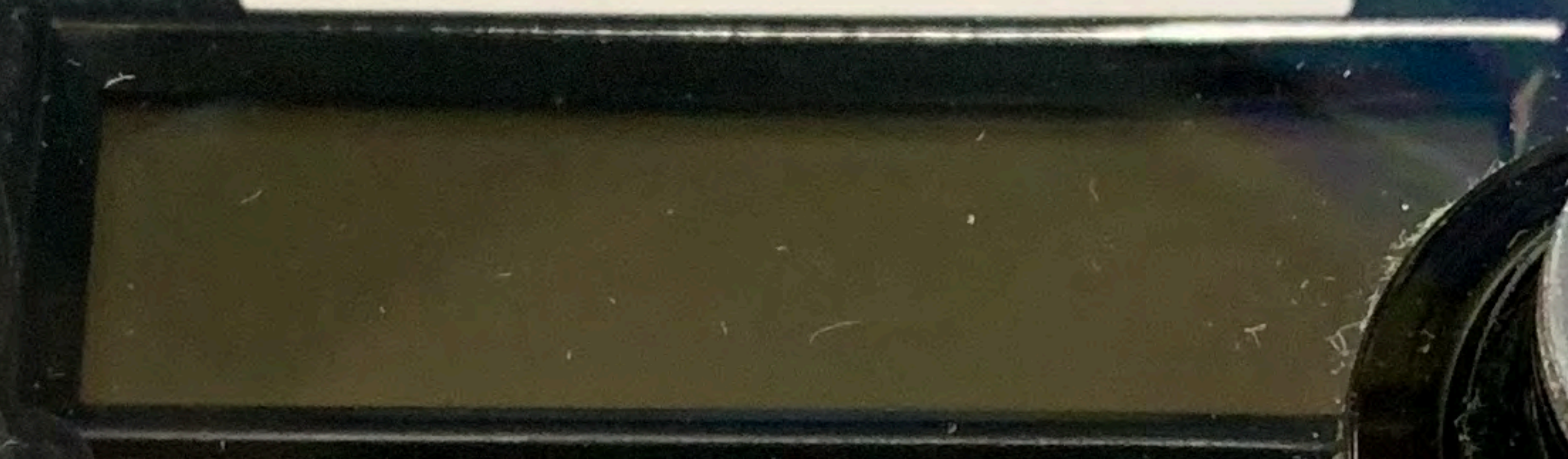
Landis+Gyr+ Gridstream PLX  
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Type **E650 S4x RXR**  
FORM 9S/8S CL20 120-277V 4W 60Hz TA=2.5 Kh 1.8 YΔ  
VTR   
CTR   
Kh   
 **Unitil** **506883**  
  
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K=0.15  
MULT. ALL RDGS. BY



Landis+Gyr+ Gridstream PLX  
0035702954AF2542  




Type **E650 S4x RXR**  
**FORM 4S CL20 120-277V 3W 60Hz TA=2.5 Kh 0.6**  
 **Unitil 505052**  
  
**AAC0000505052**  
**162 283 788**  


VTR   
CTR

MULT. ALL  
RDGS. BY



# E650 S4x Polyphase



## Enhanced Metering for Commercial and Industrial Applications

Expanding upon the industry-leading flexibility of Landis+Gyr polyphase meters, the E650 S4x sets a new standard for versatility in a C&I metering platform. Out of the box, the S4x is a full-featured C&I meter that provides four-quadrant measurements of active and reactive energy, load profile, and TOU without a battery when existing on an AMI network.

The E650 S4x provides the metrics utilities need to take full advantage of advanced grid management technologies. Delivered, received, and per quadrant measurements of active, reactive, and apparent energy are all simultaneously calculated, as are their respective demand values. Additionally, the S4x provides two alternative methods for calculating reactive and apparent energy and demand values. They can be either directly measured or vectorially derived, giving an electric utility the ultimate flexibility in how they measure and bill their customers.

The E650 S4x provides all of its metrics at significantly higher resolution than most competitive C&I meters. All energy and demand metrics are stored with milliunit resolution. All instrumentation metrics such as voltage, current, and phase are stored in microunits.

