



OWNER'S MANUAL

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I. SAFETY CONSIDERATIONS

	GENERAL WARNING
	Ensure all appropriate personnel read owner's manual prior to installation and/or operation of controller. Failure to Comply with instructions and safety precautions could lead to personal injury or product damage. Please call and ask to speak with one of our customer service representatives if there are any questions.
	CAUTION
	Disconnect controller from power source before servicing or removing cover.

II. DESCRIPTION

The PDA/ATF-MAX is a dual purpose controller for both monitoring the pressure differential with alarm indicator and automatically controlling the flush valve of a Thompson strainer.

III. SYSTEM OVERVIEW

The PDA/ATF-MAX system consists of the following primary components:

A) PDA/ATF-MAX controller

B) Power supply

C) Transducer / Wiring assembly

D) Mounting bracket

E) Flush valve assembly



The controller interface contains the controller screen and keypad interface as shown. The clear cover provides protection for the controller and can be opened with the two latches on the side of the controller housing to access the keypad.

A) Controller Screen

B) Keypad



IV. OPERATION

Startup

- 1) Plug in the power plug into a standard 115VAC wall outlet
- 2) Upon power-up, the company information screen will be shown for 15 seconds.
- 3) After 15 seconds, the screen will change to the manifold pressure screen and will begin monitoring differential pressure across the strainer.

Automatic Flushing

Under normal operation, a timed flush will be initiated on a periodic schedule defined by the PDA/ATF-MAX programmed setting. (every 24 hours per factory setting).

In addition, a timed flush will be initiated when the differential pressure reaches the setpoint defined by the PDA/ATF-MAX settings.

See the *MENU SCREENS* section for information on changing factory settings.

Consecutive Flush Alarm

If three consecutive flushing operations are detected by the PDA/ATF-MAX, a consecutive flush alarm will be triggered and no additional flush cycles will be initiated until the alarm is cleared.

To reset the Consecutive Flush Alarm, first, correct the cause of the alarm, then push the red ESC button on the controller while a Status screen is displayed. The optional Customer's Remote Reset input, Input iB, allows for a remote reset of the Consecutive Flush Alarm.

Scrolling through Menu Screens

The *PDA/ATF-MAX* allows the operator to scroll through a selection of menu screens by pressing the **A** or **B** buttons. Press **A** to scroll backward to the previous menu or press **B** to scroll forward to the next menu. The LCD backlight will automatically turn on for 5 minutes when a button is pressed, thus allowing the operator to easily view the menus in low light situations.

Changing Parameter Values

To change an adjustable value, first scroll to the appropriate menu screen using the A or B button. Follow the directions below to modify the value.

- 1) The current selected value will show flashing blocks. Use the + or - keys to select another value if desired.
- 2) Press OK on the selected value. The value will change from flashing blocks to flashing numbers. Flashing blocks indicate the value is locked into memory. Flashing numbers indicates the value is unlocked and can be changed.
- 3) Press the + or - buttons to change the value. Holding the + or - button will allow the value to increase at a faster rate after the first 10 increments have passed.
- 4) When finished, press OK to save the change to memory. The value will return to flashing blocks.



REFER TO THE MENU SCREENS SECTION FOR DETAILED INFORMATION ON EACH SCREEN AND/OR PARAMETER.

V. MENU SCREENS

Power Up Screen

The Power Up screen displays the company information for Miller Leaman. Each time the PDA/ATF-MAX is plugged in, or when power is returned after a loss, this screen will be displayed for 15 seconds. The Power Up screen can be viewed by unplugging the PDA/ATF-MAX's power, then plugging it back on again.

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800-881-0320

Manifold Pressure Screen:

After 15 seconds, the Power Up screen will be changed to the Manifold Pressure screen. The Manifold Pressure Screen displays the pressure in PSI for inlet manifold, outlet manifold, and the calculated differential pressure between the inlet and outlet manifolds.

