

Electricity Metering

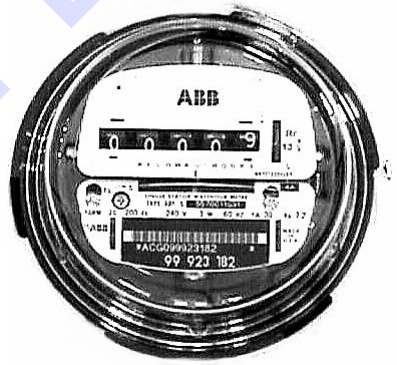
ELSTER 

&



*Byram's
Metering
Manual*

WATTHOUR METERS



ELECTROMECHANICAL

Byram Laboratories Inc.
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Branchburg NJ 08876

Phone 1-800-766-1212
Fax 908-252-0822
www.byramlabs.com



Electricity Metering

Valued Customers and Installers

Thank you for buying one of the most popular meters in the US. Elster is the market leader in Revenue Grade, Electricity Metering. Byram is the Exclusive East Coast Meter Center of Excellence for Elster watt-hour meters.

Please read this manual to understand how to install your watt-hour meter. If you have any questions you can call Byram at 1-800-766-1212, or fax your questions and comments to 908-252-0822. You may also visit Byram's web-site for KWH wiring information, www.byramlabs.com.

If you are the installer, please make sure that the owner receives this instruction manual.

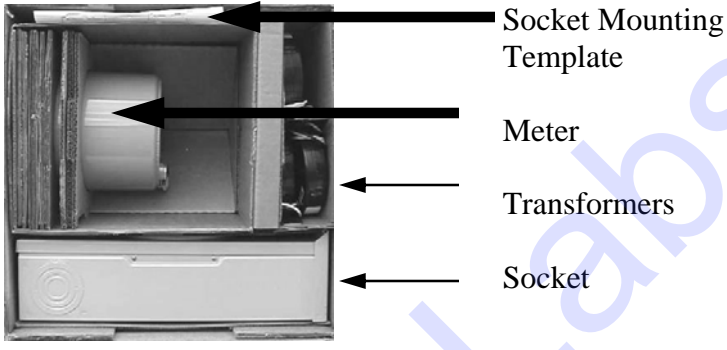
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Electricity Metering Package

Your meter package will arrive in one box. All components necessary for your meter installation will be included in the meter package.



Specifications of the Electromechanical Meter

ISO 9001 certified

0.84 watts for potential watt loss

22 watts average for starting watts

Glass or polycarbonate cover

Highly reliable, epoxy encapsulated potential coil



Electricity Metering

WARRANTY

- Byram Labs will replace or repair (at it's option) any Elster metering product purchased through Byram Labs which contains defects in material or workmanship.
- The product has a limited warranty of 10 years from the date of manufacturer.
- The limited warranty does not include the cost of removal or reinstallation or any associated labor costs, or transportation (freight) costs.
- The warranty does not include misapplication of the metering product, alteration of the metering product from it's intended configuration, use of the metering product with other products not recommended by Elster, or abuse.
- Byram must be notified within 30 days of the assumed defect.
- No warranties, expressed or implied, including warranties or fitness for a particular purpose or merchantability, or warnings arising from the course of dealing or usage of trade, are made regarding the information, recommendations, descriptions, warnings, and cautions contained herein.
- In no event will Byram Labs or Elster be responsible to the user on contract, in tort, (including negligence), strict liability or otherwise for any special indirect, incidental, or consequential damage or loss whatsoever, including but not limited to, damage to or loss of use of equipment; cost of capital; loss of profits or revenues; or claims against the user by its customers resulting from the use of the information, recommendations, descriptions, and safety notices contained herein.

