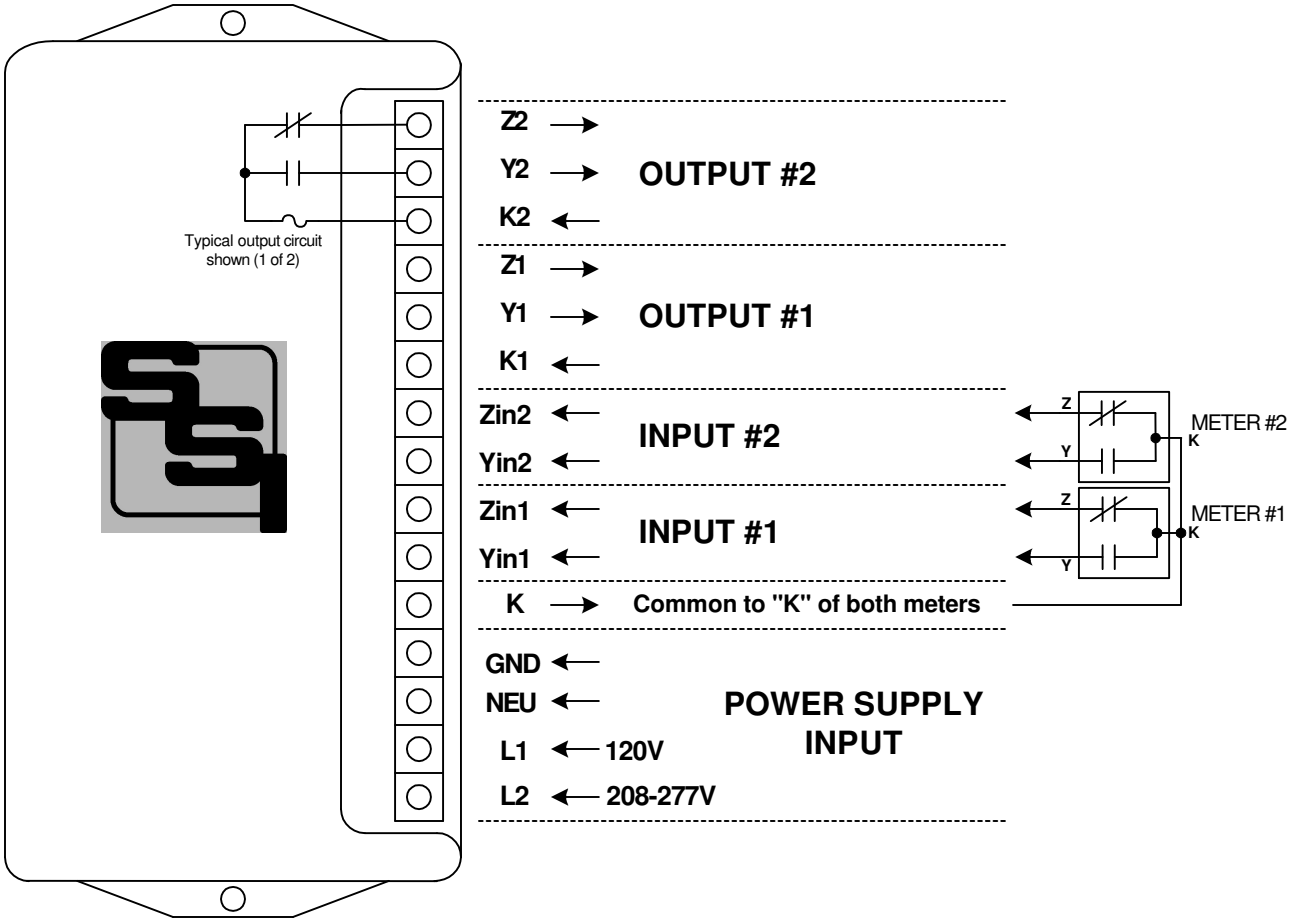
MPT-2C

Standard Solid State

INSTRUCTION SHEET
METER PULSE TOTALIZER



POWER INPUT - To power the MPT-2C with a 120VAC power supply, connect the "hot" 120VAC lead to the **L1** terminal. Connect the neutral to the **NEU** terminal. Connect the GND terminal to the electrical system ground. For 208, 240 or 277 VAC operation, connect the "hot" lead to the **L2** power supply input terminal.

METER CONNECTIONS - The MPT-2C's "K" terminal provides the common return for both meters' "K" terminals. The MPT-2C uses 2-Wire or 3-Wire inputs. Connect each meter's "Y" or "Y" and "Z" terminals to the "Y" and "Z" terminals of the desired input channel of the MPT-2C. Each "Y" and "Z" input provide its own wetting (sense) voltage to the meter's "Y" and "Z" terminals. The meters' pulse outputs can be dry-contact, solid state or electro-mechanical.

OUTPUTS - Two 3-Wire isolated outputs are provided on the MPT-2C. MOV transient suppression for the contacts of the solid-state relays is provided internally. The output loads should be limited to 1/10 Amp by F1 & F2. Two 1/10 Amp fuses are supplied standard with the unit unless otherwise specified. The fuse is a 3AG (AGC) fast blow type. Maximum output power dissipation is 800mW.