Manifold Pressure

Inlet : 0034.0

Outlet : 0032.0

PSID : 0002.0

The Status Screens

The status screens provide system feedback, allowing the operator to monitor when and how the Flush cycle is occurring. A Flush cycle can be started manually, automatically via the Flush Interval Timer or the Pressure Differential Transducers (PSID), or remotely by optional Customer Input Signal.

The current status of the controller is displayed as follows:

Status: OFF MAX

The Inlet Pressure transducer is monitored to sense sufficient Inlet Pressure and allow Timed Flushes, and Differential Pressure Flushing. When the inlet pressure is sensed as lower than the Setpoint, the Flush Interval timer will be paused, and a timed Flush will not occur. Differential Pressure Flushing will also be inhibited. DP sensing will continue, and the Status Screen will display >> High PSID << on the second line. When the Inlet Pressure is sensed as low, the top line of the Status Screen will display Status: OFF MAX alternating with Inlet Pressure Low.

Status: OFF MAX

PSID : 00.0

Inlet Pressure Low

PSID : 00.0

Status: OFF MAX

>> High PSID <<

V. MENU SCREENS (CONT.)

Status: AUTO MAX

Indicates that the Inlet Pressure is not Low, and the controller is waiting for a Flush cycle to begin. The system is assumed to be in normal filtration mode and flowing water. The Flush interval timer is running. The controller displays Status: AUTO MAX when the Inlet Pressure is not low and a Flush cycle has not begun. A Flush can occur from the Timer, a high pressure differential via the Pressure Transducers, indicated as >> High PSID << on the display, manually by the operator by pressing the green OK button on the controller, or by the Customer Input Signal.

```
Status: AUTO MAX
PSID : 0003.0
Press OK to Start
A Flush Cycle
```

```
Status: AUTO MAX
>> High PSID <<
Press OK to Start
A Flush Cycle
```

Status: ON MAX

Indicates that the system is in a Flush cycle, initiated either by the Operator, by the Flush Interval Timer, the Pressure Transducers, or by the Customer Input Signal. The controller will stop displaying the PSID value, but will instead indicate Flush Cycle.

The Flush Valve is opened, and the Alarm Light/Sounder output is flashing. This output flashes the Light and Sounder throughout the entire Flush cycle. The Flush Duration is nominally set for 8 seconds. The Flush Duration time is adjustable - see Setup screen #3 for information. After this Flush duration time, the Flush Cycle is complete. The Open Flush Valve Output will be turned off, the Alarm Light/Sounder will be turned off, and the Status Screen will display Status: AUTO MAX.

```
Status: ON MAX
Flush Cycle
```

```
Press ESC to Stop
```

```
Status: AUTO MAX
PSID : 0003.2
Press OK to Start
A Flush Cycle
```

Status: System Alarm

On any of the status screens, a System Alarm screen can be activated. The second line down will be alternately flashing >> System Alarm << and whatever was on line 2 before the system alarm occurred.

A system alarm can be any customer specific alarm. The only standard system alarm is the Consecutive Flush Alarm. This alarm occurs when the Flush cycle has been initiated three times in a row by the Pressure Transducers (PSID). Output #4 will be turned ON, which will then energize Relay 1 (R-1). Relay 1 provides a Dry Contact signal for the Customer's Consecutive Flush Alarm monitoring.

The Consecutive Flush Alarm will also cause the Alarm Light/Sounder to change from flashing to steady ON. The Consecutive Flush Alarm will also disable any additional Flush Cycles from occurring.

```
Status: ON MAX
>> System Alarm <<
Press ESC to Stop
```

V. MENU SCREENS (CONT.)

Flush Interval & PSID Setpoint Screen

The user-defined interval at which the system will initiate an automatic Flush cycle. The Flush Interval timer resets after any Flush cycle occurs (by timer, PD Transducers, operator, or Customer Input Signal). This value is adjustable from 1 minute to 1000 hrs. Setting both values to zero will turn off the Flush timer. It is recommended that the operator adjust the Flush interval timer so that the system Flushes by time before the pressure differential set-point is reached. Factory Preset value is 24 Hours. This setpoint is located on Screen 2.