The E650 S4x raises the bar on security and tamper detection capabilities. A tilt and vibration sensor can identify significant shock force applied to the meter. A dedicated Hall effect sensor is used to detect strong magnetic field presence. The physically actuated cover removal switch can trigger an alarm and log an event. A new optical port lockout feature allows total control over port access through a compatible communication module.

The S4x has significantly more RAM, ROM, and non-volatile memory for load profile, self-reads, and event logs. Standard 16 channel load profile memory of 256 KB can be upgraded to 1 MB without the need for additional hardware.

### SUPERIOR METRICS

- Four-quadrant measurement
- Delivered and received kW, kVA and kVAR demands
- Two alternate methods of VAR and VA calculation
- Milliunit energy and demand resolution
- Microunit instrumentation resolution

### LOAD PROFILE

- 16 CH 256K standard, 1 MB option
- 2nd recorder option
- 32 bit data storage

### UNIQUE SECURITY

- Magnetic tamper detection
- Cover removal switch
- Tilt and vibration sensor

### HARDWARE OPTIONS

- Enhanced Gridstream RF module
- I/O board
- Three-phase power supply

### RF COMMUNICATION OPTIONS

- Series 5
- Series 6



SUPERIOR  
METRICS



LOAD  
PROFILE



HARDWARE  
OPTIONS



UNIQUE  
SECURITY



RF COMMUNICATION  
OPTIONS

# E650 S4x Polyphase

An optional second 16 channel recorder can be configured with a different interval length than the first, making it an ideal instrumentation recorder for continuously monitoring voltage, current, phase, and frequency. Load profile data is stored in 32 bit registers that can easily handle the increased data resolution the S4x offers without interval overflow or the need for a scale factor.

The meter is available with multiple hardware options that further expand its capabilities. With the addition of an enhanced RF communications module, the S4x becomes a powerful C&I endpoint on the industry-leading Landis+Gyr Gridstream® Connect IoT network. An I/O board enables inputs that can increment a load profile channel or trigger a different billing rate; and outputs that can provide KYZ pulses or trigger load control devices. The Enhanced RF module and I/O board are available together for even greater functional versatility. A true three-phase power supply can ensure that the S4x keeps metering, even if a voltage phase is lost.

## PRODUCT SPECIFICATIONS

GENERAL SPECIFICATIONS	
<b>Specifications</b>	Active and reactive energy are standard TOU and 256K load profile are standard ANSI C12.19 standard protocol Unsurpassed 10KV surge protection for safety Designed for 20+ years of life Extensive event logging Magnetic tamper detection via Hall effect sensor Cover removal switch Tilt and vibration sensor
<b>Operating Temperature</b>	-40C to +85C under cover
<b>Frequency</b>	50 or 60Hz ± 5%
<b>Humidity</b>	Less than or equal to 95% relative humidity, non-condensing
<b>Accuracy Class</b>	Class 20, 120, 200, & 320 meters ± 0.2% Class 480 meters and forms 36S, 29S, 36A ± 0.5%
<b>Over Voltage Withstand</b>	Temporary (.5 sec) 150% rated voltage Continuous (5 hours) 120% rated voltage
<b>Voltage Burden</b>	≤ 2.5W
NOMINAL VOLTAGE	
<b>Standard Power Supply</b>	120–480V (2 and 3 wire 120, 208, 240, 277, 347, 480. 4 wire 120/208, 240/416, 277/480, 347/600)
<b>Three-phase Power Supply Option</b>	120– 277V (2 and 3 wire 120, 208, 240, 277. 4 wire 120/208, 277/480)

Kbps = Kilobytes per second

This information is provided on an “as is” basis and does not imply any kind of guarantee or warranty, express or implied. Changes may be made to this information.

