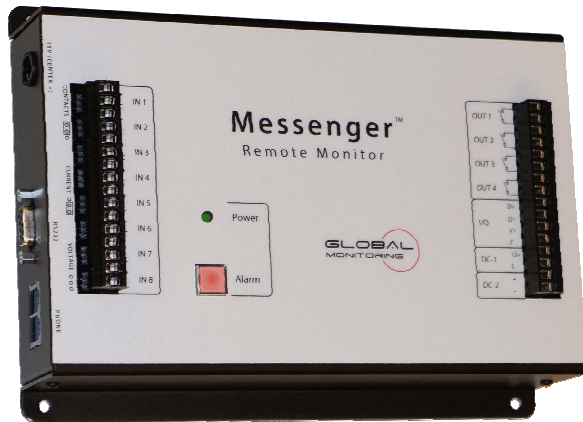




Welcome to the Global Monitoring Family

Messenger 8120 Remote Monitor Start-Up Guide

Monitor and record equipment, environmental, and other conditions at one or more remote locations. Receive exception reports & control outputs from the convenience of your computer or cell-phone.



Remote Monitoring. Re-invented!

Congratulations on your acquisition of the Messenger 8120 – a rugged monitoring, control and alarm system with data-logging and other capabilities that you can access from any computer or telephone. Installation and operation have been designed so that you can quickly and effortlessly realize the remote possibilities placed at your fingertips with this state-of-the-art remote monitoring system.

This manual steps you through the installation, configuration and operation procedures that are typical of most applications. Supplemental information covering less common installation scenarios and trouble-shooting information can be found on our website: www.GlobalMonitoring.com

Still have questions or need product support?

If your question requires immediate attention, call us Monday through Friday between 10 AM and 4 PM ET at + 1 610- 604- 0760. If the issue is less urgent, visit www.globalmonitoring.com/support and open a support ticket

Register your System

To help us help you, we urge you to register your system online at www.globalmonitoring.com/support

Table of Contents

Welcome to the Global Monitoring Family.....	2
An introduction to the Messenger 8120	5
Typical applications.....	5
Features and Specifications	6
Choose the communication mode that's right for you	7
Standard and optional modes	7
Select your Sensors.....	11
Install the hardware	12
Locate and mount the system	12
System Layout	13
Attaching the Inputs	14
Connecting the Outputs	16
Connect to a Communications Service	16
Connect a power source.....	17
Backup Battery	17
Configure the system.....	18
Initiate Communication.....	18
Change the Security Codes	19
Give the Messenger 8120 an Identity.....	19
Set the Time	20
Configure the Inputs	20
Enable the Power Alarm.....	23
Enable Alarm Actions	23
Start the Data Recorder.....	24
Start the Output Controller	24
Schedule Reports	25
Check your Work and Logoff.....	25

Information the way you need it.....	26
Information to your Phone or Cell Phone	26
Information to your Terminal or PC.....	27
Information to your Fax or eFax.....	30
Getting data via the internet.....	30
Alarm handling.....	32
Data logging and analysis.....	34
Performing an XMODEM file transfer.....	35
Environmental policy.....	38
Important notices.....	38

An introduction to the Messenger 8120



The Messenger 8120 is an industrial-grade, multi-function system that gives you the capability to monitor equipment, environmental, and other conditions at one or more remote locations from the convenience of your desk or cell-phone.

This capability can be put to work in a variety ways, with the end result being less time on the road, improved efficiency, better customer service and your own 'peace of mind.'

Typical applications



Liquid & Bulk Storage
Lift Stations
Pipelines
Refineries
Chemical Plants

Monitored Conditions
Tank Level Monitoring
Bulk Inventory
Deliveries
Usage Data



Equipment
Generators
Pumps
Compressors
Equipment Skids

Monitored Conditions
Pressure
Flow
Level



Environmental
Remediation Equipment
Emissions Monitoring
Flood Control
Sound Abatement

Monitored Conditions
Pressure
Flow
Run-Time
Level
Ambient Sound

Features and Specifications

- Standard Inputs:** Eight analog inputs. Each accepts a 4-20mA, dry contact, or 0-5VDC signal. Ten-bit resolution with capabilities that include: scaling, adjustable filtering, data-logging, alarm triggering, pulse counting, rate-detection, run-timer, and output control. Also included is an AC power sensor.
- Optional Inputs:** An 8 input expansion module can be added that accepts low-voltage DC, dry-contact and 4-20 mA signals. Each input has 14 bit resolution and feature scaling, data-logging and alarm triggering.
- Outputs:** Four relays can switch up to 3 amps each. Outputs can be controlled either manually or automatically as a function of input set-points or alarm status.
- Communication:** 14 standard and optional communication modes. Standard modes include Landline-to-Terminal, Landline-to-Fax, Landline-to-Voice and Direct-to-Terminal. Optional communications kits are available for wireless and Ethernet connectivity.
- Data Logger:** Any or all of the inputs and outputs can be logged at intervals ranging from 1 second to 99 hours. Alarms and system events can also be logged. Default capacity is 200,000 data-points stored as 10,000 comma-delimited records containing a time stamp, 8 input values, 4 output and 8 system status flags. Configuration changes can increase or decrease the capacity. Data can be imported into most spreadsheet and analysis applications.
- Alarm Processor:** Each input has configurable high and low alarm set-points, dwell time and other parameters. Alarms can control outputs or initiate a notification process. Alarm events and return to normal events are recorded in the data logger.
- Power Supply:** Includes a 100-240 VAC Energy Star and CEC compliant wall supply. Also available is the GMU8122, which includes a 90-240 VAC DIN-Rail supply. Contact the factory for other power options such as vehicle power or solar.
- Battery:** Internal rechargeable battery provides uninterrupted operation for up to 4 hours in the absence of AC power and can also provide power to your sensors and accessories.
- Physical:** Size – 9.0” W x 7.0” H x 2.0” D (230 x 175 x 70 mm)
Weight – 3.1 LB (1038 G)
Operating temperature 32 to 130F (0 to 50C), extended range available.
- m2mLIVE:** The Global Monitoring Messenger 8120 is fully compatible with m2mLIVE, a web-based reporting service.

Choose the communication mode that's right for you



The usefulness of any remote monitoring system is dependent on its ability to move information from a remote site to the people, devices or systems that need it. The Messenger 8120 Industrial Monitoring System supports 14 different ways to move that information – you choose the modes appropriate to your application.

Standard and optional modes

A communication mode is a set of technologies used to move information from the Messenger 8120 System at a remote location to a target destination. One mode may move the information over a landline and deliver it vocally to a cell phone, while another may move the information via wireless and post it on a website.

A communication mode is more than just phone-lines, broadband connections and hardware - it includes the 'know how' of remote monitoring experts, developed over many years, to insure the reliable and cost-effective delivery of information from a remote site to the people or systems that need it. This 'know how', embedded into every Messenger 8120, makes the implementation of any given communication mode a straightforward process.

