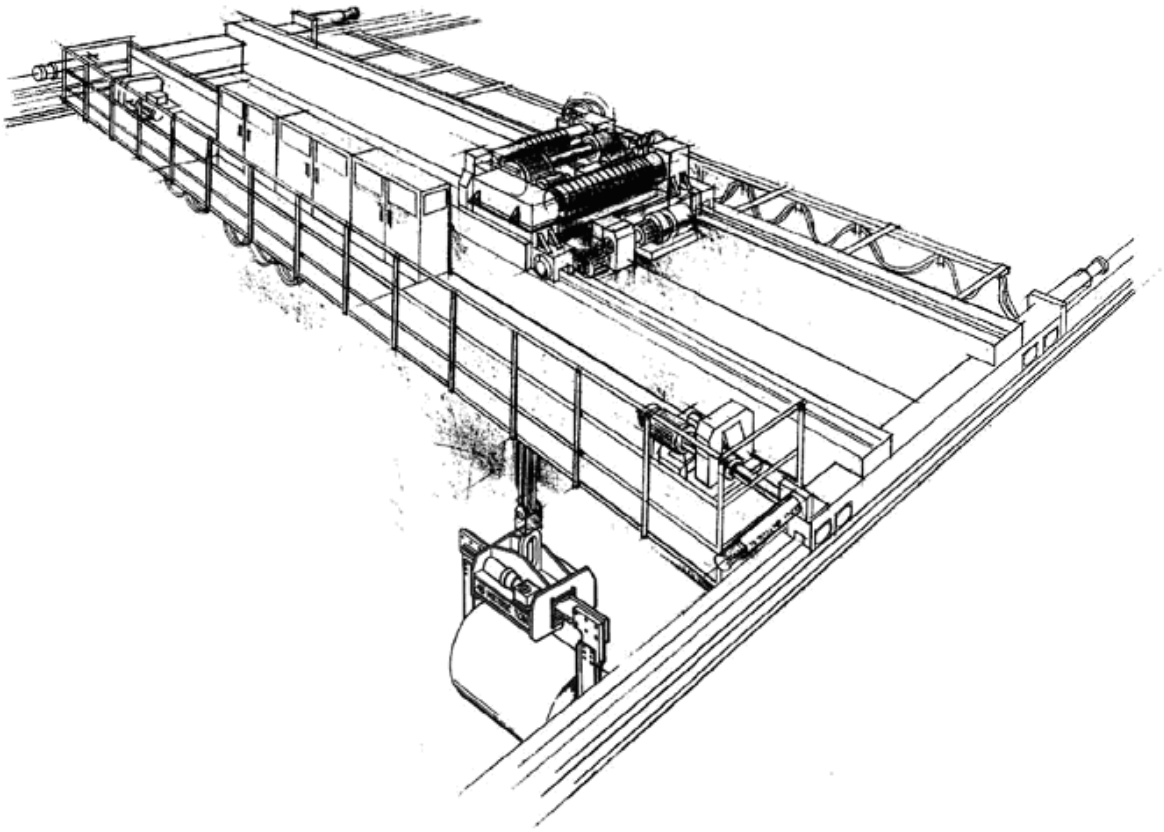

DataLogger
Series 3+

DataLogger and DataPulse Software
Instruction Manual

MAGNETEK
MATERIAL HANDLING

December 2011
Part Number: 144-16490
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PRODUCT MANUAL SAFETY INFORMATION

Magnetek, Inc. (Magnetek) offers a broad range of radio remote control products, control products and adjustable frequency drives, and industrial braking systems for overhead material handling applications. This manual has been prepared by Magnetek to provide information and recommendations for the installation, use, operation and service of Magnetek's material handling products and systems (Magnetek Products). Anyone who uses, operates, maintains, services, installs or owns Magnetek Products should know, understand and follow our instructions and safety recommendations in this manual for Magnetek Products.

The recommendations in this manual do not take precedence over any of the following requirements relating to cranes, hoists and lifting devices:

- Instructions, manuals, and safety warnings of the manufacturers of the equipment where the system is used,
- Plant safety rules and procedures of the employers and the owners of facilities where the Magnetek Products are being used,
- Regulations issued by the Occupational Health and Safety Administration (OSHA),
- Applicable local, state or federal codes, ordinances, standards and requirements, or
- Safety standards and practices for the overhead material handling industry.

This manual does not include or address the specific instructions and safety warnings of these manufacturers or any of the other requirements listed above. It is the responsibility of the owners, users and operators of the Magnetek Products to know, understand and follow all of these requirements. It is the responsibility of the owner of the Magnetek Products to make its employees aware of all of the above listed requirements and to make certain that all operators are properly trained. No one should use Magnetek Products prior to becoming familiar with and being trained in these requirements.

WARRANTY INFORMATION

FOR INFORMATION ON MAGNETEK'S PRODUCT WARRANTIES BY PRODUCT TYPE, PLEASE VISIT WWW.MAGNETEKMH.COM.

DANGER, WARNING, CAUTION, and NOTE Statements

DANGER, WARNING, CAUTION, and *Note* statements may be used in this manual to emphasize important and critical information. You must read these statements to help ensure safety and to prevent product damage.

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

***NOTE**: A NOTE statement is used to notify of installation, operation, programming, or maintenance information that is important, but not hazard-related.*

WARNING

Improper programming of a drive can lead to unexpected, undesirable, or unsafe operation or performance of the drive.

Disclaimer of Warranty

Magnetek, hereafter referred to as Company, assumes no responsibility for improper programming of a drive by untrained personnel. A drive should only be programmed by a trained technician who has read and understands the contents of this manual. Improper programming of a drive can lead to unexpected, undesirable, or unsafe operation or performance of the drive. This may result in damage to equipment or personal injury. Company shall not be liable for economic loss, property damage, or other consequential damages or physical injury sustained by the purchaser or by any third party as a result of such programming. Company neither assumes nor authorizes any other person to assume for Company any other liability in connection with the sale or use of this product.

Overview

The DataLogger Series 3 was designed to simplify troubleshooting and provide for detailed operational histories that are necessary for genuine preventive maintenance.

The DataLogger is a nonvolatile solid state (flash memory) recording device that allows the operator to easily and logically access the Run, Alarm & Fault histories of the IMPULSE•G+/VG+ Series 2, IMPULSE•G+/VG+ Series 3, and IMPULSE•G+/VG+ Series 4 drives. It will also store 5 parameter sets. The DataLogger was designed to be a fit and form replacement to the Series 3 keypad. An additional cable is required for use with Series 2 drives.