OPERATING VOLTAGE	
<b>Standard Power Supply</b>	98 to 552 VAC (line to neutral) autoranging power supply
<b>Three-phase Power Supply Option</b>	98 to 318 VAC (line to neutral) autoranging power supply
STARTING CURRENT (AMPS)	
<b>Class 20</b>	0.005 Amp
<b>Class 150</b>	0.050 Amp
<b>Class 200</b>	0.050 Amp
<b>Class 320</b>	0.080 Amp
<b>Class 480</b>	0.120 Amp
AVAILABLE FORMS	
<b>Self-Contained S-Base</b>	2S, 12S, 14/15/16/17S, 25S, 1S, 2SE, 12SE, 14/15/16/17SE, 25SE
<b>Self-Contained K-Base</b>	12K, 14/15/16K, 27K
<b>Self-Contained A-Base</b>	16A
<b>Transformer Rated S-Base</b>	3S, 3SC, 4S, 8/9S, 45S, 36S, 29S
<b>Transformer Rated A-Base</b>	8/10A, 45A, 36A
APPLICABLE STANDARDS	
ANSI C12.1 for electric meters ANSI C12.10 for physical aspects of watt hour meters ANSI C12.20 for electricity meters, 0.2 and 0.5 accuracy class CAN3-C12-M84 Canadian specs for approval of electrical meters CAN3-Z234.4-79 Canadian specs for all numeric dates and times	

## GET IN TOUCH.

For more information and nationwide warranty terms, visit us at [landisgyr.com](http://landisgyr.com) or call us at 888-390-5733.



## LET'S BUILD A BRIGHTER FUTURE TOGETHER

Since 1896, Landis+Gyr has been a global leader of energy management solutions. We've provided more than 3,500 utility companies all over the world with the broadest portfolio of products and services in the industry. With a worldwide team of 1,300+ engineers and research professionals, as well as an ISO certification for quality and environmental processes, we are committed to improving energy efficiency, streamlining operations, and improving customer service for utility providers.

# Gridstream PLX

The Next Generation of PLC Technology



**Will your PLC network keep up with the smart grid?**

Landis+Gyr, a pioneer in developing power line carrier (PLC) technologies designed specifically for advanced metering, developed Gridstream® PLX to be the next generation PLC network for smart grid communications.

Just like Landis+Gyr's legacy PLC technology, PLX maintains continuous, unsolicited communication with each device on the network. But PLX goes a step further by



expanding communication channels to allow delivery of 15-minute interval data in a continuous stream from every endpoint. The expanded network capacity allows faster outage and restoration notifications

as well as remote firmware upgrades and improved security options.

The added communication capacity of PLX provides more data, more often. Not only does this enhance support for utility billing and engineering departments, but it also

enhances demand response, prepay and outage management programs with faster data delivery and confirmations. PLX benefits customer service departments with up-to-date information for consumer web portals and detailed interval data to analyze for billing inquiries.

