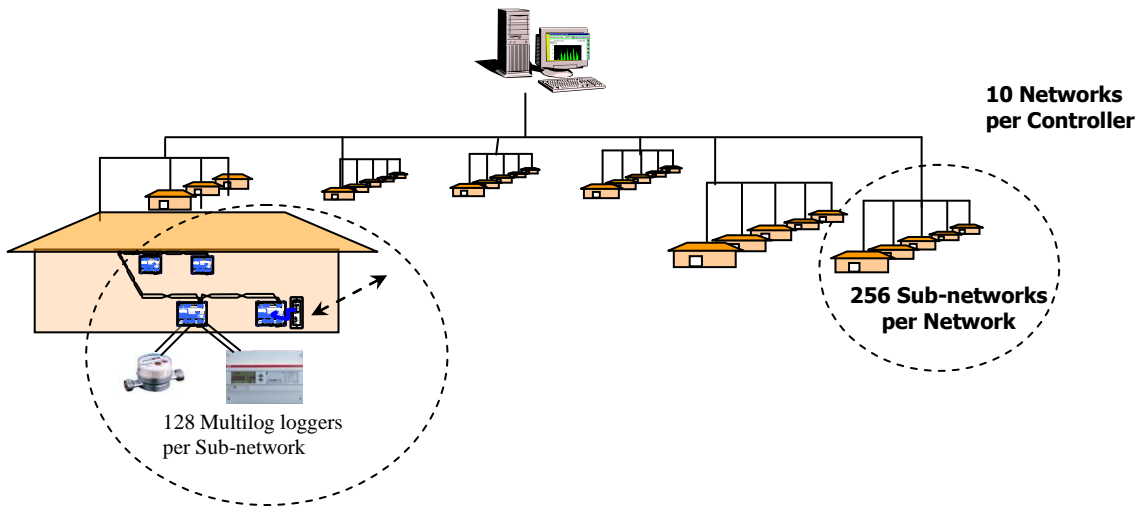


## The Multilog Controller Software

The Multilog Controller provides the means to remotely administer and access data in co-operation with Multilog logger units. The Controller is able to control and monitor up to 323,850 Multilog units in a multi-layered network structure enabling the automatic collection of periodic data from a maximum of 647,700 meters and other measuring devices.



### Functionality:

Multilog Controller software is windows based employing familiar toolbars, drop-down menus and mouse functions. Help pages include a user manual and help topic search facilities.

### Multilog Controller is structured in six parts:

1. **Network Manager** - for setting up Multilog logger networks, configuring logger inputs and meter-constants.
2. **Schedule Manager** – for programming the times for automatic download of acquired data from Multilog logger units and export to other software.
3. **Data Manager** – for creating virtual meters, viewing and reporting acquired data.
4. **Download manager** – for automatic data collection during normal system operation.
5. **Event Manager** – Monitors and displays notifiable system events.
6. **Properties** – for changing user Login, program application path and selecting a range of automatic functions.

Enercom often supply Multilog systems in conjunction with automatic Monitoring and Targeting software such as eSight®, Tymax 1000 or software from other organisations such as TEAM, Enviros, Systemlink 2000, Invensys (Satchwell) BMS, Trend BMS etc.

In operation, Multilog Controller automatically collects data and exports this to the aM&T software. Once configured and commissioned, the system operates transparently, without need for adjustment.

**Host Computer:**

Multilog Controller software is delivered on a single CD-ROM. For proper utilisation, it requires installation onto the Hard-Drive with a minimum of 10 Mbytes free space. Multilog Controller is a 32-bit application for Windows 95™/98™/NT™4.0/2000/XP. A Pentium Processor II 233 MHz or faster is required and a minimum of 128 Mbytes RAM.

For connection to local Multilog logger networks use an RS232 serial communications port connected to either a Multilog desk-top PC interface unit or directly to a Multilog logger unit. For connection to remote Multilog logger networks use either an RS232 communications port connected to Enercom's TCP/IP Ethernet interface device, a Modem; or the computer's internal modem.

