



Fluid Manager™

By Engineered Fluid, Inc.®



Monitor Equipment Anywhere From the Fluid Manager Web Site

- Receive Voice or E-Mail Messages Within seconds
- Data Logging Capabilities

The Fluid Manager is a low cost web-to-wireless remote monitor system or SCADA alternative. Its internal wireless modem provides two-way communications to the automated Fluid Manager operations center and the www.thefluidmanager.com web site. Cellular communications provide very wide spread coverage throughout North America with no requirement for a local cellular account.

The inputs and outputs of the Fluid Manager are suitable for a wide range of direct connect monitoring applications. The standard Fluid Manager monitors up to eight dry contact digital inputs and four analog inputs and includes four remote control relays.

Operation is very simple:

1. Connect the fluid manager to the digital switches and analog sensors to be monitored and apply power.
2. The Fluid Manager will automatically establish 2 way wireless communications to the www.thefluidmanager.com web site.
3. Log onto your private secure page on the Fluid Manager web site to:
 - View the last reported status of your equipment – switch positions, temperature, pressure, equipment on/off status, number of pumps starts, run time...
 - Send a remote control command or request an up-to-date report from the unit
 - Configure selected alarms or events to trigger an immediate user notification
 - Configure time/date scheduled command sequences



Eight Digital Inputs

The Fluid Manager is equipped with eight on-board digital status inputs. Each input is protected with surge suppression circuitry per ANSI C37.90.1-2002 to minimize the effect of external transient voltages. Each input can be individually enabled or disabled and configured to report (or not report) all state changes .

The standard product is designed to monitor dry contact inputs. A 12 VDC wetting voltage is supplied to the common terminal points. No external voltage is required.

The Fluid Manager can report the state of all inputs when any input changes state in either direction (open-closed or closed-open) for longer than the programmable trigger time. The trigger time of each input is set by the user through a local programming utility and can be varied from 1-240 seconds. Any change that does not remain stable for the specified trigger time will be ignored. The factory default trigger time is 5 seconds.

Four Analog Inputs

Four analog inputs are configured to monitor 0-10 VDC or 0-20 mA input signals (jumper selectable). Other values can be ordered as factory options.

Two programmable set points and one trigger time can be locally programmed for each input. When the monitored signal crosses a set point for the specified trigger timer, a range change report may be sent. The A-D converter has 10-bit resolution, so the analog report sends the measured signal(s) as a number from 0-1023.

At the Fluid Manager web server, offsets, scalars and lookup tables are available to convert the raw numbers into meaningful values such as temperature, tank level, pressure, etc. These flexible conversion options allow the system to monitor and accurately interpret many types of sensors. The analog report also includes the present range (such as low, medium, high) of the monitored signal. Analog inputs are protected with surge suppression circuitry per ANSI C37.90.1

Four Remote Control Outputs

Four on-board Form C mechanical relays have the capability to switch up to 8 Amps at up to 250 VAC, or up to 8 Amps at 30 VDC. (Form C relays provide both Normally Open and Normally Closed connections.)

Remote control commands from the Fluid Manager web server can set the output relays to a continuing state of closed (on) or open (off), or can initiate a temporary open or closed condition. The length of the temporarily controlled output changes can be selected from the web site from 1 to 9999 seconds, or 1 to 9999 minutes (over 6 days).

Time scheduled or “as-needed” commands from the web server can control any of the output relays at a variety of user defined times and frequencies.



Long Distance Machine to Machine Controls

The Fluid Manager NOC can be used to forward control commands from one unit to another - anywhere in North America. Control commands can be sent to any Fluid Manager unit based on input conditions reported by another unit.

Integrated Power Supply & Battery Backup - Power Outage Reporting

The standard Fluid Manager operates from 120 VAC. The circuit board includes an on-board voltage regulator that can be used to continually charge a small (up to 5 Amp Hr) 12 VDC battery while AC power is present.

If the AC power is lost for more than one minute, the unit will report the power outage. When power is restored, a Power On call will be made. The value in the battery backup is to make the owner aware of a power failure condition.