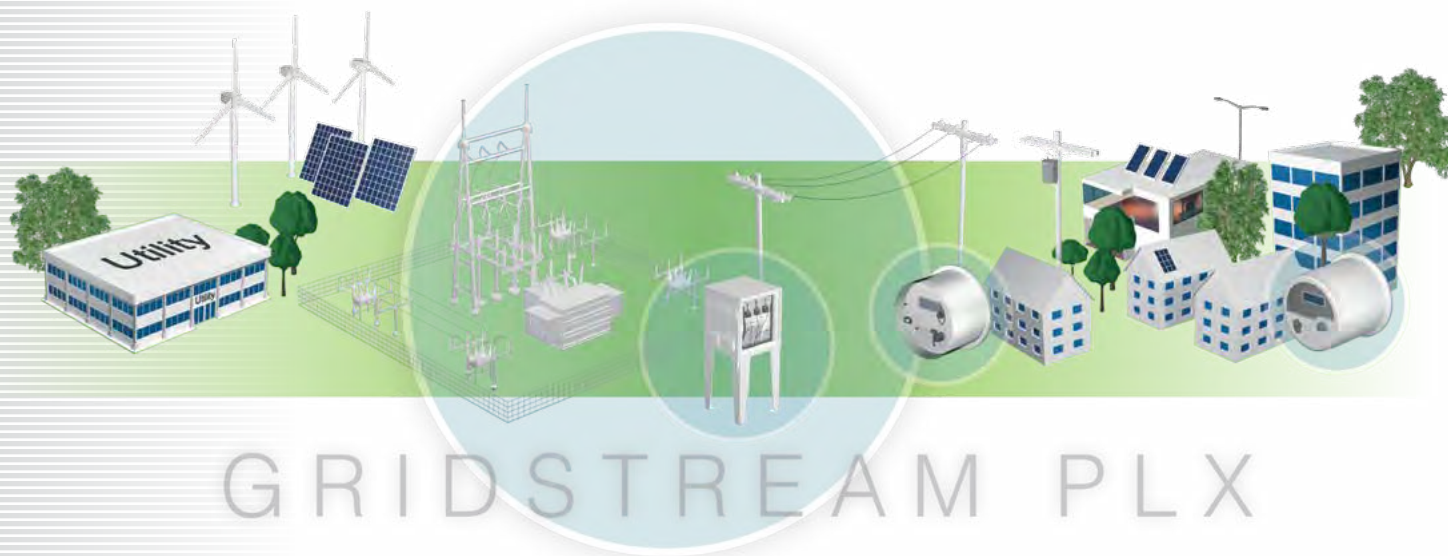
Best of all, PLX retains the same head-end software, Command Center, for a smooth migration path along with the ability to operate multiple networks from the same software. Using the proven and familiar Command Center platform, utilities can monitor and control activity on their distribution networks like never before. PLX provides analytics from the meter to the substation to identify potential trouble spots and failing equipment, while assisting with preventative maintenance.



## HIGHLIGHTS:

- 15-minute intervals continuously from every endpoint
- Redundant storage of data at the endpoint and collector to ensure no data loss
- Daily diagnostic information to improve customer service
- Remote control of four time-of-use rates within multiple schedules and holiday rates
- Automatic and immediate notification of meter tamper
- Remote reflashing capability to avoid obsolescence of module firmware
- Remote disconnect/connect with FOCUS® AX-SD meter

## Gridstream PLX Connects Utility Assets Across the Grid



### Applications

#### Interval Meter Data

Interval data is viewable every 15 minutes from every meter to support engineering analysis, customer service response and billing applications.

#### Distribution System Analytics

PLX monitors distribution system noise and harmonic data to locate and replace faulty infrastructure, isolate and quantify line loss, resize equipment and improve power quality.

#### Voltage Monitoring

Voltage readings are useful for applications ranging from load management to infrastructure sizing and detecting failing transformers. This information also helps maintain power factor and reduce line losses. Coincident voltage readings can be used for analyzing peak loads.

#### Consumer Energy Management

Engaging the consumer through energy portals, home area networking and dynamic payment programs such as prepay, encourages energy efficiency and improves customer service.



#### Integration

Command Center, the operating software for Gridstream systems, provides ease of integration into existing utility networks.

Landis+Gyr's standards-based software and meter data management solutions deliver interoperability with most applications used for CIS, billing, engineering, operations and data management.

#### Demand Response

Peak power management options include dynamic voltage management, time-based pricing programs and direct load control.

#### Outage Detection

Because endpoints are in continuous communication with the data collector, outage reporting and restoration detection are triggered automatically within 15 minutes of an event.

## Gridstream PLX Commercial Endpoints



### *Advanced Data Access and Control for Commercial-Industrial Metering*

#### Overview

Gridstream® PLX is a ground-breaking power line carrier-based solution for advanced metering and smart grid applications. PLX commercial metering endpoints deliver unprecedented access to interval and load profile data across the network. And because PLX endpoints are installed as plug 'n play devices, the endpoint delivers billable reads to the Gridstream head-end system, Command Center, within hours of installation.

PLX is designed to provide 15-minute interval reads for load profiling. Utilities can choose two load profile values, then group meters to deliver active or reactive energy or voltage by phase. The 15-minute intervals are not batched, but arrive every 15 minutes in Command Center for immediate use for managing very high-value customers.

In addition to continuous interval data, Gridstream PLX simultaneously pushes full register meter reads for accurate, timely

billing information of both active and reactive energy and peak demand including coincident demand and power factor. PLX easily employs different rates for any class of customer and bills on either a pre-defined schedule or on a last-minute override during critical peaks.

