



Acquisition Solutions

Sensors
Input

Dataloggers
Measure

Communications
Transfer

Software
Output

What Do We Do?

We develop and sell electronic hardware and software to meet the needs of our customers applications. We have standard off-the-shelf software and hardware packages, as well as the ability to custom engineer a solution for your project. With decades of collective experience dealing with a variety of applications, we understand the needs of customers in our markets, whether civil engineering, environmental, meteorological or industrial. From instrumentation selection to system design and fabrication to the powerful software solution you need to make it all work (and make sense of it), we have what you need. (SEE LEFT)

Software Systems

We develop all of the software we sell. The foundation of our software is MultiLogger. This product is designed to manage the data acquisition of your project, whether comprised of a single system or dozens. It is designed to manage the network of systems, as well as the programming. Although originally designed to support the Campbell Scientific MCU's, it is being expanded to support data acquisition hardware from other manufacturers, contact Canary Systems for further information regarding this feature. It is currently deployed at over 300 projects worldwide and is available in numerous languages including German, Italian and Russian, with others in development. Following is brief overview of its features and functionality.

Network Management (SEE FIG 1, next page)

- Easy-to-learn and intuitive graphical interface
- Supports all Campbell communication peripherals
- Uses Windows functionality for modems (TAPI) and network devices (TCP/IP Winsock)
- Supports other communication peripherals using Generic Modem device
- Automates collection of data from all systems using a Collection Agent
- Manages Local as well as Remote configurations of data acquisition hardware

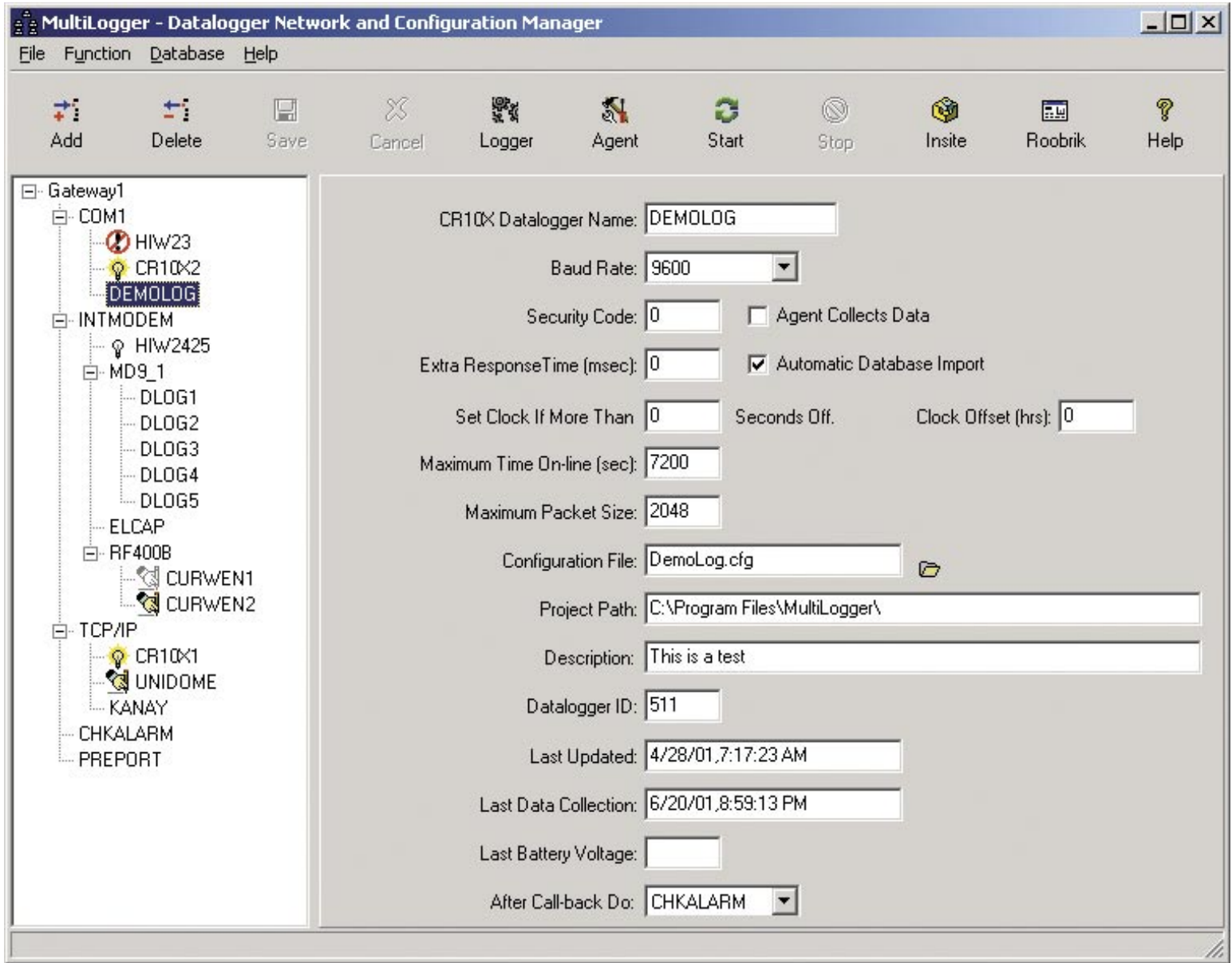


FIG 1. THIS IS THE NETWORK MANAGEMENT INTERFACE, WHERE YOU GET A COMPLETE OVERVIEW OF THE SYSTEMS, THEIR CONFIGURATION AND STATUS.

Program Generation

The basic premise of MultiLogger, as it relates to programming your data acquisition system, is to provide an advanced graphical user interface (GUI) consisting of the most commonly used functions. This includes configuration of the measurement intervals, instruments and processing options. MultiLogger does the work for you to develop the needed system programming to make it all work.

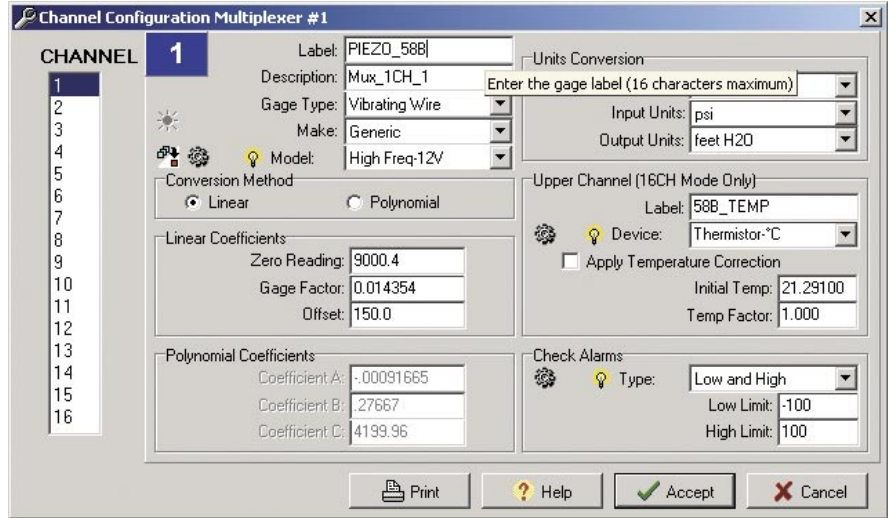
Three different interval types are supported, a fixed interval of up to 604,800 seconds (once per week), logarithmic intervals consisting of up to 6 different intervals lengths and iterations and up to 6 specified times per day. Start and stop times may also be used to further define the measurement period. Other interval types, such as triggered measurements, are also easily supported. (SEE FIG 2, next page)

Peripheral devices such as instrument multiplexers are easily configured using the built-in functionality of MultiLogger. (SEE FIG 3, next page)

Individual channels are then configured using the Channel Configuration form. Conversion from raw reading units to engineering units is by linear or polynomial conversion (other types are supported as well), additional conversion units may be easily specified, temperature measurements with automatic correction may be made and alarms defined for each channel. (SEE FIG 4.)

For advanced users we provide mechanisms to customize all of these features, as well as the ability to add additional functionality. (SEE FIG 5.)

