Remote Control Monitors with Position Retention Setup

Position Retention – The implementation of hardware and firmware routines to ensure monitor horizontal & vertical axis positions are known and maintained at all times.

There are two separate methods of setting position retention; the CANbus Messaging Method, or the Operator Station Method. The quickest and easiest method is to use CANbus messaging. Position retention requires Y5105-B base board and Y5100-B motor boards.

CANbus Messaging Method

NOTICE   THERE IS A ONE MINUTE TIME LIMIT AFTER POWER UP TO ENTER HARD STOP MODE.

STEP 1 - USE CANbus COMMANDS TO ENTER HARD STOP MODE

CANbus Commands

1. Set Data Byte #5/Bit 6 and send message
2. Wait at least 100 mSec
3. Clear Data Byte #5/Bit 6 and send message

STEP 2 - MANUALLY MOVE MONITOR TO 4 HARD STOPS

Using monitor control box membrane switch, move Horizontal & Vertical axes to physical hard stop until motor current limits.

1. Wait for PARK LED to blink three times after hard stop is hit
2. Proceed to next axis/hard stop. Order does not matter
3. Mode exits automatically when all four hard stops are hit

Horizontal Axis Mark Position

Vertical Axis Mark Position

STEP 3 - ALIGN MARK POSITIONS

Move horizontal & vertical axis by using monitor membrane buttons, to align mark positions.

STEP 4 - USE CANbus COMMANDS TO MARK POSITION REFERENCES.

CANbus Commands

1. Set Data Byte #5/Bit 7 and send message
2. Wait at least 100 mSec
3. Clear Data Byte #5/Bit 7 and send message
   - Horizontal & Vertical axis positions are reset to (H) 50% and (V) 50%
   - Mode exits automatically after positions' reset attempt

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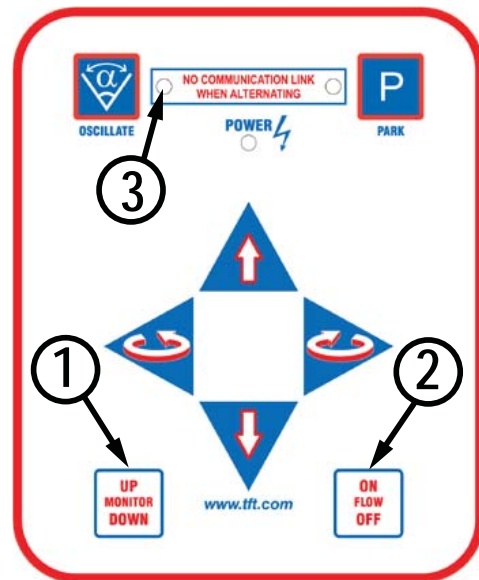# Operator Station Method

THERE IS A ONE MINUTE TIME LIMIT AFTER POWER UP TO ENTER HARD STOP MODE.

STEP 1 - ENTER HARD STOP MODE

1. Press and hold button #1.
2. While holding button #1, press button #2 two times.
3. Release both buttons. Oscillate LED #3 will blink once every two seconds to indicate active mode.

STEP 2 - MOVE MONITOR TO ALL 4 HARD STOPS.

1. Using monitor control box membrane switch, move Horizontal & Vertical axes to physical hard stop until motor current limits.
2. Wait for PARK led to blink three times after hard stop is hit.
3. Proceed to next axis/hard stop. Order does not matter.
4. Mode exits automatically when all four hard stops are hit.