The DataLogger System consists of three (3) components:

- the DataLogger,
- the USB cable for PC communication, and
- DataPulse™ Series 3 software.

The DataLogger was designed to include sufficient memory to log the last 1400 Run Events, the last 200 Alarm Events and the last 200 Fault Events. In addition to the Alarm and Fault history, a Trace function is provided for viewing drive data that lead to the Alarm/ Fault condition. The user-friendly DataLogger can be effectively applied by those with little or no knowledge of inverters. All data acquisition is automatic, and data viewing and analysis is available via the LCD display or by uploading and viewing on your PC. The logger is powered by the inverters 5 VDC internal supply when logging or by the USB when connected to the PC. The internal clock is powered by a replaceable lithium coin type battery.

How data logging works:

The DataLogger is a device which polls the Drive via the RS232 CN1 port. Once connected, the logger will read the Inverter Status and U1 parameters. From the Inverter Status, the logger can detect when the drive is running or when a fault or alarm occurs. Note: the logger must be in Monitor mode to log any data.

When a run occurs:

When the logger detects a run, it increments the run counter and begins to take averages and store peak values of the U1 parameters being read. It also records how long the run remains active. When the run is ended, this information is written to memory for storage. If it ended due to a fault or alarm the reference to that fault/alarm is also associated to the run.

When a fault occurs:

When the logger detects a fault, it reads an additional set of registers from the drive, named the fault content registers. These registers identify which fault(s) are present. Once read, each register is checked to filter out specific faults, such as DC Bus undervoltage, which would be logged every time the drive power is cycled, if not filtered. Once the check is done, if a valid fault still exists, the U2 parameters are read from the drive. Once read, the fault data is written to memory for storage. In addition, the U1 parameters are written to memory as trace data. This gives the past five scans of data just before the fault occurs, in addition to the drive-stored fault data. If a run event was present when the fault occurred, the reference to that run is also saved with the fault data. If the logger is connected and monitoring, the **ENTER** button will reset the fault.

When an alarm occurs:

When the logger detects an alarm, it reads an additional set of registers from the drive, named the alarm content registers. These registers identify which alarm(s) are present. Once read, each register is checked to filter out specific alarms, such as DC Bus undervoltage, which would be logged every time the drive power is cycled, if not filtered. Once the check is done, if any alarms still exist, the current U1 parameters are saved to memory for storage. In addition, the U1 parameters are written to memory as trace data. This gives the past five scans of data leading up to the alarm. If a run event was present when the alarm occurred, the reference to that run is also saved with the alarm data.

Logging of Run, Fault, Alarm and Trace Data

All data collection is automatic; viewing data is per the various screens, and the roadmap of functions per the diagram on the Menu Navigation on page 6. The Monitor Mode of the DataLogger permits real time monitoring of inverter activity.

Uploading and downloading parameter data

The drive parameters can be uploaded (stored) into the DataLogger for use at a later time. This data, after uploading into the DataLogger, can then be used to easily create duplicate drives during manufacturing or to create a duplicate drive in the case of inverter failure and/or replacement. The parameter data can also be viewed and saved to the PC using the DataPulse Series 3 PC software included with each logger or available as a download at electromotive.com website. A drive parameter set can be downloaded into a drive of same software version, model, control method (flux vector, open loop vector or V/F) and motion. Caution should be taken when downloading parameters into a flux vector drive. An auto-tune should be performed even if the motors seemingly are identical to ensure peak performance.

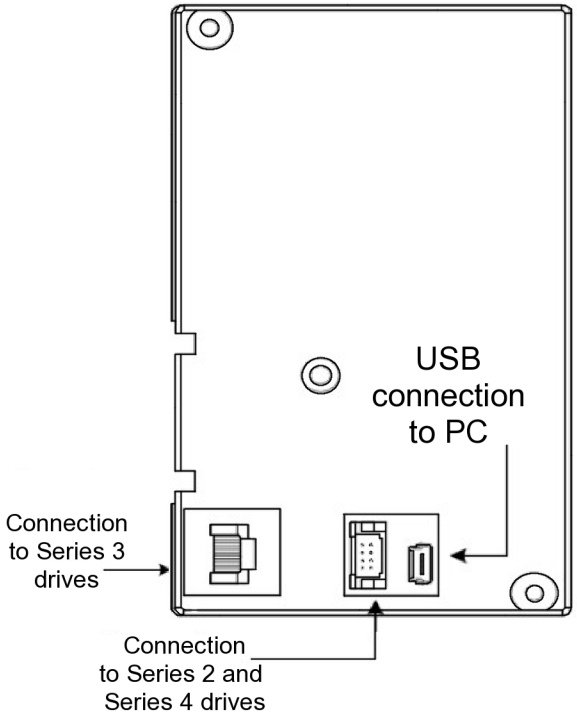
Getting Connected

The Datalogger supports all software versions for Series 3 drives and the following software versions for Series 2 drives: 14906, 14908, 14909, 14911, 14912, 14920, 14940, 14960, 14961, 14962, 14964, 14965, and 14980.