PLX commercial endpoints give the utility access and control needed to manage commercial accounts. With PLX, all endpoints deliver energy and demand reads captured at midnight and at the demand reset to deliver data ready for billing the same day with the best data availability percentages in the industry. The endpoints alert the utility to phase outages, low battery and other meter, module or interface errors within minutes so the situation can be quickly addressed.

Gridstream PLX offers the capacity to deliver the multitude of values offered by Landis+Gyr's high-end S4 meters, including time-of-use rates.

#### FEATURES & BENEFITS:

*Why Landis+Gyr makes a difference.*

- Two, 15-minute intervals of active or reactive energy reads continuously
- 60 days of storage of interval data at the endpoint
- Daily minimum, maximum and average voltage reads with time of occurrence by phase
- Remote control of four time-of-use rates within multiple schedules and holiday rates
- Automatic notification of meter errors within minutes of occurrence
- Remote reflashing capability to avoid obsolescence of module firmware

Product Specifications: **Gridstream PLX Commercial Endpoints**



**Specifications**

Part Number	26-7300
Operating Temperature	-40° to +85°C (under Meter Cover)
Operating Voltage	85–305 VAC
Setup Method	Laptop, handheld PC or remote

**Compatibility**

Voltage	Meter Form								
	1S	2S	3S	4S	8/9S	12S	15/16S	6/36S	5/45S
120 (2-wire)	•								
120 (3-wire)			•			•			•
120 (3-wire Delta)						•			•
120 (3-wire Network)						•			•
120 (4-wire Delta)					•		•		•
120 (4-wire Wye)					•		•	•	
240 (3-wire)		•	•	•		•			•
240 (3-wire Delta)						•			•
277 (3-wire)						•			
240/277 (4-wire Delta)					•		•		•
240/277 (4-wire Wye)					•		•	•	•

**Standards Compliance**

ANSI C12.1-2008	Code for Electricity Metering
ANSI/IPC-A-610	Acceptability of Electronic Assemblies
FCC CFR Title 47 (Part 15, subpart B) ICES-006 (Issue 2, 2009)	Radiated and Conducted Emissions
IEC 61000-4-2	Electrostatic Discharge Immunity
IEC 61000-4-3	Radiated RF Electromagnetic Field Immunity
IEC 61000-4-4	Electrical Fast Transient/Burst Immunity
IEC 61000-4-5, IEEE C62.41.2-2002, Category B	Surge Immunity (Combination Wave)
IEC 61000-4-8	Power Frequency Magnetic Field Immunity
IEC 61000-4-9	Pulse Magnetic Field Immunity
IEC 61000-4-11	Voltage Dips and Interrupts Immunity
IEC 61000-4-12, IEEE C62.41.2-2002, Category B	Surge Immunity (100 kHz Ring Wave)
IEC 61000-4-18, IEEE C37.90.1-2002	Surge Immunity (1 MHz Oscillatory)
IEC 60068-2-6: 1987	Mechanical Vibration
IEC 60068-2-27: 1987	Mechanical Shock
10 kV Surge Immunity (Combination Wave)	
Accelerated Life Test	85°C with 85% Relative Humidity for 1100 hours

Phone: **678.258.1500**

FAX: **678.258.1550**

landisgyr.com

1.13.14





## Gridstream PLX Residential Endpoints



Meter Platforms  
FOCUS® AL  
FOCUS AX/AX-SD

*Full Two-Way Constant Communication  
for Gridstream PLX Residential Metering*

### Overview

The Gridstream® PLX network takes full advantage of today's power line carrier technology for advanced metering. The Landis+Gyr next generation PLX residential endpoint delivers a big boost in data delivery and processing power over the Gridstream platform.

With the capacity and data throughput to support future smart grid applications, PLX endpoints are also easily installed as plug 'n play devices that are securely deployed through Gridstream head-end software, Command Center. The endpoints deliver 15-minute kWh or voltage intervals every quarter hour for immediate use by the utility for smart grid applications that drive efficiency, reliability and revenue protection.