The Pressure Differential setting in PSI, which when compared to the calculated Differential Pressure from the Inlet and Outlet pressure transducers, will cause a Flush cycle to begin when exceeded. The recommended PD setpoint is 1-2 PSID above the "clean" PSID reading at the systems MAXIMUM flow rate. Setting this PSID Setpoint at low flow may result in continuous Flushing at higher flow rates, since the Pressure Differential increases with flow rate. This value is adjustable from 1 to 30 PSID. Factory preset is 7 PSID. This set-point is located on Screen 2.

```
Flush Interval
HOURS:MM 0024:00
Enter
PSID Setpoint 07
```

Flush Duration Screen

The time allotted for the Flush Valve to be open. This time should be set according to the type of filter and the nature of the material being filtered. This value is adjustable from 5 to 300 seconds. Factory Preset value is 8 seconds. This setpoint is located on Screen 3. **Please Note - Flush Valve is not completely open until 3 seconds into this time value.**

```
Flush Duration
Seconds: 00008
```

Inlet Low Pressure Setpoint Screen

The Inlet Pressure transducer is monitored to sense sufficient Inlet Pressure and allow Timed Flushes, and Differential Pressure Flushing. On these systems, when the inlet pressure is sensed as lower than the Setpoint, the Flush Interval timer will be paused, and a timed Flush will not occur. Differential Pressure Flushing will also be inhibited. DP sensing will continue, and the Status Screen will display >> **High PSID** << on the second line. When the Inlet Pressure is sensed as low, the top line of the Status Screen will display Inlet Pressure Low.

Setpoint Adjustment - The Inlet Low Pressure Setpoint is adjustable from 5 (PSI) to 20 (PSI). Factory Preset value is 15 (PSI). This setpoint is located on Screen 4

```
Inlet Low Pressure
Setpoint: 00015
```

V. MENU SCREENS (CONT.)

Time Since Last Flush & Triggered By Screen

This screen is READ ONLY for information and is not adjustable. The screen shows the amount of time that has elapsed since the system last Flushed (example: 00011:30 is 11 hours and 30 minutes) and how the last Flush was triggered. There are four trigger possibilities:

- 1) *Local Operator* - Flush triggered manually by an operator
- 2) *Timer* - the backflush was triggered by time as set on the Backflush Interval screen.
- 3) *PD Transducer* - the Flush was triggered by a high pressure differential, as set on the PSID setpoint.
- 4) *Customer Input* - Optional Customer's Input signal at input I1 initiated the Flush Cycle.

```
Time Since Last
Flush           00000:04
Triggered By:
PD Transducers
```

Flush Counters Screen

Trip: The number of Flush cycles that have occurred since the counter was last reset. This includes cycles initiated both manually and automatically. This counter can be reset by pressing the red **ESC** button from the Flush Counters screen.

Life: The number of Flush cycles that have occurred in the controller's lifetime. This includes cycles initiated both manually and automatically. This counter cannot be reset.

```
Flush Counters
Trip:           00010
Life:          000000010
Press ESC to Reset
```

Controller ID Screen

This screen is READ ONLY and is used to identify the controller version and ID.

```
Maxim4 PDA/ATF-MAX
Controller v.3.5
Copyright(c)2021
ML31155
```