MultiLogger also includes a program editor, used to add/delete/modify functionality of MultiLogger or develop custom data logger programming. (SEE FIG 6, next page)

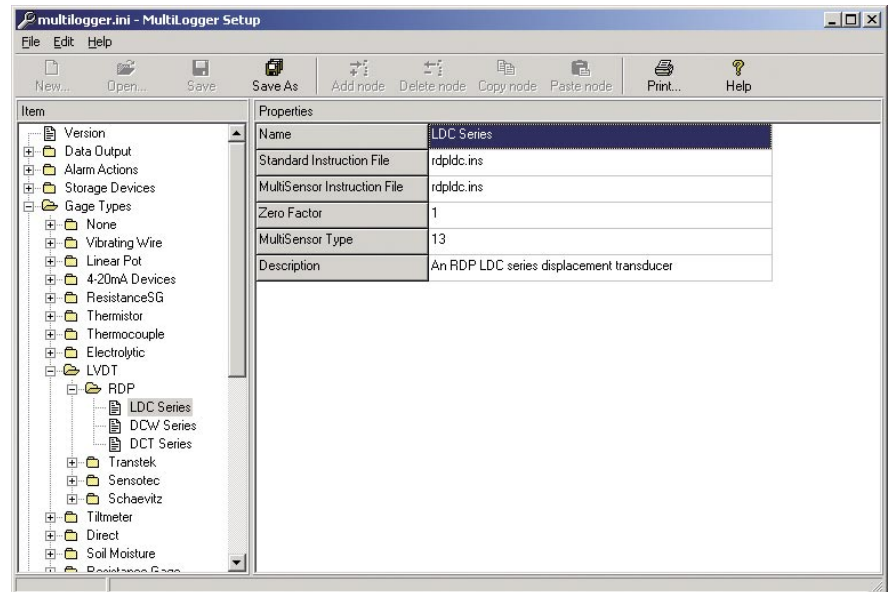


The image shows a software dialog box titled "Channel Configuration Multiplexer #1". It features a list of channels on the left, with channel 1 selected. The main area is divided into several sections:

- Channel 1:** Label: PIEZO_588; Description: Mux_1CH_1; Gage Type: Vibrating Wire; Make: Generic; Model: High Freq-12V.
- Units Conversion:** Input Units: psi; Output Units: feet H2O.
- Conversion Method:** Radio buttons for Linear (selected) and Polynomial.
- Linear Coefficients:** Zero Reading: 9000.4; Gage Factor: 0.014354; Offset: 150.0.
- Polynomial Coefficients:** Coefficient A: -0.00091665; Coefficient B: .27667; Coefficient C: 4199.96.
- Upper Channel (16CH Mode Only):** Label: 588_TEMP; Device: Thermistor-°C; Apply Temperature Correction: unchecked; Initial Temp: 21.29100; Temp Factor: 1.000.
- Check Alarms:** Type: Low and High; Low Limit: -100; High Limit: 100.

 At the bottom, there are buttons for Print, Help, Accept, and Cancel.

FIG 4. CHANNEL CONFIGURATION FORM FOR CONFIGURING INDIVIDUAL MULTIPLEXER OR DIRECT-CONNECT CHANNELS



The image shows a software dialog box titled "multilogger.ini - MultiLogger Setup". It has a menu bar (File, Edit, Help) and a toolbar with icons for New, Open, Save, Save As, Add node, Delete node, Copy node, Paste node, Print, and Help. The main area is split into two panes:

- Item:** A tree view showing a hierarchy of sensor types. The "LDC Series" item is selected.
- Properties:** A table with the following data:

Name	LDC Series
Standard Instruction File	rdpldc.ins
MultiSensor Instruction File	rdpldc.ins
Zero Factor	1
MultiSensor Type	13
Description	An RDP LDC series displacement transducer