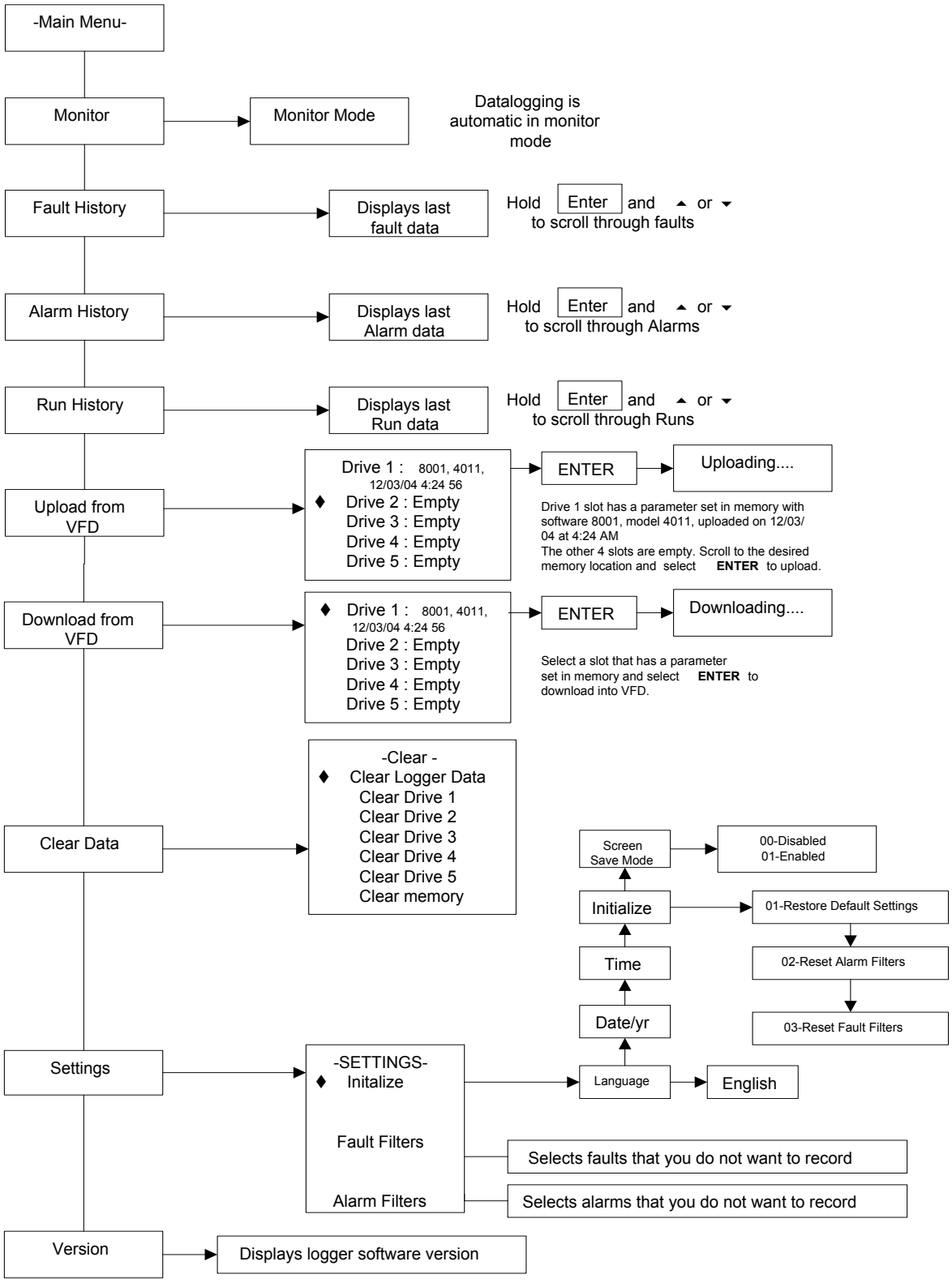
For connection to Series 3 drives, simply replace the keypad with the data logger. The DataLogger will automatically begin logging after a 2 second boot up.

For connection to a Series 2 or Series 4 drive remove the existing keypad. Use the ribbon cable, p/n 140-10274 (supplied), and connect the 12 pin connector end to the Series 2 keypad port. Connect the 8 pin connector end to port on the rear of the DataLogger.

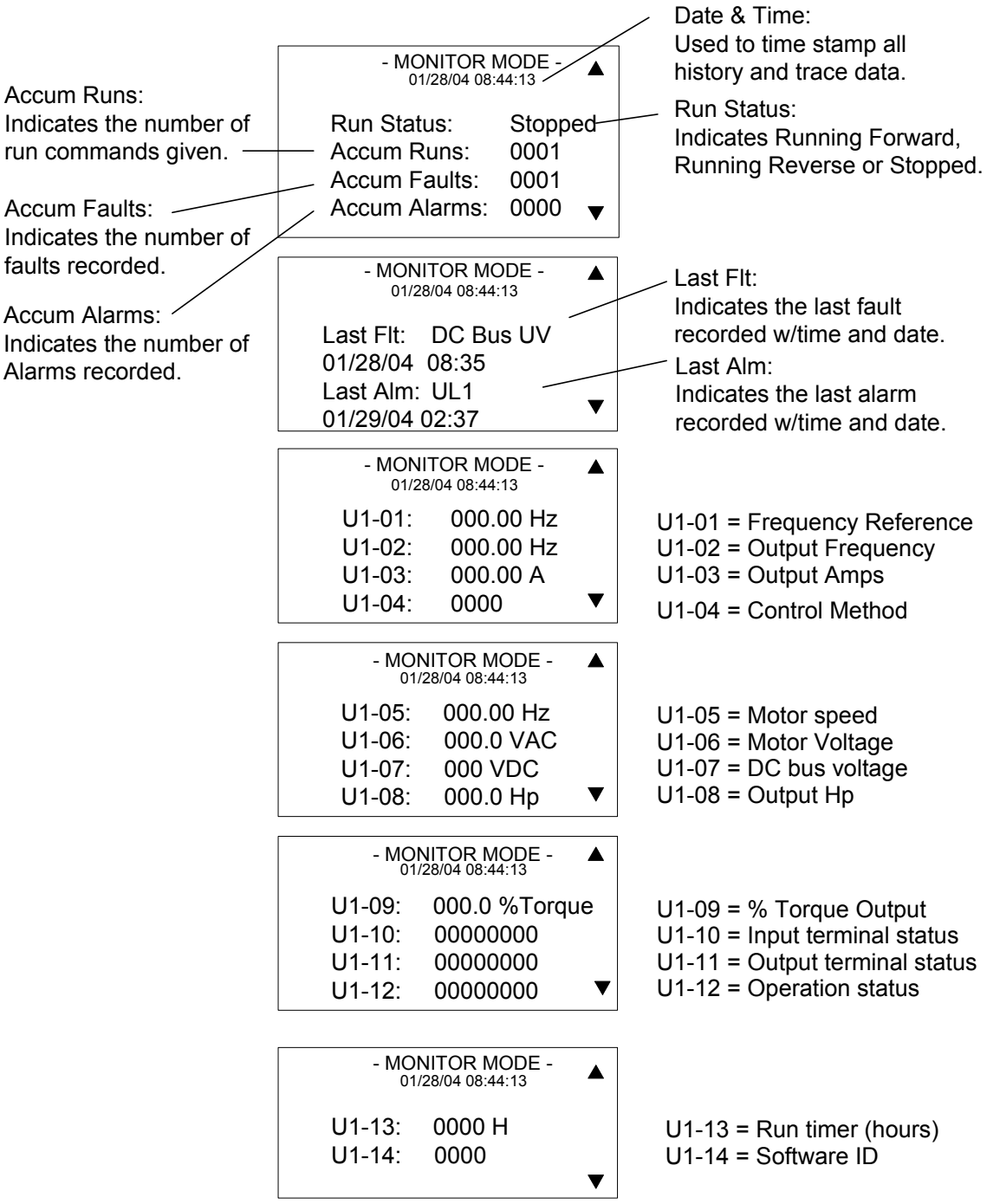
NOTE: After a short time without a keyed input the logger displays a screen save mode. When in the screen save mode, press any of the four keys on the logger to display the menu.