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OUTPUT CONFIGURATION - Each output channel of the MPT-2C may be configured as one Form C (3-Wire) output or two independent Form A (2-Wire) outputs. The output configuration is configured in the OUT MODE display. If the Form C output mode is selected, Outputs 1 and 2 operate in tandem, that is, both operate in Form C mode and use a "toggle" pulse operation. In this mode, K1-Y1 and K2-Y2, for example, are both closed at the same time; Correspondingly, K1-Z1 and K2-Z2 are open. Upon the next pulse output the positions reverse with K1-Z1 and K2-Z2 closed and K1-Y1 and K2-Y2 open.

USING THE OUTPUT IN 3-WIRE MODE - When the MPT-2C is operated in the Form C (3-Wire) mode, each output channel "toggles" to the opposite state --back and forth like a single-pole, double throw switch -- upon each pulse being outputted. For one pulse there is continuity between K and Y (a closure) while there is no continuity between K and Z (an open). Upon the next pulse being received from the meter they reverse positions, K-Z closes and K-Y opens. In Form C mode, Y and Z are always opposite of each other. When one is closed and the other is open. There is logic in the MPT-2C's software that disallows two FORM C pulses of the same type in a row. They MUST alternate KY, KZ, KY, KZ, KY etc.

Each KYZ output is an isolated dry contact, meaning there is no voltage applied to it internally. The wetting voltage for each KYZ output of the MPT-2C output must be supplied by the receiving ("downstream") device or by an auxiliary power supply. The outputs are solid state and are non-polarized. They may be used for AC or DC voltages. The output is limited to 100mA@ 250VAC, 800mW maximum. Fuses are sized at 1/10th amp (100mA). Do not exceed this rating as the solid state MOS-FET switching device may be destroyed. Internal current limiting of the solid state devices is also employed to protect them from over current or high dissipation situations. In the Form C mode, it is perfectly acceptable to use only two wires on the MPT-2C's output to the downstream device. Remember to double the Form C pulse constant if your receiving device does not automatically adjust the pulse value. Most energy management systems actually prefer a "toggle" pulse because it is generally a 50/50 duty cycle.

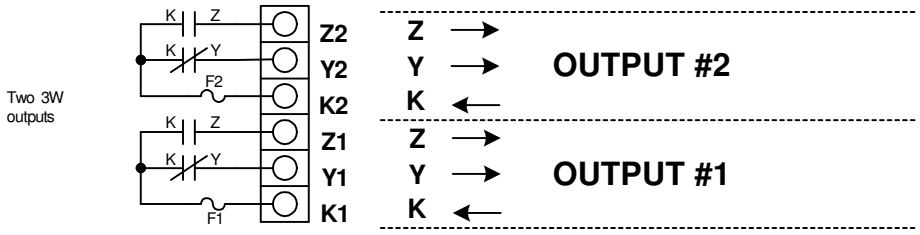

Figure 2

USING THE OUTPUT IN 2-WIRE MODE -

The MPT-2C's two KYZ outputs contain four solid state Form A dry-contacts and may be used independently as four Form A outputs in two KY and KZ pairs. In this case instead of Y and Z of each output being opposite of each other, they are independently used. (See Figure 3). These outputs operate in the momentary mode, meaning they close for a fixed period of time then reset to an open state. Even though the devices are operated independently in Form A mode, each set (Y1A-Z1A and Y2A-Z2B) must be operated at the same voltage, from the same voltage source since they have a shared common.

When the Output Mode display is set to "A", the two output channels each have a unique Output Pulse Value that can be individually set so different pulse output values are possible. To use the two output mode a clear understanding is necessary by the installer or user. There is a difference between the Hardware Outputs and the Software Channels. Output #1 (Hardware) consists of a 3-Wire pulse output consisting of K1, Y1 and Z1 output terminals. (Continued on next page)

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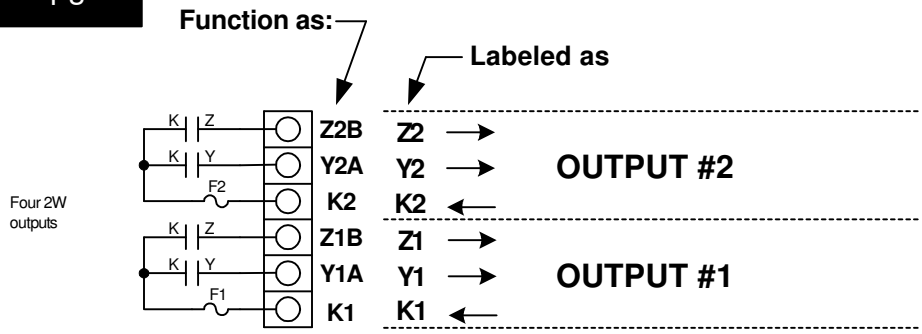

Figure 3

(Continued from Page 2)