FIG 5. MLSETUP PROGRAM FOR ADDING / DELETING / MODIFYING DEFAULT PROGRAMMING OPTIONS OF MULTILLOGGER

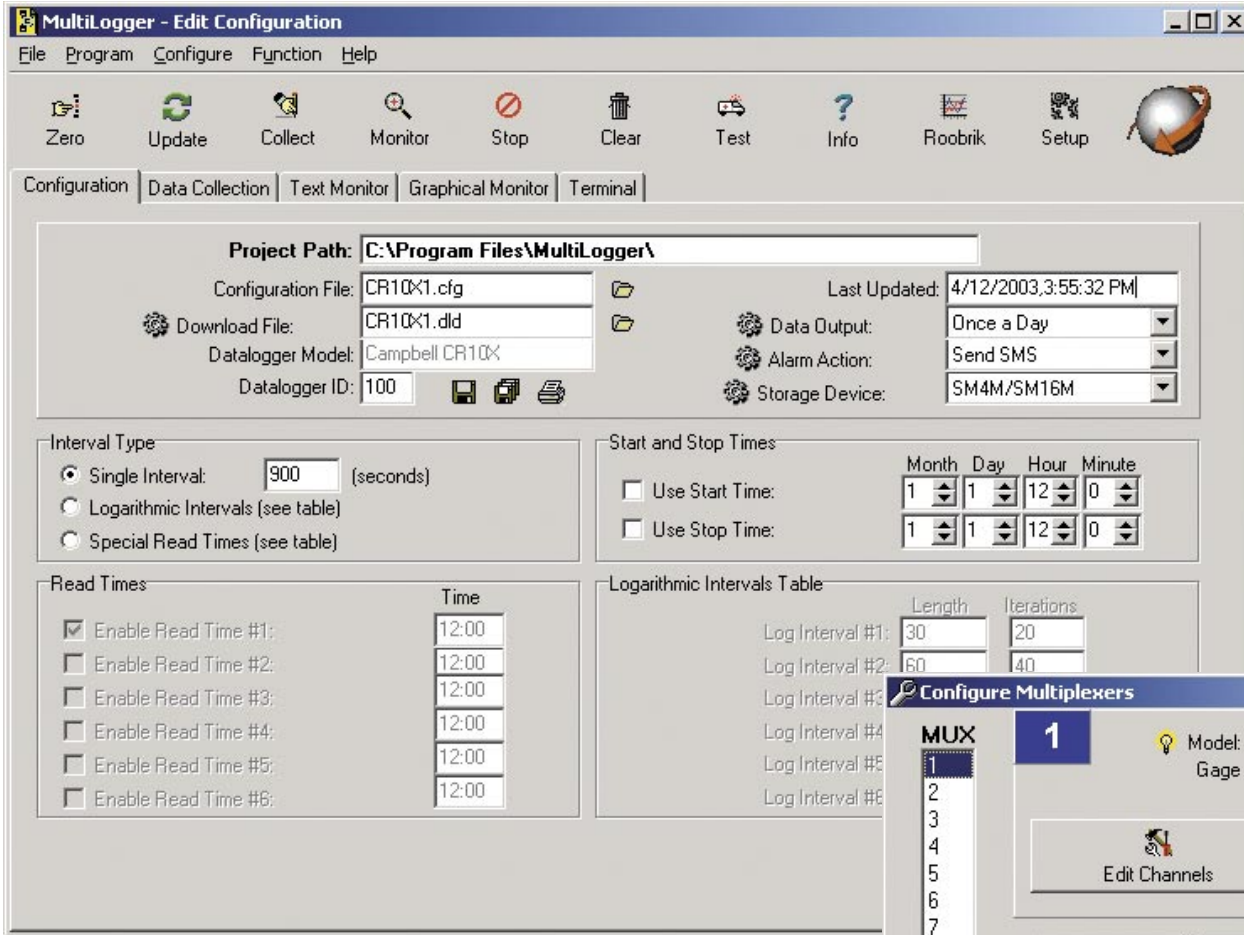


FIG 2. LOGGER FORM SHOWING INTERVAL, DATA STORAGE AND ALARM CONFIGURATION

FIG 3. MULTIPLEXER CONFIGURATION FORM

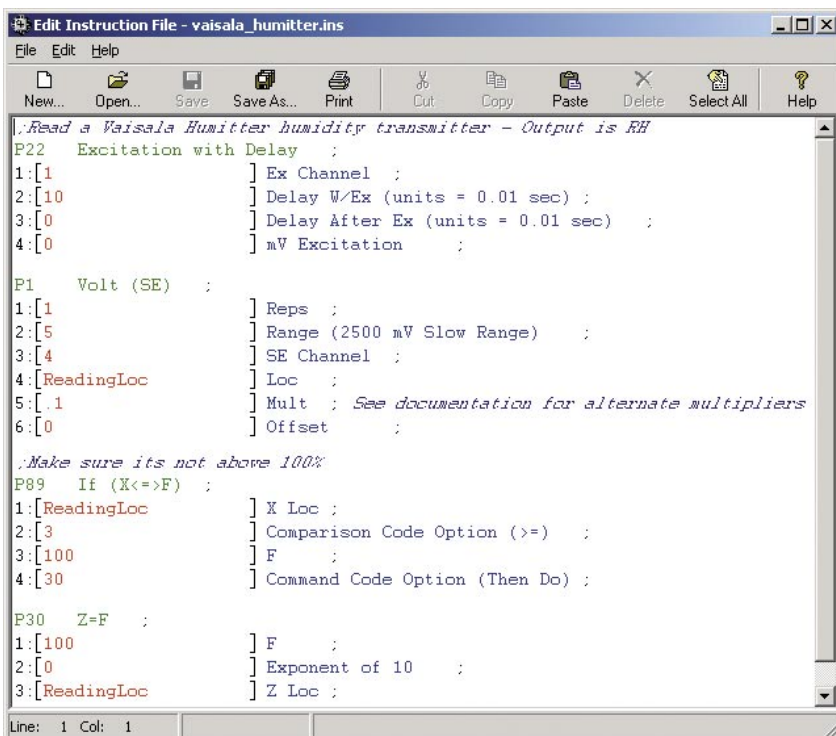


FIG 6. MLEDITOR PROGRAM FOR MODIFYING DEFAULT PROGRAMMING CODE

MultiLoggerDB Database System

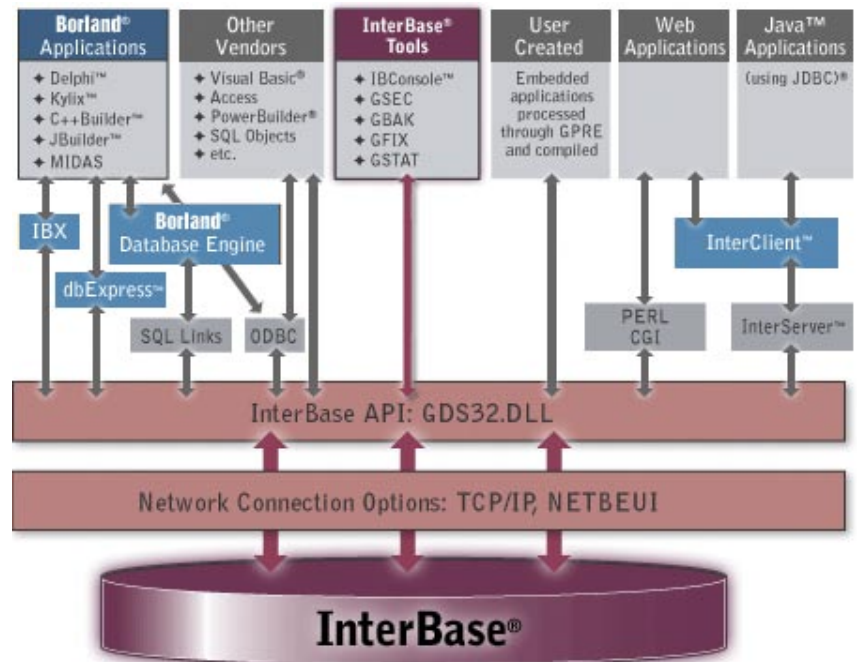
MultiLoggerDB expands the basic functionality of the MultiLogger software by integrating SQL database technology for storage and retrieval of data. Gone is the onerous burden, particularly for multi-datalogger systems, of data file management! Well of course we would be lying if we eliminated all of the work, but suffice to say your job of managing data will become less tedious and less time consuming!

We utilize an ANSI-92 SQL database called Interbase, originally developed by Interbase Corporation, now developed and sold by Borland Software Corporation. It is also available as an open-source platform, which MultiLoggerDB utilizes. Numerous capabilities are integrated into our database system, multi-user concurrent data access via LAN/WAN/Internet, multi-application data sharing through ODBC, ability to run complex filtering or other processing criteria through the use of ANSI-92 SQL statements, replication of the database in other locations (using IBReplicator), management of data from multiple systems, user security, and many others. The database system also avoids common mistakes made with the reduction of data, particularly for large systems, such as duplication of data or delineation of one instrument record from another.

Database administration tools are also included with MultiLoggerDB which allow you to manage security, back up and restore the database, perform maintenance, view database statistics, transfer the database from one operating system to another and validate and repair the database. A host of third-party tools are also available to provide more advanced database management functions.

The database console allows you to manage your project, you will NOT need to have detailed knowledge of SQL to effectively use our database system! Using the database console, data may be loaded, viewed, edited, added and/or deleted. Data from other systems may be imported using the manual data import function, the MultiLoggerDB User's Guide provides details regarding the required supporting files which must be created for import of such data. Project, instrument and data records may be created and populated manually; this proves very useful when entering other types of site data such as barometric readings or survey data. When importing data from systems programmed by MultiLogger, no additional configuration of the database is required to manually or automatically import data! The required information about the data is derived from the system configuration as managed by MultiLogger.

The database console also provides an easy-to-use interface for backing up and restoring the database file. Various views of the database console are shown, illustrating the types of records managed by the database console. (SEE FIG 7 & 8, see next page)