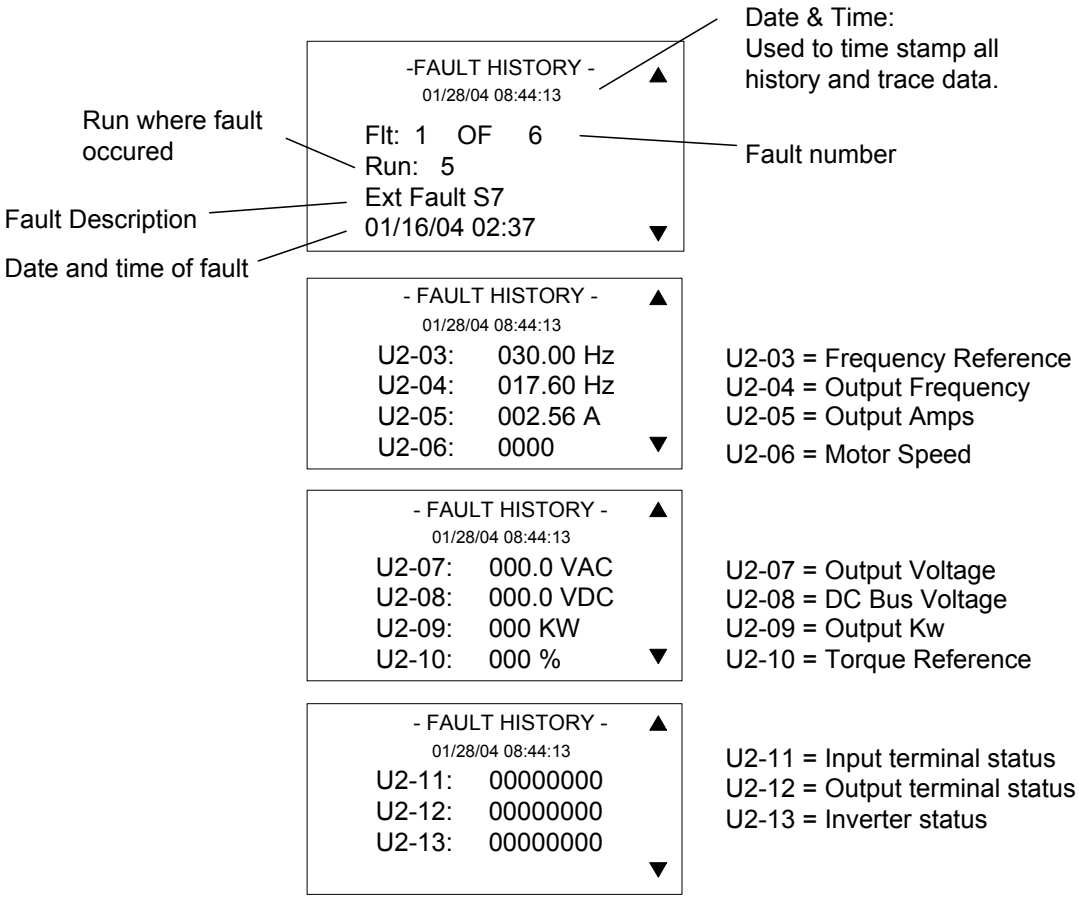
DATALOGGER MENU NAVIGATION



The Monitor Mode provides for Real-Time display of Inverter operation. It also indicates the total number of Run events, Alarm and Fault events.



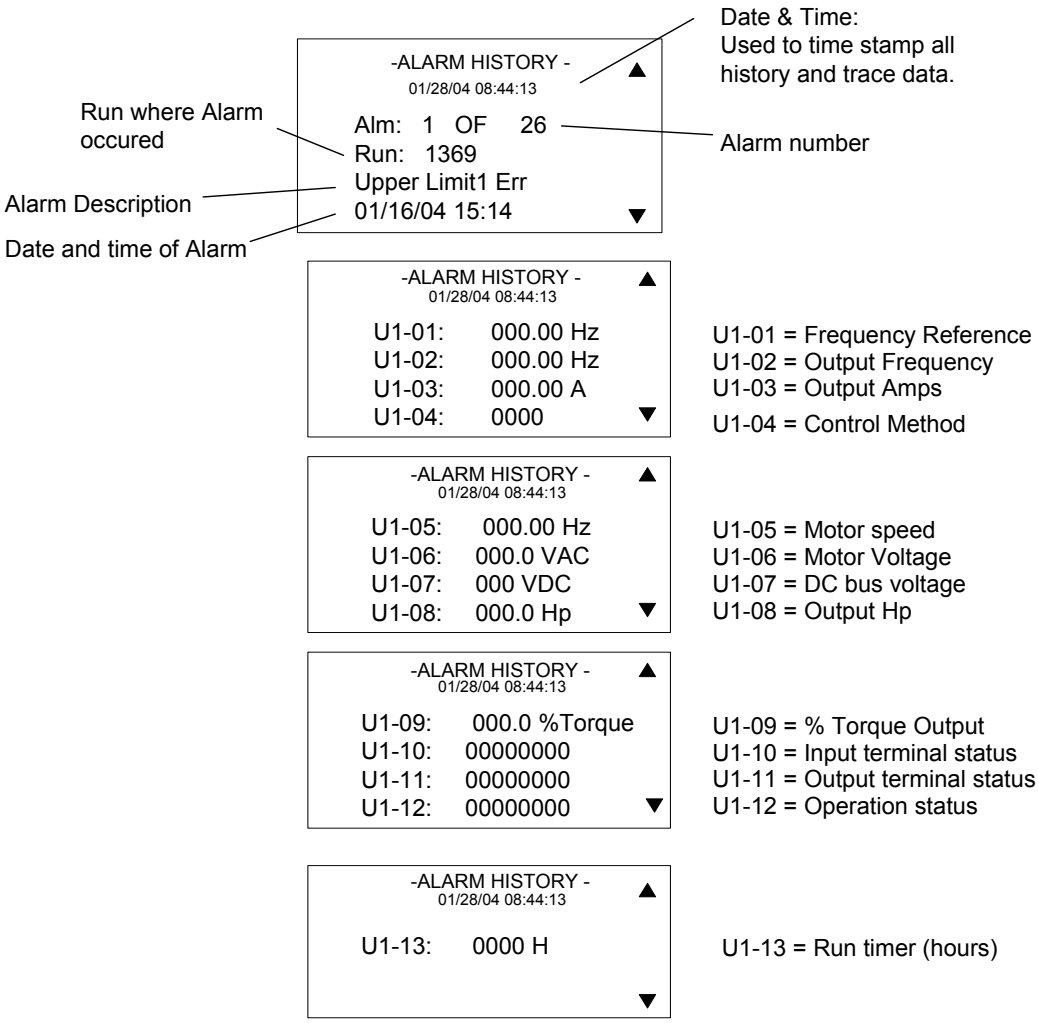
The Fault History provides the data for reviewing recorded faults and information on each fault occurrence.