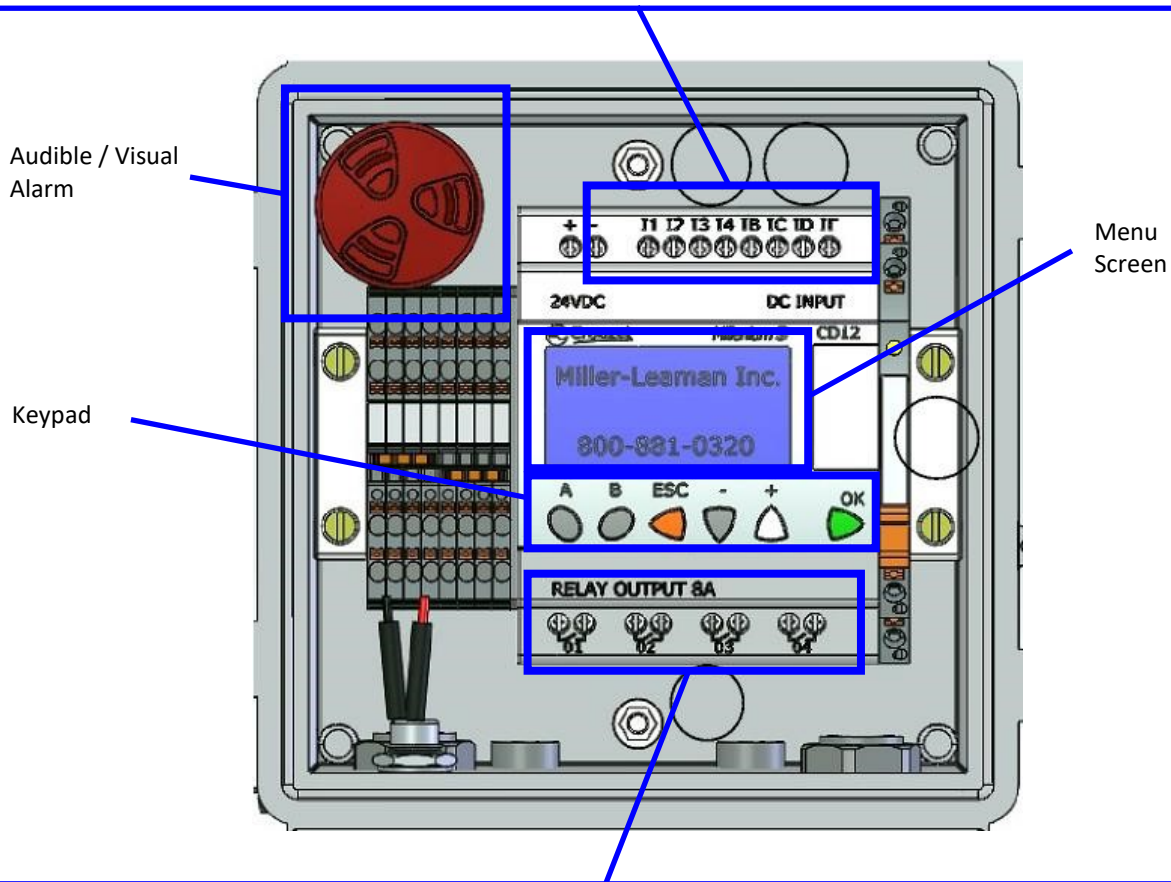
VI. LAYOUT & I/O CONFIGURATION

Inputs

I1 - The optional Customer Initiate Flush input will signal the PDA/ATF-MAX to start a Flush cycle.

IB - The optional Customer Remote Alarm Reset input will signal the PDA/ATF-MAX to remotely reset the Consecutive Flush Alarm.

The Analog/Digital Input locations allow Miller-Leaman Inc. to design customer specific programs. These programs are then able to receive and process both digital and analog signals from devices such as Pressure Transducers, Flow-meters, Level Switches, etc. Inputs IC & ID are the Inlet and Outlet Pressure Transducer connections. These provide a 0-10Vdc signal into the controller. These signals are converted into pressure level values and compared to each other for the pressure differential value. When the PD value exceeds the PD setpoint, the PDA/ATF-MAX is signaled to start a Flush cycle. The Inlet Pressure Transducer also is used to disable the Flush Timer and Flush Signal from Differential Pressure, should the Inlet Pressure be less than the Inlet Low Pressure Set-point.



Outputs

(Note - each output's left terminal has been connected to the 24VDC power. The output's right terminal provides the output signal)

Output #1 controls the Flush valve.