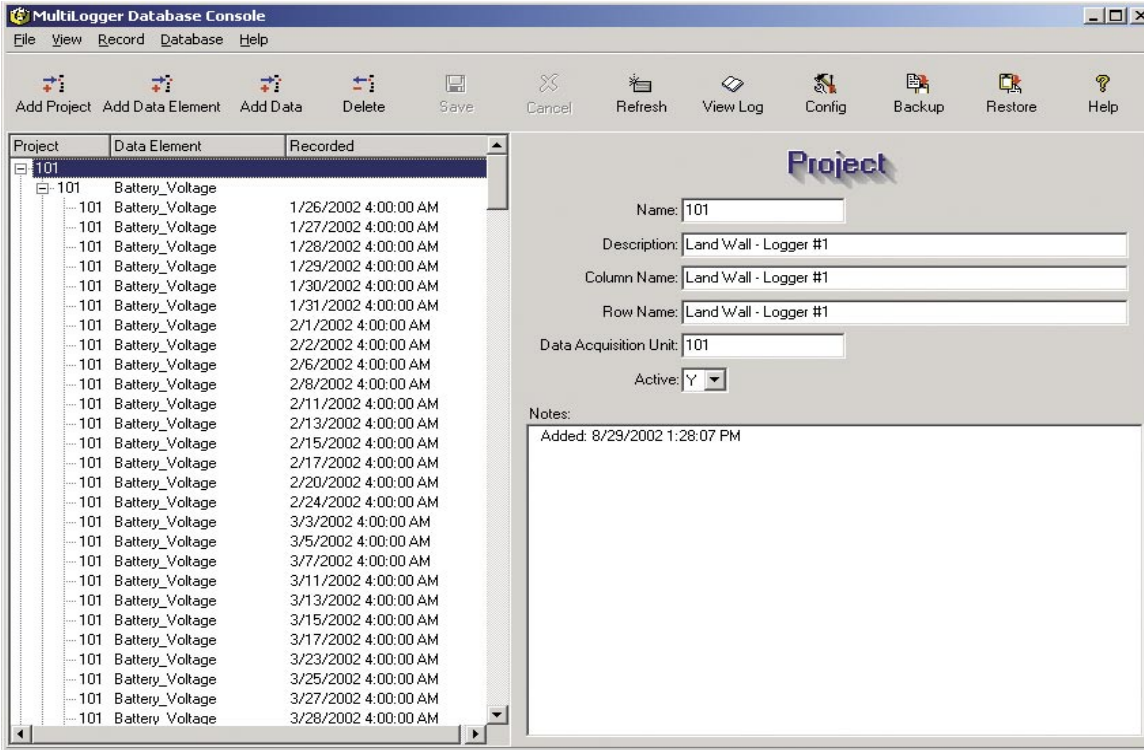


FIG 7. VIEW OF DATABASE CONSOLE SHOWING PROJECT RECORD

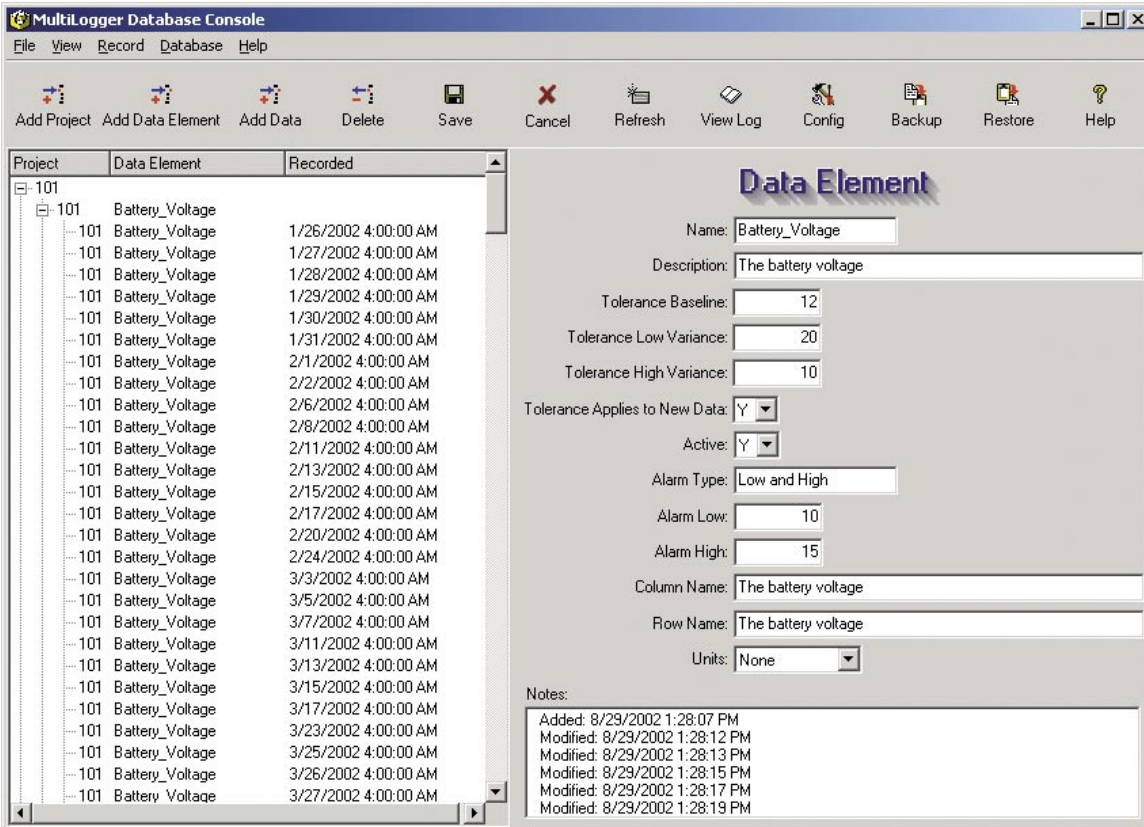


FIG 8. VIEW OF DATABASE CONSOLE SHOWING DATA ELEMENT, OR INSTRUMENT, RECORD

MultiLoggerDB Database System

Client Data Access

We have developed Insite, the client software you will need to access and distribute data when using our MultiLoggerDB system. It is designed to connect to the Interbase database across a variety of network connection types, whether over a Local Area Network (LAN), Wide Area Network (WAN) or the Internet. (SEE FIG 9.)

Insite can also be hosted on the database server directly if remote data access is not required. Insite provides an intuitive graphical interface to the project, designed to present the project as a series of images, usually engineering drawings extracted from a CAD system (bitmaps, jpegs, or metafiles may be used, contact Canary Systems regarding conversion of Autocad™ drawings), with locations of instruments indicated by icons. (SEE FIG 10.)

Various actions can be performed on the icons directly, display of various parameters related to the instrument, such as the current reading, units, date/time of reading, alarm configuration and values is possible, in addition double-clicking on an icon creates a Quick Chart of the last Quick Select data points.

The various project images are easily selected by using the thumbnail viewer (SEE FIG 11.) and display of selected instruments is easily controlled using the Legend Box. (SEE FIG 12.)

In addition to providing up-to-the-minute views of the data in the database Insite can generate notification events to signal alarm conditions. Numerous alarm types are supported, contact Canary Systems for more information regarding this functionality.

Insite also provides comprehensive data output capabilities, these include reports, charts and spreadsheets (using Microsoft Excel™). Output definitions may be saved as a parameter file, to re-create a certain output at a later time the parameter file can be simply loaded and executed. (SEE FIG 13.)

