DATA SHEET

# MAS-CAL

MAS Calibration Unit

## DESCRIPTION

The MAS-CAL is the field calibration unit for the MAS sensor. It is designed to operate off of either 9V battery or external 24VAC power supply. The MAS-CAL provides the MAS sensor with power from either source. The MAS-CAL is used to view the settings of the MAS sensor and be able to halve or double the factory set full scale range of the sensor and be able to double or reset to zero the factory set timing. The MAS-CAL works with all MAS sensors, even when each has different factory settings because all of the changes are relative to the factory preset values.

## SOLVES COMMISSIONING PROBLEM

MAS sensors are optimally calibrated to work for most applications. However, if the sensor doesn't detect enough light to obtain the desired signal level or if the sensor is saturated early during the day, the output signal can be re-calculated. The MAS-CAL has settings to double or halve the sensor signal. This solves most commissioning problems and factory calibration is always retained.

## EASY SETUP

The MAS-CAL is plugged into the supplied 120-24 VDC wall transformer through its power plug and jack. The two wires of the MAS sensor are inserted into the MAS-CAL sensor terminal blocks Red and Black positions. A Digital Multimeter, set on milli-amps is inserted into the MAS-CAL meter terminal blocks. (See Figure1: MAS-CAL Hook-Up Diagram)

## POWER BUTTON AND LED

When the Power pushbutton is pressed, the accompanying Power LED is turned on. The Green Power LED will blink if there is insufficient power to operate the MAS-CAL and power the attached MAS sensors. Pressing the Power pushbutton again, once the power is on, will toggle the power off.

## COMM LED

The Yellow COMM LED will solidly light when the attached MAS sensor has continuity with the MAS-CAL. The COMM LED will blink when there is no sensor connection to the MAS-CAL. The COMM LED will momentarily flicker while the MAS-CAL is directly communicating with the MAS sensor.


## FEATURES

- **Powered by either 9V battery or external 24VAC power supply.**
- **Adjustable settings of Footcandle Light Range settings for MAS sensors.**
- **Adjustable settings of Response Time.**
- **Easy two step programming with LED indicators.**
- **Indicates low battery and faulty connection problem.**
- **Automatically powers down after 10 min.**
- **Program MAS sensors up to 4,000ft away.**
- **Short Circuit protection.**
- **Broken sensor wire indication.**
- **MAS-CAL solves most commissioning problems.**
- **Include short video training.**
- **Transformer and 9V battery in-**




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## PROGRAM BUTTON

Pressing the **PRG** Button will light the Red Program LED. Pressing the Program Button sets the program mode in the MAS sensor which will return to the MAS-CAL Light Range and Response Time status, illuminating their respective **X/2**, **1X**, **2X**, **0T**, **1T**, **2T** LEDs.

Pressing a new Light Range and Time buttons to write the values of the MAS sensors. The status is then automatically read and displayed on the LEDs. Pressing the **PRG** Button returns the programmer to Run Mode, extinguishing the Program LED and the Light Range and Response Time status LEDs. Run Mode displays the current 4-20mA values on a Digital Multimeter, set to the mA range.

## LIGHT RANGE ADJUSTMENT

The sensor is field scalable with the MAS-CAL. The factory sensor scaling is defined as **1X** (One times the factory preset range), as defined as the 20mA signal calibrated at the sensors full scale range (ie the MAS-S Skylight sensor at 5,000 FC). The MAS-CAL has a button for **X/2** or half range the factory preset range equaling 20mA (ie the MAS-S Skylight sensor at 2,500 FC). The MAS-CAL has a button for **2X** or twice the factory range calibrated to 20mA (ie the MAS-S Skylight sensor at 10,000 FC). MAS-CAL current configuration is shown on a LED Light Range.

## TIME ADJUSTMENT

Three time settings are available on the MAS-CAL. The time setting is based upon the full scale response time of the sensor from 10% to 90% of the range. The first is the factory setting of **0T** (Zero times the factory preset range) and is defined as 1 second. The short delay is useful for commissioning and in dimming systems, when an immediate response is required. The second is the factory setting of **1T** (One times the factory preset range), which is defined as 10 minutes for an MAS-S Skylight sensor, The third time setting is **2T**, (two times the factory preset range), which is defined as 20 minutes for an MAS-S Skylight Sensor . The MAS-CAL indicates the time setting with 3 LEDs, one next to each time setting button.

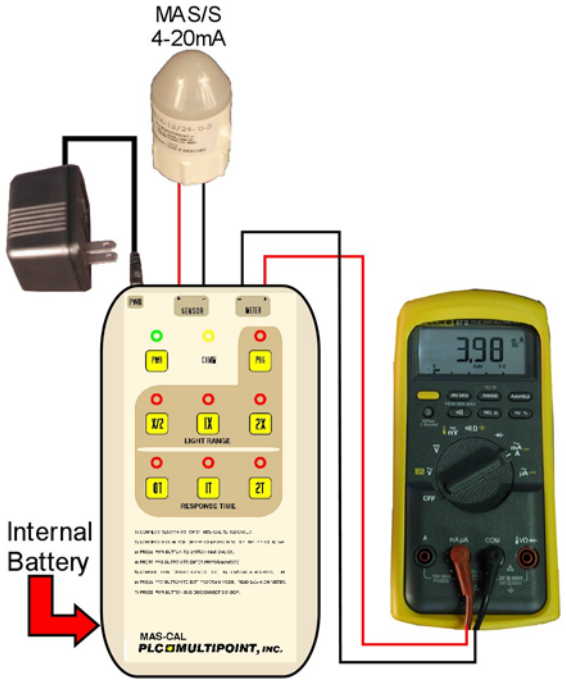


Figure 1:
MAS-CAL Hook-Up Diagram

## PROGRAM TIMEOUT

Should the MAS Sensor be left in Program mode while connected to the MAS-CAL, The MAS-CAL will switch power off and go into an energy conservation mode after 10 minutes. No LEDs will be displayed and the MAS-CAL will not be in program mode.