**Controller Software Details****1). Network Manager functions:**

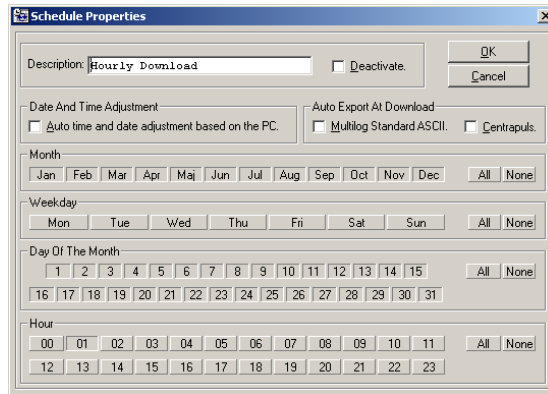
- Used during system configuration for setting up new Multilog logger networks and editing to reflect metering changes.
- Creates new Networks, Sub-networks, Multilog nodes, meter inputs, event inputs and relay outputs within a tree list structure using add, edit, remove and copy functions.
- For each Network and Sub-network: enables input of descriptions and communication properties such as LON network, Modem, TCP/IP Ethernet and respective dial-up or TCP/IP addresses.
- Automatically allocates unique identification numbers for each Network, Sub-network and Multilog logger nodes and allocates initialisation strings for connected communication devices.
- Each Multilog logger node, provides the ability to input, edit and view:
  - Description
  - node ID, if a gateway node: connected modem or TCP/IP Ethernet interface and its number/address, inputs and outputs in use.
- For each meter or other measurement device connected (two per Multilog logger):
  - Description. The meter pulse ratio (an integer value or fraction between 65000:1 and 1:65000), and measurement unit (e.g kWh, m<sup>3</sup>, litre, etc.).
  - Storage interval, i.e. the time base for storage of the 2800 historical data values that a Multilog logger is capable of storing for each meter input. Numerous interval options are available between one minute and one month, including half-hourly as commonly used in the UK for energy consumption data.
  - An initial synchronised reading value and a maximum meter (return to zero) reading.
- For each Multilog logger's Event Input:
  - Description.
  - A "destination" Multilog Relay Output to be triggered or the email address for an automated event message\*.
- For each Relay Output (two per Multilog logger):
  - Description. Up to 28 weekly time controls (open/close), or alternative automatic triggering by an Event Input at a Multilog logger.
  - Copy and Paste functions enable rapid input of similar Multilog logger nodes.
  - Provides a means to check the availability of the communication path to each Multilog logger, check and adjust synchronisation between a Multilog logger's internal clock and the host computer and between recorded meter readings and manual readings.
  - View the current setting and state of inputs and outputs for each Multilog logger.
  - Collapse/expand tree list structures.

**Search function.**

Print or file a network report.

## 2). **Schedule Manager functions:**

- Used during system configuration to create timetables for meter data downloads.
- Creates up to ten automatic data download schedules, each schedule may collect monitored data from all or selected network nodes.
- A scheduled download can either collect Multilog interval consumption data and readings or acquire the instantaneous readings.
- A schedule's download frequency can be set at any rate between every hour and once a year, and be set to commence at chosen times and days each week/month/year.
- Option to automatically re-synchronise each Multilog logger's internal clock to the host computer after every download.
- Option to automatically convert downloaded data to a standard ASCII export file format.



- Set maximum and minimum meter consumption levels to produce notifiable event warnings i.e. MD events
- Activate/deactivate specific download schedules.
- Advises next download time for each schedule.
- Enables manual initiation of data downloads.

### **Search function.**

- Collapse/expand tree list structures.
- Print or file a schedule report.

## 3). **Data Manager Functions:**

Used if the Multilog system is not set up to automatically export data to Monitoring and Targeting software. The Data Manager provides a means for selecting, viewing, manipulating and printing downloaded Multilog logger data and manually copying data to other software such as Microsoft Excel.

- Generates files of consecutive (non-repeating) data at each download
- Identifies inconsistent or missing data, generating a special "discard file" if this occurs.
- Creates "Virtual Meter Data" files calculated by adding and subtracting data from real meter data files in accordance with entered formulae.
- Apply conversion calculations to meter data.
- Displays acquired and virtual data files in a tree list structure.
- Collapse/expand tree list structures.
- Manual export function converts a selected data file contents to the supported export format.