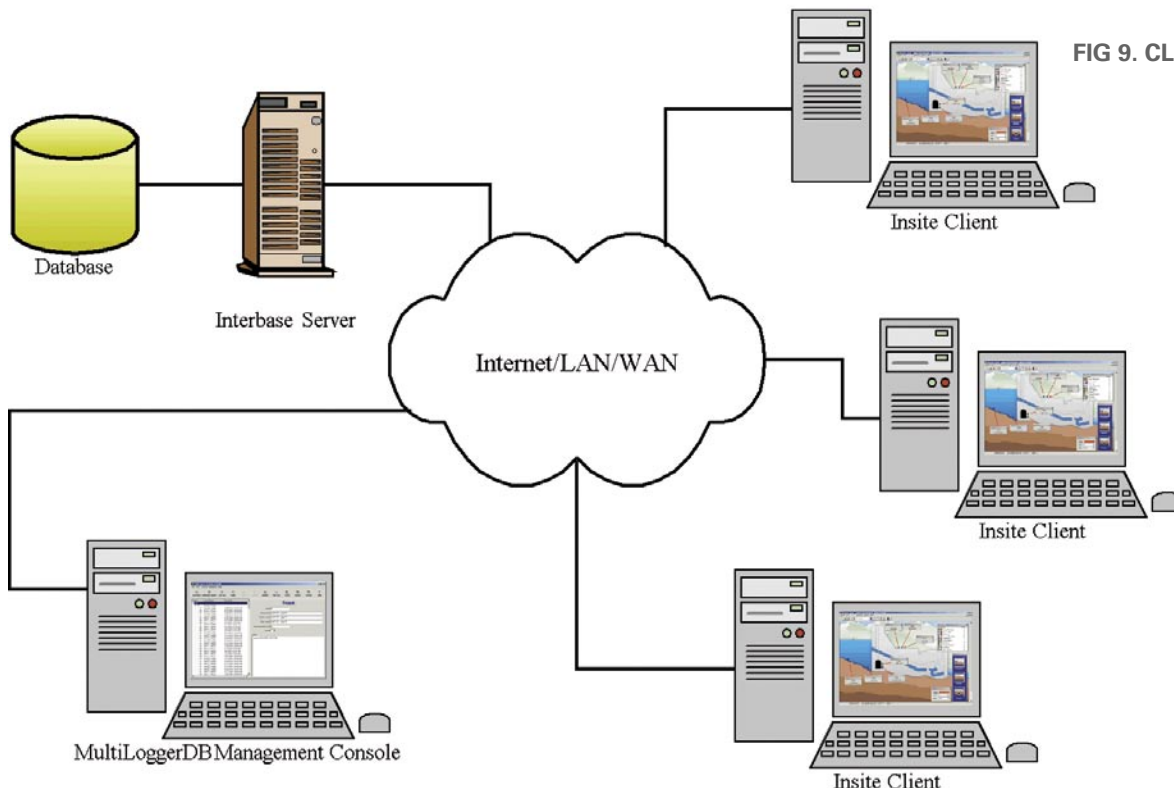


FIG 9. CLIENT DATA ACCESS TOPOLOGY

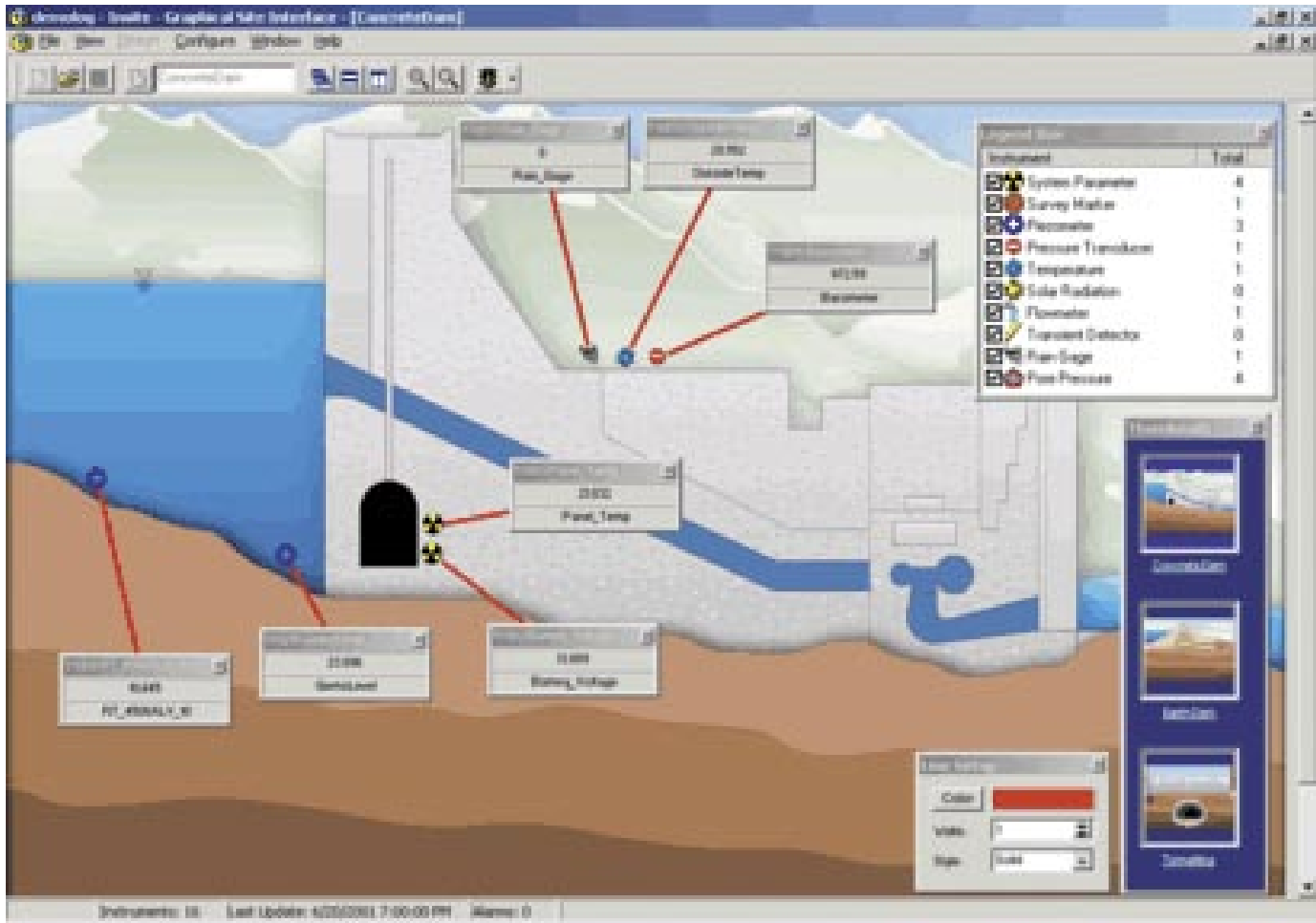


FIG 10. SAMPLE VIEW OF INSITE PROJECT CONFIGURATION

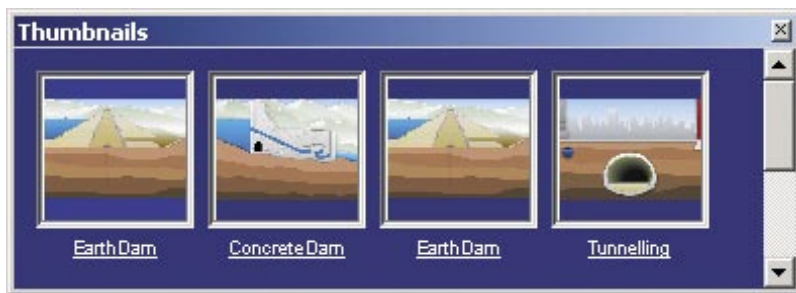


FIG 11. INSITE IMAGE VIEW THUMBNAIL SELECTOR



FIG 12. INSITE LEGEND BOX

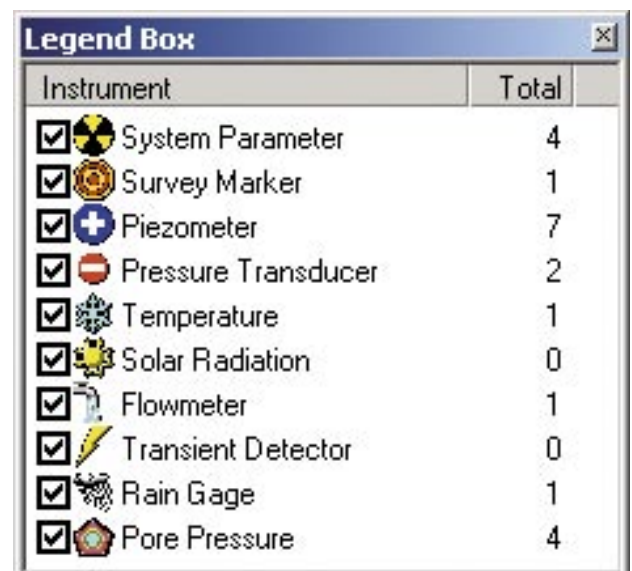


FIG 13. INSITE OUTPUT

Data Processing and Output

Insite provides extensive data processing and output capabilities. Complex calculations may be created and stored in the database using Insite. For example, a single barometer measurement may be used to automatically correct multiple water level measurements, spanning multiple systems. Complex equations may be entered, for example converting 3 measurements from a stress cell to stress in psi (or other units). Calculations may be built referencing multiple data elements (multiple instruments) as well as other calculations. (SEE FIG 15.)

In addition, these calculated values may then be associated with icons, in the same manner that data elements are supported, and alarms and notification can be configured. Data may then be selected based on defined filtering criteria. These criteria include the Last day, week, month, etc. of data, a specified date range or using more advanced criteria, such as certain values or other conditions of the data being met. (SEE FIG 14.)

Essentially there are 3 types of outputs that may be created by Insite, tabular reports, charts, and spreadsheets. Each output option is highly configurable, and includes a variety of types. For example there are 2 types of Quick Reports that can be created, standard tabular reports of instrument data and instrument reports. Instrument reports output data from selected instruments over the selected time period in tabular form. The instrument report generates a tabular listing of useful statistics regarding instruments, including such items as the number of readings for selected instruments, valid readings vs. invalid readings, date/time of last valid or invalid readings, among others. (SEE FIG 16, see next page)

There are over 20 chart types currently supported by Insite, including specialized charting such as Time Series (where measurements are averaged over a selected period of time and then output vs. fixed datum, for example calculating average values of water levels over time and then plotting vs. instrument elevations) or Inclinometer (where measurements are plotted vs. depth). Standard chart types include line, area, pointer, pie, contour, among others. Chart definitions are saved in a template file for recall when re-creating the chart at another time. (SEE FIG 16, see next page)

The spreadsheet export will populate an Excel worksheet with selected data, this may be instrument data or calculated data. Additionally macros may be specified to run in conjunction with the spreadsheet generation to perform further processing or other Excel based tasks. The Excel export options may be automatically invoked to generate files representing instrument data, various text and worksheet file formats are supported, including .html file generation. (SEE FIG 17, see next page)