The Messenger 8120 Remote Monitor currently supports 12 distinct modes for remote communication plus 2 direct modes for local communication. Additional communication modes are anticipated in the future.

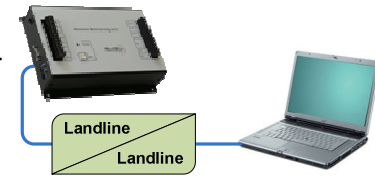
Several communication modes permit full administration of the Messenger 8120 System, while others are intended for data reporting only. In most cases, you can enable several communication modes; however, at least one of those modes should support remote administration.

The next few pages describe each of the communication modes for you to choose from.

Landline-to-PC /Terminal

Messenger 8120 is attached to a standard (dedicated or shared) landline. PC (with terminal software) or data terminal also attached to a landline.

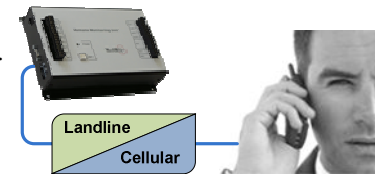
Standard feature!
Supports remote administration.



Landline-to-Phone or Cell Phone

Messenger 8120 is attached to a standard (dedicated or shared) landline. Voice reports are delivered to any standard phone or cell-phone.

Standard feature!



Landline-to-Fax

Messenger 8120 is attached to a standard (dedicated or shared) landline. Printed reports are delivered to any standard fax.

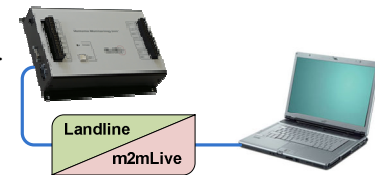
Standard feature!



Landline-to-Website

Messenger 8120 is attached to a standard (dedicated or shared) landline. Data is automatically collected by m2mLive service and made accessible to any device with web access.

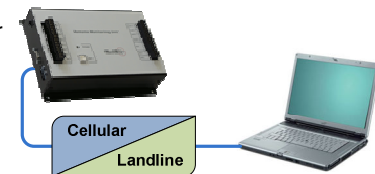
Requires m2mLIVE Service.



Cellular-to- PC/Terminal

Messenger 8120 is attached to a cellular interface. PC (with terminal software) or data terminal is attached to a landline.

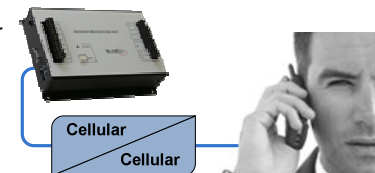
Requires optional "GMA2011 Cell-Com Kit". Supports remote administration.



Cellular-to-Phone or Cell Phone

Messenger 8120 is attached to a cellular interface. Voice reports are delivered to any standard phone or cell-phone.

Requires optional "GMA2011 Cell-Com Kit". Supports remote administration.



Cellular-to-Fax

Messenger 8120 is attached to a cellular interface.
Printed reports are delivered to any standard fax.

Requires optional "GMA2011 Cell-Com Kit". Supports remote administration.

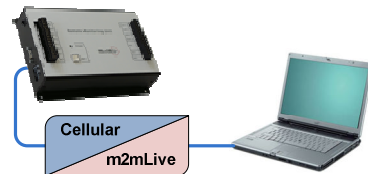


Cellular-to-Website

Messenger 8120 is attached to a cellular interface.

Data is automatically collected by m2mLive service and made accessible to any device with web access.

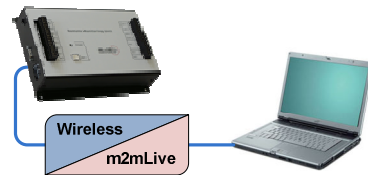
*Requires m2mLIVE Service
Requires optional "GMA2011 Cell-Com Kit". Supports remote administration.*



Wireless-to-Website

Messenger 8120 is attached to a wireless data interface.
Data is automatically collected by m2mLive service and made accessible to any device with web access.

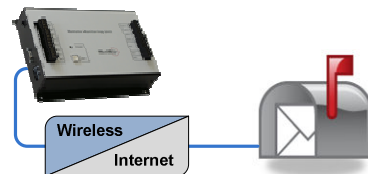
Requires optional "GMA2012 GSM-Com Kit". Requires m2mLIVE Service



Wireless-to-TCP/IP

Messenger 8120 is attached to a wireless interface.
Data is accessible via telnet and other internet protocols.

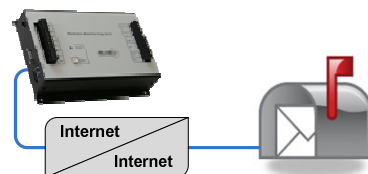
Requires optional "GMA2012 GSM-Com Kit". Supports remote administration



TCP/IP-to-TCP/IP

Messenger 8120 is attached to an Ethernet interface.
Data is accessible via telnet and other internet protocols.

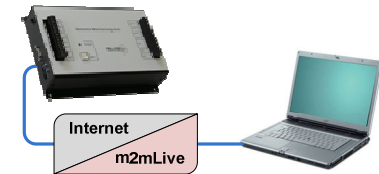
Requires optional "GMA2014 Ethernet-Com Kit". Supports remote administration



TCP/IP-to-Website

Messenger 8120 is attached to an Ethernet interface.
Data is automatically collected by m2mLive service and made accessible to any device with web access.

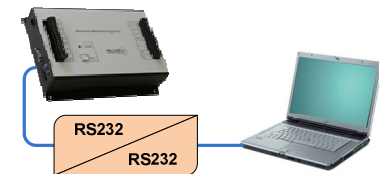
Requires optional "GMA2014 Ethernet Com Kit". Requires m2mLIVE Service



Direct-to-RS232 PC/Terminal

Messenger 8120 attaches directly to a PC (with terminal software) or data terminal.

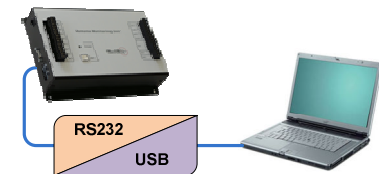
*Standard feature (RS232 cable not included).
Supports remote administration.*



Direct-to-USB PC/Terminal

Messenger 8120 System connects directly to the USB port of a PC.
Messenger 8120 attaches directly to a PC (with terminal software) or data terminal.

*Standard feature (RS232 cable and USB adapter not included).
Supports remote administration.*



Select your Sensors

Every remote monitoring system requires sensors to convert physical variables (such as temperature, flow or level) into electrical signals that can be processed, recorded and transmitted.



The Messenger 8120 Remote Monitor works directly with any sensor that provides an industry-standard 4-20 mA, 0-5VDC, pulse or dry-contact output. It also supports low-cost thermistors for temperature sensing.

Examples of conditions that can be monitored by sensors include:

Acceleration	Acoustic Energy
Conductivity	Current
Flow	Light
Limit Switch	Linear Position
Occupancy	ORP
pH	Power
Rotary Position	Temperature
Vacuum	Vibration
Voltage	Water Quality
Weight	Wind Speed

There are thousands of sensor manufacturers that offer tens-of thousands of sensors to satisfy most any application.