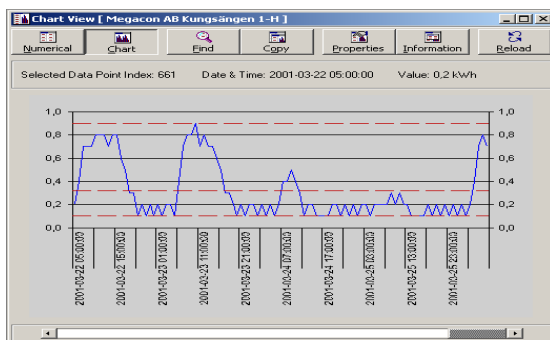
### **Search function.**

- View downloaded and virtual meter data in tabular form to see date, time, consumption during the measurement interval and meter reading.

Index	Date	Time	Value [ kWh ]	Meter Reading [ kWh ]
616	2001-03-20	08:00:00	0,7	15690,6
617	2001-03-20	09:00:00	0,8	15691,3
618	2001-03-20	10:00:00	0,8	15692,1
619	2001-03-20	11:00:00	0,8	15692,9
620	2001-03-20	12:00:00	0,8	15693,7
621	2001-03-20	13:00:00	0,8	15694,5
622	2001-03-20	14:00:00	0,8	15695,3
623	2001-03-20	15:00:00	0,8	15696,1
624	2001-03-20	16:00:00	0,6	15696,9
625	2001-03-20	17:00:00	0,5	15697,5

View downloaded meter data in graphical form showing a profile of measured values:

- Choice of graphical presentation includes bar-graph, line chart, 2D/3D and colour options.
- Display Mean, Max and Min levels.
- Select time period and number of displayed points.
- X and Y axis scaling options



- Copy, save, and print functions for numerical or graphical data.

#### 4). Download manager functions:

This part of the software is running during normal Multilog Controller operation, it controls downloads in accordance with previously set up schedules. Whilst running, the other manager functions are inhibited unless username and passwords are entered. Whilst the other manager functions are in use, scheduled downloads are deferred. Activated during normal operation of the Multilog System and normally configured to “hide” and “lock” the main Multilog Controller window.

- The Download Manager window can be minimised.
- Whilst locked, Multilog Controller continues to monitor Multilog Networks for notifiable events, manages automatic data downloads, export files and other automatic functions.
- Enter username and password to unlock the Multilog Controller, close the Download Manager and use the other Multilog Controller functions.
- Multilog Controller defers downloads scheduled to start at times when the Download Manager is not running.

#### The Download Manager:

- Controls communication to Multilog logger network Modem interface devices.
- Controls communication to Multilog logger network TCP/IP Ethernet interface devices.
- Disables the other Multilog Controller manager functions whilst operational.
- Synchronises each Multilog logger’s internal clock following data download if a Schedule requires.
- Displays “New Event(s)” if a Multilog logger receives an event input,
- Displays “New Event(s)” if a Multilog logger measures consumption beyond a pre-set minimum or maximum,
- Displays “New Event(s)” in the case of missing or non-matching downloaded data.
- Displays “Download Failure” if collection of any meter data is incomplete.
- Automatically re-attempts download if a Multilog logger download fails to complete.
- Enables manual initiation of data downloads.
- Only downloads new data from each Multilog logger.

Optional automatic Download Manager functions are specified during system configuration using the Properties window as follows:

- Auto run at Login: Option to start the Download Manager automatically at login of the Multilog Controller software.
- Auto Lock at Run Time: Option to automatically lock the Multilog Controller software when the Download Manager is started.
- Auto Run at Auto Login: Option to start the Download Manager automatically at auto login of the Multilog Controller software.
- Auto Hide Multilog Controller: Option to hide the Multilog Controller main window automatically when the Download Manager is started.
- Auto Notify at Manual Update of New Events: Option to automatically send email messages as set up in the Event Manager.
- Auto Calculate Created Virtual Inputs at Download: Option to automatically generate “Virtual Meter data” files as set up in the Data Manager.
- Auto Export Created Virtual Inputs at Download: Option to automatically produce export files corresponding to Virtual Meter Data files automatically generated.
- Auto Event Report creation at N Events: Option to cause the Multilog Controller to generate a report automatically based on the number of existing events within the Event Manager if that number exceeds a certain quantity (from 100 to 1,000).
- Auto Remove Data older than N months: Option to limit the historical length of meter data files to an age selectable between 1 month and 120 months. This option can be used to remove data exported to aM&T software.
- Number of Download Report Lines: Option to limit the number of lines within the download report generated by the Download Manager to a number from 1,000 to 30,000.
- Auto Start Download Manager after N minutes: Option that automatically sets the Download Manager running a certain amount of time after Multilog Controller Login. The time can be set between 1 and 500 minutes.
- Log, if the Time Difference is more than N seconds: Option that creates a record of the time difference between a Multilog logger’s clock and the host computer’s clock at the time of data download if that difference exceeds the selectable limit of between 1 and 30,000 seconds.
- Event, if the Time Difference is more than N seconds. Option that creates an Event if the time difference between a Multilog logger’s clock and the host computer’s clock at the time of data download exceeds the selectable limit of between 1 and 30,000 seconds.

### 5). Event Manager functions:

This part of the Multilog Controller software provides the means to view and manage events recorded by the Multilog system.

- Registers and lists events, their source and time.

Input	Node	Subnet	Network	Detected Date	Detected Time	Occurred Date	Occurred Time	Caused By
Input 2	Node	Subnet 1	Network 1	2001-04-04	19:44:55	?	?	Non Matching Meter Reading
Input 1	Node	Subnet 1	Network 1	2001-04-04	19:44:52	?	?	Non Matching Meter Reading
Input 2	Node	Subnet 1	Network 1	2001-04-04	19:42:55	?	?	Non Matching Data File Header
Input 1	Node	Subnet 1	Network 1	2001-04-04	19:42:51	?	?	Non Matching Data File Header
Input 2	Node 1	Subnet 1	Network 1	2001-04-04	19:41:01	2001-04-04	19:40:00	The CV: 18 kWh Exceeded The Max SDV: 2 kWh
Input 1	Node 1	Subnet 1	Network 1	2001-04-04	19:40:58	2001-04-04	19:39:00	The CV: 20 kWh Exceeded The Max SDV: 2 kWh
Input 2	Node 1	Subnet 1	Network 1	2001-04-04	19:38:58	2001-04-04	19:36:00	The CV: 0 kWh Dropped Below The Min SDV: 1 kWh
Input 1	Node 1	Subnet 1	Network 1	2001-04-04	19:38:58	2001-04-04	19:37:00	The CV: 0 kWh Dropped Below The Min SDV: 1 kWh
Input 1	Node 1	Subnet 1	Network 1	2001-04-04	19:38:54	2001-04-04	19:36:00	The CV: 0 kWh Dropped Below The Min SDV: 1 kWh
Input 1	Node 1	Subnet 1	Network 1	2001-04-04	19:38:54	2001-04-04	19:37:00	The CV: 0 kWh Dropped Below The Min SDV: 1 kWh
Event	Node 1	Subnet 1	Network 1	2001-04-04	19:37:43	2001-04-04	19:37:40	Event Input
Event	Node 1	Subnet 1	Network 1	2001-04-04	19:37:37	2001-04-04	19:37:34	Event Input

- Events include non-matching meter reading; non-matching data file header, event input and consumption recorded outside preset minimum or maximum levels.
- Generates a report of events existing on the event manager register.

**Search function.**

- Manage the event list using “confirm” to acknowledge event and “remove” to delete a record of a confirmed event.
- Use “Event Notify” window to direct automatic email messages\* to a specified recipient or close particular Multilog logger relay contacts when an event input occurs.
- Update function checks for new events reported by Multilog logger units.

\* Email function requires Microsoft Outlook Express 5 to be installed on the host computer and connection to the mail server by only one profile.

**6). Properties functions:**

Used during system configuration to change the security password, program application path and automatic operational functions.

- Enter username and password to access the Properties window.
- Enables changes to username and password.
- Select paths for Multilog Controller Working, Backup and Restore directories.
- Specify the Download Manager’s automatic functions (as listed under the Download Manager section).