



Configuring the M-986

The following is an example of pseudocode of the commands required to control the M-986-2R2. Pseudocode for M-986 configured for external clocking, manual mode, binary operation, with end of digit operation.

```
BEGIN_MAIN_INIT:                // initialize the M-986

WAIT_LOOP1:
If( /RBLE is low)                // if the write buffer is empty
Output configuration byte one, 00110000B; // initialize, channel 1 disabled
Else
    goto WAIT_LOOP1;            // go wait for write buffer to be empty
Endif

WAIT_LOOP2:
If( /RBLE is low)                // if the write buffer is empty
    Output configuration byte two, 01100000B; // initialize with channel 2 disabled
Else
    goto WAIT_LOOP2;            // go wait for write buffer to be empty
Endif

Set config1 = 0;                // set no configuration byte 1 update required
Set config2 = 0;                // set no configuration byte 2 update required
Set ch1_state = IDLE;           // set the state for the ch1 processing loop to idle
Set ch2_state = IDLE;           // set the state for the ch2 processing loop to idle
Set ch1_tone = 0;                // clear ch 1 receive digit buffer
Set sav1_tone = 0;              // clear ch 1 saved digit
Set tone1 = 0;                  // clear flag for ch1 digit received
Set ch2_tone = 0;                // clear ch 2 receive digit buffer
Set sav2_tone = 0;              // clear ch 2 saved digit
Set tone2 = 0;                  // clear flag for ch2 digit received
Goto BEGIN_MAIN_LOOP            // initialize is complete, go to main loop

END_MAIN_INIT:
BEGIN_MAIN_LOOP:
If( /TBLF transitions low )      // if digit is received
    CPU drives /RD low to read the tone, 0S00XXXX where "S" is channel select bit and "XXXX" is the
    binary value.
    If( bit 6 = 0)                // bit 6 gives channel number
        ch1_tone = XXXX;          // save value for later processing
        tone1 = 1;                // flag channel 1 tone received
    Else                            // it is for channel 2
        ch2_tone = XXXX;          // save value for later processing
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    tone2 = 1; // flag channel 2 tone received
  Endif
Endif
If( config1 = 1) // if load of configuration byte one required
  If( /RBLE is low) // if transmit buffer is empty
    config1 = 0; // clear flag
    Output configuration byte config_one; // write configuration byte
  Endif
Endif
Else If( config2 = 1) // if load of configuration byte two required
  If( /RBLE is low) // if transmit buffer is empty
    config2 = 0; // clear flag
    Output configuration byte config_two; // write configuration byte
  Endif
Endif
Else If( ch1_trans = 1) // if transmit to channel 1 required
  If( /RBLE is low) // if transmit buffer is empty
    ch1_trans = 0; // clear flag
    Output transmit command, 1000YYYY // "YYYY" is binary value
  Endif
Endif
Else If( ch2_trans = 1) // if transmit to channel 2 required
  If( /RBLE is low) // if transmit buffer is empty
    ch2_trans = 0; // clear flag
    Output transmit command, 1100YYYY // "YYYY" is binary value
  Endif
Endif
Call PROCESS_CH1; // do processing for channel 1
Call PROCESS_CH2; // do processing for channel 2
Goto BEGIN_MAIN_LOOP; // go back to start of main loop
END_MAIN_LOOP:
BEGIN_PROCESS_CH1:
PROCESS_CH1:
  If(ch1_state = RESET) // if reset state
    If( ch1_trans = 0) // if no transmit command pending
      config1 = 1; // signal configuration byte 1 update required
      config_one = 00110100 B (binary); // save configuration to be loaded
      // which is channel disable
    Set ch1_state = IDLE; // switch to idle on next pass
  Endif;
Endif;

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Else If(ch1_state = IDLE)                                // idle, wait for assignment to central office
  If(channel 1 assigned for backward operation) // if channel assigned to central office
    config1 = 1;                                         // signal configuration byte 1 update required
    config_one = 00111100 B (binary); // save configuration to be loaded
                                                    // channel enabled in backward mode
    Set ch1_state = BACKWARD;                            // switch to backward state on next pass
  Endif;
  If(channel 1 assigned for forward operation)           // if channel assigned to central office
    config1 = 1;                                         // signal configuration byte 1 update required
    config_one = 00111101 B (binary);                   // save configuration to be loaded
    tone1 = 1;                                           // set flag to start forward transmit
    ch1_tone = 0;                                        // also insures start of forward digit
    Set ch1_state = FORWARD;                            // switch to forward state on next pass
  Endif;
Endif;
Else If(ch1_state = BACKWARD)                           // backward, wait for forward digit & send reply
  If( tone1 = 1)                                        // if channel 1 tone seen