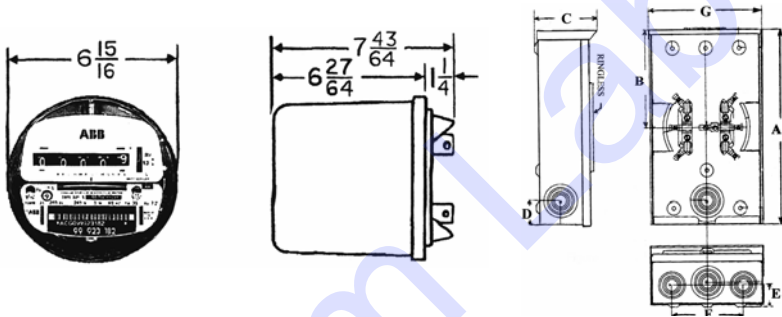
SAFETY

- The installer should follow all appropriate and applicable OSHA, and local safety requirements.
- Caution - make sure the meter you are installing matches the service type (form), current class, and capacity required. Installing a mismatched meter can cause serious damage to the installer and the equipment. Do not use with phase shifting transformers.
- **Warning** Circuit closing devices must be used on current transformer secondaries. This applies to form 5S, 5A, 6S, 9S, 10S, and 10A meters. Dangerous currents and voltages are present when secondaries are open circuited. Personal injury, death, and/or equipment damage can result if circuit closing devices are not used.
- Use authorized utility procedures to install ground connections before wiring meter.



INSTALLING AND REMOVING THE ELECTROMECHANICAL METER - Direct connect to socket no CTs

The meters are calibrated and tested before shipping , and are ready for installation. The electromechanical meter fits all standard socket connected (S type) services. With the optional S type to A type adapter it will fit all standard bottom connected services.(A type) services.



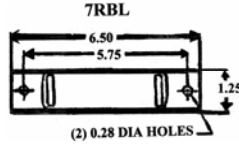
Typical socket

Installing a S type socket connected unit

1. Check the socket to make sure the wiring of the service matches the base form of the unit
2. Remove any paint from the socket rim at the point of contact with the ground strap of the Alpha+ lightning arrester, to insure the meter is grounded.
3. Align the meter blades and the socket jaws on the base of the unit with the service socket
4. Plug the unit into the socket by grasping each side of the meter and push it into the socket until it is firmly in place.
5. After the meter is plugged in, apply power.
6. Record any information you need about the meter like location, serial number, and reading on the register
7. Make sure that the required meter seals are installed.



INSTALLING TRANSFORMER TYPE METERS



How to Install-

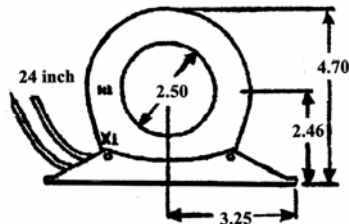
1. Use authorized Utility procedures to make sure that the power to the Socket is turned off. To be sure that the power is off, always use a quality multimeter to check for both AC and DC voltages that might be present.
2. Make sure to use the correct transformer for the maximum amps and voltage of the supply from the utility.
3. Install the current transformers to each wire to be measured. Make sure that the transformers are installed in the correct direction per the below diagram. This will involve breaking the circuit, placing the wire through the transformer, and reconnecting the wire. If you are using split core transformers you do not need to break the circuit.
4. Make sure that all transformers have the same rating.
5. Make sure that the meter is the correct form to use with the socket [example - 5S meter with a 5S socket]
6. Wire the transformer leads to the socket making sure to use the correct wiring diagram. Some of the circuits diagrams are on the following pages.
7. Make your voltage connections.
8. Carefully push the meter into the socket, making sure that there is a firm connection.
9. Restore power to the socket using Utility procedures.
10. Test the meter to make sure that it is energized.
11. Now follow the procedures from page 5 item 6.

Package transformer

H1 Marking on transformer
Should be on supply side.

X1 White lead

X2 Black lead





Removing the S-type meter from service

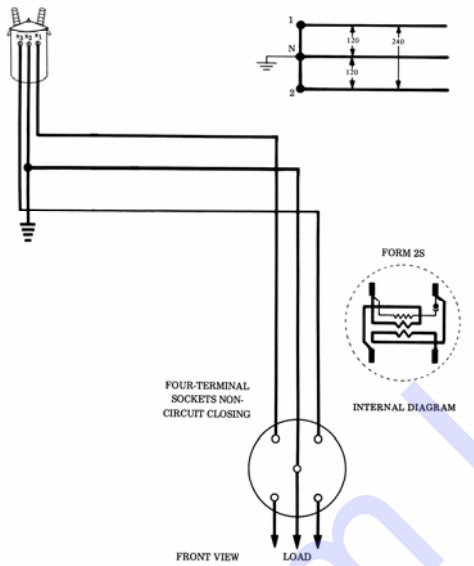
Warning - Use authorized utility procedures to remove metering equipment. Dangerous voltages are present, and personal injury, death, or equipment damage can result if safety precautions are not followed.