Output #2 is not assigned.

Output #3 is a relay output for the Alarm Light/Sounder - DP Alarm is flashing and Consecutive Flush Alarm is steady.

Output #4 Consecutive Flush Alarm signal - relay output turned on when the Consecutive Flush count reaches the setpoint. This output is wired to the coil of Relay 1 (see above) to provide a Dry Contact output.

VII. ELECTRICAL CONNECTIONS



NOTE: When using an external power source, the input power to the Controller must be the same as indicated on the upper left side of the PDA/ATF-MAX. Typically the controller is 24 volts DC. Plug the provided 24VDC Power Supply into a standard 120VAC Outlet, observing all state and local codes.

Flush Valve

The **Flush Valve** is connected to *Output#1* terminal(+ signal, white wire), *Common (-)* power terminal (Power Common, black wire), and 24VDC (+) power terminal (Power +, red wire). **Please Note - with power on and no signal, the Flush Valve will move to its closed position, until it is closed.**

Pressure Transducers

The **Pressure Transducers** have a three wire connection, white assigned to the input (IC or ID), blue to the *Common (-)* terminal, and the brown to the 24VDC Power (+) terminal .

Customer Initiated Flush Signal (Optional)

The optional **Customer Initiate Flush Signal** input is connected to Input I1. Please Note - this signal must be a discrete 24VDC signal, that references the Common (-) terminals.

Customer Remote Alarm Reset Signal (Optional)

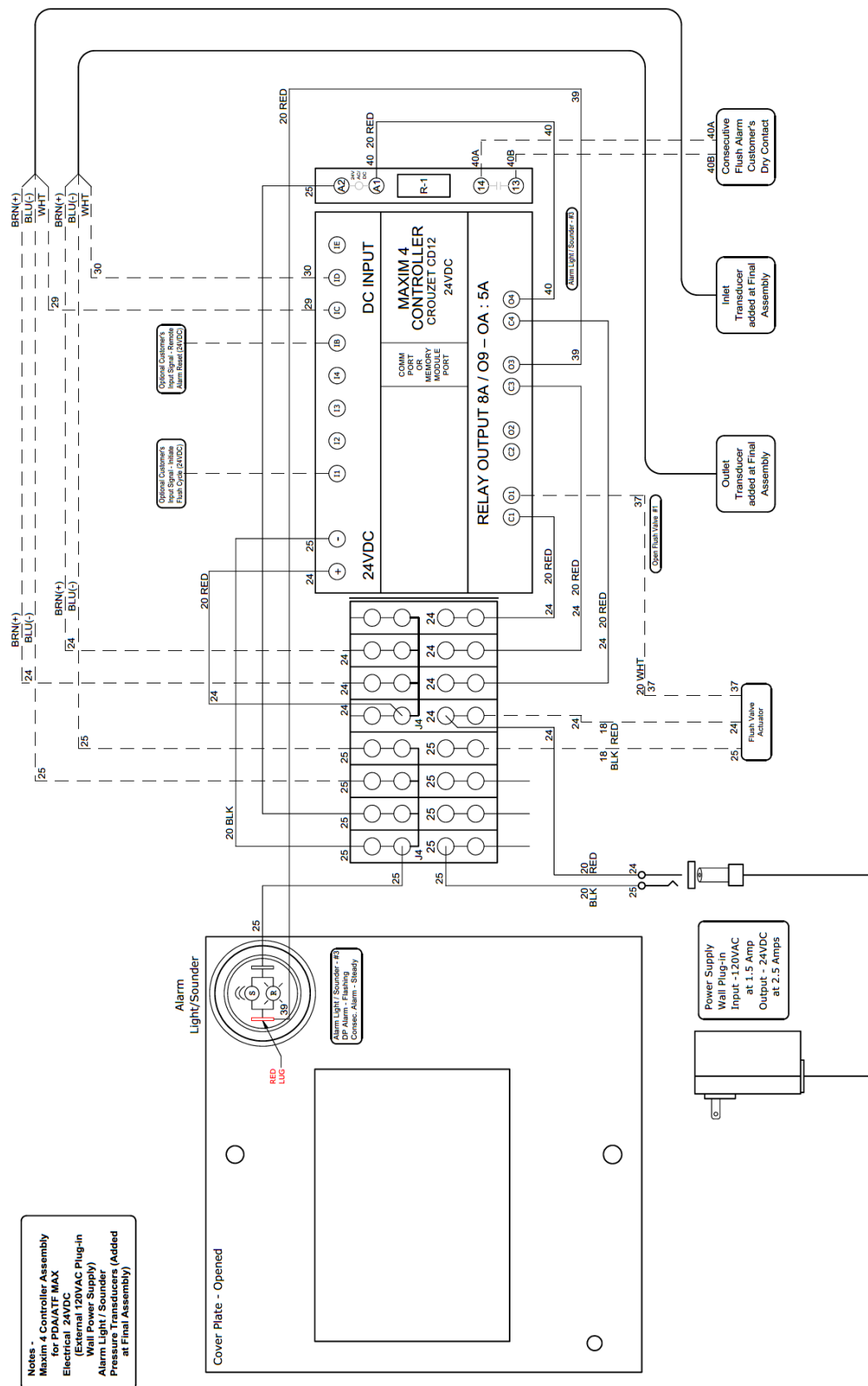
The optional **Customer Remote Alarm Reset Signal** input is connected to Input IB. Please Note - this signal must be a discrete 24VDC signal, that references the Common (-) terminals.