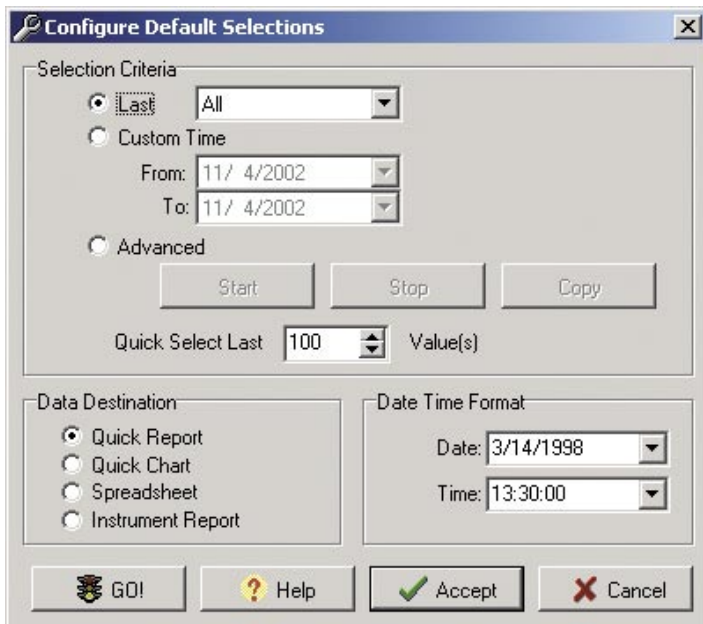


FIG 14. DEFAULT SELECTIONS FORM USED TO CONFIGURE THE DEFAULT OUTPUT OPTIONS

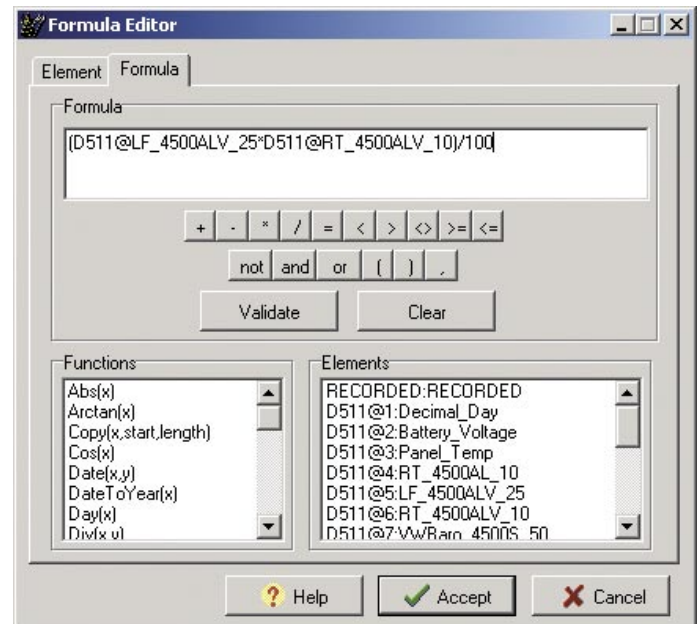


FIG15. FORMULA EDITOR FOR ENTERING CALCULATIONS



Print Preview

Drawdown

Pumpout Data

RECORDED	Well 1	Well 2	Well 3	Well 4	Well 5	Well 6	Well 7	Well 8	Well 9	Well 10
7/31/1997 -0 12:19:00	-0.12191	-0.1345	-0.01259	-0.18752	-0.01511	-0.01291	-0.00436	-0.00114	-0.02165	-0.01214
7/31/1997 -0 12:19:00	-2.6655	-2.6655	-0.65097	-0.8447	-0.01541	-0.01974	-0.00436	-0.00134	-0.06955	-0.07713
7/31/1997 -0 12:19:00	-6.4319	-6.7365	-2.3719	-2.6036	-0.05026	-0.01352	-0.00571	0.00067	-0.1337	-0.1487
7/31/1997 -0 12:19:00	-8.4436	-8.5163	-3.8103	-3.957	-0.04794	-0.01016	-0.00461	0.00134	-0.21201	-0.21521
7/31/1997 -0 12:19:00	-9.6132	-9.7087	-4.9034	-4.9856	-0.01645	-0.0065	-0.00253	0.00116	-0.28378	-0.28368
7/31/1997 -0 12:19:00	-10.415	-10.466	-5.692	-5.7555	-0.04306	-0.01022	-0.00436	0.00024	-0.33023	-0.3453
7/31/1997 -0 12:19:00	-11.003	-10.946	-6.271	-6.3108	-0.04514	-0.00601	-0.00333	0.00177	-0.40439	-0.39844
7/31/1997 -0 12:19:00	-11.407	-11.434	-6.7002	-6.7102	-0.0101	-0.00864	0.00156	0.00159	-0.44424	-0.4452
7/31/1997 -0 12:19:00	-12.192	-12.163	-7.5129	-7.475	-0.0668	-0.01376	-0.00516	0.00391	-0.57272	-0.56666
7/31/1997 -0 12:19:00	-12.613	-12.501	-7.9422	-7.8762	-0.06992	-0.01279	-0.00827	0.00391	-0.65567	-0.6721
7/31/1997 -0 12:19:00	-12.841	-12.795	-8.2065	-8.1458	-0.03226	-0.00687	-0.00491	0.00458	-0.71634	-0.7464
7/31/1997 -0 12:19:00	-13.042	-12.96	-8.4032	-8.3323	-0.0278	-0.00529	-0.00327	0.00629	-0.78391	-0.81607
7/31/1997 -0 12:19:00	-13.207	-13.1	-8.5525	-8.4758	-0.05594	-0.01199	-0.00754	0.00464	-0.83652	-0.87035
7/31/1997 -0 12:19:00	-13.339	-13.227	-8.675	-8.6028	-0.04715	-0.01126	-0.00664	0.00171	-0.89236	-0.91925
7/31/1997 -0 12:19:00	-13.447	-13.384	-8.7733	-8.7056	-0.01773	-0.00797	-0.0065	0.0033	-0.9473	-0.96576
7/31/1997 -0 12:19:00	-13.531	-13.525	-8.8664	-8.7978	-0.00455	-0.00992	-0.009	0.00134	-0.98988	-1.0073
7/31/1997 -0 12:19:00	-13.646	-13.539	-8.9408	-8.8826	-0.03476	-0.01224	-0.01175	0.00208	-1.0183	-1.0425
7/31/1997 -0 12:19:00	-13.721	-13.629	-9.024	-8.9673	-0.0372	-0.01022	-0.00943	0.00159	-1.0582	-1.0824
7/31/1997 -0 12:19:00	-13.818	-13.734	-9.0947	-9.0505	-0.01004	-0.00607	-0.00156	0.00305	-1.105	-1.1167
7/31/1997 -0 12:19:00	-13.903	-13.834	-9.1683	-9.1214	-0.00497	-0.0123	-0.01089	0.00256	-1.1383	-1.1475
7/31/1997 -0 12:19:00	-13.953	-13.869	-9.2251	-9.1836	-0.03696	-0.00699	-0.00779	0.00146	-1.1622	-1.1729
7/31/1997 -0 12:19:00	-14.005	-13.993	-9.2779	-9.2311	-0.03427	-0.00967	-0.00772	0.00269	-1.1963	-1.2075
7/31/1997 -0 12:19:00	-14.06	-14.033	-9.3296	-9.2828	-0.00595	-0.01144	-0.00595	-0.00055	-1.2366	-1.233
7/31/1997 -0 12:19:00	-14.112	-13.997	-9.3793	-9.3351	-0.00455	-0.0098	-0.00925	0.00006	-1.2577	-1.2618
7/31/1997 -0 12:19:00	-14.157	-14.059	-9.4184	-9.3787	-0.02597	-0.00888	-0.00815	-0.00153	-1.2908	-1.2905
7/31/1997 -0 12:19:00	-14.198	-14.227	-9.5975	-9.5519	-0.00748	-0.00858	-0.00864	-0.00118	-1.4109	-1.4067
7/31/1997 -0 12:19:00	-14.48	-14.412	-9.7265	-9.6667	-0.00658	-0.01199	-0.00491	-0.00287	-1.4959	-1.4992
7/31/1997 -0 12:19:00	-14.583	-14.497	-9.8391	-9.7831	-0.00723	-0.01614	-0.00961	-0.0033	-1.5661	-1.5852
7/31/1997 -0 12:19:00	-14.588	-14.568	-9.8912	-9.8312	-0.01591	-0.01431	-0.01083	-0.00556	-1.6485	-1.6648
7/31/1997 -0 12:19:00	-14.602	-14.679	-10.035	-9.9903	-0.02121	-0.01614	-0.01010	-0.00692	-1.7054	-1.7307
7/31/1997 -0 12:19:00	-14.688	-14.828	-10.121	-10.075	-0.0159	-0.02097	-0.00882	-0.00891	-1.7761	-1.8034
7/31/1997 -0 12:19:00	-14.719	-14.828	-10.199	-10.158	-0.0212	-0.0159	-0.0092	-0.0052	-1.8485	-1.8588
7/31/1997 -0 12:19:00	-14.719	-14.828	-10.271	-10.233	-0.01944	-0.02072	-0.0101	-0.00763	-1.8934	-1.9099
7/31/1997 -0 12:19:00	-14.719	-14.828	-10.301	-10.254	-0.0242	-0.01877	-0.00961	-0.00842	-1.9482	-1.9666
7/31/1997 -0 12:19:00	-14.719	-14.828	-10.359	-10.356	-0.0261	-0.02361	-0.00973	-0.00677	-2.009	-2.0147
7/31/1997 -0 12:19:00	-14.719	-14.828	-10.418	-10.418	-0.02206	-0.02225	-0.01541	-0.00891	-2.0555	-2.0703
7/31/1997 -0 12:19:00	-14.719	-14.828	-10.452	-10.452	-0.02054	-0.02054	-0.01144	-0.00836	-2.1032	-2.1092
7/31/1997 -0 12:19:00	-14.719	-14.828	-10.513	-10.489	-0.02393	-0.02054	-0.01144	-0.00836	-2.1534	-2.1552
7/31/1997 -0 12:19:00	-14.719	-14.828	-10.573	-10.536	-0.02744	-0.02341	-0.00976	-0.00854	-2.1534	-2.1552

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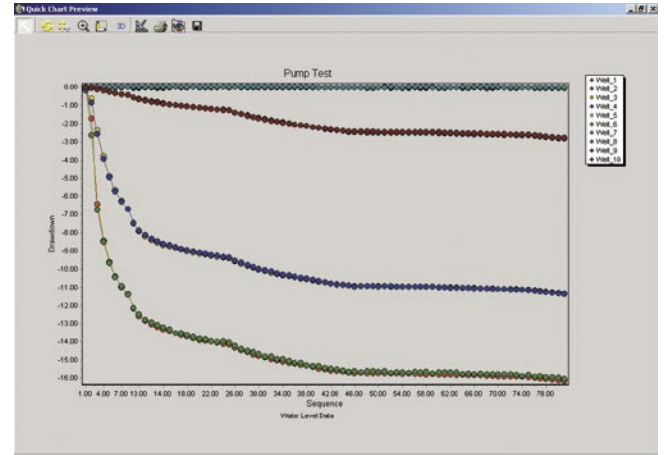