Output #2 (Hardware) consists of a second 3-Wire pulse output consisting of K2, Y2 and Z2 output terminals (See Figure 3 on Page 3.) In the Form A (2-Wire) output mode, the MPT-2C has two software output "Channels" that operate the hardware outputs individually. Channel 1, denoted by the suffix "A" operates the two outputs designated as Y1A and Y2A. Channel B is denoted by the suffix "B" and operates the two outputs designated as Z1B and Z2B. Each software output operates its two hardware outputs in tandem, meaning that both hardware outputs close and open togeher. For example, whenever a pulse is outputted on Software output Channel #1, both Y1A and Y2A close (connect to) to their respective K terminals. In other words, upon a closure of this channel, K1 and Y1A have continuity; K2 and Y2A have continuity. Likewise, when a pulse is outputted on Software output Channel #2, K1 and Z1B have continuity; K2 and Z2B will have continuity.
Note: YxB and ZxA do not exist in this numbering scheme.The second digit (numerical) denotes the Hardware output, either 1 or 2. The third digit (alpha) denotes the software channel, either A or B.

In the Form A output mode, there are several other differences:

Output Pulse Width Setting: The outputs' dwell or closure time is controlled by the AOUT1_TMS and AOUT2_TMS settings. See the MPT-2C programming manual for more information on this setting. These settings range from 100mS to 1000mS in 100mS increments. It is important to know the minimum pulse width specification of the receiving equipment. The output pulse width time must be set so that pulses will be reliably "seen" by the pulse receiving equipment. If pulses are too short, they will either not be counted at all or may be intermittently received. Most equipment will see pulses down to 50 mS, so 100 mS is a good default value. This value should be kept as short as possible (so as not to skew demand information in the event that pulses are outputted rapidly) but long enough to be reliable.

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MPT-2C Electrical Wiring

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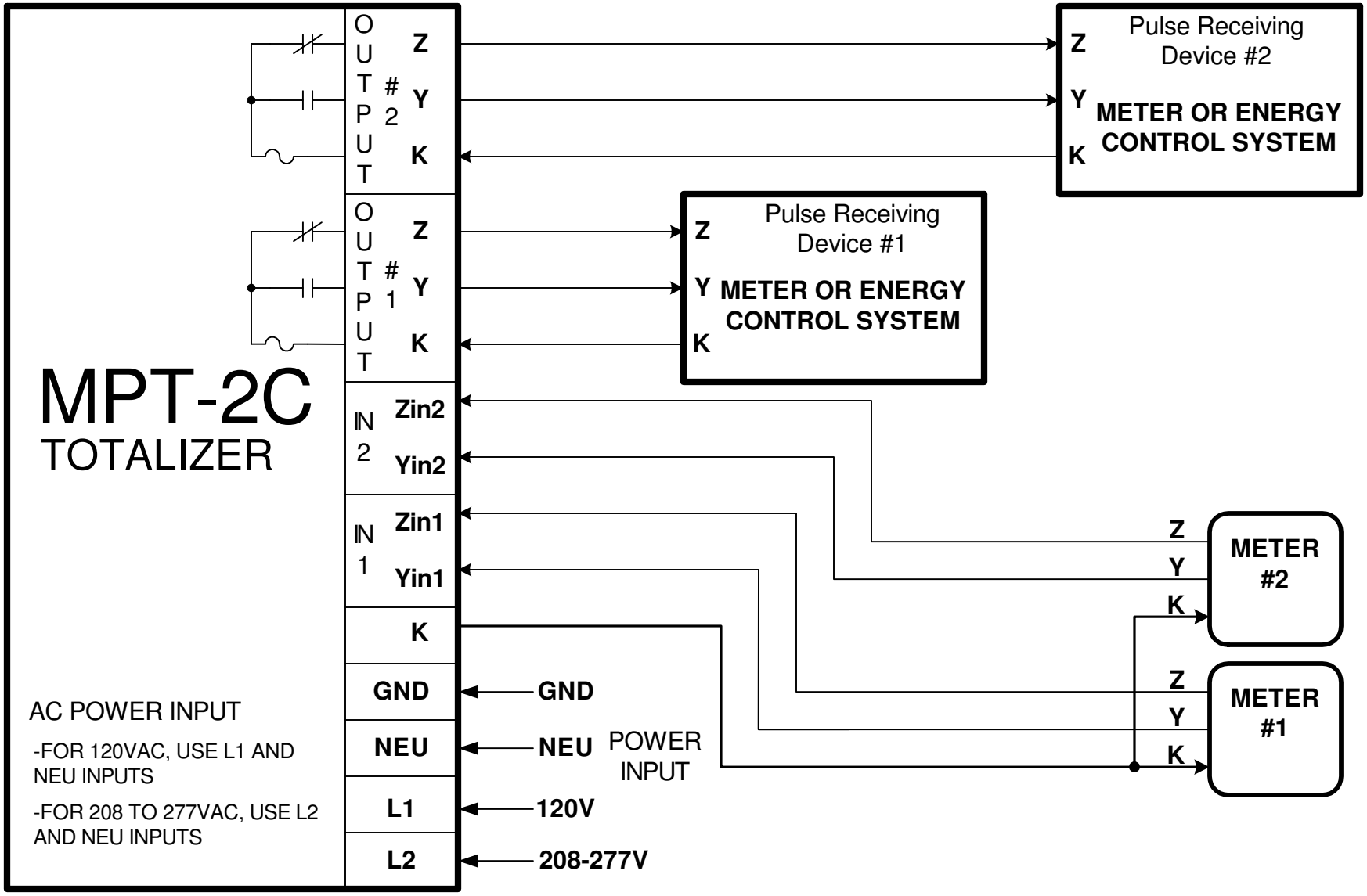

NOTE: A Sense Voltage of +13VDC is applied to the meters via the "Y" or "Z" leads from the MPT-2. The "K" lead is the common return.