Warning - When you remove a socket connected S-type meter that will not immediately be replaced, always install a cover plate over the socket hole. Failure to do so will expose dangerous voltages causing personal injury, death, or damage to equipment.

To remove a socket - connected S-type unit, follow these steps:

1. Prior to disconnecting the unit, make sure you have recorded the register data [manually writing down all data]
2. Remove power from the unit.
3. Break the seal holding the unit in place.
4. Remove the seal, and collar [or other security /locking device]
5. Remove the unit from the socket firmly grasp each side of the unit, and gently pull it out from the socket. If the unit resists being pulled, gently rock the meter from top to bottom as you pull. DO NOT try to force it off with a screw driver or crow bar.

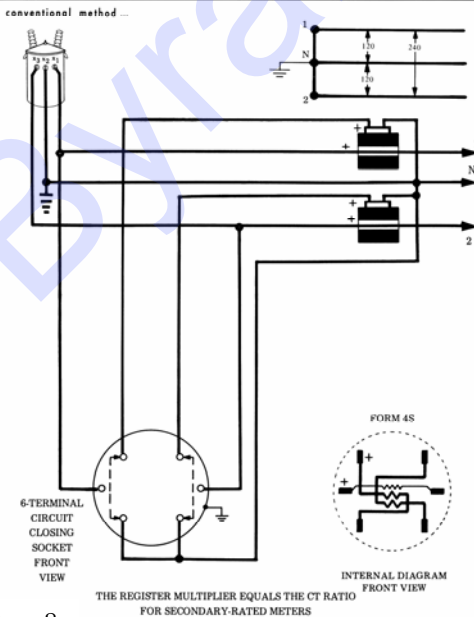
Measurement of energy from a grounded neutral - 120/240 volt single-phase, three-wire supply, 3-wire service



Form 2S

Single-Phase,
Three-Wire

Measurement of energy on a single-phase, three-wire service with 2 CT's and a three-wire single-phase meter



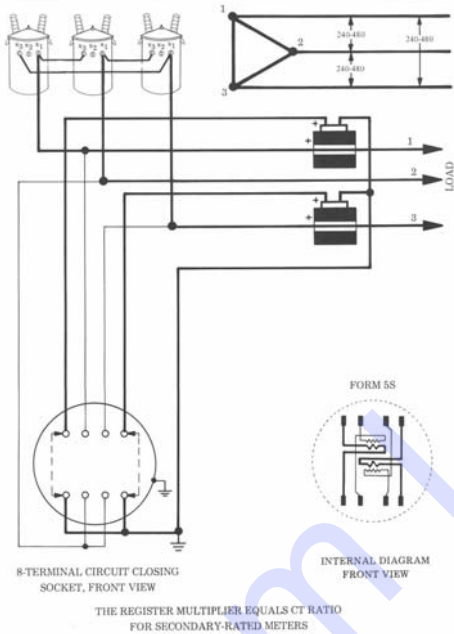
Form 4S

Single-Phase with
two window type
transformers



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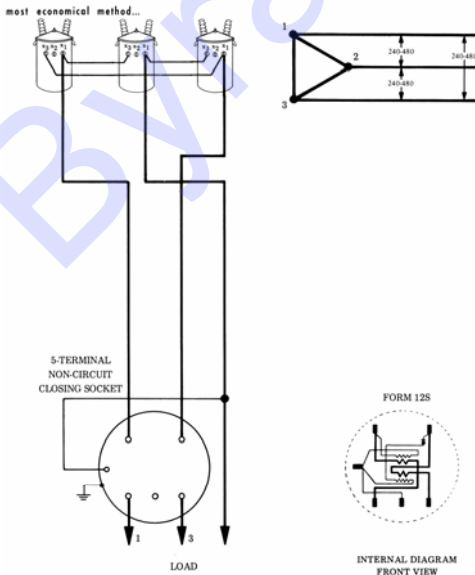
Measurement of energy on a three-phase, three-wire Delta service with 2 CT's and a 2-stator meter



Form 5S

Three-Phase,
Three-Wire Delta

Measurement of energy on a three-phase, three-wire Delta service with a 2-stator meter

