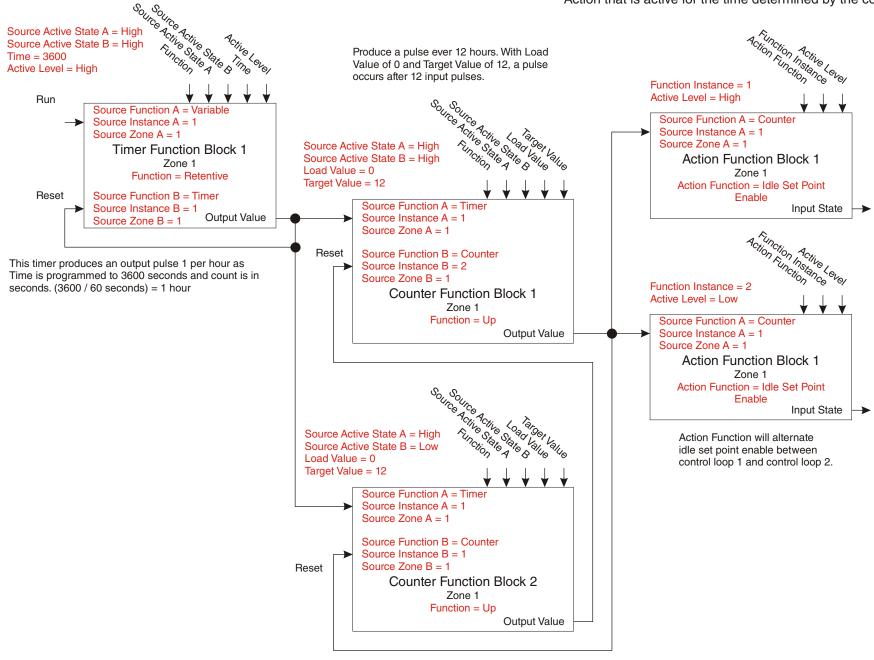# Typical timer application diagram

Example 46 - Using function blocks to switch an output or action on cyclic basis.

Real world example is where a customer wants to control an action in cyclic fashion such as 12 hours on, then 12 hours off and repeat.

Demonstrates use of Timer, Counter, and Action Function blocks.

Theory of operation - Timer 1 is free running timer when Run signal is active. Timer 1 produces pulse when Time in seconds is reached providing reset to self and pulse to Counter 1 and Counter 2. Counter 1 & 2 counts up for each timer pulse starting at Load Value and produces a pulse count when Target Value is reached. Counter 1 pulse will cause Action to occur and will reset Counter 2. Counter 2 will reset Counter 1. The result is an Action that is active for the time determined by the count process, then inactive for the time determined by the count process.

Source Active State A = High
Source Active State B = High
Time = 3600
Active Level = High

Source Active State A
Source Active State B
Function
Active Level
Time

Run

Source Function A = Variable
Source Instance A = 1
Source Zone A = 1

Timer Function Block 1
Zone 1
Function = Retentive

Reset

Source Function B = Timer
Source Instance B = 1
Source Zone B = 1

Output Value

This timer produces an output pulse 1 per hour as Time is programmed to 3600 seconds and count is in seconds. (3600 / 60 seconds) = 1 hour

Produce a pulse ever 12 hours. With Load Value of 0 and Target Value of 12, a pulse occurs after 12 input pulses.

Source Active State A = High
Source Active State B = High
Load Value = 0
Target Value = 12

Source Active State A
Source Active State B
Function
Load Value
Target Value

Source Function A = Timer
Source Instance A = 1
Source Zone A = 1

Source Function B = Counter
Source Instance B = 2
Source Zone B = 1

Reset

Counter Function Block 1
Zone 1
Function = Up

Output Value

Source Active State A = High
Source Active State B = Low
Load Value = 0
Target Value = 12

Source Active State A
Source Active State B
Function
Load Value
Target Value

Source Function A = Timer
Source Instance A = 1
Source Zone A = 1

Source Function B = Counter
Source Instance B = 1
Source Zone B = 1

Reset

Counter Function Block 2
Zone 1
Function = Up

Output Value

Counter 1 & Counter 2 produce a square wave of 12 hours on, 12 hours off.

Function Instance = 1
Active Level = High

Function Instance
Action Function
Active Level

Source Function A = Counter
Source Instance A = 1
Source Zone A = 1

Action Function Block 1
Zone 1
Action Function = Idle Set Point Enable

Input State

Function Instance = 2
Active Level = Low

Function Instance
Action Function
Active Level

Source Function A = Counter
Source Instance A = 1
Source Zone A = 1

Action Function Block 1
Zone 1
Action Function = Idle Set Point Enable

Input State

Action Function will alternate idle set point enable between control loop 1 and control loop 2.

EZ-ZONE RM Application Example - using function blocks
Print on 11" x 17" landscape paper for best viewing

Information Flow

Revision A