The MAS Sensor will retain its last saved Scaling and Time configurations.

| LIGHT RANGE IN FOOTCANDLE | | | | RESPONSE TIME | |
|---|---|---|---|---|---|
| | X/2 | 1X | 2X | 0T | 1/60 MIN. |
| **MAS-S** Skylight | 2,500 FC | 5,000 FC | 10,000 FC | 1T | 10 MIN. |
| **MAS-A** Atrium | 500 FC | 1,000 FC | 2,000 FC | 2T | 20 MIN. |
| **MAS-O** Outdoor | 125 FC | 250 FC | 500 FC | | |
| **MAS-I** Indoor | 50 FC | 100 FC | 200 FC | | |




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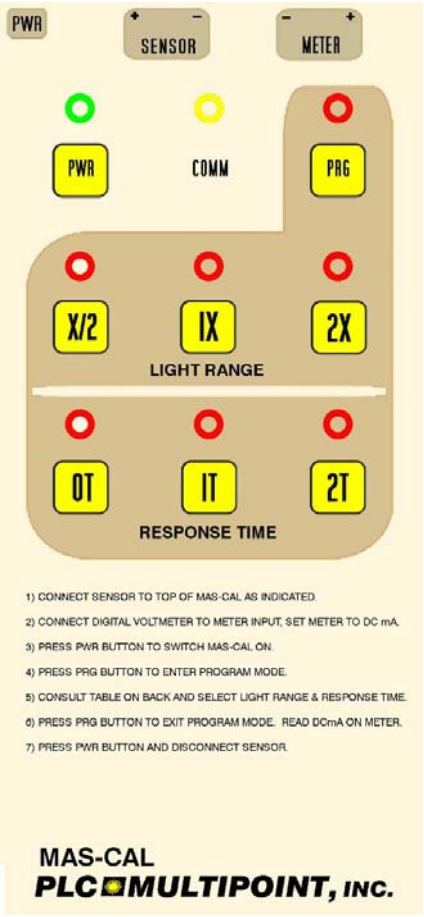
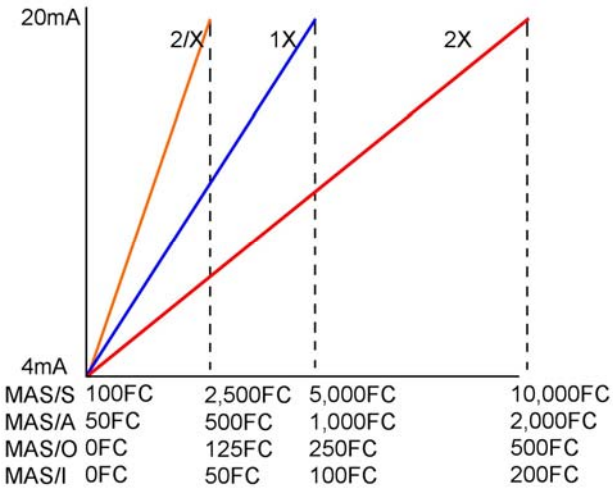
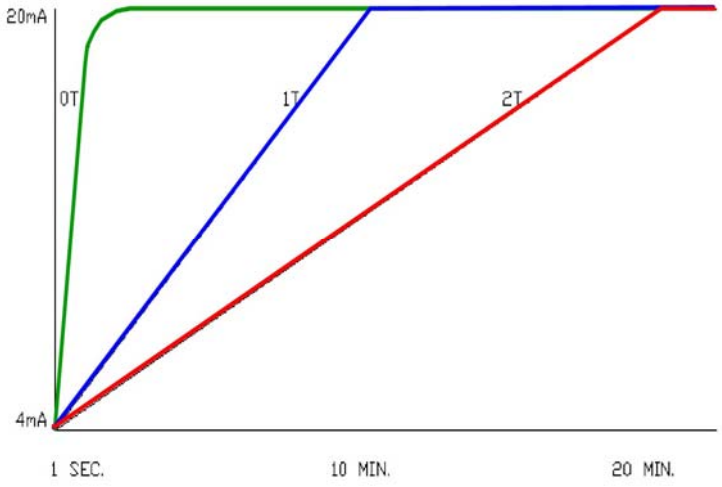
## MAS-CAL TECHNICAL DATA

| | |
|---|---|
| **Power voltage:** | 9VDC or 24VAC power supply w/ 5.5 x 2.1mm positive Tip Jack |
| **Protection:** | Polarity Reversal |
| **Output:** | Pulse code sequence |
| **Communication:** | 2 wire proprietary |
| **Com Signals:** | Non Polarized |
| **Distance:** | 4,000ft |
| **Field Operator Interface:** | 8 pushbutton pad with integral LEDs<br>Light Range: **2/X**, **1X**, **2X**<br>Response Time:**0T**, **1T**, **2T**<br>Program: Program/Run<br>Comm: (LED only) |
| **Operating Temp.:** | -40F to 140F (-40C to 60C) |
| **Sensor Terminals:** | 4 spring Clamp<br>+ - Sensor<br>+ - Digital Multimeter |
| **Timeout:** | 10 Minutes after last keystroke |
| **External Dimensions:** | 7" h x 4" w x 1.1" d |




**LIGHT RANGE SETTINGS**




**RESPONSE TIME OVERVIEW**

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