



ME8000 Remote Tank Level Monitoring System

from
ManuFlo® TM
Flow Measurement Products

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Purpose of the ME8000:

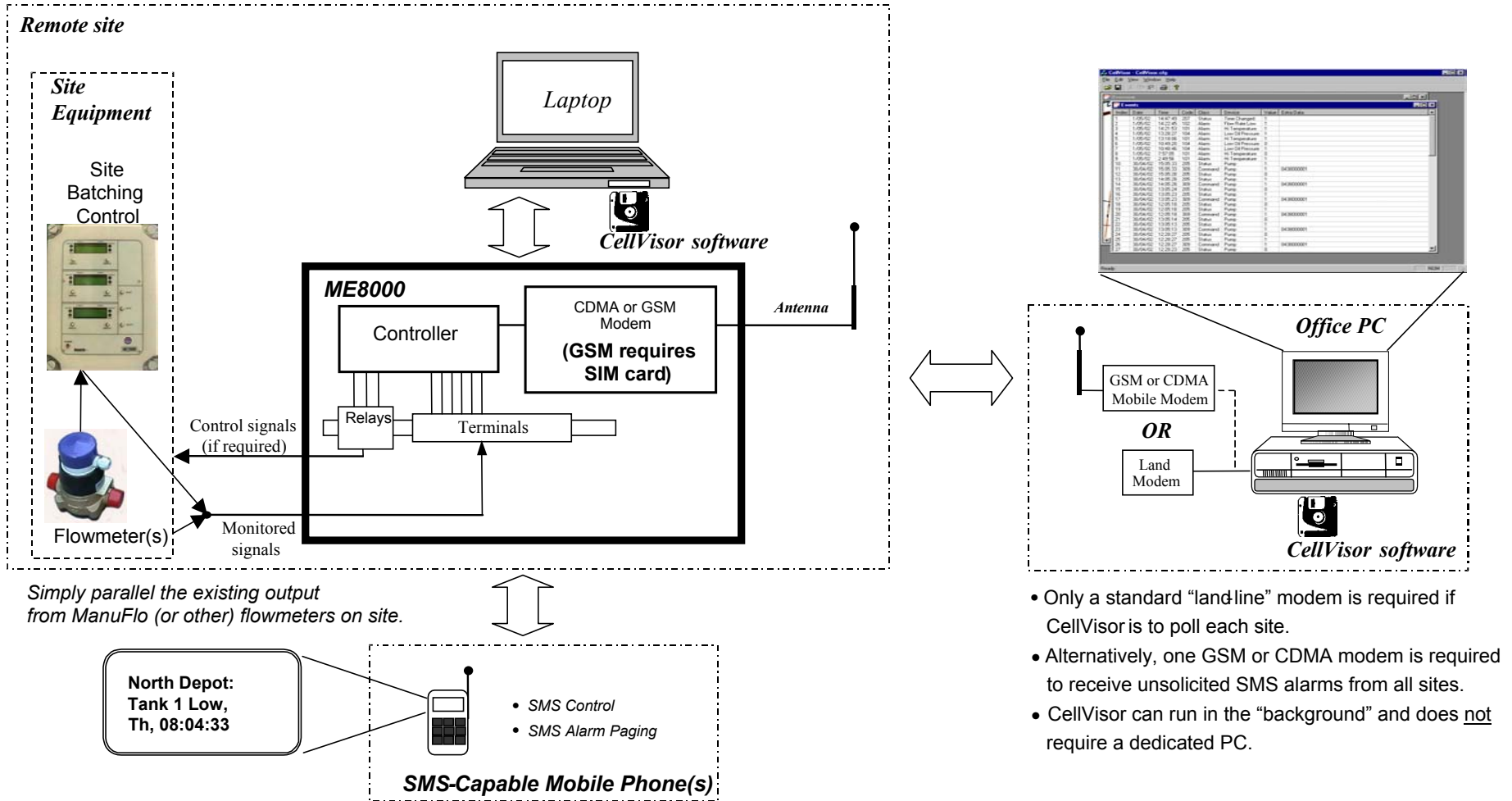
- to automate the inventory and supply of chemical stock levels across multiple sites, through measurement of chemical usage and communication via mobile networks.

The user can remotely verify the status of each site, either from a central location (PC in head office) and/or in the field via mobile phones or laptops (e.g. by admix delivery drivers, dispenser technicians).