FIG 17. INSITE EXAMPLE QUICK CHART

FIG 16. INSITE EXAMPLE TABULAR QUICK REPORT

Microsoft Excel - Book1.xls

File Edit View Insert Format Tools Data Window Help

Sheet1 / Sheet2 / Sheet3

A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Pumptest Data												
2	Drawdown												
3	RECORDED	Well 1	Well 2	Well 3	Well 4	Well 5	Well 6	Well 7	Well 8	Well 9	Well 10		
4	7/31/1997 12:12:00	-0.12191	-0.1345	-0.01259	-0.18752	-0.01511	-0.01291	-0.00436	-0.00114	-0.02165	-0.01214		
5	7/31/1997 12:13:00	-2.6655	-2.6655	-0.65097	-0.8447	-0.01541	-0.01974	-0.00436	-0.00134	-0.06955	-0.07713		
6	7/31/1997 12:14:00	-6.4319	-6.7365	-2.3719	-2.6036	-0.05026	-0.01352	-0.00571	0.00067	-0.1337	-0.1487		
7	7/31/1997 12:15:00	-8.4436	-8.5163	-3.8103	-3.957	-0.04794	-0.01016	-0.00461	0.00134	-0.21201	-0.21521		
8	7/31/1997 12:16:00	-9.6132	-9.7087	-4.9034	-4.9856	-0.01645	-0.0065	-0.00253	0.00116	-0.28378	-0.28368		
9	7/31/1997 12:17:00	-10.415	-10.466	-5.692	-5.7555	-0.04306	-0.01022	-0.00436	0.00024	-0.33023	-0.3453		
10	7/31/1997 12:18:00	-11.003	-10.946	-6.271	-6.3108	-0.04514	-0.00601	-0.00333	0.00177	-0.40439	-0.39844		
11	7/31/1997 12:19:00	-11.407	-11.434	-6.7002	-6.7102	-0.0101	-0.00864	0.00156	0.00159	-0.44424	-0.4452		
12	7/31/1997 12:20:00	-12.192	-12.163	-7.5129	-7.475	-0.0668	-0.01376	-0.00516	0.00391	-0.57272	-0.56666		
13	7/31/1997 12:21:00	-12.613	-12.501	-7.9422	-7.8762	-0.06992	-0.01279	-0.00827	0.00391	-0.65567	-0.6721		
14	7/31/1997 12:22:00	-12.841	-12.795	-8.2065	-8.1458	-0.03226	-0.00687	-0.00491	0.00458	-0.71634	-0.7464		
15	7/31/1997 12:23:00	-13.042	-12.96	-8.4032	-8.3323	-0.0278	-0.00529	-0.00327	0.00629	-0.78391	-0.81607		
16	7/31/1997 12:24:00	-13.207	-13.1	-8.5525	-8.4758	-0.05594	-0.01199	-0.00754	0.00464	-0.83652	-0.87035		
17	7/31/1997 12:25:00	-13.339	-13.227	-8.675	-8.6028	-0.04715	-0.01126	-0.00864	0.00171	-0.89236	-0.91925		
18	7/31/1997 12:26:00	-13.447	-13.334	-8.7733	-8.7056	-0.01773	-0.00797	-0.0065	0.0033	-0.9473	-0.96576		
19	7/31/1997 12:27:00	-13.531	-13.525	-8.8664	-8.7978	-0.00455	-0.00992	-0.009	0.00134	-0.98988	-1.0073		
20	7/31/1997 12:28:00	-13.646	-13.539	-8.9408	-8.8826	-0.03476	-0.01224	-0.01175	0.00208	-1.0183	-1.0425		
21	7/31/1997 12:29:00	-13.721	-13.629	-9.024	-8.9673	-0.0372	-0.01022	-0.00943	0.00159	-1.0582	-1.0824		
22	7/31/1997 12:30:00	-13.818	-13.734	-9.0947	-9.0505	-0.01004	-0.00607	-0.00156	0.00305	-1.105	-1.1167		
23	7/31/1997 12:31:00	-13.903	-13.834	-9.1683	-9.1214	-0.00497	-0.0123	-0.01089	0.00256	-1.1383	-1.1475		
24	7/31/1997 12:32:00	-13.953	-13.869	-9.2251	-9.1836	-0.03696	-0.00699	-0.00779	0.00146	-1.1622	-1.1729		
25	7/31/1997 12:33:00	-14.005	-13.993	-9.2779	-9.2311	-0.03427	-0.00967	-0.00772	0.00269	-1.1963	-1.2075		
26	7/31/1997 12:34:00	-14.06	-14.033	-9.3296	-9.2828	-0.00595	-0.01144	-0.00595	-0.00055	-1.2366	-1.233		
27	7/31/1997 12:35:00	-14.112	-13.997	-9.3793	-9.3351	-0.00455	-0.0098	-0.00925	0.00006	-1.2577	-1.2618		
28	7/31/1997 12:36:00	-14.157	-14.059	-9.4184	-9.3787	-0.02597	-0.00888	-0.00815	-0.00153	-1.2908	-1.2905		
29	7/31/1997 12:37:00	-14.346	-14.237	-9.5975	-9.5519	-0.00748	-0.00858	-0.00864	-0.00118	-1.4109	-1.4067		
30	7/31/1997 12:38:00	-14.48	-14.412	-9.7265	-9.6667	-0.00658	-0.01199	-0.00491	-0.00287	-1.4959	-1.4992		
31	7/31/1997 12:39:00	-14.593	-14.497	-9.8391	-9.7831	-0.00723	-0.01614	-0.00961	-0.0033	-1.5661	-1.5852		
32	7/31/1997 12:40:00	-14.71	-14.568	-9.9452	-9.8912	-0.01291	-0.01431	-0.01083	-0.00256	-1.6485	-1.6648		
33	7/31/1997 12:41:00	-14.802	-14.679	-10.035	-9.9903	-0.02121	-0.01614	-0.01010	-0.00692	-1.7054	-1.7307		
34	7/31/1997 12:42:00	-14.858	-14.828	-10.121	-10.075	-0.0159	-0.02097	-0.00882	-0.00891	-1.7761	-1.8034		

FIG 18. INSITE EXAMPLE SPREADSHEET OUTPUT

Hardware Systems

We design and fabricate the hardware systems to meet your project requirements. We also sell components for those customers wishing to assemble their own systems.

At the heart of most of our systems is a field proven Campbell Scientific controller. With over 100,000 units deployed in the harshest of field environments these MCU's have proven their reliability and durability. It is our hardware of choice.

A basic system includes a Campbell Scientific MCU, a CR10X, CR510 or CR23X, with appropriate wiring panel. A rechargeable lead-acid battery provides power, sized according to the demands of the system. Solar panels or AC adaptors are used to provide charging for the battery system. Sensor interface products or other interface devices, including the communication products are also built-in. We support all Campbell communication peripherals, as well as other peripherals such as the various Synchronous Device Modules (SDM's), which provide expanded control and measurement capabilities. (SEE FIG 19.)

The systems are housed in rugged, industrial NEMA 4X/IP 65 rated enclosures, designed to withstand the harshest environments. The measurement capabilities of our systems range from 1 to 256 channels, sized according to the project requirements. We also have standard off-the-shelf systems that offer standard packaged functionality at a cost-effective price. (SEE FIG 20, see next page)