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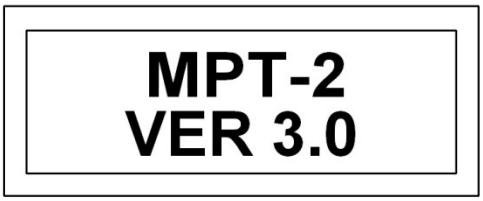
PROGRAMMING THE MPT-2C TOTALIZER

Version 3.0 Software

The MPT-2C Metering Pulse Totalizer is programmed by using the three small pushbutton switches (keys) located just above the LCD display. The left key with the yellow cap is the "Back" or Previous screen key. The middle key with the orange cap is the "Forward" or Next key and moves the cursor (the dash under a number on the LCD display) forward from display item to item. The right pushbutton switch (key) with the black cap is used to change the value in the column above the cursor. If the value above the cursor were 5, pressing the black key three times would change the display above the cursor to 8. Continued pressing of the black key would advance the number to the value 9 and then 0, then 1…2…3…4…5…6…7…8…9…0…and so on. When the desired value is reached, release the black key and press the orange key to move to the next display item. If the value at the present display position has changed, the new value will be saved into memory as soon as you move the cursor to the next position. If no change is desired, just press the orange key again. Pressing the yellow key will move you to the previous screen. All functions of the totalizer are accessible by repeatedly pressing the yellow or orange key. Upon reaching the last screen in the loop, and pressing the orange key again, the display will loop back and start again at the first display. Consequently, all the settings can be changed and saved with a combination of pushes of the yellow, orange and black keys, as the instructions that follow will illustrate.

START-UP DISPLAY: DISPLAYS SOFTWARE VERSION

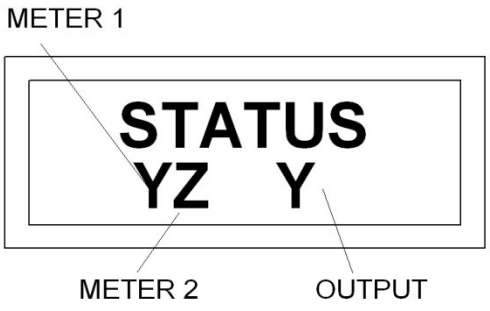
When the MPT-2C is powered up, the start-up screen will be displayed. This screen displays the Model Number on the top line and software version number of the totalizer on the bottom line. **THE DISPLAY WILL AUTOMATICALLY GO TO THE FIRST DISPLAY SCREEN AFTER 5 SECONDS.**



START-UP DISPLAY

FIRST DISPLAY: STATUS OF INPUTS/OUTPUT

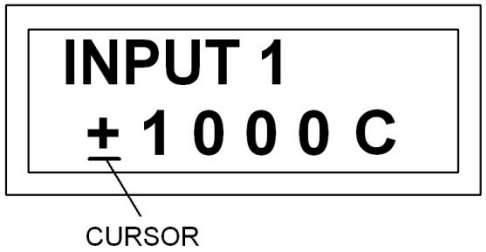
Upon the receipt of a pulse – that is, continuity between the Z2 terminal and the K common terminal for example here, Meter #2's status shown here on the display will change to a "Z". Each input shows the last transmitted status to the MPT-2. If either input is not connected, it will display a "-" in its position. The "Y" displayed as an output status shows that the contacts between "K"



INPUT/OUTPUT STATUS DISPLAY

and “Y” on the output are closed or “made up”. The “K” to “Z” output contacts are open. **PRESS THE ORANGE KEY TO GO TO NEXT DISPLAY.**

SECOND DISPLAY: METER #1 KWH/PULSE VALUE

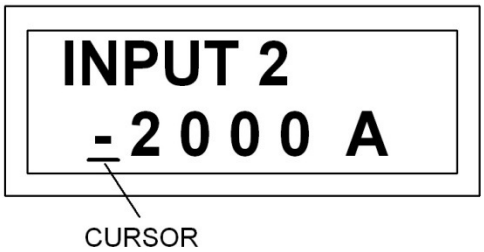


METER #1 KWH/P VALUE DISPLAY

The second display is the KWH/PULSE value programmed in for METER #1. There are six cursor positions on this display. The first position is to set Input #1’s sign, either positive or negative. This will determine whether a pulse is added or subtracted from the value in the PV register. The pulse value is the next four digits. The value of each digit may be changed by first moving the cursor to the digit desired using the **ORANGE KEY.** To change the digit’s value, press the **BLACK KEY.** Press this key any number of times until the desired number is displayed. Press the **ORANGE KEY** once to advance the cursor to the next position to the right. Again enter the correct number with the **BLACK KEY**. Press the **ORANGE KEY** once. Enter the third number with the **BLACK KEY**. Press the **ORANGE KEY** once and enter the fourth number with the **BLACK KEY**. The last digit (position) of the display determines whether the input is a Form C (3-wire) input or Form A (2-wire) input. If Form A is selected, the dry contact output from the meter on the input must be wired to the Input’s K and Y terminals. Press the **BLACK KEY** to toggle back and forth between A and C. Once the desired input mode is selected, press the **ORANGE KEY**, you will advance to the third display.