15 VDC powered units are also available as a factory option. A special low power mode can be enabled to further reduce the unit's power consumption. In this mode, the radio is powered down except when a report is being transmitted. This is useful for solar powered applications where no controls or reports-on-demand are needed.

Reporting Options

Reports are triggered for three reasons:

- (1) A specified alarm condition occurs such as a digital input change or analog range change.
- (2) A time scheduled report is due.
- (3) A report is requested from the web site.

The status of the connected inputs and outputs are reported along with a variety of system configuration information. Reports can be time scheduled at a programmable frequency, from once every hour to once every 240 hours (10 days). The reports can be requested at any time from the web site.

Daily Transmission Limits

To reduce the number of transmissions that might result from over-active inputs or power cycling conditions, the number of event-based calls per 24 hours can be limited. (Note: limiting the number of transmissions could result the unit not signaling an alarm to the user) Time scheduled calls and user requested status calls will continue to be placed even after this limit has been reached.

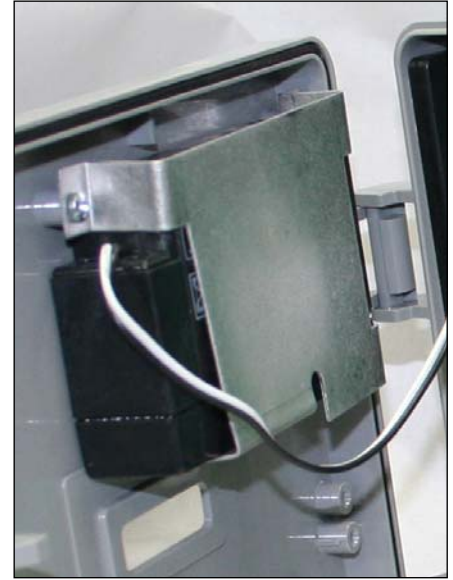
Dual Mode (Digital / Analog) Cellular Control Channel Communications

Fluid Manager cellular communication provides very wide spread coverage throughout North America with no requirement for a local cellular account. The low cost makes it suitable for a wide variety of general monitoring and control applications. The Fluid Manager will operate on either the CDMA or GPRS cellular networks.

Easy Installation and Test

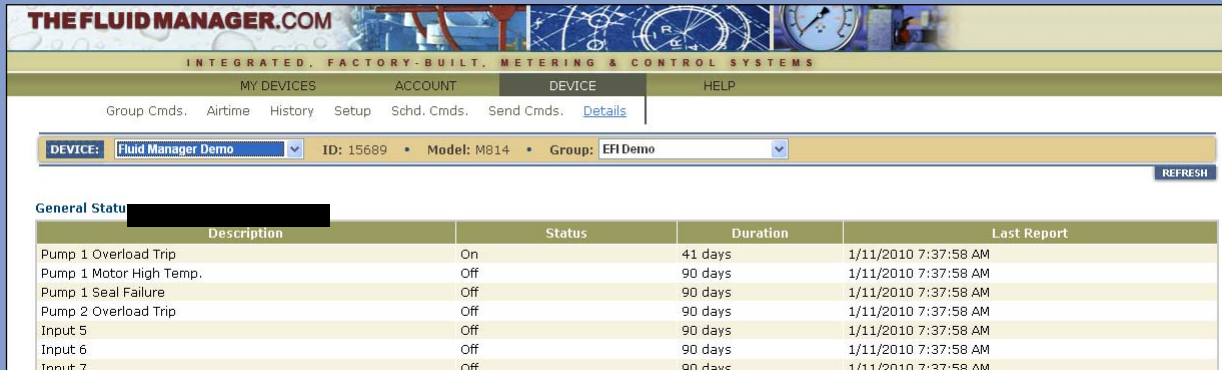
A pushbutton switch initiates a test in which LEDs are used to indicate the signal strength being received by the radio. This is used to facilitate installation, antenna selection and orientation, and troubleshooting.

In addition, informative status messages and test functions can be displayed to a PC or Palm terminal program to help understand what the system is doing and to aid in troubleshooting.



