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'*****
' Forward Reverse Tram
' Accelerate - Cruise - Slow - Detect Stopped - Wait - Reverse -
' Accelerate - Cruise - Slow - Detect Stopped - Wait - Forward -
'
' 149 Bytes of 256          27 April 2009
'*****
'**** Directives ****
#picaxe 08m                'Compile with 08m

'**** Pins ****
symbol    FwdRev      = 0          'Fwd/Rev Relay
symbol    StnADC      = 1          'Station Stop Time
symbol    StopADC     = 1          'Stopped Test
symbol    PWMPin     = 2          'PWM to FET
symbol    LocRly     = input3     'Location Reed Switch
symbol    MaxSpdADC  = 4          'Max Speed

'**** Variables ****
symbol    Flag        = b0        'Flag Byte
symbol    Counter     = b1        'Loop Variable
symbol    StationWait = b2        'Station Wait time
symbol    MSpd        = b3        'ADC Value (0 - 255)
symbol    Temp        = b4        'Temp Variable
symbol    PWMSpeed    = W4        'PWM Duty Cycle
symbol    PWMCount    = W5        'Counter for speed reduction
symbol    MaxSpd      = W6        'Maximum Speed

'**** Constants ****
symbol    MinSpd      = 770       'Minimum Speed (from tests)

'*****
' Toggle switch to read Station Stop Time Value
' Read in ADC Station delay pot and save value to EEPROM
' Release switch when loco starts, for End of Line detection.
' If ADC Val < 6 detected, then use the default value 10Sec
'*****
Init:
  low FwdRev          'Set Direction Forward
  low PWMPin         'Stop the PWM
ReadWait:
  pause 2000         'Wait 2 S
  For Counter = 1 to 10
    Readadc StnADC, StationWait 'ADC value 0-255 = 0-51 Sec
    if StationWait >20 then CalcStop 'If valid Save and continue
    pause 100        'Wee delay
  next Counter      'Try 10 times
  StationWait = 50  'Default value 50*200mS=10sec
CalcStop:
  setint %00000000, %00001000 'Look for Low on Input 3
  Flag = 1                  'Slowdown when interrupted
  PWMSpeed = MinSpd + 100   'Set initial speed
  pwmout PWMPin,255, PWMSpeed 'Start PWM

'*****
Main:
  do                    'Waste time here
    pause 5             'Wait for Interrupt
    if Flag = 0 then SpeedUp 'Wait 5mS
                          'If Stopped i.e. Flag = 0

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