Global Monitoring offers a selection of sensors specifically for use with the Messenger 8120.

Sensors Magazine publishes a comprehensive list of sensor manufacturers available online at

http://sensorsmag.globalspec.com/ProductFinder/Sensors_Transducers_Detectors

Global Monitoring has published a number of online resources to help you locate the right sensor for your specific application. Please visit

www.globalmonitoring.com/support

Install the hardware

This section describes the procedure for installing the Messenger 8120 Remote Monitor. It includes details on how to –



- *Locate and mount the system*
- *Connect sensors*
- *Connect output devices*
- *Connect a power source*
- *Connect a landline or other communication service*
- *Start the system*

The Messenger 8120 Remote Monitor ships with a phone cord, AC power adapter, and an internal 12 VDC rechargeable battery and basic mounting hardware. Sensors, hookup wire/cable, and installation tools are not included.

A variety of accessories to help solve installation and communications issues are offered on our website.

Locate and mount the system

Locate the Messenger 8120 Remote Monitor in an area that is close to the conditions being monitored, but protected from tampering and from environmental extremes. If located outdoors or in a damp, dusty or dirty environment, the Messenger 8120 Remote Monitor, power-supply, and any optional Com-Kits must be mounted inside a suitable enclosure.

The Messenger 8120 can be mounted with four screws (one at each corner), or with three screws. For three screw installation, hang the Messenger 8120 on the 'keyhole' cutout on back of unit and fasten with screws at bottom corners. A mounting template is available on our website.

Fiber or nylon washers should be used under each screw to protect the finish on the enclosure.

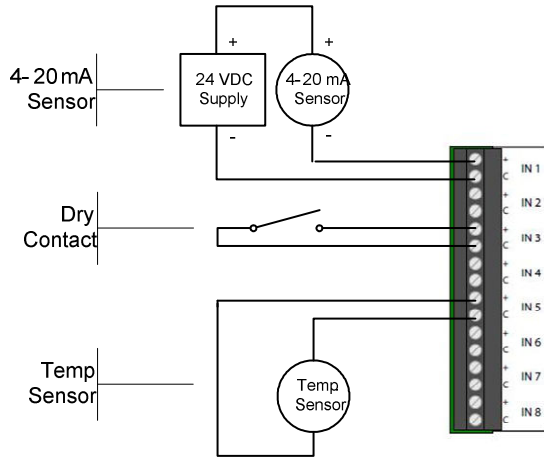
Input Wiring

Inputs should be wired with 14 to 22 gauge wire. Twisted pair cable is recommended for runs in excess of 20 feet.

Input signals must not exceed 5 VDC or 25 mA.

Keep in mind that the inputs are referenced to “common” – they are not electrically isolated from each. Certain applications may require the use of a signal isolator.

Typical Wiring Connections



Need Additional Inputs?

Up to three Input Expansion Modules (see options and accessories) can be attached to the Messenger 8120 to expand its monitoring capacity to 32 inputs. The modules are attached via twisted-pair cable and can be located up to 500 feet from the system.

Auxiliary DC Output

The DC-1 terminals provide 12 VDC (nominal) at up to 500 mA to power external sensors and accessories. This power is taken from the backup battery and will provide uninterruptible power, even during a power outage. A full load will decrease the amount of battery backup time by about 30%.

Connecting the Outputs

The Messenger 8120 has four output relays that can be controlled remotely or automatically in response to alarm conditions or input parameters. Each relay can switch up to 3 amps.

Connect to a Communications Service

If you are using any of the communication modes that require ‘land-line’ phone service, follow the directions below. For other communication modes that require one of our optional Com-Kits, follow the instructions included with that kit.

Selecting a landline – The Messenger 8120 Remote Monitor is compatible with most public phone systems found throughout the world and with certain VoIP systems such as Verizon FIOS.

Caution: Certain office phone systems will only work with proprietary telephone equipment. Before you attach the Messenger 8120 to an office phone line, make sure that the phone line is compatible with ‘standard’ telephone equipment such as a fax or modem, otherwise, damage could occur to the Messenger 8120 and/or the office phone system.

Connect the phone cord from either of the two phone jacks located on the side of the Messenger 8120 to an active phone line.



Ideally, the Messenger 8120 should be the only device on the line, however, it is often possible to share a phone line with a fax, or telephone. Contact technical support for additional information about line sharing.

Test the landline by temporarily connecting a standard telephone to the unused jack on the side of the Messenger 8120. Make sure you can place and receive calls. Check both pulse and tone dialing modes and make a note of any prefixes (such as “9”) that may be required to place a call.

Connect a power source

AC Operation

The Messenger 8120 Remote Monitor ships with a 15 VDC Energy Star and CEC (California Energy Commission) compliant power supply. Insert the power supply cable into the Messenger 8120.



Plug it in

When all wiring connections are complete, plug the power supply into a non-switched (always on) power outlet.

Contact Global Monitoring for other power options.



Backup Battery

An internal rechargeable battery maintains full system operation for up to 4 hours in the event of a power outage.

Enabling the Backup Battery

The backup battery is automatically enabled when the power supply is connected to an AC power source. If AC power is lost, the battery provides power to the Messenger 8120 and any sensor or accessory attached to the DC output for up to 4 hours. When AC power returns, the battery recharges. A full recharge can take 48 hours.

Disabling the Backup Battery

The backup battery is automatically disconnected when the battery is about 90% discharged. The battery is also disconnected when the power cable is removed from the side of the Messenger 8120.

Configure the system

This section takes you step-by-step through the process of configuring the Messenger 8120 to your unique remote monitoring application.



Initiate Communication

Configuration is performed with a data terminal or a PC running a terminal emulation program. Many PCs include a terminal emulation program (such as HyperTerminal). If you need a terminal emulation program, visit www.globalmonitoring.com/support.

Configuration can be performed locally (via a serial connection), or remotely via a dial-tone connection.



The factory default serial port settings are: 8 data bits, no parity, 1 stop bit (8N1) at 38,400 bps, with hardware handshaking. Use a "DB9M to DB9F" cable if your computer has an RS232 port, or use a "DB9M to USB" cable if your computer does not have an RS232 port. Either cable can be obtained from a computer supply distributor or from Global Monitoring.

For detailed instructions for establishing communications with the Messenger 8120, refer to the document 'Step-by-Step: Use HyperTerminal to access your Remote Monitors' available on our website.

Login

Once connected, the Messenger 8120 will identify itself and request a security code. The default code is "11111111".

```
Midland Pumping Station - HyperTerminal
File Edit View Call Transfer Help
GMU8100
On Line
Site: Midland Pumping Station
Code: *****
Time: 09/07/2009 11:11:02
Enter Security Code >*****
```

Entering Commands

When the Messenger 8120 is ready to accept a command, it will issue a command prompt that looks like:

COMMAND>

Commands that you issue to the Messenger 8120 are in the form of a three-letter-abbreviations (such as INP for input) followed by a fourth letter that designates the type of command.