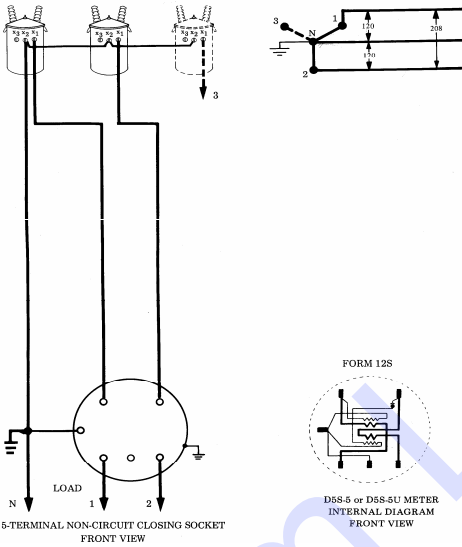


Form 12S

Three-Phase,
Three-Wire Delta



Measurement of energy on a network, three-wire, 120/208-volt service with a 2-stator meter

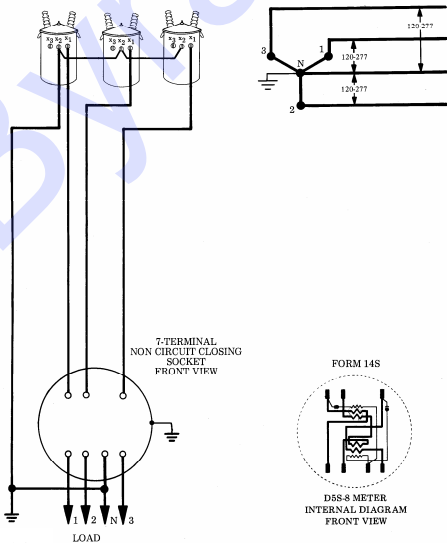


Form 12S

Network,
Three-Wire

Measurement of energy on a three-phase, four-wire Wye service with a 2-1/2-stator meter

most economical method...



Form 14S

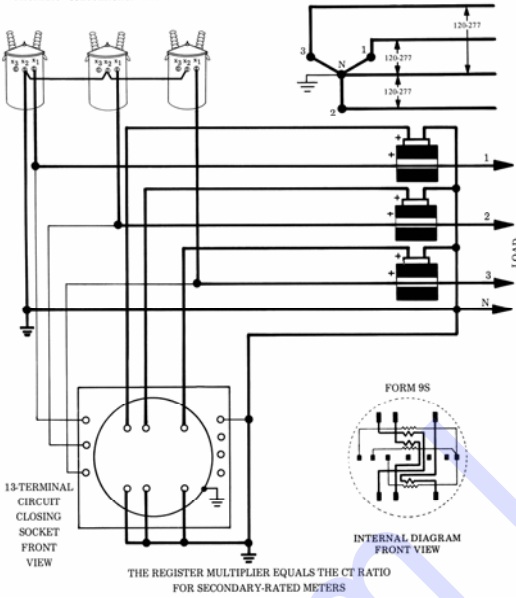
Three-Phase,
Four-Wire Wye



Electricity Metering

Measurement of energy on a three-phase, four-wire Wye service with 3 CT's and a 3-stator meter

alternate conventional method...

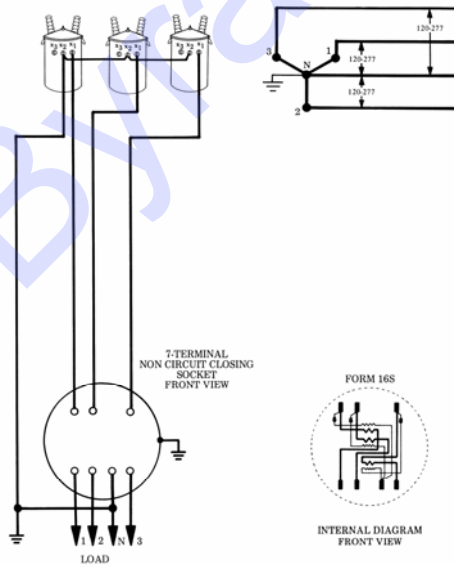


Form 9S

Three-Phase,
Four-Wire Wye

Measurement of energy on a three-phase, four-wire Wye service with a 3-stator meter

conventional method...



Form 16S

Three-Phase,
Four-Wire Wye

Byram Labs, located in
Branchburg NJ, is a world class
distributor,
manufacturer, modification
center, and calibration facility,
serving the electrical,
electronics, and process
markets with products that
include test equipment,
calibrators, analog and digital
panel meters, and electrical
watthour meters



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