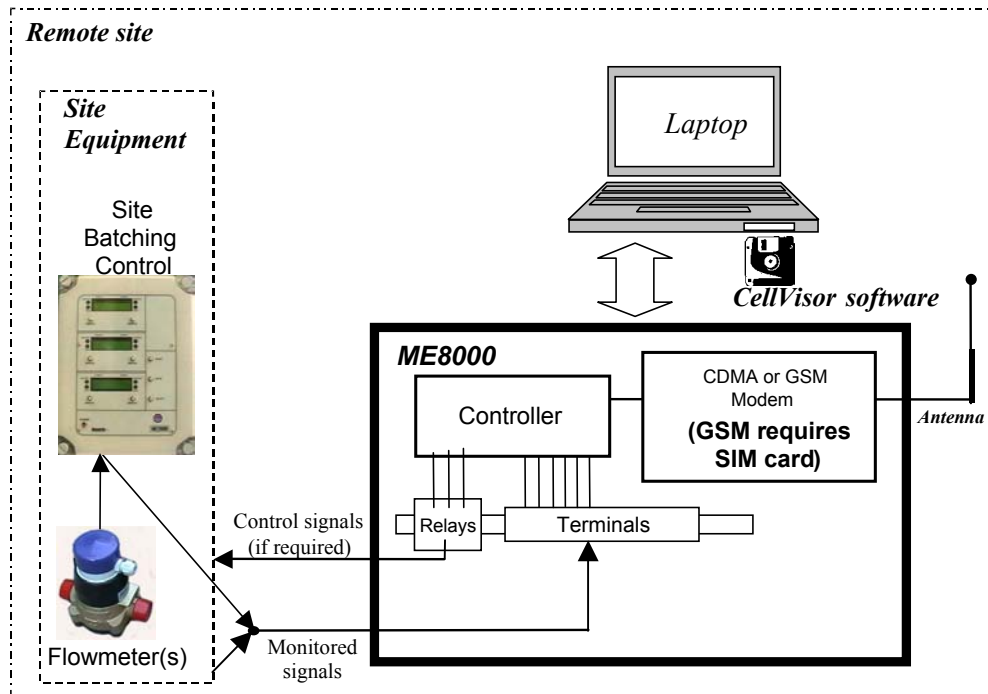
Features of the ME8000:

- uses pulses from existing installed flowmeters (up to 16 flowmeters) on a site. Easily incorporates into existing ManuFlo (or other) Admixture systems e.g. ME2000, UIC/A, ME995.
- time stamps every batch quantity, and records last 2000 operations – ideal for traceability of batches.
- issues immediate unsolicited alarms (e.g. to report low tank level), direct to selected personnel (e.g. delivery driver, dispenser technician, manager) to initiate deliveries.
- communication is via GSM (generally metropolitan) or CDMA (generally rural) mobile networks between ME8000 and mobile-phones/office-PC. The GSM and CDMA networks are linked.
- user can remotely verify site tank levels and site status, from an office PC, and in the field via mobile phones.
- can remotely control site via any authorised SMS-capable mobile phone.

System Overview



- Only a standard “land-line” modem is required if CellVisor is to poll each site.
- Alternatively, one GSM or CDMA modem is required to receive unsolicited SMS alarms from all sites.
- CellVisor can run in the “background” and does not require a dedicated PC.



Site Components

ME8000 unit(s) at a remote site:

- are connected to flowmeters (ManuFlo or other) that provide a digital pulse signal that indicates chemical usage.
- monitor and store information on tank levels.
- can monitor site signals.
- have antenna and a mobile modem (GSM or CDMA) for communications:
 - do not require a wired telephone connection.
 - if GSM, modem needs a SIM card.
- Tank totals can be retrieved on site via local Laptop/PC.

ME8000 units at a remote site:

- issue alarms if necessary using Short Message Service (SMS) text messaging to nominated recipients (set up via CellVisor software)
- transmit a watchdog message each day at predetermined time to selected mobile phone(s) and/or Central PC.
- receive authorised user commands via SMS e.g. to change alarm setpoints or remotely turn on controlled outputs.

GSM Modems use a SIM card



If the ME8000 has a GSM Modem, then it will also require a SIM card (Subscriber Identity Module card).

A GSM modem must have a SIM card in it to be able to connect to the network.

CDMA modems do not use a SIM card and connect directly to the network.

For a GSM modem, the SIM card is needed for SMS to operate and for remote connection.