Consecutive Flush Alarm Output Signal (Dry Contact, Optional)

Output #4 is the discrete **Consecutive Flush Alarm** 24VDC output signal, that is connected to the coil of Relay 1 (R-1). This relay provides a Dry Contact connection for Customer **Consecutive Flush Alarm** signal.

Review the *Electrical Schematic* section prior to making any connections to the controller.

VIII. ELECTRICAL SCHEMATIC



IX. WARRANTY

This warranty is given by Miller-Leaman, Inc. (MLI) and is governed by the Laws of the State of Florida. Venue and jurisdiction of any case or controversy related to the use of this product or this warranty shall lie exclusively in the State Courts of Volusia County, Florida. MLI warrants its Products against defects in material and workmanship, as per the product warranty schedule listed below, if properly installed, maintained and operated in accordance with MLI instructions and good industry practice, excluding ordinary wear, corrosion, erosion, chemical or abrasive action. This warranty shall not apply to any Products or parts of Products that (a) used or operated in any application outside the stated specifications or design limitations of said Products; or (b) have been damaged or in any way altered due to misuse, negligence or accidents; or (c) have been repaired or altered in any manner outside of MLI factory, unless by express authorization of MLI; or (d) have been used in a manner contrary to MLI instructions or recommendations, including without limitation with respect to site preparation, maintenance or environmental conditions. **MLI MAKES NO OTHER REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL MLI BE LIABLE FOR ANY DELAY, INCONVENIENCE, WORK STOPPAGE, CARTAGE, SHIPPING, LOSS OF USE OF EQUIPMENT, LOSS OF TIME, INJURY OR DAMAGE TO ANY PERSON, DEATH OF ANY PERSON, LOSS OF PROFITS OR ANY DIRECT OR INDIRECT INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGES RESULTING FROM OR ATTRIBUTABLE TO THE USE OF THE PRODUCT.** The sole obligation of MLI under this warranty is to repair or replace, at MLI option, any Product or any part or parts thereof found to be defective. MLI makes no warranties, express or implied, for any goods not manufactured or developed by MLI and shall assign to Buyer any warranty for such goods extended to MLI by the Manufacturer and Buyer shall look solely to such warranty in the event of a claim or action relating to such goods. Warranty period: 12 months from factory ship date.



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The PDA/ATF-MAX is a product of Miller-Leaman, Inc.