THIRD DISPLAY: METER #2 KWH/PULSE VALUE

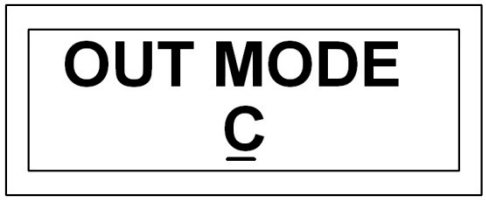
The third display works to input KWH/PULSE values for METER #2 in the same manner as display #2 worked for METER #1.



METER #2 KWH/P VALUE DISPLAY

FOURTH DISPLAY: TOTALIZER OUTPUT MODE

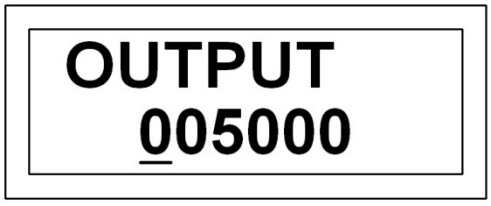
The fourth display shows the output mode selection screen. You can select either 1 Form C (3-Wire) output or 2 Form A (2-Wire) outputs. Form C is a “toggle” output since



OUTPUT MODE DISPLAY

each outputted pulse toggles back and forth from K-Y to K-Z continuity or K-Z to K-Y continuity, like a single pole, double throw (SPDT) switch. Form A is a momentary type of switch closure and is closed for either the same time as the input pulse duration or a fixed amount of time as specified in the display called "AOUT1_mS". Press the **BLACK** key to toggle back and forth between the Form A or Form C selection. Press the **ORANGE** key to move to the next display.

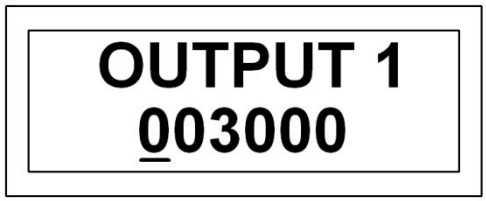
FIFTH DISPLAY: TOTALIZER OUTPUT KWH/PULSE VALUE



OUTPUT KWH/P VALUE DISPLAY

If you selected FORM C in the last display, you will arrive here. The fifth display, unlike the input meter value displays, has 6 digits that may be set. The value (or weight) of the output is set in the same manner as the meter input displays. When the Pulse Value Total register equals or exceeds this value, the output pulse value is subtracted from the PV Total, and causes an output pulse (a change of state of the output relay) to occur. The output value entered in this display must be greater than or equal to 1 (one). If the user inadvertently puts zero (0) in this field such that all 6 digits are zeros, a one (1) will be automatically placed on the LCD in the furthest right position. The desired output value may then be entered.

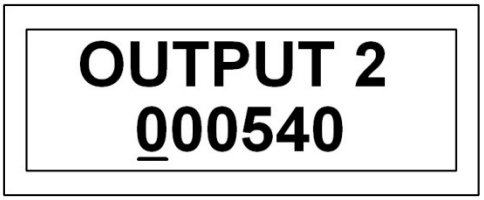
SIXTH DISPLAY: TOTALIZER OUTPUT 1 KWH/PULSE VALUE



OUTPUT KWH/P VALUE DISPLAY

If you selected Form A in the fourth display, you will arrive here. The sixth display, unlike the input meter value displays, has 6 digits that may be set. The value (or weight) of the output is set in the same manner as the meter input displays. When the Pulse Value Total register equals or exceeds this value, the output pulse value is subtracted from the PV Total, and causes an output pulse to occur. The outputted pulse on Output #1 has a closure time specified by the output time display AOUT1_mS. This value must be greater than or equal to 1 (one). If the user inadvertently puts zero (0) in this field such that all six digits are zeros, a one (1) will be automatically placed on the LCD in the furthest right position. The desired output value may then be entered.

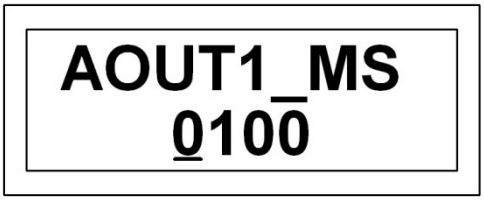
SEVENTH DISPLAY: TOTALIZER OUTPUT 2 KWH/PULSE VALUE



OUTPUT KWH/P VALUE DISPLAY

The seventh display is the output value for Output #2. Like the sixth display, 6 digits that may be set. The value (or weight) of the output is set in the same manner as the meter input displays. When the Pulse Value Total register equals or exceeds this value, the output pulse value is subtracted from the PV Total, and causes an output pulse to occur. The outputted pulse on Output #2 has a closure time specified by the output time display AOUT2_mS. This value must be greater than or equal to 1 (one). If the user inadvertently puts zero (0) in this field such that all six digits are zeros, a one (1) will be automatically placed on the LCD in the furthest right position. The desired output value may then be entered.