- Note that the SIM card must have both:
 - a **VOICE number** - for the ME8000 to send and receive SMS messages, and
 - a **DATA number** - for the ME8000 to be accessible remotely for data transfers (e.g. site logs)
- The PIN (password) on the SIM card must be disabled.

Manu Electronics do not supply the SIM card, and the user is free to purchase whatever SIM card plan is appropriate. The ME8000 does not conduct "long" phone connections, therefore the least expensive monthly SIM card plan (with higher call rates) is usually the most cost-effective.

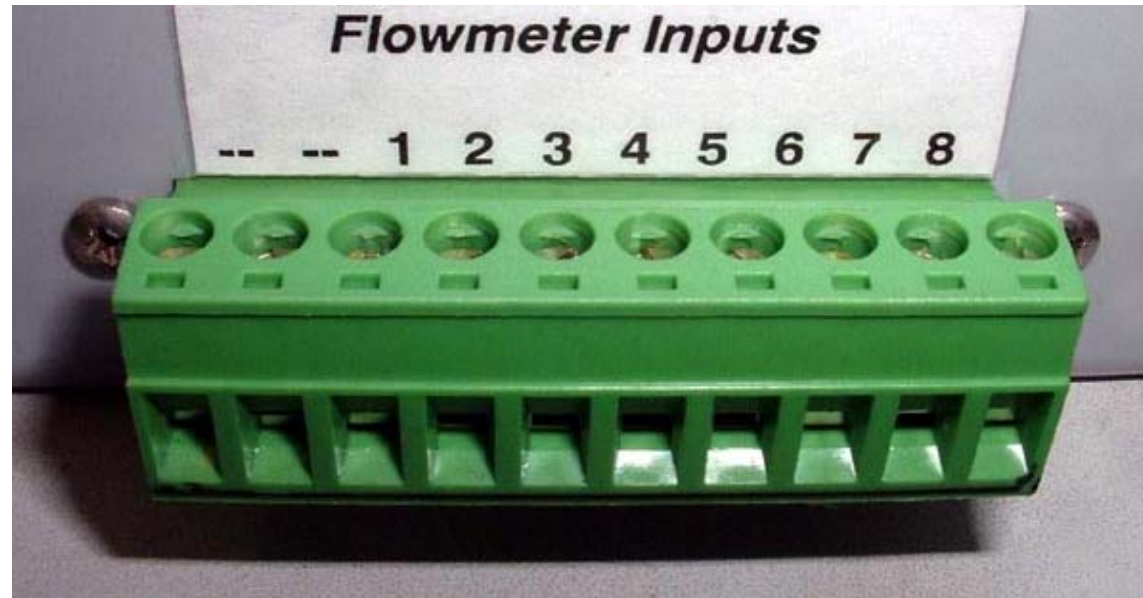


ME8000 Specifications:

- 8 digital inputs standard (protected to +/- 36VDC), upto 5kHz.
- optional additional 8 inputs (making 16 inputs in total).
- optional 4 digital outputs @100ma each
- on-board non-volatile memory. Time-stamped events are logged for usage summary reports, and to allow later analysis of problems at the site being monitored. Up to 2000 events can be logged. Data is retained in the event of a power loss.
- internal modem (order with GSM or CDMA modem).
- antenna pre-fitted to enclosure.
- IP56 housing - sealed Polycarbonate enclosure with lid.
- Dimensions: 198mm W, 263mm H, 85mm D
- needs external 240vac (or optionally 110vac) supply. Internally, 12vDC powered.
- Operating Conditions: -40° C to 60° C
5% - 95% non-condensing humidity.

Due to continuous product development, specifications and design may change without prior notice.

Connecting the ME8000



Flowmeter pulses are fed to the ME8000 using 10 pin plug-in, plug-out wiring connection harness for easy connection/disconnection of all flowmeter pulses.

Virtually maintenance-free after installation!