Here are a few common commands:

COMMAND>INP R Request an **Input Report**

COMMAND>TIM O **Time Operations** (Set the time and date)

COMMAND>SEC S **Security Setup**

Note: The Messenger 8120 will time-out and automatically go off line if there is no communications activity for three minutes. Use the XON command to disable the timeout feature.

Change the Security Codes

The Messenger 8120 provides three security codes, each permitting access to the system but with varying levels of privilege.

	Level 1	Level 2	Level 3
View Reports	✓	✓	✓
Download data. Modify certain parameters.	✓	✓	
Modify any parameter.	✓		

At the COMMAND> prompt, type SEC S. Then select menu item #1 (to set Security Code 1). Then enter an 8 digit security code. Only the digits 0-9 are accepted. You will be prompted to re-enter the security code for validation.

Repeat this process for security code #2 and security code #3.

Give the Messenger 8120 an Identity

There are three programmable fields to differentiate Messenger 8120 monitoring systems from each other; a Code Number, Unit Phone Number and Site Name.

Code Number

Code Number is an eight-character alphanumeric field used to identify the Messenger 8120 to either the free or subscription-based m2mLive service. If you subscribe to the service, you will be given an account code to enter here. If you do not subscribe to the m2mLive service, you can repurpose this field for your own use. The information in this field appears on the login screen and in certain other reports.

At the COMMAND> prompt, type SEC S. Then select menu item #4 (to set Code Number). Then enter an eight-character code.

Unit Phone Number

Unit Phone Number is generally set to the phone number of the dial-tone line to which the Messenger 8120 is attached. The Messenger 8120 vocalizes the numeric information in this field when delivering certain Voice Mode reports.

At the COMMAND> prompt, type SEC S. Then choose menu item #5 (to set the Unit Phone Number). Then enter the phone number of the dial-tone line to which the Messenger 8120 is attached.

Site Name

Site Name is a 23-character alphanumeric field that contains any descriptive information of your choosing such as "123 Main St., 19123" or "Communications Closet". This information appears on the login screen and in certain other reports.

At the COMMAND> prompt, type SEC S. Then choose menu item #6 (to set the Site Name). Then enter a descriptor of up to 23 characters.

Set the Time

At the COMMAND> prompt, type TIM O. You will be prompted to enter the date, followed by the time. Follow the formatting instructions carefully.

Configure the Inputs

Each input channel has a set of programmable parameters that define how the input signal is reported and how it performs alarm, control and data logging activities.

At the COMMAND> prompt, type INP S. Then select the menu number corresponding to the input channel you wish to modify. The Messenger 8120 present a list of parameters for that channel.

Basic Parameters

Every input channel has a **Label**, **Sensor Type** and **Data Logging** parameter.

Label - The alpha-numeric label identifies the input channel on reports. It can be up to 12 characters long and contain any printable characters. In voice mode, certain specific labels are recognized by the Messenger 8120 and are explicitly vocalized. The label name "Flow", for example, is a recognized label name that

will be vocalized as *flow*, while labels that are not recognized will be vocalized by input number.

Sensor Type instructs the Messenger 8120 to process the input signal in a particular way depending on the type of sensor attached to the input channel.

Select Sensor Type 01 or 02 if you are using a Global Monitoring supplied temperature sensor.

Select Sensor Type 03 if the sensor produces an "ON/OFF" signal, such as from a switch, open-collector or logic signal.

If you are using a sensor that generates pulses (such as a rotation sensor, bucket-tip rain gauge or pinwheel flowmeter), choose type 04 for totalization or 05 for rate. Remember that the maximum pulse rate is 120 per minute.

Select Sensor Type #6 for a sensor that produces a signal that varies in voltage, current or resistance.

Select Sensor Type 09 for a 4 to 20 mA sensor.

Data logging can be enabled or disabled on a "per channel" basis. Disabling data logging on any channel allocates additional memory to the other channels and helps reduce download times.

Scaling Parameters

Sensors generally output a variable voltage or current that corresponds to some real-world condition. A level sensor on a 5000 gallon tank, for example, may produce a 4mA signal when the tank is empty, increasing linearly to 20mA when the tank is full. The Messenger 8120 provides several scaling parameters to convert most sensor signals into real-world information.

Bottom of Scale applies to input types #06 and #09. Enter the real-world value corresponding to the sensor's bottom-of-scale reading. In the example cited above, the value would be 0.

Top of Scale applies to input types #06 and #09. Enter the real-world value corresponding to the sensor's top-of-scale reading. In the example cited above, the value would be 5000.

Gain is a fixed 'pulse multiplier' that applies to input types #04 and #05. If a pinwheel flow-meter, for example, produced 1 pulse for every 5 gallons of flow, then a multiplier of 5 converts the pulse count into gallons. Note: Decimal gains are also permitted – if a flow-meter produces 10 pulses for every gallon of flow, then a multiplier of 0.1 would convert the pulse count into gallons.

Calibration Offset helps compensate for small inaccuracies in the sensor by adding or subtracting a constant from the reported value. If a tank, for example, is reporting 450 gallons when the actual level is 455 gallons, simply enter the correct value (455 in this case). The Messenger 8120 will calculate and store a corrective offset. This parameter applies to input types #01, 02, 06 and #09.

Decimal Places applies to input types #04, 05, 06 and #09. Enter a number corresponding to the number of decimal positions that you want to appear in various reports.

Units applies to input types #04, 05, 06 and 09. It is simply a 3 character abbreviation of your choosing (VDC, RPM, Gal, KG, m, etc) denoting the physical property being measured. This parameter appears in certain reports to enhance readability. It has no effect on the information being collected.

Open Description applies to input type #03. When a discrete input is in its 'open' position, it can be reported as open, closed, high, low, alarm, ok, on, off, "1", or "0".

Closed Description applies to input type #03. When a discrete input is in its 'closed' position, it can be reported as open, closed, high, low, alarm, ok, on, off, "1", or "0".

Timing Mode applies to input rate calculations. Select either minutes or hours as the timing window for rate calculations (gallons per minute, gallons per hour, etc).

Alarm Parameters

High Alarm applies to input types #01, 02, 04, 05, 06 and 09. Enter the real-world value corresponding to the sensors bottom-of-scale reading. In the example cited above, the value would be 0. To disable the high alarm, set it equal to the top-of-scale parameter

Low Alarm applies to input types #01, 02, 05, 06 and 09. Enter the real-world value corresponding to the sensors top-of-scale reading. In the example cited above, the value would be 5000. To disable the low alarm, set it equal to the bottom-of-scale parameter

Response Time applies to input types #01, 02, 03, 06 and 09. Enter a time from 1 second to 32000 seconds. An alarm does NOT trigger unless an alarm condition exists for the entire response time. If the alarm condition returns to normal – even momentarily, the response timer is reset. A response time of '0' provides a near instantaneous alarm trigger.