STEP 3 - ALIGN MARK POSITIONS
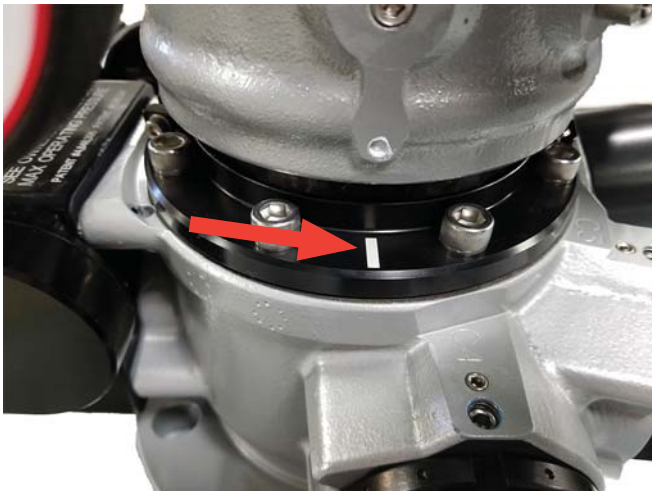
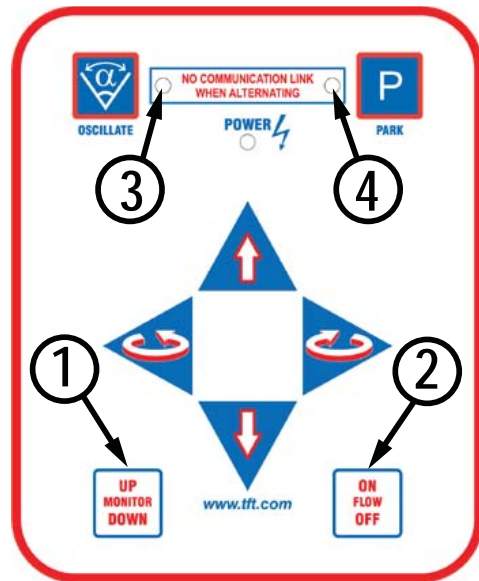**Horizontal Axis Mark Position**

Vertical Axis Mark Position

STEP 4 - SAVE POSITION REFERENCES

Only available on monitor operating station.

1. Press and hold button #1.
2. While holding button #1 press button #2 four times. Then release all buttons.
3. OSC LED will blink five times to indicate success.
4. Park LED will blink five times to indicate failure.

General Setup Information

Position Retention Status

Status Byte #7/Bit 0 and Bit 1 will indicate if Horizontal & Vertical position feedback is valid (1 = valid, 0 = not valid)

Bits are set after Reference Position procedure is complete

Bits will be cleared by one of the two scenarios

    Li-Ion battery completely discharged

    Override knob moved more than ten times with power turned off (final value TBD)

In the event that either the Horizontal Axis Position or Vertical Axis Position becomes invalid

    Monitor movement will only be allowed from monitor membrane buttons

    Hard Stop Procedure may need to be performed

    Reference Position Procedure will need to be performed

Programmable Stops

Set Positions:

Reference position must be set first

Move horizontal or vertical axes using CANbus commands or monitor membrane buttons to desired stop location

    Send message to set programmable stop

        For LEFT Stop: Set Data Byte #5/Bit 0

        For RIGHT Stop: Set Data Byte #5/Bit 1

        For UP Stop: Set Data Byte #5/Bit 2

        For DOWN Stop: Set Data Byte #5/Bit 3

    Wait at least 100mSec

    Clear bit and send message

Once programmable stop is set, corresponding status bit will be set to indicate axis at programmable stop

Clear Positions:

Send message to clear programmable stops, both stops are cleared

    For Horizontal Axis: Set Data Byte #5/Bit 4

    For Vertical Axis: Set Data Byte #5/Bit 5

Wait at least 100mSec

Clear bit and send message

Normal Operation

After RC nozzle is installed, be sure to move actuator to full STREAM and full FOG positions to set hard stops.

PARK Method:

Park Programming is not required or allowed

Park button press or CANbus/RS485 message received to start movement

Communication board will move axes to (H) 50% (V) 25% (N) 25% positions

    Park Positions will be hardcoded for now

    Future changes planned for programming using PARK button

AT PARK flag will be set until monitor is moved

    Horizontal & Vertical position percentages will not be altered if motor current limits due to hitting an obstruction

    Hard Stop Mode can be performed at any time (within one minute of power up if using monitor membrane buttons)

    Reference Position Mode can be performed at any time (within one minute of power up if using monitor membrane buttons).

Power LED Diagnostic Blink

If at any point the horizontal or vertical axis position becomes invalid, the Power LED will blink a diagnostic code.

    Eight blinks + one blink = Horizontal Position not Valid

    Eight blinks + two blinks = Vertical Position not Valid

Diagnostic blink will not show until one minute power up timer expires.