

Tank Management Applications Firmware

The Tank Management Applications Firmware adds storage tank level monitoring capability to ROC300-Series Remote Operations Controllers that use a ROCPAC module. The firmware uses two measured inputs: one to monitor tank level and the other to measure discharge from the tank. A value for volume removed can be manually entered. The number of storage tanks that can be managed by the firmware is 8 for a ROC364 and 3 for a ROC306/ROC312 unit.

In a typical application, a differential pressure transmitter is installed near the bottom of the tank, where it measures the pressure differential between the weight of the liquid in the tank and atmospheric pressure. As the liquid level varies, so does the pressure differential and the corresponding signal from the transmitter. Atmospheric pressure variation affects both sides of the transmitter equally and therefore produces no net effect.

To measure discharge of liquid from the tank, a turbine flowmeter is normally used at the tank outlet. As liquid is discharged, the flowmeter produces a pulse output proportional to the flow rate. The firmware uses both pressure and output flow readings to calculate tank volume changes.

The method of calculating volume changes takes into account the change in tank level as measured by the level transmitter, the total volume pumped as measured by the flow meter, and the total volume manually removed as entered by the operator, all measured over a 24-hour period from the specified contract hour.

The firmware is only contained in the ROCPAC memory module; it is not available in the FlashPAC module.

Specifications

<p>CONFIGURABLE PARAMETERS</p> <p>Tag: The 10-character name describing the point.</p> <p>Units: A 10-character name for the engineering units (such as barrels, gallons, etc.).</p> <p>Level Input: The type of input used by the tank manager to measure the level of the liquid in the tank. Input sources can be I/O points, flow calculations, PID parameters, tank parameters, FST registers.</p> <p>Meter Output (Flow Input): The type of input used by the tank manager to measure liquid flowing out of the tank. The input can be either a pulse input or not used.</p> <p>Scan Period: The number of 50 millisecond periods between calculating tank volume.</p>	<p>CONFIGURABLE PARAMETERS (CONT'D)</p> <p>Alarm Code: Enables or disables the rate alarm.</p> <p>Rate Alarm EU: The maximum allowable drop in level between scan periods.</p> <p>Level Deadband: The range of values where an alarm will not change state.</p> <p>Strapping Value: A factor for equating a change in tank level to a change in tank volume.</p> <p>Specific Gravity: The specific gravity of the liquid stored in the tank (water = 1.000).</p> <p>Manual Entry: The amount of liquid removed manually from the tank as measured in volumetric units.</p>
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Specifications (Cont'd)

<p>MONITORED PARAMETERS</p> <p>Total Units Hauled: The total number of volumetric units manually removed during a 24-hour period.</p> <p>Contract Hour Level: The tank level recorded at midnight.</p> <p>Current Fluid Level: The current liquid level in the tank measured in engineering units.</p>	<p>MONITORED PARAMETERS (CONT'D)</p> <p>Units Discharged: The volume in engineering units discharged through the flowmeter since the contract hour.</p> <p>Today's Volume: Volume produced since the contract hour as specified by the calculation method.</p> <p>Yesterday's Volume: Volume produced for the previous 24-hour period.</p>
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