Rate Alarming applies to input types #01, 02, 06 and 09. Use this parameter in conjunction with the OUT O command to set a rate of change alarm. A rate of change alarm exists when the input changes by the value in this parameter within the time specified in the OUT O parameter. Note that the rate of change parameter can be positive or negative.

Alarm applies to input type #03. Use this parameter to enable or disable alarms. If alarms are enabled, they can be triggered on either an open or closed condition.

Control Parameters

Each input can control a dedicated run-time meter. In addition, inputs #1, 2, 3 and 4 can control output relays #1, 2, 3 & 4 respectively.

Output On Set Point applies to input types #01, 02, 03, 05, 06 and 09. When the input value exceeds this parameter, the run-timer is activated. In addition, an output relay will activate if so configured through the **OUT S** command.

Output Off Set Point applies to #01, 02, 03, 05, 06 and 09. When the input value falls below this parameter, the associated run-timer and/or output relay is activated by the action of the Output On Set Point will be turned off. You can offset the Output On and Output Off setpoints to reduce or eliminate relay chatter.

REPEAT THE ABOVE FOR EACH INPUT

Enable the Power Alarm

The Messenger 8120 has a built-in power sensor that detects the presence or absence of primary power (which usually comes from an AC power supply). Use the **POW S** command to enable or disable this alarm. Note that power outage events are logged regardless of this setting.

Enable Alarm Actions

The Messenger 8120 System continually monitors the configured inputs and power sensor for alarm conditions that you have defined. If an alarm condition is detected, the Messenger 8120 can do any combination of the following:

- 1) Illuminate a front-panel alarm indicator
- 2) Sound a Local Alarm Beeper
- 3) Activate a relay
- 4) Record an alarm event in the data logger,
- 5) Initiate an alarm notification process.

Front Panel Indicator – This indicator is always enabled. It will begin to blink whenever a new alarm condition is detected and will continue to blink until the alarm is acknowledged – either by pressing the front-panel alarm button or issuing an acknowledgement command to the unit

The Local Alarm Sounder is enabled or disabled through the **ALM S** command. If enabled, it will alternate on and off in step with the front panel alarm indicator. The alarm sounder shuts off when alarms have been acknowledged.

If so configured through the **OUT O** command, an output relay can open or close if an alarm exists, or close if an unacknowledged alarm exists. Specific alarms can be directed to specific output relays, for example: output #1 could close if any alarm exists, while output #2 can close only if there is an unacknowledged alarm on inputs #2 and #7.

Alarms can also initiate a dial-out notification process and deliver voice, data or faxed reports.

Configure Dial-Out Notifications

At the **COMMAND>** prompt, type **PHO O** to display a list of 8 numbers to be dialed for alarm notification.

Select an entry to edit. When prompted, enter a name and phone number following the on-screen instructions. Note that every phone number must begin with a “V”, “D” or “F” to instruct the Messenger 8120 to make a voice call, data transmission or fax report.

Start the Data Recorder

The Messenger 8120’s data logger records all system-wide events such as alarms, online sessions, resets and failed login attempts. It can also be configured to record input and output conditions on a periodic basis.

Logging period

At the **COMMAND>** prompt, type **LOG S**. Select #1 and enter the logging period in HH:MM:SS format.

Start the Output Controller

The Messenger 8120 includes four output relays that can be used to control or reset equipment - either on demand or response to input set-points or alarm conditions.

- In manual mode, an output is controlled by the user. This mode is useful for remotely resetting equipment.
- In set-point mode, an output is controlled by “on” and “off” set-points on a designated input channel. A common use for this mode is to regulate tank levels by controlling a pump. Other applications include temperature and pH control.
- In alarm mode, an output is controlled by the alarm status of the Messenger 8120. Use this mode to shut down equipment or to activate a warning device.

You can mix or match control mode settings among the two output channels. The output control mode settings are found in the **OUT S** menu.

There are three variations of set-point mode, differing only with respect to the time-of-day in which the automatic control is active.

Automatic Control is active 24/7. The output will automatically turn ON or OFF as determined by the Output ON and Output OFF setpoints on its corresponding input. Use the **INP S** command to set or change these control setpoints.

Automatic Day - Identical to Automatic, except that control only occurs during daytime hours. The output is OFF during nighttime hours. Use the **INP S** command to set or change the control setpoints and the **DAY S** to set or change Start of Day and End of Day.

Automatic Night - Identical to Automatic, except that control only occurs during nighttime hours. The output is OFF during daytime hours. Use the **INP S**

command to set or change the control setpoints and the **DAY S** to set or change Start of Day and End of Day.

Alarm Mode - When using one of the alarm tracking modes to control an output, you must enter an alarm mask for that output. The alarm mask indicates which input's alarm conditions should be used to control the output. The alarm mask is a two-character hexadecimal number representing an eight-bit binary mask. The least significant bit of the mask correlates to input #1, the most significant bit of the mask correlates to input #8. If a bit in the mask is set to 0, alarms on the correlating input *will not control the output*. Conversely, if a bit is set to 1, an alarm on the correlating input *will control the output*.

As an example, if you want output #1 to be controlled by alarms on input channels 1 through 4, but ignore alarms on channels 5 through 8, you would use **0F** (equivalent to binary 00001111) as the alarm mask.

Close on Active Alarms - The output will go on (close) when an alarm condition presently exists on any of the inputs designated by the alarm mask. A present alarm is considered to be active when an input alarm setpoint is exceeded for longer than the input's response time.

Open on Active Alarms - The output will go off (open) when an alarm condition presently exists on any of the inputs designated by the alarm mask. A present alarm is considered to be active when an input alarm setpoint is exceeded for longer than the input's response time.

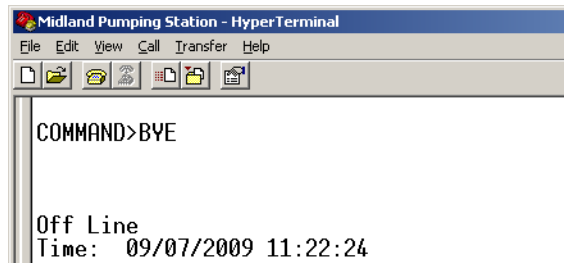
Close on Unacknowledged Alarms - The output will go on (close) when an alarm condition exists on any of the inputs designated by the alarm mask and stay on even if the alarm condition goes away. It will turn off (open) when the alarm condition is acknowledged.

Schedule Reports

The Messenger 8120 can send a status report to a phone, computer or fax on a scheduled basis. You could, for example, have it send a daily summary report to a fax. At the **COMMAND>** prompt, type **SCH S**. Then edit the menu options in sequence to enable the scheduler, define the schedule and enter a destination phone number.

Check your Work and Logoff

You've completed the basic setup. Type **BYE** to end the session.



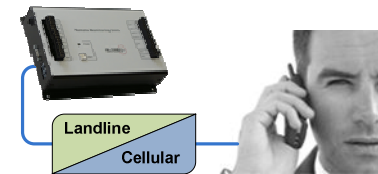
Information the way you need it



You've configured your Messenger 8120 Remote Monitor to monitor and record conditions at a remote site. Now you're ready to check the status of the conditions at the remote site, analyze activity and control the operation of equipment.