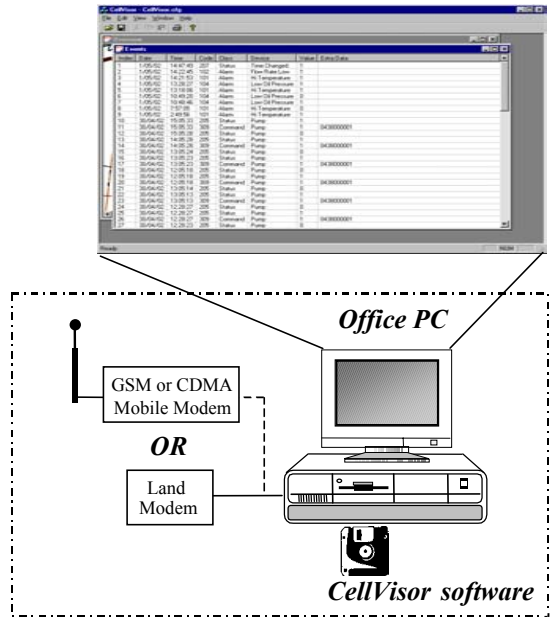
PC Components

Office PC requires:

- CellVisor software to configure ME8000 (s) and monitor site(s).

and either

- Mobile Modem (GSM or CDMA) and Antenna, to:
 - read site status after polling site via dial up.
 - receive unsolicited SMS alarms.Note: Don't need PABX line.



or

- Land Modem, to:
 - read site status after polling site via dial up.Note: ~~Can't receive live SMS alarms on the~~

CellVisor PC Software

The accompanying “CellVisor” monitoring and control software, on an office or home PC:

- is needed to:
 - be able to load and modify alarm settings into ME8000.
 - dial the remote sites via mobile or land modem from a PC, to monitor current tank levels, and to retrieve logs, site status and alarms.
- provides an alarm/event report which can be printed between any selected dates for any selected site.
- all report data can be exported as a “flat” file suitable for importing into Microsoft Excel for generation of custom reports.
- has no designed limit for the number of sites it can manage.
- is provided on floppy disc.
- can run in the background, and does not require a dedicated PC.

Cellvisor PC requirements:

- Hard Disk space: 1.5 MB for program + 160K for downloaded event data from each ME8000.
- Either a Land Modem, or an RS232 serial port with PC Mobile Modem connected.
- any current Windows Operating System.