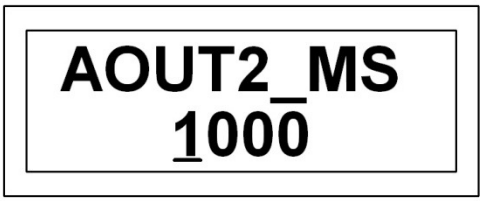
EIGHTH DISPLAY: PULSE OUTPUT #1 TIME



PULSE OUTPUT #1TIME DISPLAY

The eighth display allows you to set the closure time of a FORM A output pulse on Output #1. The time may be set in 100-millisecond increments. The minimum time is 100 milliseconds. The maximum time is 1000 milliseconds (1 second). Thus only digits 1 and 2 of this display are programmable. The entry method is the same as that used to set the meter input values.

NINTH DISPLAY: PULSE OUTPUT #2 TIME

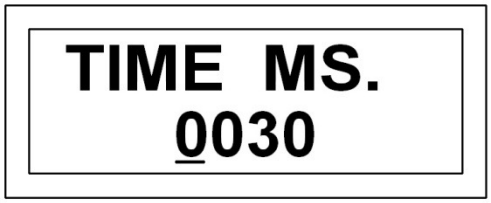


PULSE OUTPUT #2TIME DISPLAY

The ninth display allows you to set the closure time of a FORM A output pulse on Output #2. The time may be set in 100-millisecond increments. The minimum time is 100 milliseconds. The maximum time is 1000 milliseconds (1 second). Thus only digits 1 and 2 of this display are programmable. The entry method is the same as that used to set the meter input values.

WARNING: Care should be taken not to make FORM A output pulses any longer than necessary since it may cause problems in periods of high demand if pulse values are too small.

TENTH DISPLAY: TIME BETWEEN OUTPUT PULSES



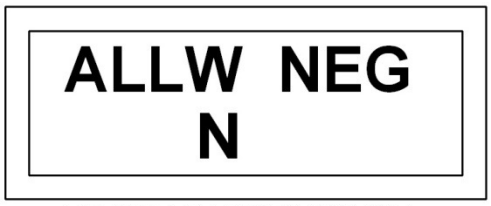
TIME BETWEEN PULSES DISPLAY

The tenth display allows you to set a minimum time between output pulses to accommodate differences in required recording equipment and minimum relay make-up times. The time is set in 10-millisecond increments. The minimum time is 20 milliseconds. The maximum time is 1000 milliseconds (1 second). The entry method is the same as that used to set the meter input values. This value applies to both FORM C and FORM A output pulse modes. Care should be taken not to make this setting any longer than required. Note: If pulses are going into an interval data recorder, demand may be skewed by pulses delayed in being output because of this setting. To eliminate this problem pulse values may be made larger, thus reducing the number of pulses and in effect slowing the pulses down.

ELEVENTH DISPLAY: PULSE VALUE REGISTER CONFIGURATION

ALLOW NEGATIVE ACCUMULATOR DISPLAY

The eleventh display allows you to configure the PULSE VALUE TOTAL register to allow both a positive or negative balance, OR a positive balance only. The default setting is "Y" (for "yes") - to allow the register balance to go negative. Press the **ORANGE** key to move to the next setting.



DO NOT ALLOW NEGATIVE ACCUMULATOR DISPLAY

If you desire to set the MPT-2 so that the pulse value register will be positive (or zero) ONLY, press the **BLACK** key to change the "Y" to an "N". If you select the "N" (or "no") value to this setting, the PV register will count down to zero but will not go negative. It will remain at zero until such time that enough positive pulses occur to make the pulse value register increment upwards. Press the **ORANGE** key to move to the next setting. If the MPT-2 has been running and has accumulated a negative value in the PV TOTAL register, AND the user changes the ALLW NEG value from "Y" to "N", the PV TOTAL value is reset to zero(0).

TWELFTH DISPLAY: PULSE VALUE DISPLAY
FORM C OUTPUT MODE

PULSE VALUE DISPLAY

The twelfth display shows the accumulated numerical value contained within the processor's memory at any given time. For example, assume that you have set METER #1's input pulse value to 2000, all other METER inputs to 0000, an OUTPUT pulse value of 005000 and a TIME BETWEEN PULSES value of 500 mS. Upon entering three (3) pulses into METER #1's input, several things happen. First, the pulse accumulator registers a value of 6000 (3 pulses X 2000/pulse). Since the accumulator is greater than the Output Pulse Value setting (5000), an output pulse occurs. Next, 5000 (the output value) is subtracted, leaving a display of 1000 in the PV TOTAL display. Finally, if the total in the PV had still exceeded 5000, then after 500mS, another output pulse would have occurred. The remainder will usually be smaller than the output pulse value and is only awaiting sufficient pulses at the meter inputs before a new output pulse is generated and a new smaller remainder calculated. This setting is stored in non-volatile memory upon loss of power.

