

## 1. OBJECTIVE

Details the operation of the 'TC', Timed Cycling, chemical feed pump intermittent feed, special control.

## 2. APPLICATION

The 'TC' command targets swimming pool control where there is a long time delay between feed and detection of the feed at the controlling sensor.

The 'TC' command may also be used to base feed a chemical by setting a pump ON time and a PERIOD in minutes.

### OPERATION

Switches pump power **ON** for a user defined time in every user defined **PERIOD**. Whenever the control sensor is between Setpoints, pumps and valves controlled by a sensor, will Time Cycle. User sets the **ON & PERIOD** time in minutes to reflect each sites' pump size and time delay.

#### **Oxidant Feed Cycling:**

Oxidant control set to turn ON at 300mV and OFF at 500mV.

Period = 30 minutes, ON time = 5 minutes

When the ORP is between 300mV and 500mV the oxidant pump or solenoid is ON for 5 minutes in every 30 minute period.

#### **Base Feeding:**

A biocide is fed for 2 minutes every 60 minutes.

A sensor and setpoints are required for Timed Cycling.

When base feeding, the sensor is selected and setpoints set so the sensor is always between the Turn On & Turn OFF setpoints.

Priming and Biocide feed timing may still be used to slug feed.

User set biocide timing will be added to Timed Cycling ON times.

#### **Notes:**

1. Outside of the TURN ON – TURN OFF window, the pump is always OFF.
2. Setting '**REVERSE**' control disables Timed Cycling.
3. Setting the control equation to any water meter, removes Timed Cycling
4. Attempting to set the Timed Cycling special control on a switch controlled by a water meter displays 'meter illegal with special control'
5. Removing the control equation on a switch with Timed Cycling, removes the Timed Cycling special control.

### **3. FUNCTION**

#### **3.1 COMMAND SYNTAX**

The 'TC' option is entered in the special control field of the 'SW' switch command using the syntax:

**SWx,,,TCy/z** where **x** = Relay#1..8, **y**= PERIOD time in minutes & **z**= ON time in minutes.

Example: **SW1,,,TC20/4 & Enter**

Every 20 minutes, the pump controlled by Relay No.1 will be ON for 4 minutes.  
The controller will respond with the ON time and the PERIOD time.

Keying **SW1 & Enter** will display current settings for ON time & PERIOD

#### **3.2 CURRENT STATE MONITORING**

The **ST** command will count down the current ON or OFF time in fractional minutes in the **Special Control** section of the **ST** response screen.

Example: **ST1,6 & Enter** will display the current state of relays No.1 & No.6.

#### **3.3 LIMITS & OUT-OF-LIMITS RESPONSE**

1. Timing is reset at midnight. A new PERIOD starts at midnight.
2. Maximum PERIOD in **TC** mode is 360 minutes. Attempting to set the PERIOD to more than 360 minutes, sets the PERIOD to 360 minutes.
3. Periods greater than 6 hours can be set using the existing biocide timing.
4. Setting the ON time to greater than the PERIOD, sets the ON time equal to the PERIOD time.
5. Setting the ON or PERIOD to time less than 1 minute, sets the PERIOD to 1 minute
6. Clearing alarms restarts the PERIOD and starts another OFF time. Owed time is zeroed.

#### **3.4 ALARMS & DATA LOGGING**

1. There is no change in feed limit timer or data logging when the 'TC' special command is used. The controller logs the pump ON time and times out on minutes per actuation exceeded and minutes per day exceeded.
2. The controller will log the actual pump run time and will display relay ON & OFF state correctly while time cycling the pump or solenoid between setpoints.