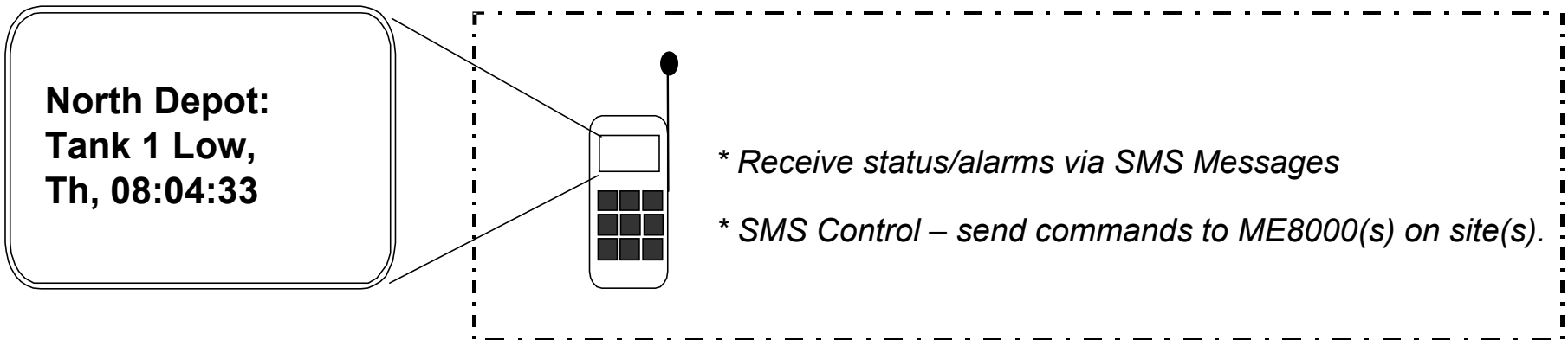
CellVisor Screen

Index	Date	Time	Code	Class	Device	Value	Extra Data
1	1/05/02	14:47:49	207	Status	Time Changed	1	
2	1/05/02	14:22:45	102	Alarm	Flow Rate Low	1	
3	1/05/02	14:21:53	101	Alarm	Hi Temperature	1	
4	1/05/02	13:28:27	104	Alarm	Low Oil Pressure	1	
5	1/05/02	13:18:06	101	Alarm	Hi Temperature	1	
6	1/05/02	10:49:20	104	Alarm	Low Oil Pressure	0	
7	1/05/02	10:48:46	104	Alarm	Low Oil Pressure	1	
8	1/05/02	7:57:05	101	Alarm	Hi Temperature	0	
9	1/05/02	2:49:56	101	Alarm	Hi Temperature	1	
10	30/04/02	15:05:33	205	Status	Pump	1	
11	30/04/02	15:05:33	309	Command	Pump	1	0438000001
12	30/04/02	15:05:28	205	Status	Pump	0	
13	30/04/02	14:05:28	205	Status	Pump	1	
14	30/04/02	14:05:28	309	Command	Pump	1	0438000001
15	30/04/02	13:05:24	205	Status	Pump	0	
16	30/04/02	13:05:23	205	Status	Pump	1	
17	30/04/02	13:05:23	309	Command	Pump	1	0438000001
18	30/04/02	12:05:18	205	Status	Pump	0	
19	30/04/02	12:05:18	205	Status	Pump	1	
20	30/04/02	12:05:18	309	Command	Pump	1	0438000001
21	30/04/02	13:05:14	205	Status	Pump	0	
22	30/04/02	13:05:13	205	Status	Pump	1	
23	30/04/02	13:05:13	309	Command	Pump	1	0438000001
24	30/04/02	12:28:27	205	Status	Pump	0	
25	30/04/02	12:28:27	205	Status	Pump	1	
26	30/04/02	12:28:27	309	Command	Pump	1	0438000001
27	30/04/02	12:28:23	205	Status	Pump	0	

sample site log

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Mobile Phones



**Customer's own
SMS-Capable Mobile Phone(s)**

Example

Setup:

- At a site, a number of storage tanks (typically 6) already have pulse flowmeters fitted.
- The output pulses from each flowmeter are paralleled to an ME8000 at the site.
- CellVisor software is installed on the office PC. Information is entered into Cellvisor:
 - the actual initial tank levels,
 - the “low” setpoints,
 - configuration information, including:
 - authorised phones.
 - ME8000 Data Number.
- The office PC with Cellvisor connects to the ME8000 via modem, and sends configuration data.
- The PC is disconnected.

NOTE: This setup procedure can also be performed onsite using a laptop running CellVisor directly connected to the ME8000, instead of using a remotely connected office PC.

Example (cont'd)

- As flow is detected on each channel, the ME8000 counts and scales pulses and subtracts the count from the relevant current total.
- The ME8000 stores totals on-site (2000 batch values). This log can be downloaded either locally, or via modem.
- Any authorised computer, loaded with CellVisor software, can dial the ME8000 to retrieve current tank levels and site status.
- Any authorised mobile can request site status via an SMS message (e.g. "Stat.1") and will receive an SMS message listing each tank level and any alarms.
- optional 4 digital outputs available, which can be directly controlled from authorised mobile phones via SMS text messages.
- When the "low" setpoint is reached for any tank, this alarm is sent (via SMS) to any designated mobile phone(s) and to the office PC (if the PC has a GSM Mobile Modem option fitted).
- When a new delivery is transferred to each tank, either the driver can directly update the new capacity onsite via sending an SMS from his mobile phone (e.g. "T1.1000"), or can submit his delivery sheet to the main office for updating later via CellVisor on the office PC.

Benefits to Supplier

- provide the End Customer with a reliable service, not just a product
= **End Customer confidence and satisfaction.**
- don't have to interrupt End Customer to check tank levels.
- can examine site status at any time.
- better understanding of customer usage patterns.
- easy to install and setup:
 - no float or level switches necessary.
 - minimal extra wiring and power needed to monitor/control a site.
- low ongoing costs:
 - just SIM card rental and calls.
 - virtually no maintenance.
- easy to remotely control site via simple SMS messages.
- immediate notification of site problems.
- for remote sites, knowledge of specific fault will allow service personnel to attend site with correct supplies.
- Australian made – local support and free phone support, from a manufacturer of proven reliability.
- system is simple, works, and is value for money.

Benefits to End Customer

- End Customer confidence and satisfaction:
 - End Customer not interrupted for tank level checks.
 - tank levels are automatically monitored and replenished.
 - stocks don't run out and work is not delayed.

Costs

- Value for money system.
- Discounts for bulk purchases.

Trial

A demonstration/trial in Sydney of the ME8000 can be arranged.

Commissioning

Free 1 days setup and assistance will be provided by Manu Electronics for commissioning your first system in the Sydney metropolitan area.

Availability

Orders accepted as from 3 November 2003.

Further Information

See the ME8000 datasheet on the web at
http://www.manuelectronics.com.au/pdfs/me8000_datasheet.pdf

or contact

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