THIRTEENTH DISPLAY: PULSE VALUE DISPLAY
FORM A OUTPUT MODE, OUTPUT #1

PULSE VALUE DISPLAY

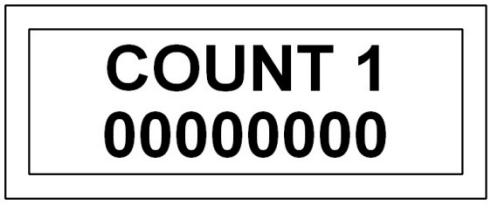
The thirteenth display shows Output #1's accumulated numerical pulse value contained within the processor's memory at any given time. For example, assume that you have set METER #1's input pulse value to 2000, all other METER inputs to 0000, an OUTPUT pulse value of 005000 and a TIME BETWEEN PULSES value of 500 mS. Upon entering three (3) pulses into METER #1's input, several things happen. First, the pulse accumulator registers a value of 6000 (3 pulses X 2000/pulse). Since the accumulator is greater than the Output Pulse Value setting (5000), an output pulse occurs. Next, 5000 (the output value) is subtracted, leaving a display of 1000 in the PV1TOTAL display. Finally, if the total in the PV had still exceeded 5000, then after 500mS, another output pulse would have occurred. The remainder will usually be smaller than the output pulse value and is only awaiting sufficient pulses at the meter inputs before a new output pulse is generated and a new smaller remainder calculated. This setting is stored in non-volatile memory upon loss of power.

FOURTEENTH DISPLAY: PULSE VALUE DISPLAY
FORM A OUTPUT MODE, OUTPUT #2

PULSE VALUE DISPLAY

The fourteenth display shows Output #2's accumulated numerical pulse value contained within the processor's memory at any given time. For example, assume that you have set METER #2's input pulse value to 4000, all other METER inputs to 0000, an OUTPUT pulse value of 005000 and a TIME BETWEEN PULSES value of 500 mS. Upon entering two (2) pulses into METER #1's input, several things happen. First, the pulse accumulator registers a value of 8000 (2 pulses X 4000/pulse). Since the accumulator is greater than the Output Pulse Value setting (5000), an output pulse occurs. Next, 5000 (the output value) is subtracted, leaving a display of 3000 in the PV2TOTAL display. Finally, if the total in the PV had still exceeded 5000, then after 500mS, another output pulse would have occurred. The remainder will usually be smaller than the output pulse value and is only awaiting sufficient pulses at the meter inputs before a new output pulse is generated and a new smaller remainder calculated. This setting is stored in non-volatile memory upon loss of power.

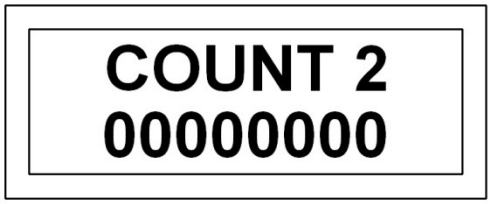
FIFTEENTH DISPLAY: INPUT PULSE COUNT – METER #1



METER #1 PULSE COUNT DISPLAY

The fifteenth display allows you to see the total number of pulses that have been counted by meter input #1 since the last reset. This number is simply a counter that increments by one (1) count each time a pulse is recorded by meter input #1. This value is non-weighted and represents the number of counts only. This count is saved in non-volatile memory upon loss of power. Press the **ORANGE KEY** to advance to the next display.

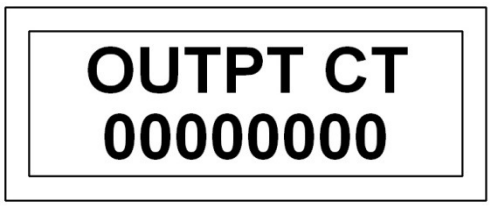
SIXTEENTH DISPLAY: INPUT PULSE COUNT – METER #2



METER #2 PULSE COUNT DISPLAY

The sixteenth display allows you to see the total number of pulses that have been counted by meter input #2 since the last reset. This number is simply a counter that increments by one (1) count each time a pulse is recorded by meter input #2. This value is non-weighted and represents the number of counts only. This count is saved in non-volatile memory upon loss of power. Press the **ORANGE KEY** to advance to the next display.

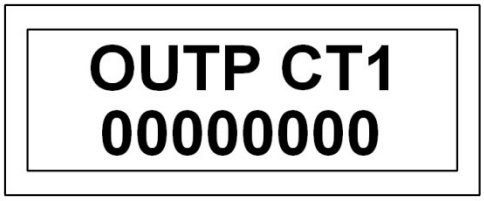
SEVENTEENTH DISPLAY: OUTPUT PULSE COUNT



OUTPUT PULSE COUNT DISPLAY

If you selected the C output mode in the fourth display, the seventeenth display allows you to see the total number of output pulses that have been outputted since the last reset. This number is a counter that increments by one (1) count each time a pulse is sent to the output relay. This value is non-weighted and represents the raw number of output counts only. This count is saved in non-volatile memory upon loss of power. Press the **ORANGE KEY** to advance to the next display.