Information to your Phone or Cell Phone

If your Messenger 8120 is connected to a dial-tone line, you can call it from any cell-phone or telephone to check monitored conditions, control outputs and acknowledge alarms.



Use your land-line or cell-phone to call the Messenger 8120. When it answers, you will hear a "bong" sound, followed by a few seconds of silence. Press the **"#"** key on your phone during the time of silence. The system will switch to voice mode, identify itself and prompt you for a security code (if you fail to press the **"#"** key at the proper time, just hang up, wait 2 minutes, and try again). Once the Messenger 8120 enters voice mode, use the buttons on your phone to key in your security code.

All commands are 3 letter abbreviations that you spell out on your phone's keypad followed by the **"#"**. To hear an input status report, for example, key in **I N P #** and you will hear a report of input conditions.



Important:

If the Messenger 8120 fails to respond to a command, press the **"#"** key at two-second intervals until you hear **"OK"** or hang up, wait 2 minutes and try again.

To check output status, press O U T #

MNO 6 TUV 8 TUV 8 #

To control outputs, press "O" (for **O**utput) followed by the number of the output you want to control (1, 2, 3 or 4) followed by 1 for on or 0 (zero) for off.

EXAMPLE: To turn output three OFF, press "O", "1", "0", "#" on the phone keypad.

MNO 6 1 OPER 0 #

To turn output three ON, press "O", "1", "1", "#" on the phone keypad.

MNO 6 1 1 #

Note that the outputs must be configured for manual control.

To acknowledge an alarm or check alarm status, press

ABC 2 JKL 5 MNO 6 #

To end a voice mode session, simply press BYE.

ABC 2 WXY 9 DEF 3 #

Information to your Terminal or PC

If your Messenger 8120 is connected to a dial-tone line, you can call it from any modem-equipped data terminal or PC to access all of its monitoring and control capabilities.

After you initiate communication with the Messenger 8120, you will be prompted to enter your password (which was set during the configuration process).

```
GMU8100
On Line
Site: Midland Pump Company
Code: m2100317
Time: 03/17/2010 12:40:53
```

```
Enter Security Code >*****
```

When you receive the COMMAND> prompt, press the ENTER key and you will get a list of available commands.

```
COMMAND>
```

```
COMMAND MENU
=====
ALM = Alarms
BYE = End Session
CNT = Pulse Counter
INP = Inputs
LOG = Data Recorder
OUT = Outputs
PHO = Phone Data
POW = AC Power
RUN = Input Runtimers
SCH = Scheduled Dial Out
SEC = Security
```

Each three-letter command is followed by an "R" for a report, or "O" for options, or "S" for setup. So, for example, to get a real-time report of the present condition of the inputs including any that may have exceeded an alarm setpoint, type "INP" followed by an "R". Analog inputs will provide LO, HI, and OK status; discrete will provide AL and OK indicators.

```
COMMAND>INP R
```

```
INPUT STATUS REPORT
=====
Sensor #1 OK 20.00 mA Switch #5 OK OPEN
Sensor #2 OK 20.00 mA Switch #6 OK OPEN
Sensor #3 OK 15.54 mA Switch #7 OK OPEN
Sensor #4 OK 20.00 mA Switch #8 OK OPEN
```

```
Time: 03/17/2010 12:41:40
```

```
COMMAND>OUT R
```

```
OUTPUT STATUS REPORT
=====
Output #01 Manual OFF
Output #02 Manual OFF
Output #03 Manual OFF
Output #04 Manual OFF
```

```
Time: 03/17/2010 12:42:29
```

Type SEC R at the command prompt. Note: These counters and timers are non-volatile and will be retained even if all power is removed from the Messenger 8120 system

```
COMMAND>SEC R
```


SECURITY REPORT

```
=====
Total Alarms:      41
Access Denials:    4
On-line Sessions: 69
Service Outages:  10
System Hours:     73.8
```

Each of the 8 built-in inputs has a timer that starts whenever its value exceeds its *output on* setpoint and continues to run until its value drops below its *output off* setpoint. To read the timers, type RUN R. To reset the timers, type RUN S.

INPUT RUNTIME REPORT

```
=====
Sensor #1         01:21:08
Sensor #2         00:00:05
Sensor #3         00:00:25
Sensor #4         00:00:02
Switch #5        00:00:01
Switch #6        00:00:02
Switch #7        00:00:02
Switch #8        00:00:00
Time format:     hh:mm:ss
```

Each of the 8 built-in inputs has a counter that increments whenever its value transitions from low to high. To read the counters, type CNT R. To reset the counters, type CNT S.

INPUT COUNTER REPORT

```
=====
Sensor #1         51
Sensor #2         2
Sensor #3         24
Sensor #4         1
Switch #5        1
Switch #6        3
Switch #7        1
Switch #8        1
```

Type POW R to check the status of the AC power.

AC POWER REPORT

```
== =====
AC Power is On
```

Type ALM R for an alarm status report. If there are any unacknowledged alarms, you will be given the option to acknowledge them.

```
COMMAND>ALM R
```

```
ACTIVE ACKNOWLEDGED ALARMS
```

```
=====
```

None

UNACKNOWLEDGED ALARMS

```
=====
```

None

Type PHO R for a listing of the designated dial-out phone names and numbers.

PHONE NUMBER REPORT

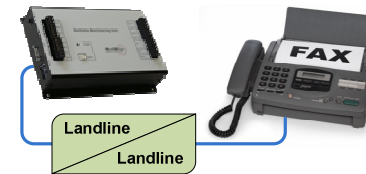
```
=====
1 - Office      V16105551212
2 - Phone #2   No Number
3 - Phone #3   No Number
4 - Phone #4   No Number
5 - Phone #5   No Number
6 - Phone #6   No Number
7 - Phone #7   No Number
8 - Phone #8   No Number
```

Output Control

Use the OUT O command and select the channel you want to control and use the spacebar to manually toggle the output "on" or "off."

Information to your Fax or eFax

The Messenger 8120 system can send alarm reports or periodic status reports directly to a fax machine.



To send alarm reports to your fax machine, use the PHO O command and add your fax number to the alarm dial-out sequence. Remember to prefix the phone number with an "F".

To send periodic status reports to your fax machine, use the SCH S command and follow the menu directives.

Getting data via the internet

The Messenger 8120 can communicate with you over the internet in a variety of ways:

Free Monthly Diagnostics via email – Global Monitoring offers a *free* monthly diagnostics service in which our automated *m2mLive* communications server will

attempt to call your Messenger 8120 and perform a number of tests to insure that your monitoring system is working properly. A diagnostics report is delivered to you via email.

Consolidated Reports to your Browser – This economical service enables you to view data from any number of remote locations from any browser with internet access. Global Monitoring's *m2mLIVE* communication server calls each of your sites at pre-determined intervals to collect and archive data. You can view recent or historical data and view a variety of operational and diagnostic reports.

