



TECHNICAL NOTE TNDA06

Title: PAX meter pre-scaled value overflow

Product(s): PAX Counters

Problem Description: The value displayed on the PAX Counters will increment normally then suddenly go negative. All pulses received by the meter after that point cause the meter to count backward. The problem is application related and occurs only when an extremely low scale factor is used and the scale multiplier is needed to offset it. The initial problem was seen on a PAXI but the problem will occur in the PAXC or any one of the RLC counters that use this method of scaling.

Cause of the Problem: The pre-scaled count register increments until full and overflows to the most significant bit in the register. The data in the count register is interpreted as a signed integer value. Therefore, the most significant bit in the register determines the positive or negative sign of the register value. Once the overflow condition occurs in the count register and the sign bit is set, the meter interprets the value as negative and starts counting back toward zero. This overflow condition is typically seen by a combination of the scale factor and the scale multiplier being set very low. These low scale factor and scale multiplier settings are necessary to compensate for a high number of pulses for a single unit of count. In the case that initially started this investigation, the customer was counting liters and each liter counted consisted of 243,902 pulses to the counter. To get the needed resolution on the display the scale multiplier had to be used. It was set to 0.01.

Corrective Action: Nothing can be done to correct this problem. This is not a factory defect; it is the limits of the resolution of the meter. In most applications this may only occur after several years if the meter is never reset. However, in the application described above, it was occurring about every three days.