

Mueller Systems Solid State Register (SSR)§

COMPOSITE REGISTER TECHNOLOGY

Effective February 18th, 2017, Mueller Systems has implemented customer-driven enhancements to its state-of-the-art SSR register.

1. The SSR liquid crystal display remains illuminated at all times. An external light source is not required to illuminate the display.
2. The screen refresh rate in standard viewing mode is once per second.
3. TEST mode can be activated for 2 hours when required. The initialization sequence for entering TEST mode is detailed later in this document. The screen refresh rate in TEST mode is 8 times per second.

The Mueller Systems Solid State Register (SSR) brings enhanced usability and accuracy to all current Mueller Systems positive displacement meters in sizes 5/8" through 2". Using a market leading composite enclosure to house the processor electronics, battery, high resolution liquid crystal display, and magnetic sensors under a heat treated, tempered glass lens, the SSR register delivers extraordinary functionality and value when paired with the latest metrology and AMR/AMI solutions from Mueller Systems.

The SSR register provides a lower profile than its electromechanical counterparts to make installation in small meter boxes easier. The SSR housing provides multiple options for integral AMR/AMI device mounting. Units integrated with the AMI/AMR device transceiver are equipped with a knuckled joint to allow adjustments of up to 90° from vertical.



Solid State Register (SSR)§

SSR Gallon Register Display

Installation is easier and installers can obtain the best possible radio frequency propagation. The register can rotate 358° on the meter, adding flexibility in tight spaces – field personnel can spin the display to any orientation.

AMR/AMI units can be ordered with mating Nicor or Itron connectors to simplify installation. Replacements for a variety of radio frequency devices are also available.

The SSR is compatible with all bayonet-style locking register designs on Mueller Systems positive displacement meters. The register is mechanically protected from tampering by an integral installation ring and wedge making tampering readily apparent to field technicians. The register can be replaced without removing the meter from the service line when required due to vandalism or damage.

The SSR register uses no hazardous substances within the electronic equipment. The Printed Circuit Board, components and solder are all lead-free, making the SSR register a "green" choice.

Mueller Systems

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A View From The Top

The easy-to-read, factory programmed, 10-digit liquid crystal display provides a precise visual reading of units, totalized consumption and intuitive icons for visual verification of field performance.

Icons provide utility personnel key information at a glance:

- battery strength when six months of effective life remains
- presence and direction of water flow even at ultra-low flow rates
- billing units, indicated by lines under and over digits in the display

The Mueller Systems logo and SSR product name identify the register as the latest product in a long line of electronic register devices designed for the reliable transmission of meter data since the early 1960s.

The pad located at the top of the display is permanently etched with a unique, never duplicated 10-digit ID number, meter model, size, and the date of manufacture. A plastic lid protects the glass lens while usage and additional data are collected.



420 Composite PD meter with SSR and integral Hot Rod transmitter

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

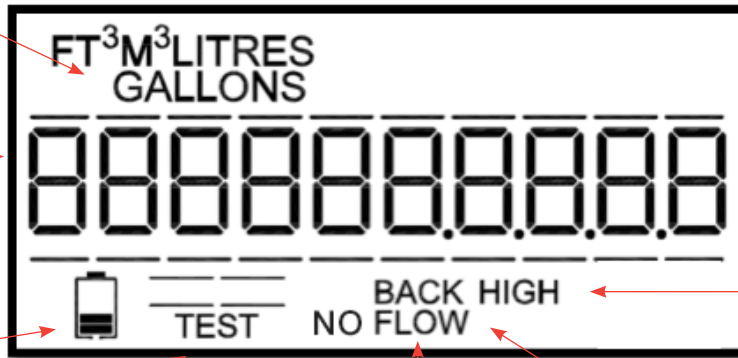
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SSR Display Features

Units of registration are illuminated: gallons, cubic feet, cubic meters or litres.

The 10 digit display provides excellent resolution. Up to 9 digits can be transmitted electronically. The position of the decimal place is factory-programmable.

The low battery icon is illuminated only when approximately 6 months of battery life remain.



The TEST icon is illuminated when the meter is placed in test mode by 3 flashes of light to the optical sensor followed by 15 seconds of darkness with the lid closed, and 1 additional flash of light. Successful sensor communication is indicated by illumination of the double bar above the word TEST each time the sensor detects a light flash.

The BACKFLOW icon is illuminated when the meter experiences reverse flow.

The word FLOW indicates the presence of positive flow. The words NO FLOW are illuminated in the absence of flow.

Lines above and below the numeric display indicate the desired billing units.

HIGH icon indicates ambient light prevents the use of the light sensor to change LCD functionality. Shade the LCD to permit sensor communication.

Register Operation

The Display

The SSR display remains illuminated at all times. The 10-digit display shows usage and, if detected, an error message.

Test Mode

In the event a more frequent screen refresh is required, TEST mode can be accessed which initiates eight screen refreshes per second. The following steps are required to initiate TEST mode.

To place the SSR in TEST mode with a flashlight, flash the optical sensor three times (double bars appear above the TEST icon), close the lid for 15 seconds, open and flash the sensor once more.

In TEST mode, the LCD displays:

- the 10-digit register ID for 5 seconds
- the model number for 1 second, and then
- the meter can be tested utilizing the standard total screen for test calculations

After your test, flash the optical sensor 3 times to return to standard mode. The register automatically reverts to standard mode 120 minutes after the TEST mode began.

Error Display

The SSR can display up to eight error notifications on the LCD. For example, "ERR 008" indicates the SSR was removed from the meter.

Error codes cannot be cleared in the field and will require factory support. Please contact Mueller Systems for instructions. Under an error condition, the register functions normally. The LCD displays consumption and flashes the error code about every three seconds. If no subsequent error conditions occur, the error message clears after 90 days.

Currently, the SSR supports the following error codes:

- 001 – Magnetic tamper detected – The magnetic sensors have detected the presence of a strong, interfering, external magnetic field.
- 002 – Internal memory failure – Automatic self-testing identified an error in the firmware image.
- 004 – Sensor error – Periodic checking of the magnetic sensors identified that they are not presenting the correct signals.
- 008 – Removal error – The magnetic sensors have determined that the register has been removed from the meter body.
- 016 – FU Upgrade Image Error – The saved variable image was corrupted during the Firmware Upgrade process; this indicates that default values have been reloaded.

These codes can be combined by adding together the relevant codes, so a magnetic tamper (001) and memory failure (002) will be code 003.

Other errors numbers will be defined as required.