Alarm handling

Responding to an alarm message - Voice Mode

When the Messenger 8120 detects an alarm it will dial any phone number designated to receive voice mode alarms. When the phone is answered, the Messenger 8120 system will repeat the alarm message up to six times:

"Hello, this is telephone number one two three four five six seven. Alert condition exists."

Recipients of such calls should press and hold any keypad button for one to two seconds. The Messenger 8120 system will respond with the following message:

"OK. Enter security code."

When a correct security code has been entered, the Messenger 8120 system will say, "Yes." Then press **INP#** to learn the cause of the input alarm condition and type **ALM#** to acknowledge receipt of the alarm message.

Responding to an Alarm Message - Data Mode (local)

For local response, an indicator on the front panel of the Messenger 8120 system will flash if there are any unacknowledged alarms. An ALARM CANCEL switch enables alarms to be canceled from the front panel.

The indicator will remain on continuously if there are acknowledged alarms.

Was the alarm message delivered?

Whenever the Messenger 8120 attempts to deliver an alarm message, the data logger creates a time-stamped record indicating either a 'dial-out status' (DOS), or a 'dial-out failure' (DOF).

In many (but not all) cases, these records can be used to infer if an alarm message was delivered. It is important to note that it is not always possible to determine if an alarm message was delivered such as in the case of dialing an answering machine.

In voice mode, the only positive indication that a message was delivered is a DOS (dial-out status) log entry followed immediately by an ON (online) log entry. In order for this to occur, the called party must press the "#" key on their phone at any time during the alarm message and enter their 8 digit security code when prompted.

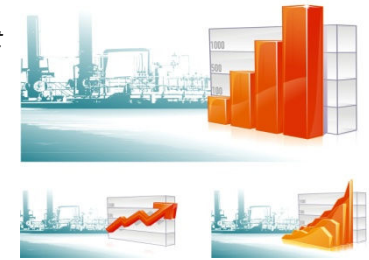
For improves results, we recommend adding a "W" before the phone number in voice mode to force a DOF log entry in cases where phone service has been disconnected from the GMU8100.

The following chart helps decode the meaning of the dial-out codes.

		How responses are logged						
Alarm dialing string programmed into the Messenger 8120	Action taken by the Messenger 8120 when an alarm is detected.	Messenger 8120 does not detect dial-	Messenger 8120 dials, but line is busy	Messenger 8120 dials, but there is no	Ans by human, no action taken	Ans by human, successful login	Answered by FAX	Answered by MODEM
V5551212	Dial 5551212 whether or not a dial-tone is detected. Deliver a voice message.	DOS	DOS	DOS	DOS	DOS	DOS	DOS
VW5551212	Wait for dial-tone, then dial 5551212 and deliver a voice message.	DOF	DOS	DOS	DOS	DOS	DOS	DOS
V9W5551212	Dial 9, wait for second dial-tone, then dial 5551212. Deliver a voice message.	DOF	DOS	DOS	DOS	DOS	DOS	DOS
VW9W5551212	Dial 9, wait for second dial-tone, then dial 5551212. Deliver voice message.	DOF	DOS	DOS	DOS	DOS	DOS	DOS
F5551212	Dial 5551212 whether or not a dial-tone is detected and connect to a fax.	DOF	DOF	DOF	DOF		DOS	
FW5551212	Wait for dial-tone, then dial 5551212 and connect to a fax.	DOF	DOF	DOF	DOF		DOS	
F9W5551212	Dial 9, wait for second dial-tone, then dial 5551212 and connect to a fax.	DOF	DOF	DOF	DOF		DOS	
FW9W5551212	Dial 9, wait for second dial-tone, then dial 5551212 and connect to a fax.	DOF	DOF	DOF	DOF		DOS	
D5551212	Dial 5551212 whether or not a dial-tone is detected and connect to a modem.	DOF	DOF	DOF	DOF			DOS
DW5551212	Wait for dial-tone, then dial 5551212 and connect to a modem.	DOF	DOF	DOF	DOF			DOS
D9W5551212	Dial 9, wait for second dial-tone, then dial 5551212 and connect to a modem.	DOF	DOF	DOF	DOF			DOS
DW9W5551212	Dial 9, wait for second dial-tone, then dial 5551212 and connect to a modem.	DOF	DOF	DOF	DOF			DOS

Data logging and analysis

The Messenger records snapshots of all input and output conditions at critical moments that you have defined. This information can be downloaded and analyzed to provide valuable insight into the operation of a process, equipment, or facility.



Log Operations (LOG O)

Whenever a system or log event occurs, the Messenger 8120 system will write to memory a time-stamped record of parameters. System events such as system resets, alarm detection, alarm acknowledgments, alarm dial outs, etc. are automatically logged. Log events are logged at the periodic log rate if periodic logging is enabled. (See LOG S.) When the data log becomes full, the overload data will wrap around and erase previous data without any alarm or warning. It is up to the operator to set the log-time interval so that it will be possible to download the logged data before the data logger becomes full.

Data Extraction and Analysis

There are three methods that can be used to download data from the Messenger 8120. All three methods provide comma delimited data compatible with most spreadsheet and data analysis programs. To start the process, type **LOG O**.

```
COMMAND>LOG O
```

```
DATALOG OPERATIONS
```

```
=====
```

```
1 = Display uncompressed periodic log in ASCII.
2 = Download uncompressed periodic log using X-modem.
3 = Download compressed periodic log using X-modem.
5 = Display data log configuration.
0 = Previous Menu
Choose a Number>
```

Select option 1 (uncompressed ASCII) if you want to view the data on-screen or to capture it to a text file.

Select option 2 (uncompressed XMODEM) to initiate a file transfer. This is the recommended method to transfer large amounts of data from the Messenger 8120 system to a personal computer since it can detect and correct data errors that might occur during the file transfer (due to line noise, for example). This method will be explained later in further detail.

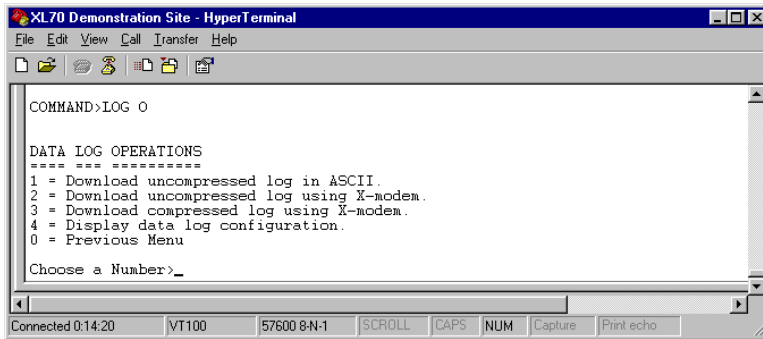
Select option 3 (compressed XMODEM) to initiate a compressed binary file transfer. This method is the NOT recommended since it requires a complicated

decompression step and since most modems already perform their own data compression and decompression.