WWW.THEFLUIDMANAGER.COM

At the Fluid Manager Communications Network Operations Center, incoming data is validated and processed for distribution to the end user. In addition, configuration and control information can be sent from the FLUID MANAGER web site to the field module.



The screenshot shows the Fluid Manager web interface. At the top, there is a navigation bar with tabs for MY DEVICES, ACCOUNT, DEVICE, and HELP. Below this, there are links for Group Cmds., Airtime, History, Setup, Sched. Cmds., Send Cmds., and Details. A search bar shows the selected device as 'Fluid Manager Demo' with ID: 15689, Model: M814, and Group: EFI Demo. A REFRESH button is visible. Below the search bar, there is a 'General Status' section with a table of equipment components.

Description	Status	Duration	Last Report
Pump 1 Overload Trip	On	41 days	1/11/2010 7:37:58 AM
Pump 1 Motor High Temp.	Off	90 days	1/11/2010 7:37:58 AM
Pump 1 Seal Failure	Off	90 days	1/11/2010 7:37:58 AM
Pump 2 Overload Trip	Off	90 days	1/11/2010 7:37:58 AM
Input 5	Off	90 days	1/11/2010 7:37:58 AM
Input 6	Off	90 days	1/11/2010 7:37:58 AM
Input 7	Off	90 days	1/11/2010 7:37:58 AM

The central web server records and displays all incoming status messages and depending on the customer's instructions can notify the customer of the event via e-mail or telephone (using a text-to-speech voice message), and/or pass the data to the customer's designated e-mail or IP address.

After entering a unique user ID and password:

- Both current and historical data can be viewed for all units. Displays can be personalized with informative labels and units.
- Data exporting options can be defined.
- Remote control commands, reporting options and user notification messages can be created and maintained.
- Time scheduled reports and commands can be defined.
- Current status reports can be requested.
- Time/date scheduled command sequences can be set up

Fluid Manager customers can also dial in to the toll-free number of the automated Fluid Manager Network Operations Center to hear a spoken status report of their monitored equipment or facility from any telephone in North America. The text-to-speech based status message may be as complex as a listing of all monitored inputs and outputs or it may be as simple as "the pump is off". Control commands can also be entered directly from the telephone.

User Notifications

Digital input changes and analog range changes can be used to trigger notifications to a list of contact people. Notifications include telephone based voice (text-to-speech), emails, and/or text messages. The call-out lists, messages, and triggers are fully definable by the user.

Environmental

The components are assembled in a weatherproof polycarbonate enclosure with a hinged, gasketed lid. The recommended operating temperature range is -22 to 140 degrees F (-30 to 60 C). The recommended relative humidity range is 5 - 95% non-condensing.





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Ordering Form

The Fluid Manager configuration includes 8 digital (dry contact) inputs, 4 analog inputs, and 4 remote control relays in a weatherproof enclosure. It is powered by 15VDC or 120VAC, and includes an internal battery and charger for reporting power outages.

EF1844ACGDLX GPRS Fluid Manager Unit
8 Digital inputs, 4 Analog inputs,
4 Control relays, 120 VAC Powered

EF1844DCGDLX GPRS Fluid Manager Unit,
8 Digital inputs, 4 Analog inputs,
4 Control relays, 15 VDC Powered

EF1844ACSDLX Standard Satellite Unit
8 Digital inputs, 4 Analog inputs,
4 Control relays, 120 VAC Powered

EF1844DCSDLX Standard Satellite Unit,
8 Digital inputs, 4 Analog inputs, 4 Control relays, 15 VDC Powered

EF1844ACCDLX Standard CDMA Unit,
8 Digital inputs, 4 Analog inputs, 4 Control relays, 120 VAC Powered

EF1844DCCDLX Standard CDMA Unit,
8 Digital inputs, 4 Analog inputs, 4 Control relays, 15 VDC Powered



Name _____

Company _____ Phone _____

Email _____ Fax _____

Website _____

Fax this to: Fluid Manager at 618-533-1459 or email to: info@thefluidmanager.com

Last update 01-2011