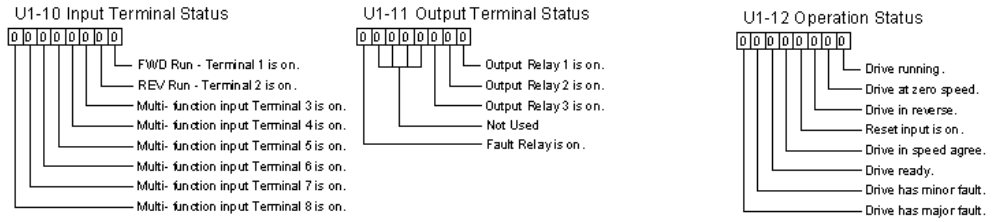


FAULT AND ALARM FILTERS

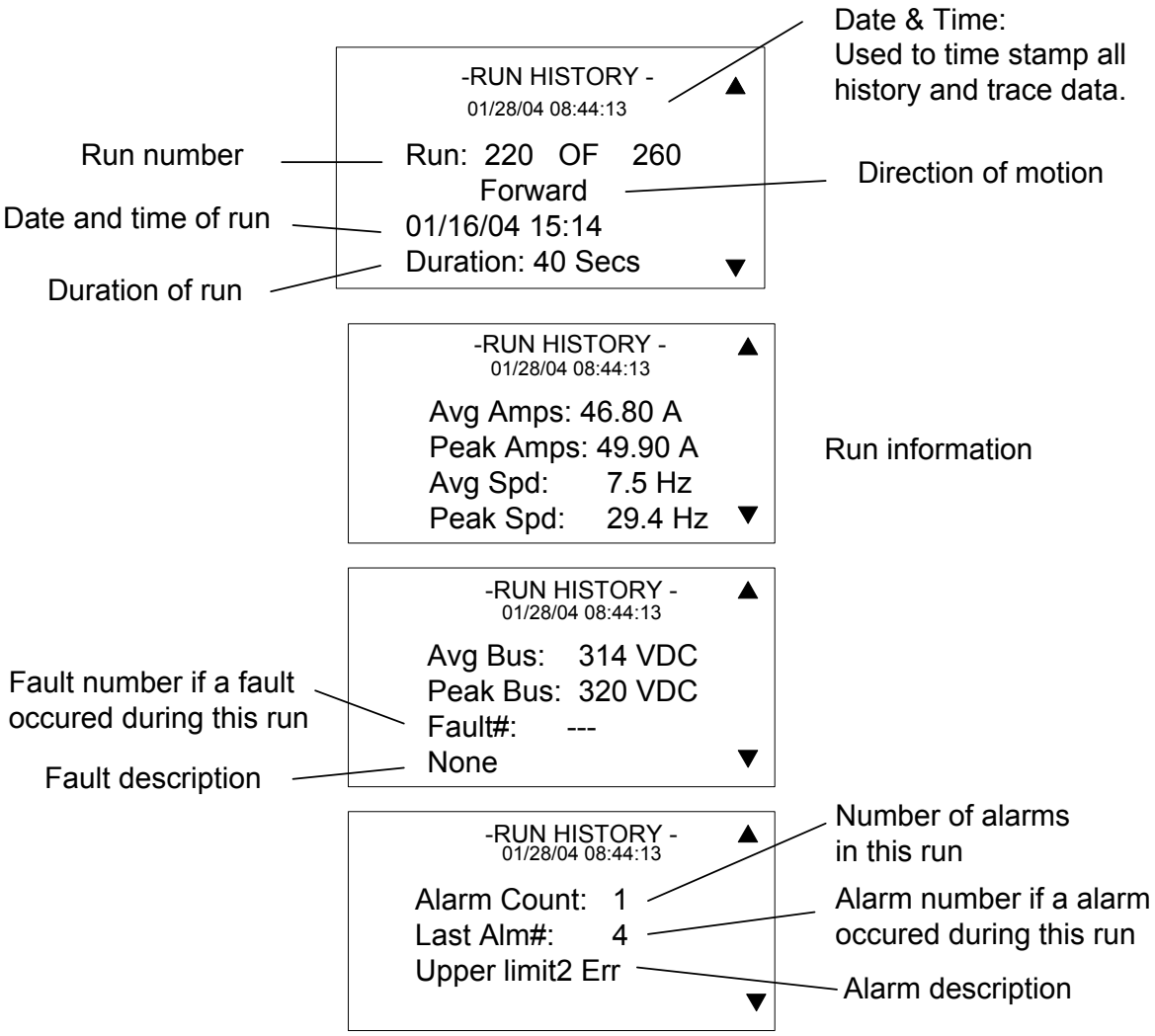
To turn off the recording of any faults or alarms, go to “Settings”, “Fault Filters” or “Alarm Filters” and press enter. Scroll up or down through the listing of faults/alarms. If you would like to filter out a fault from being recorded then press the enter key when the cursor is next to the desired fault. A check mark on the left hand side will indicate that the fault has been selected to be filtered out. Alarms would be selected in the same manner.

The Alarm History provides the data for reviewing recorded alarms and information on each alarm occurrence.





The Run History provides the data for reviewing information on each time the drive receives a run command or a change in direction.