In addition to continuous interval data, Gridstream PLX is simultaneously pushing full register meter reads for accurate, timely billing of energy and demand to alert the utility of abnormal consumption patterns. Outage management is also improved with unsolicited alerts and restoration confirmation from each meter. Utilities are also able to improve cash flow by implementing prepay solutions and managing disconnects and reconnects remotely.

Gridstream PLX delivers updated metrology reads several times each day along with diagnostics that include IEEE reliability indices and voltage sags and swells for more accurate reporting. The 15-minute interval consumption reads can also be used for engaging consumers in energy management through energy portals and consumer energy management applications.

### FEATURES & BENEFITS:

*Why Landis+Gyr makes  
a difference.*

- 15-minute intervals of kWh or voltage continuously from every endpoint
- 60 days of storage of interval data at the endpoint
- Daily minimum, maximum and average voltage reads with time of occurrence by phase
- Remote control of four time-of-use rates within multiple schedules and holiday rates
- Automatic and immediate notification of meter tamper
- Remote reflashing capability to avoid obsolescence of module firmware
- Remote disconnect/connect with FOCUS AX-SD

Product Specifications: **Gridstream PLX Residential Endpoints**

**Specifications**

Part Number	FOCUS AL – 26-7100	
	FOCUS AX/AX-SD – 26-7200	
Operating Temperature	-40° to +85°C (under Meter Cover)	
Operating Voltage	85-264 VAC	
Setup Method	Laptop, handheld PC or remote	
Compatibility	Form	Voltage
	1S	CL100, 120v
	2S	CL200, 240v
	2SE	CL320, 240v
	3S	CL20, 120/240v
	4S	CL20, 240v
	12S/25S	CL200, 120v



**FOCUS AL**



**FOCUS AX-SD**

**Standards Compliance**

ANSI C12.1-2008	Code for Electricity Metering
ANSI/IPC-A-610	Acceptability of Electronic Assemblies
FCC CFR Title 47 (Part 15, subpart B) ICES-006 (Issue 2, 2009)	Radiated and Conducted Emissions
IEC 61000-4-2	Electrostatic Discharge Immunity
IEC 61000-4-3	Radiated RF Electromagnetic Field Immunity
IEC 61000-4-4	Electrical Fast Transient/Burst Immunity
IEC 61000-4-5, IEEE C62.41.2-2002, Category B	Surge Immunity (Combination Wave)
IEC 61000-4-8	Power Frequency Magnetic Field Immunity
IEC 61000-4-9	Pulse Magnetic Field Immunity
IEC 61000-4-11	Voltage Dips and Interrupts Immunity
IEC 61000-4-12, IEEE C62.41.2-2002, Category B	Surge Immunity (100 kHz Ring Wave)
IEC 61000-4-18, IEEE C37.90.1-2002	Surge Immunity (1 MHz Oscillatory)
IEC 60068-2-6: 1987	Mechanical Vibration
IEC 60068-2-27: 1987	Mechanical Shock
10 kV Surge Immunity (Combination Wave)	
Accelerated Life Test	85°C with 85% Relative Humidity for 1100 hours

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## Residential: FOCUS AXe Metering Platform

E331 FOCUS AXe/AXRe/RXRe  
E351 FOCUS AXe/AXRe/RXRe-SD



### Advanced Metering Performance and Safety

#### Overview

The FOCUS® AXe platform for advanced electric metering and smart grid applications is designed to enhance your sensor ecosystem with proven reliability and innovative features. Expanding on Landis+Gyr's industry-leading FOCUS AX platform, the FOCUS AXe adds increased memory and processing power to enable greater measurement, power quality, and data profiling capabilities. Furthermore, the FOCUS AXe incorporates a sensor to detect meter removal and insertion as a possible indication of tamper as well as increased power supply capacity to support more advanced AMI modules for expanded communications abilities.