Performing an XMODEM file transfer

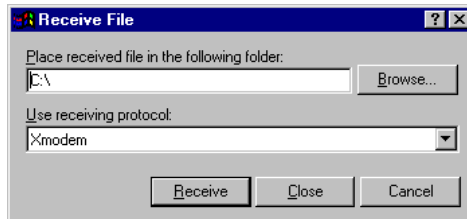
The file transfer procedure described below is simple, but time sensitive. Once started, it must be completed within 45 seconds, else the process will time out and need to be restarted.

At the command prompt, type LOG O and select option 2.



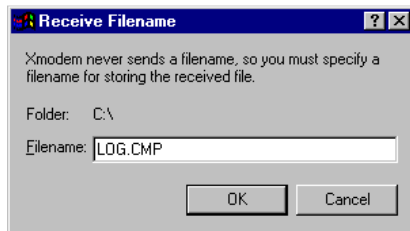
On the menu bar, click **Transfer, Receive File**.

Type the location where you want the received file to be stored. →
Set the **Use receiving protocol** to **XMODEM**. →
Click **Receive**. →

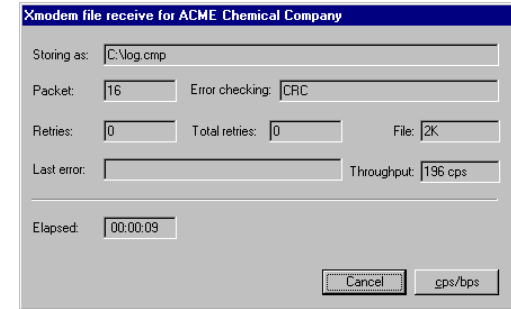


HyperTerminal will ask you to enter a name for your log file.

Use a name such as LOG.TXT →
Click **OK**. →



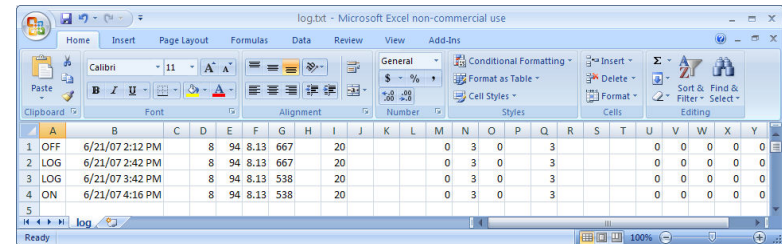
A dialog box will indicate the progress of the transfer. When the transfer is complete, HyperTerminal will automatically return to the terminal screen.



The contents of the downloaded file will look something like this:

```
OFF,06/21/2013 14:12:14.4,, 8,94,8.13,667,,19.95,,,,,0,3,0,,3,,,0,0,0,0,00
LOG,06/21/2013 14:42:39.0,, 8,94,8.13,667,,20.00,,,,,0,3,0,,3,,,0,0,0,0,00
LOG,06/21/2013 15:42:39.0,, 8,94,8.13,538,,20.00,,,,,0,3,0,,3,,,0,0,0,0,00
ON ,06/21/2013 16:16:06.4,, 8,94,8.13,538,,20.00,,,,,0,3,0,,3,,,0,0,0,0,00
```

Start Microsoft Excel and open the file that you just downloaded. Excel will recognize it as a text file and prompt you for import parameters. Specify delimited data with a comma delimiter. The spreadsheet will populate with one data-log record per row with one data field per column. Column 'B' should be formatted for 'date and time'.



Blank columns indicate 'reserved' fields or data fields for which data logging has been disabled.

The data fields are defined as follows:

Col	Field Name	Notes
A	Record Identifier	ACK = Alarm Acknowledged ALM = Alarm DOF = Dialout failure DOS = Dialout successful HI = High alarm (version specific) HKR = Two consecutive invalid passwords LOG = Periodic log LOW = Low alarm (version specific) MFL = Modem failure NOP = Reserved (version specific) NRM = Return to normal OFF = Offline ON = Online POW (version specific) RSF = Reset during log archive (version specific) RST = System reset RUN = Runtime (version specific) SBY = Standby (version specific) SRS = Watchdog reset. (version specific) TFL = Time clock failure
B	Time Stamp	MM/DD/YYYY HH:MM:SS.S
C	Reserved	System Status
D	Input #1	Value of the sensor attached to the input in engineering units.
E	Input #2	
F	Input #3	
G	Input #4	
H	Input #5	
I	Input #6	Monitors 'on-board' voltage levels. Used for factory diagnostics.
J	Input #7	
K	Input #8	
L	Output #1	Status of control outputs. 0 = OFF, 1 = ON
M	Output #2	
N	Output #3	
O	Output #4	
P	Reserved	

Environmental policy

Global Monitoring is committed to operate in an environmentally responsible manner. We often exceed the standards set for by the US Federal Government, the State of California, and the European Union.

Energy Efficiency - Global Monitoring products incorporate 'CEC' and 'Energy Star' compliant efficiency level IV power supplies that significantly reduce energy consumption.

Lead reduction/RoHS compliance - Global Monitoring's products are classified under the scope of the European Union's RoHS Directive as Category 9 products. Although not required to do so, we use RoHS compliant power supplies and offer a lead recycling program.

Packaging - Our packaging is designed to use bio-degradable and/or recyclable materials. Paper and cardboard components generally contain recycled paper fiber.

End-of-Life disposal program - Products that have completed their service life can be returned to Global Monitoring where they will be disassembled and recycled in an environmentally responsible manner.

Important notices

Global Monitoring's products are designed to monitor industrial equipment and/or processes. Global Monitoring's products must not be used for any life-support or human safety application including such applications as burglar/fire alarms, or detection of harmful or dangerous conditions.

Global Monitoring makes no warranty of any kind with regard to this publication, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

Global Monitoring shall not be liable for incidental or consequential damages in connection with the furnishing, performance, or use of its products.

This equipment has been tested and found to comply with the requirements in Part 15 of the FCC rules for a Class A digital device. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception, requiring the operator to take whatever steps necessary to correct the interference.

This class A digital device complies with Canadian ICES-003.

The technology embedded within this product is protected and may not be copied or reverse engineered.

Having problems? Need more information?

Visit our website for Application Notes, Service Bulletins, and Troubleshooting information or to open or review a trouble ticket.

<http://www.GlobalMonitoring.com/support>

Global Monitoring LLC.
491 Baltimore Pike #421
Springfield PA 19064
Office: + 1 610-604-0760
Fax: + 1 610-471-0440

www.GlobalMonitoring.com

© Copyright 1998-2013 Global Monitoring LLC

This document may be copied and used for the sole purpose of facilitating the sale, support or operation of products or systems sold by or manufactured by Global Monitoring LLC. Under no circumstances is this document to be edited, reformatted, or used for any other purpose unless authorized in writing by an officer of Global Monitoring LLC.

Global Monitoring, Messenger, Sensor Alert, m2mLive, Dancer Communications, Remote Possibilities, "Monitor Anything. Anywhere", m2m2GO, GMU8100, GlobalNet are trademarks or servicemarks of Global Monitoring and/or their owners.