    tone1 = 0;                                         // clear the flag
    If(ch1_tone = 0)                                    // if value received shows end of digit
      ch1_trans = 1;                                   // flag to send command to transmitter
      trans1 = 0000;                                   // zero tone value to turn tone off
      If( sav1_tone = last digit)                      // if last digit has been received
        Set ch1_state = Reset; // go to reset on next pass
      Endif;
    Else                                              // a non-zero digit value has been received
      sav1_tone = ch1_tone;                            // save for later checking of last digit
      ch1_trans = 1;                                   // flag to send command to transmitter
      trans1 = YYYY;                                   // YYYY is the acknowledge tone to transmit
    Endif;
  Endif;
Endif;
Else If(ch1_state = FORWARD)                           // forward, send forward digit & wait for reply
  If( tone1 = 1)                                        // if channel 1 backward tone seen
    tone1 = 0;                                         // clear the flag
    If(ch1_tone = 0)                                    // if value received shows end of digit
      If(last digit sent)                              // if this is the last digit in the call setup
        Set ch1_state = RESET;                        // back to reset on next pass
      Else
        ch1_trans = 1;                                 // flag to send command to transmitter
        trans1 = YYYY;                                 // YYYY is the forward tone to transmit
      Endif;
    Endif;
  Endif;
Endif;

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    Endif;
  Else // valid acknowledge has been received
    ch1_trans = 1; // flag to send command to transmitter
    trans1 = 0000; // value to turn transmitter off
  Endif;
Endif;
Endif;
END_PROCESS_CH1:
BEGIN_PROCESS_CH2:
PROCESS_CH2:
  If(ch2_state = RESET) // if reset state
    If( ch2_trans = 0) // if no transmit command pending
      config2 = 1; // signal configuration byte 1 update required
      config_two = 01100100 B (binary); // save configuration to be loaded
      // which is channel disable
      Set ch2_state = IDLE; // switch to idle no next pass
    Endif;
  Endif;
  Else If(ch2_state = IDLE) // idle, wait for assignment to central office
    If(channel 2 assigned for backward operation) // if channel assigned to central office
      config2 = 1; // signal configuration byte 2 update required
      config_two = 01101100 B (binary); // save configuration to be loaded
      // channel enabled in backward mode
      Set ch2_state = BACKWARD; // switch to backward state on next pass
    Endif;
    If(channel 2 assigned for forward operation) // if channel assigned to central office
      config2 = 1; // signal configuration byte 2 update required
      config_two = 01101101 B (binary); // save configuration to be loaded
      tone2 = 1; // set flag to start forward transmit
      ch2_tone = 0; // also insures start of forward digit
      Set ch2_state = FORWARD; // switch to forward state on next pass
    Endif;
  Endif;
  Else If(ch2_state = BACKWARD) // backward, wait for forward digit & send reply
    If( tone2 = 1) // if channel 2 tone seen
      tone2 = 0; // clear the flag
      If(ch2_tone = 0) // if value received shows end of digit
        ch2_trans = 1; // flag to send command to transmitter
        trans2 = 0000; // zero tone value to turn tone off
      Endif;
    Endif;
  Endif;

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If( sav2_tone = last digit)           // if last digit has been received
    Set ch2_state = RESET;           // go to reset on next pass
Endif;
Else                                   // a non-zero digit value has been received
    sav2_tone = ch2_tone;           // save for later checking of last digit
    ch2_trans = 1;                 // flag to send command to transmitter
    trans2 = YYYY;                // YYYY is the acknowledge tone to transmit
    Endif;
Endif;
Else If(ch2_state = FORWARD)         // forward, send forward digit & wait for reply
    If( tone2 = 1)                 // if channel 1 backward tone seen
        tone2 = 0;                // clear the flag
        If(ch2_tone = 0)           // if value received shows end of digit
            If(last digit sent)    // if this is the last digit in the call setup
                Set ch2_state = RESET; // back to RESET on next pass
            Else
                ch2_trans = 1;     // flag to send command to transmitter
                trans2 = YYYY;     // YYYY is the forward tone to transmit
            Endif;
        Else
            ch2_trans = 1;         // flag to send command to transmitter
            trans2 = 0000;         // zero tone value for off
        Endif;
    Endif;
Endif;
END_PROCESS_CH2:

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