#### Reliable disconnect service - for any type of residential installation

The E351 FOCUS AXe-SD provides reliable remote service disconnect and reconnect with a motor driven, cam action switch under the meter cover. Available in both CL200 and newly released CL320 UL certified models, the switches operate safely for thousands of iterations at full rated current. Along with direct switch actuation, the AXe-SD supports multiple load limiting features that initiate a disconnect when a specified instantaneous power or average demand level is reached.

The AXe-SD Form 2SE delivers precedent setting remote service disconnect capability to larger 320 amp installations, providing Landis+Gyr's unique solution to evolving utility requirements.

#### KEY FEATURES:

- Active Energy "kWh" meter: Optional  
Reactive Energy "kVAh or kVARh"
- Two, simultaneous demands: kW, kVA, and kVAR
- Motor driven, cam action service disconnect switches: 200 amp and NEW 320 amp
- All meters exceed ANSI requirements for meter accuracy (0.2%) and surge protection (10KV)
- Power Quality Metrics: Sag, Swell and Total Harmonic Distortion
- Up to 8 channels of Load Profile standard
- Independent 2nd 8-channel Load Profile Recorder (optional)
- Every S Base meter form is UL listed
- Meter removal and insertion detection to indicate possible tamper
- Magnetic and DC presence detection
- Over-the-air firmware and program updates<sup>1</sup>
- Dedicated Voltage Log
- Configurable optical port lockout<sup>1</sup>

Product Specifications: Focus AXe Residential Electric Metering Platform

**SPECIFICATIONS**

General Specifications	ALL models support demand billing and are time-of-use (TOU) Ready – Battery Optional	
	Third Generation processor runs 2x as fast as FOCUS AX	
	2x RAM, 2x ROM, and 4x the Non-Volatile Memory as FOCUS AX	
	Designed for 20+ years life	
	Utilizes ANSI protocol (for optical port and between meter and AMI device)	
	9-Digit LCD	
	Display scroll sequence programmable (factory or end user)	
	Configuration Port – standard plastic: Optional ANSI C12.18 optical	
Operating Temperature	-40C to +85C under cover	
Nominal Voltage	120V or 240V	
Operating Voltage	80% to 115% of Nominal Voltage	
Frequency	60Hz +/- 5%	
Humidity	5% to 95% relative humidity, non condensing	
Starting Load (Watts)	Class 20	0.005 Amp (0.6W)
	Class 100	0.030 Amp (3.6W)
	Class 200	0.050 Amp (12W)
	Class 320	0.080 Amp (19.2W)
	Class 480	0.120 Amp (28.8W)
Voltage Burden	< 1.9W Max	
Load Performance Accuracy	Accuracy Class 0.2% (reactive energy 0.5%)	
Available Forms	Self-Contained	1S, 2S, 2SE (320A), 12S, 25S
	Transformer Rated	3S, 4S
	K-Base	2K (480A)
Display Options	Energy Metrics: +kWh, -kWh, Net kWh, added kWh (Security), KVAh or kVARh	
	Metric Energy Display Format – 4x1, 4x10, 5x1, 5x10, 6x1 or 6x10	
	TOU, demand billing and two demands (selectable kW, kVA or kVAR)	
Communications <sup>1</sup>	Modular design - with or without AMI communication	
Selectable Meter Multiplier	Up to 4096 as result of PT ratio x CT ratio	
Applicable Standards	ANSI C12.1 for electric meters	
	ANSI C12.10 for physical aspects of watt hour meters	
	ANSI C12.18 Protocol specifications for ANSI Type 2 Optical Port	
	ANSI C12.19 Utility Industry End Device Data Tables	
	ANSI C12.20 for electricity meters, 0.2 and 0.5 accuracy classes	
	CAN3-C17-M84 Canadian specifications for approval of type of electricity meters	
Service Disconnect	200A disconnect - 10,000 operations at full rated current (disconnect/connect) Available forms: 1S, 2S, 12S, 25S	
	320A disconnect - 3,000 operations at full rated current (disconnect/connect) Available forms: 2SE	
International Certifications	Measurement Canada (MC) AE-1967 <i>Form 2SE-SD pending MC approval</i>	

*1. Select features rely on a communications module. Meters that are AMI-enabled with communications are clearly labeled on meter face above digital display.*