APPLICATION SOLUTION PAXTM #01

TANK LEVEL BASED ON PERCENT TIME USED APPLICATION

A fire truck manufacturer wants a bright LED display for the firefighters to easily view the level in their tank truck based on percent of time used. The manufacturer states that there is a constant flow rate for each pump thus a constant drain time for each tank. For example, it may take 20 minutes to go from 100% (full) to 0% (empty). They want the percentage to stop and hold when there is no flow and continue from stopping point on the next flow. It does not reset unless the fluid level indicator sends it a closure. The older needle style analog level indicators cannot give a display in percent of time used.

PRODUCTS USED: PAXTM0010, PAXCDS30

The PAXTM0010 Preset Timer / Counter, with the PAXCDS30 Dual Relay Card, was selected because it can be easily read up to 35 feet away, it is sunlight readable, the display intensity can be changed, and it can perform timing and counting functions in the same meter.

HOW IT WORKS

It is necessary for the manufacturer to determine the amount of time, in seconds, that it takes to empty a filled tanker at the constant rate. For example, it may take 20 minutes to go from 100% full to 0% empty. This means it takes 1200 seconds to go from 100% to 0% or 12 seconds per 1%. This value of 12 will be used as setpoint 1 for the timer in the PAXTM.

When the flow is on, a contact closure is sent to Input A and Common on the PAXTM. With the timer programmed for level operation, the PAXTM will start timing up. At setpoint 1 value, output 1 will momentarily turn on and the timer will reset and start timing up to setpoint 1 again. Each time output 1 turns on, the counter will decrement by one. The operator will only be viewing the counter while the timer is running, 0 to setpoint value (12), in the background. The viewed counter will count down from 100%, within the calculated period, to indicate the level condition.

When the flow stops or the truck is turned off the timer and counter freezes. When the power is restored and the flow starts again, the PAXTM picks up where it left off. The percentage counter only resets to 100% when there is a pulse from an external full tank switch.

Once setup, the entire programming can be locked out except for display intensity. The operator can change the brightness as needed.

DESIGN ADVANTAGES

This enables the firefighters to easily see the level of the tanker, in percent time of use. The information can help them make faster and more effective decisions during property and life threatening situations.

ADDITIONAL CAPABILITIES

The setpoint card could turn on an alarm to alert the operators when the level is getting low.

DIP SWITCH OR JUMPER SETTINGS

All are at factory settings.

PROGRAMMING (ONLY NON-FACTORY SETTINGS SHOWN)

1-INP
rANGE : SSS.SS

2-FNC
USEr-1 : drSt-E
rSt : NO (no manual reset)

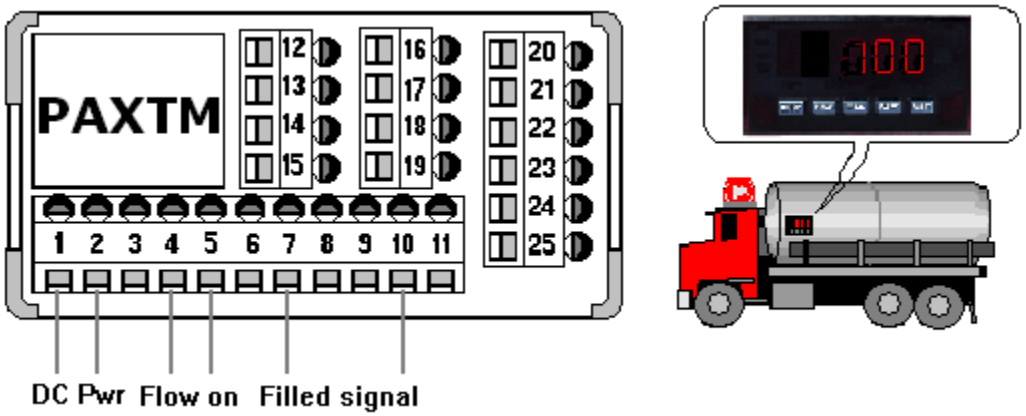
3-LOC
t-dSP : LOC (lock timer display)
C-dSP : rED (unlock counter display)
CodE : xxx (user choice)

4-CNt
C Src : 01-ON (count by 1 when SP1 is on)
C dir : dN (down count)
C Strt : 100 (start at 100)
CstOP : YES (stop counting at 0%)
VALUE : 0

6-SPt
SPSEL : SP-1
ASN-1 : t-dSP (timer)
Act-1 : tOUt
ON-1 : VALUE
SP-1 : xx.xx (time to empty by 1%)
tOUt-1 : 0.02
AutO-1 : O-ON (auto reset timer)

WIRING DIAGRAM

All wiring must be according to the installation guidelines listed in the product's specifications. For the setpoint outputs to function an external isolated voltage source (not shown below) must be connected in series.



This application note is intended to be an example. Your specific application may require changes in products, programming and/or wiring. For specific assistance, you may contact your local Red Lion products supplier or Red Lion Controls Technical Support at 717-767-6511 at 717-767-6511.