-RUN HISTORY -
01/28/04 08:44:13
Run: 220 OF 260
Forward
01/16/04 15:14
Duration: 40 Secs
Date & Time:
Used to time stamp all history and trace data.
Run number
Direction of motion
Date and time of run
Duration of run
-RUN HISTORY -
01/28/04 08:44:13
Avg Amps: 46.80 A
Peak Amps: 49.90 A
Avg Spd: 7.5 Hz
Peak Spd: 29.4 Hz
Run information
-RUN HISTORY -
01/28/04 08:44:13
Avg Bus: 314 VDC
Peak Bus: 320 VDC
Fault#: ---
None
Fault number if a fault occured during this run
Fault description
-RUN HISTORY -
01/28/04 08:44:13
Alarm Count: 1
Last Alm#: 4
Upper limit2 Err
Number of alarms in this run
Alarm number if a alarm occured during this run
Alarm description

Introduction to DataPulse Series 3 software

DataPulse is a user friendly, Windows based, DataLogger communication software that will allow the viewing of logger data in a spreadsheet format.

The DataPulse software functions include:

- Uploading Run, Fault, and Alarm histories and the corresponding trace data.
- Uploading 5 sets of parameters stored in the DataLogger.
- Displaying and saving the above data.

Computer Requirements

The hardware requirements for DataPulse software:

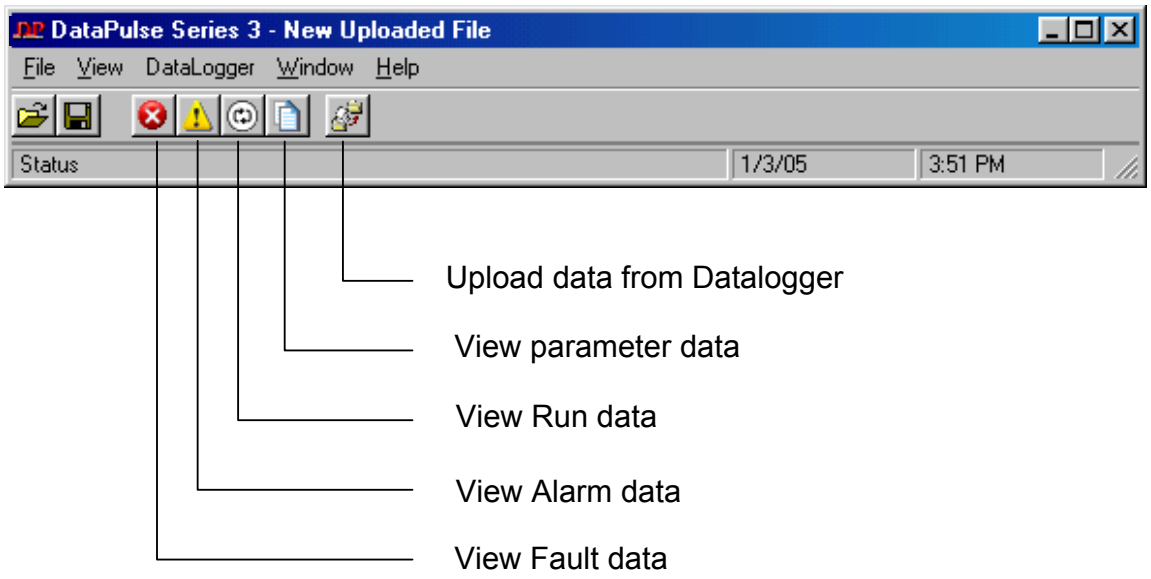
- IBM-compatible PC with a Pentium 233 MHz or higher processor (Pentium 500 MHz or higher processor recommended)
- 64 MB RAM
- 20 MB hard disk storage
- Microsoft Windows 98se, ME, 2000, or XP
  Microsoft Internet Explorer 5.5+ or higher
- USB 1.1 or 2.0 compatible port

Software Installation

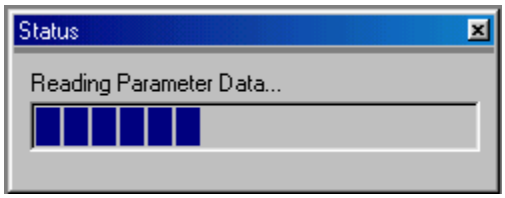
The DataPulse software is designed to auto install after CD insertion, if the installation guide does not display, then in the START menu, choose RUN. . . and type “D:\setup.exe” where “D” is your CD drive and click “OK” or select “BROWSE” and select setup.exe and “OK”.

After DataPulse software has finished installing, connect your DataLogger to the computers USB port. Your PC will require you to install the driver for this “new hardware”. The driver is located on the DataPulse CD.

Navigating DATAPULSE Series 3 MENU

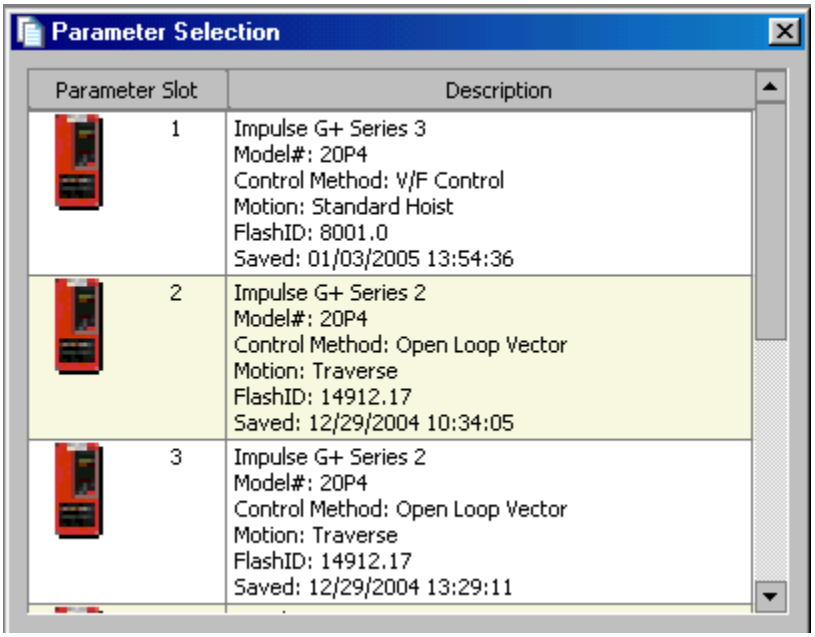


Uploading data stored in the DataLogger is done through the button located on the toolbar or by selecting “DataLogger” and “Upload from the DataLogger” from the Menu. The file must be uploaded before viewing any data. A status bar will indicate the progress of the upload and the history buttons will be highlighted after the upload is complete.