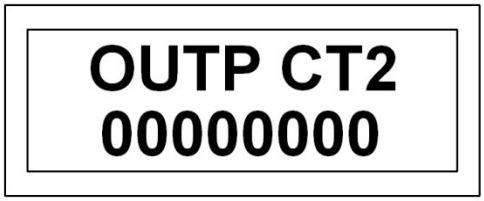
EIGHTEENTH DISPLAY: OUTPUT PULSE COUNT-OUTPUT #1



OUTPUT 1 PULSE COUNT DISPLAY

If you selected the A output mode in the fourth display, the eighteenth display allows you to see the total number of output pulses on Output #1 that have been outputted since the last reset. This number represents a pulse counter that increments by one (1) count each time a pulse is sent to the output relay #1. This value is non-weighted and represents the raw number of output #1's counts only. This count is saved in non-volatile memory upon loss of power. Press the **ORANGE KEY** to advance to the next display.

NINETEENTH DISPLAY: OUTPUT PULSE COUNT-OUTPUT #2



OUTPUT 2 PULSE COUNT DISPLAY

If you selected the A output mode in the fourth display, the nineteenth display allows you to see the total number of output pulses on Output #2 that have been outputted since the last reset. This number represents a pulse counter that increments by one (1) count each time a pulse is sent to the output relay #2. This value is non-weighted and represents the raw number of output #2's counts only. This count is saved in non-volatile memory upon loss of power. Press the **ORANGE KEY** to advance to the next display.

TWENTYTH DISPLAY: RESET COUNTERS

RESET COUNT DISPLAY

The sixteenth display allows you to reset the two INPUT counters, the OUTPUT counter,

and the PV TOTAL register, all at one time. The default of this display is “N” for no. To go back to the status display and not reset the totals, press the **ORANGE KEY**.

To reset all counters to zero, press and hold down the **BLACK KEY** for 3 seconds. A “Y” will be displayed, indicating that you are correctly pressing the key.

RESET COUNT DISPLAY

Once the MPT-2C has correctly reset all counters to zero, the display will indicate DONE. Let off the **BLACK KEY**. Upon releasing the **BLACK KEY,** the display will automatically jump back to the first display, the Status display.

RESET COUNT DISPLAY

INFORMATION ON SCALING OF VALUES FOR DATA ENTRY

The MPT-2C is a ratio device. The term “ratio device” means that if the number in the right most column of the value for meter #1 is the “ones” value for KWH/PULSE, then all other values in the far right-hand column will also represent “ones”. The second column to the left of the right column will represent “tens” values. The third column will represent the “hundreds” values, etc. This means that the decimal point, when used, can be located between any two columns or to the left or right of the first or last digit. However, once the decimal point is placed in a column, it must run top to bottom in that position only. **The decimal point does not actually appear on the display.**

OUTPUT PULSE VALUES

In general, it is bad practice to make the output pulse value(s) smaller than the smallest input value. This is because you will often get two pulses out for each input pulse in, in rapid succession, in the worst case scenario. Too many pulses out with erratic timing will cause peak demand management systems to incorrectly register the instantaneous or current demand. It is recommended that the output pulse value(s) be <u>larger or equal to</u> the largest input pulse value.

EXAMPLES

CORRECT		**CORRECT**	
METER #1	**.1000**	**METER #1**	**1.000**
METER #2	**.1234**	**METER #2**	**1.234**
OUTPUT	**05.0000**	**OUTPUT**	**05.000**

INCORRECT		**INCORRECT**	
METER #1	**.1000**	**METER #1**	**1000.**
METER #2	**1.234**	**METER #2**	**123.4**
OUTPUT	**05.0000**	**OUTPUT**	**00.5000**

While we have used KWH/PULSE for the pulse values throughout this document, the values could be watts-hours, megawatt-hours, gallons or any other common unit of measure.

TECHNICAL SUPPORT

For additional information or technical help, call Brayden Automation Corp./Solid State Instruments division at (970) 461-9600 or toll-free at (888)BRAYDEN.

INSTALLATION RECORD

METER
NAME/NUMBER……

METER
LOCATION……..…….…….

DATE
INSTALLED……..

TOTALIZER TYPE…….. MPT-2
SOFTWARE VERSION …. VERSION 3.0
MANUFACTURER…….. SOLID STATE INSTRUMENTS
A division of Brayden Automation Corp.
6230 Aviation Circle
Loveland, CO 80538
HELP ……. (970) 461-9600

FILL OUT BEFORE PROGRAMMING TOTALIZER

METER # 1 CIRCUIT NAME ……. …. …. …. …. KWH/PULSE

METER # 2 CIRCUIT NAME ……. …. …. …. …. KWH/PULSE

OUTPUT VALUE FORM C ……. …. …. …. …. …. …. KWH/PULSE

OUTPUT #1 VALUE FORM A……. …. …. …. …. …. …. KWH/PULSE

OUTPUT #2 VALUE FORM A…..……. …. …. …. …. …. …. KWH/PULSE

NOTE: The MPT-2 does not actually display a decimal point. Simply decide where you want the decimal point to be and enter all numbers accordingly. When entering your values on the above record/worksheet, all decimals for data entries **must** be in a vertical straight line for the math to work correctly. The decimal point may be between, before or after any column.