

Smart Master Meter

User Manual

Application version 1.0.0



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Control Narrative

Your **Smart Meter** unit is a **monitor**. It counts what passes through your master meter and reports the flow rate and the volumes to the cloud. It has **no outputs and no control logic** — it does not start or stop pumps, open or close valves, or change anything about your system. It only measures and reports.

The unit is a SmartController with a single Universal IO module, powered by a solar panel, a charge controller and a battery, so it can sit at the meter vault without utility power. The meter's pulse output is wired to the IO module, which counts the pulses and reports both a **rate** (pulses per minute) and a **running count**. The unit also reads the voltage coming in from the solar panel and the voltage at the battery. All values are sent to the cloud **once a minute**, and the display at the cabinet shows the current flow rate and today's volume.

Everything depends on the K-factor — the number of gallons your meter reports per pulse. That number is built into the unit's configuration when it is prepared for your site, and it scales every flow figure the unit reports. It is not an operator setting: if the flow rate reads high or low by a constant multiple compared with the meter's own display, the configuration must be rebuilt and reloaded by service. Correcting it on the dashboard is not the fix.

Two kinds of total are reported, and they behave differently.

- **Flow Total** is the IO module's own running count. It is *not* a lifetime total: it rolls back to zero every 65,536 pulses, and it restarts at zero if the IO module loses power. Seeing it drop back to zero is expected behavior, not a fault.
- **Flow Today** and **Flow Yesterday** are worked out by the controller from the *change* in that running count, so they are unaffected by the rollovers and restarts. **Use these two for volume reporting.** At local midnight, today's figure is published as Flow Yesterday and today restarts at zero. The rollover follows the controller's local time zone, so the time zone must be right for your site or the day will end at the wrong hour.

A few things worth knowing about the daily figures. Flow Yesterday reads zero until the first local midnight after startup — that is correct, not a fault. Volume that passes while the unit is powered down or rebooting is not counted, and a reboot that spans midnight will carry the day's count into the next day. And if the controller's clock jumps by more than a day (for example after a long outage), today's figure is cleared without publishing a Yesterday value, because a partial day is not a real day and publishing it would discard the last good figure.

The unit also sends alarms through the cloud, covering its own health rather than the flow: a low battery, and a warning if the unit stops reporting altogether. These are managed on the dashboard.

Setpoints

There are no control setpoints on this unit — nothing here changes how anything operates. One value can be written by the operator, at the controller (it is marked with * on the display) or from the cloud dashboard.

Value	Default	Units	What it does
Flow Today	0	Gal	The running total for the current day. It is normally maintained by the unit, but you may write 0 to it to zero the day — for example at startup, to make the day's count begin at a known moment. Writing any other value simply sets the day's running total to that figure.

Modes

This unit has no operator-selectable modes. It monitors and reports continuously from the moment it is powered up, and there is nothing to switch between — everything below is either a reading or, where noted, a value you may reset.

Readings, Alarms and Status

Channel	Meaning	What to do
Flow Rate	Current flow through the master meter, in gallons per minute, derived from the meter's pulse rate and the K-factor.	Compare against the meter's own rate display at startup. Falls to 0.0 GPM when flow stops.
Flow Total	The IO module's running pulse count converted to gallons. Not a lifetime total — it rolls over to zero every 65,536 pulses and restarts at zero if the IO module is power-cycled.	Do not use it for reporting or billing; use Flow Today and Flow Yesterday. A return to zero is normal.
Flow Today	Gallons since local midnight, computed by the controller and unaffected by the rollovers above. Updated about once a minute while water is moving, and settled immediately when flow stops.	This is your day's volume. Operators may zero it (see Setpoints).
Flow Yesterday	The previous local day's total gallons, published automatically at local midnight.	Your day-over-day reporting figure. It reads 0 until the first midnight after startup, which is correct.
Solar Voltage In	The voltage the solar panel is delivering to the charge controller. In sun, a 12 V system typically reads about 17–21 V.	A panel reading near zero in good daylight points to a shaded, dirty, disconnected or failed panel. Have it checked before the battery runs down.
Battery Voltage	The voltage at the backup battery that runs the unit overnight and through cloudy weather. A healthy 12 V battery typically reads about 12.5–14.5 V.	If it drifts lower day over day, or stops recovering during the day, have the charging system checked or the battery replaced. A dead battery means no metering data at all.

The cloud raises these alarms and notifies the contacts set up for your system. The values below are the defaults the unit ships with; thresholds and delays can be tuned on the dashboard.

Alarm	Fires when	What it means and what to do
Low Battery	Battery Voltage stays below 10.8 VDC for 10 minutes	The unit's own power is failing — 10.8 V is the usable floor of a 12 V lead-acid battery. Check the panel, charge controller and battery before the unit goes dark.
Device Inactive	Nothing at all is reported for 60 minutes	The unit has gone silent. Check its power (solar, battery) and cellular coverage. Flow that passes while it is down is not counted and cannot be recovered.

Support: if the flow figures do not agree with the meter's own totalizer, note the meter's make, model and K-factor and contact D6 Labs support — the scaling is set in the unit's configuration, not at the keypad.

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