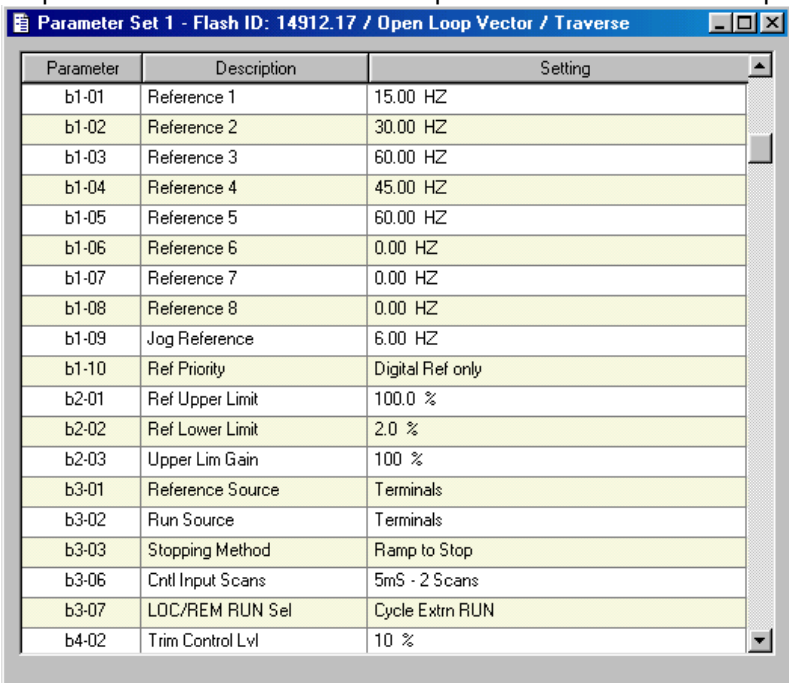


Viewing parameter sets

Selecting the button will display the parameter sets that are stored in the logger.



Double click on the parameter set of interest and the parameter information is displayed.

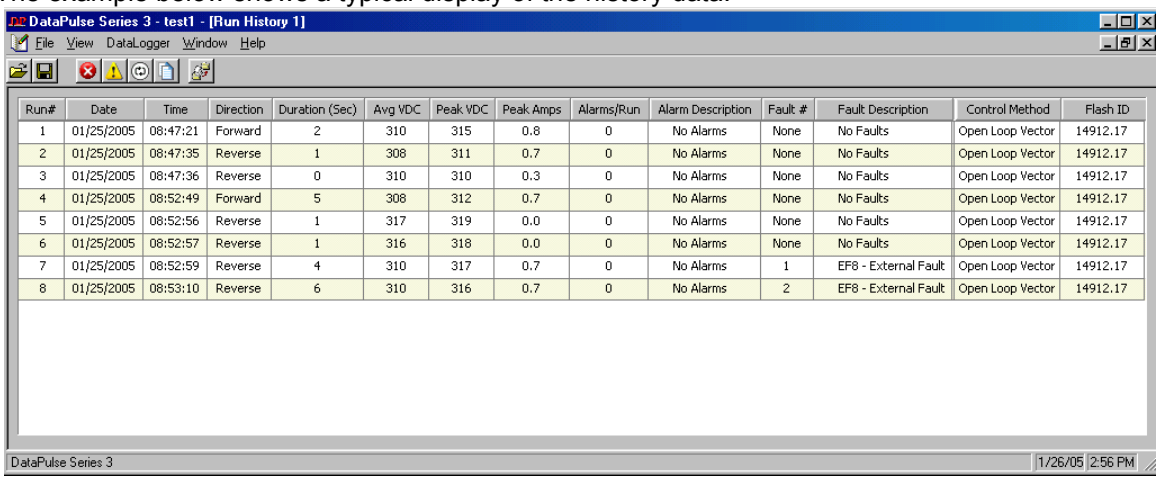


Parameter	Description	Setting
b1-01	Reference 1	15.00 HZ
b1-02	Reference 2	30.00 HZ
b1-03	Reference 3	60.00 HZ
b1-04	Reference 4	45.00 HZ
b1-05	Reference 5	60.00 HZ
b1-06	Reference 6	0.00 HZ
b1-07	Reference 7	0.00 HZ
b1-08	Reference 8	0.00 HZ
b1-09	Jog Reference	6.00 HZ
b1-10	Ref Priority	Digital Ref only
b2-01	Ref Upper Limit	100.0 %
b2-02	Ref Lower Limit	2.0 %
b2-03	Upper Lim Gain	100 %
b3-01	Reference Source	Terminals
b3-02	Run Source	Terminals
b3-03	Stopping Method	Ramp to Stop
b3-06	Cntl Input Scans	5mS - 2 Scans
b3-07	LOC/REM RUN Sel	Cycle Extrn RUN
b4-02	Trim Control Lvl	10 %

Displaying Drive History Data

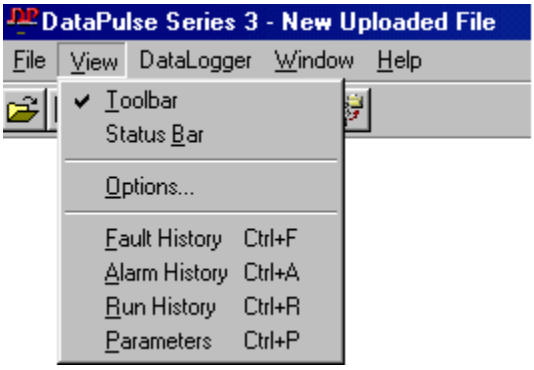
Selecting the button will display the fault history window. Selecting the button will display the alarm history and selecting the button will display the run history window.

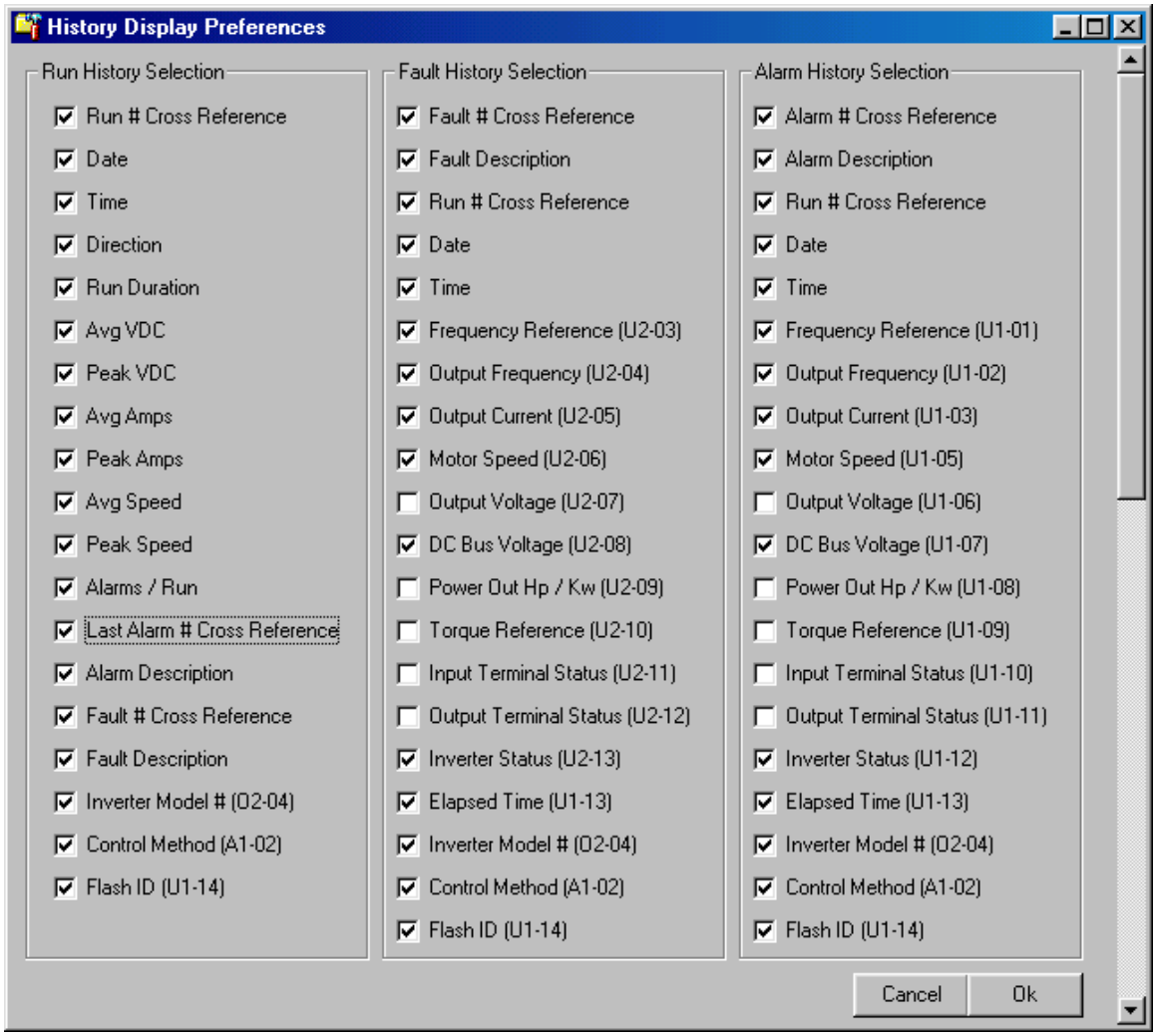
The example below shows a typical display of the history data.



Run#	Date	Time	Direction	Duration (Sec)	Avg VDC	Peak VDC	Peak Amps	Alarms/Run	Alarm Description	Fault #	Fault Description	Control Method	Flash ID
1	01/25/2005	08:47:21	Forward	2	310	315	0.8	0	No Alarms	None	No Faults	Open Loop Vector	14912.17
2	01/25/2005	08:47:35	Reverse	1	308	311	0.7	0	No Alarms	None	No Faults	Open Loop Vector	14912.17
3	01/25/2005	08:47:36	Reverse	0	310	310	0.3	0	No Alarms	None	No Faults	Open Loop Vector	14912.17
4	01/25/2005	08:52:49	Forward	5	308	312	0.7	0	No Alarms	None	No Faults	Open Loop Vector	14912.17
5	01/25/2005	08:52:56	Reverse	1	317	319	0.0	0	No Alarms	None	No Faults	Open Loop Vector	14912.17
6	01/25/2005	08:52:57	Reverse	1	316	318	0.0	0	No Alarms	None	No Faults	Open Loop Vector	14912.17
7	01/25/2005	08:52:59	Reverse	4	310	317	0.7	0	No Alarms	1	EF8 - External Fault	Open Loop Vector	14912.17
8	01/25/2005	08:53:10	Reverse	6	310	316	0.7	0	No Alarms	2	EF8 - External Fault	Open Loop Vector	14912.17

Data columns can be moved by selecting the column header and dragging the column to a new location. Columns can be deleted by selecting “VIEW” and “OPTIONS” from the toolbar menu.

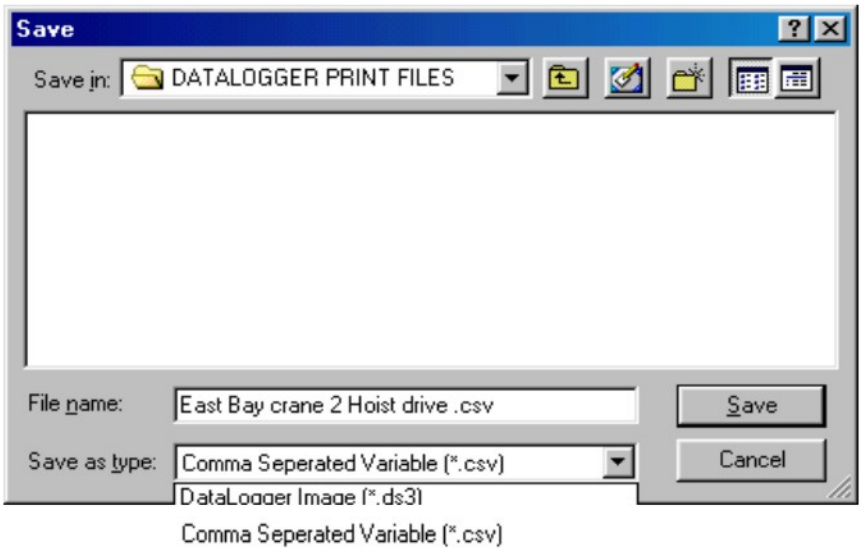




Select the data that you want to display by selecting in the check box.

PRINTING

It is best to print only the desired information from the thousands of pieces of data stored in the logger. To edit and print this information, you would save the file as a *.CSV file which is a “comma separated variable” file. The file type can be easily imported into a spreadsheet program for editing and printing.
To save this file as a .CSV file, select “Save as”, “Save as type” and select “Comma Separated Variable (*.csv)” in the drop down menu. Be sure to rename your file.



Open the *.CSV file in a spreadsheet program such as Microsoft Excel and print the desired data.