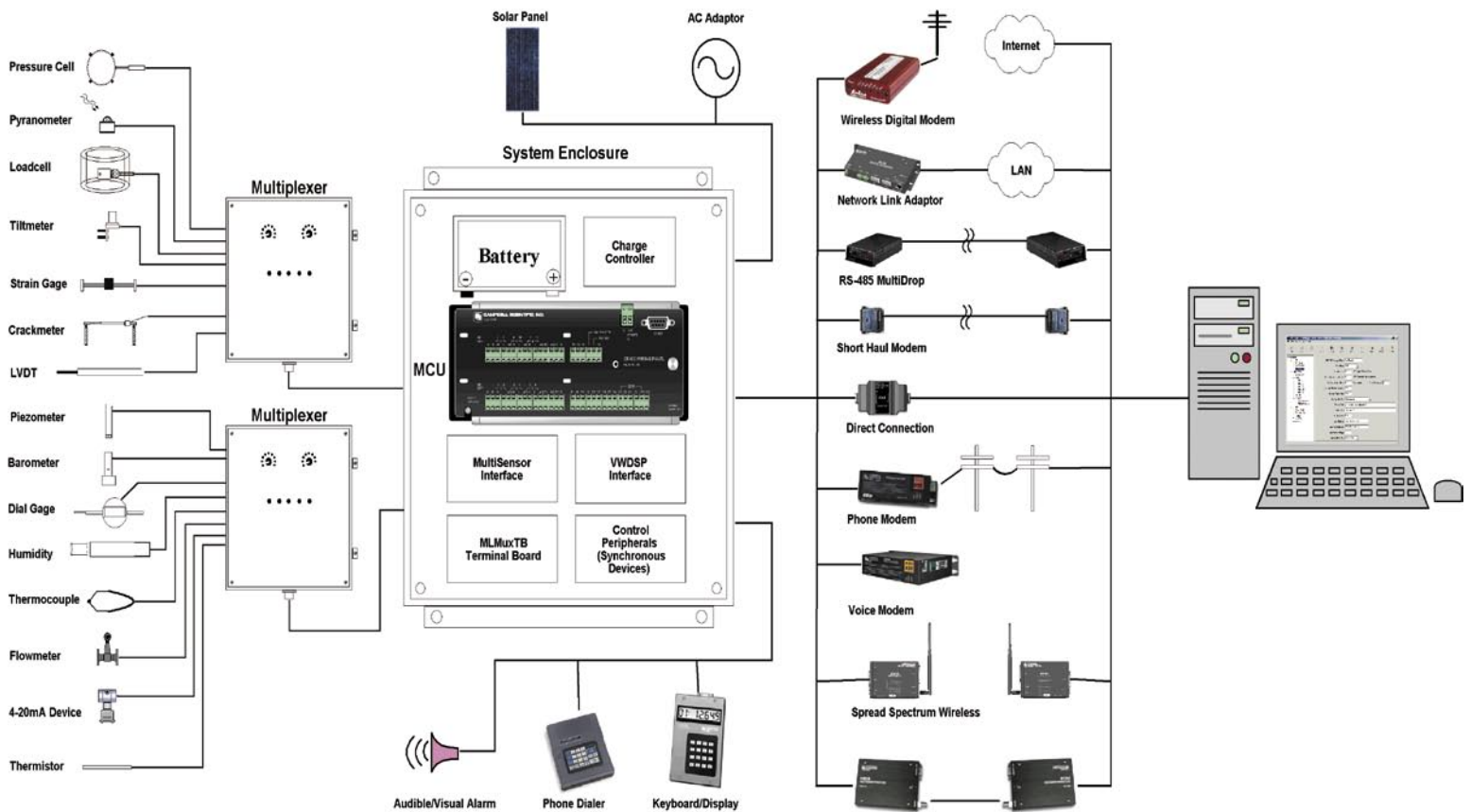


FIG 19. SYSTEM DIAGRAM ILLUSTRATING TYPICAL HARDWARE SYSTEM COMPONENTS

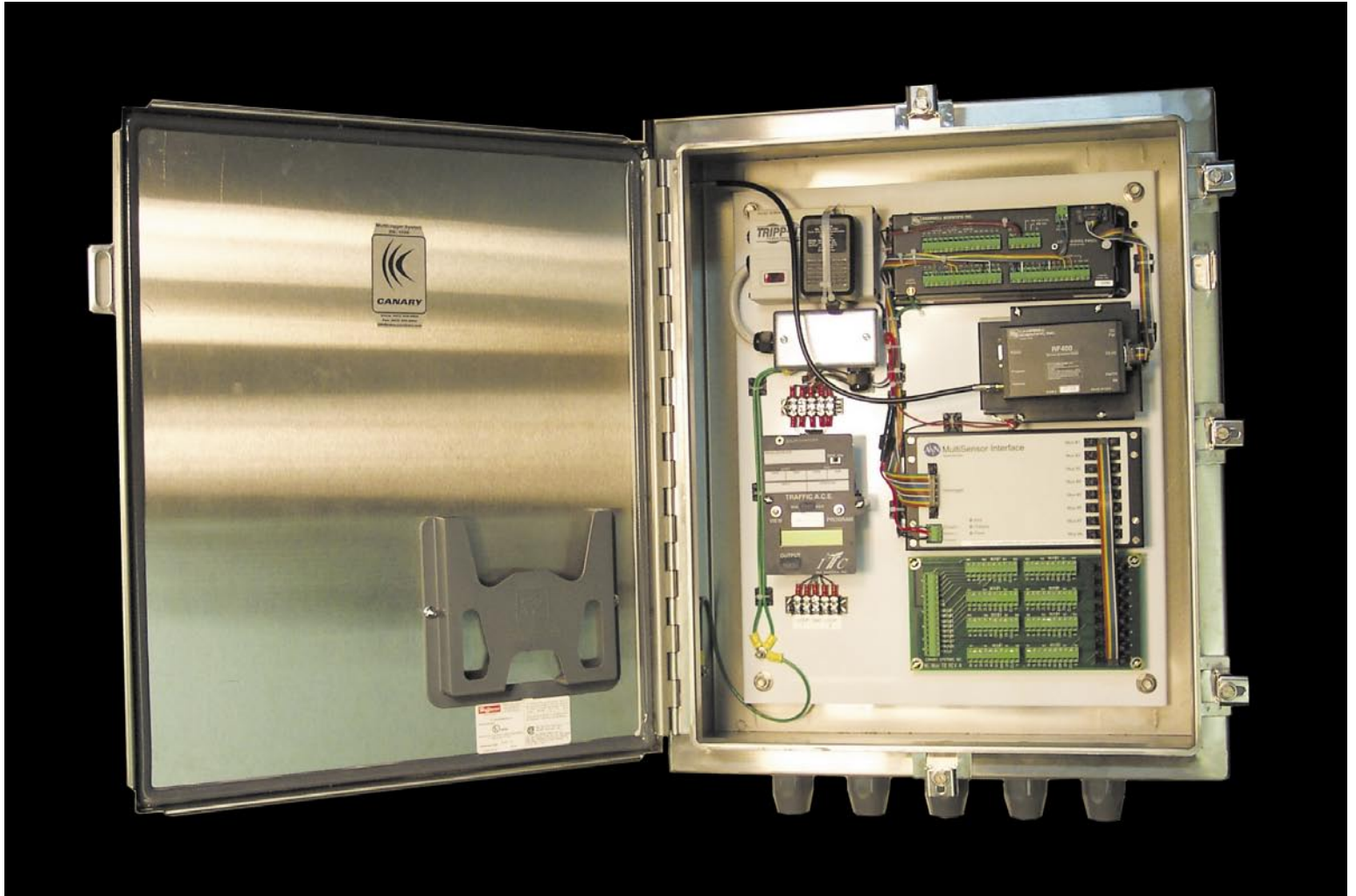


FIG 20. SYSTEM FABRICATED BY CANARY SYSTEMS



System Peripherals

Canary Systems designs, builds and sells a variety of data acquisition peripherals, these include multiplexers, sensor interface products, and communication products. Canary Systems peripherals are designed to operate in harsh environments and with low-power operation.

MultiMux

The MultiMux expands the number of instruments that can be read by the data acquisition system to 16, 32 or 48 instruments. The multiplexer consists of a terminal board for making the instrument connections and a multiplexer board (installed underneath) to switch through the channels all housed in a rugged weather resistant NEMA 4X fiberglass-polyester enclosure (other types available). Numerous switching modes are supported including 16CH x 4 or 6-wire, 32CH x 2-wire, or 48CH x 2-wire. Multiplexers may be "daisy-chained", i.e. sharing common enable and clock lines by configuration of DIP switch settings. Up to 8 multiplexers may be connected together in "daisy-chain" fashion. The MultiMux also includes lightning protection on each channel, in the form of tri-polar and bi-polar plasma surge arrestors, and has other options available such as manual switch panels. It is compatible with all Campbell Scientific control modules. (SEE FIG 21.)

MiniMux

The MiniMux expands the number of instruments that can be read by the data acquisition system to 16 or 32 instruments. The MiniMux is housed in a rugged weather resistant NEMA 4X fiberglass-polyester enclosure (other types available). It offers lower cost than the MultiMux but does not have provision for installing lightning protection components, 6-wire switching or manual switching. It is compatible with all Campbell Scientific control modules. (SEE FIG 22.)

MultiSensor Interface

The MultiSensor Interface is designed to provide various types of signal conditioning and other circuitry to support reading a variety of instruments using multiplexers. With the MultiSensor Interface every multiplexer channel can be configured for the type of instrument connected, whether vibrating wire, thermistor, RTD, linear potentiometer, 4-20mA, resistance strain gage, etc. Programming is done automatically by the MultiLogger software. It also includes battery charging circuitry and expands the number of multiplexers that may be enabled to 8. The MultiSensor Interface is compatible with the Campbell Scientific CR10, CR10X and CR23X control modules. (SEE FIG 23.)

VWDSP Interface

The VWDSP Interface is designed to provide highly reliable vibrating wire gage measurement. It consists of a precision differential amplifier front-end and analog filter in addition to digital signal processing techniques to effectively ensure that a proper measurement is obtained. A TTL or RS-232 level interface is used for connecting to the host device. It is designed to be connected directly to the serial port of a standard PC, or connected to an RS-232 port equipped data acquisition system. It also includes multiplexer expansion capabilities, it can control up to 8 multiplexers using a 3-wire serial communication interface. The VWDSP is compatible with the Campbell Scientific CR10, CR10X and CR23X control modules. (SEE FIG 24.)

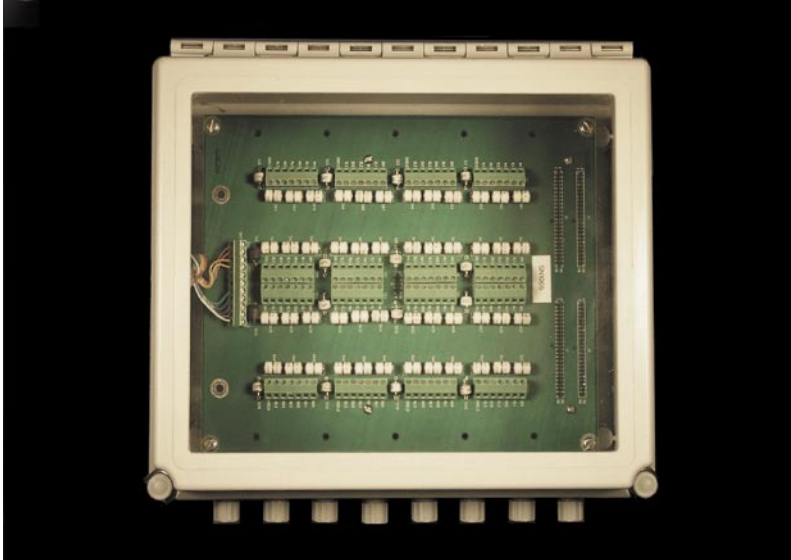


FIG 21. MULTIMUX INSTRUMENT MULTIPLEXER



FIG 22. MINIMUX INSTRUMENT MULTIPLEXER

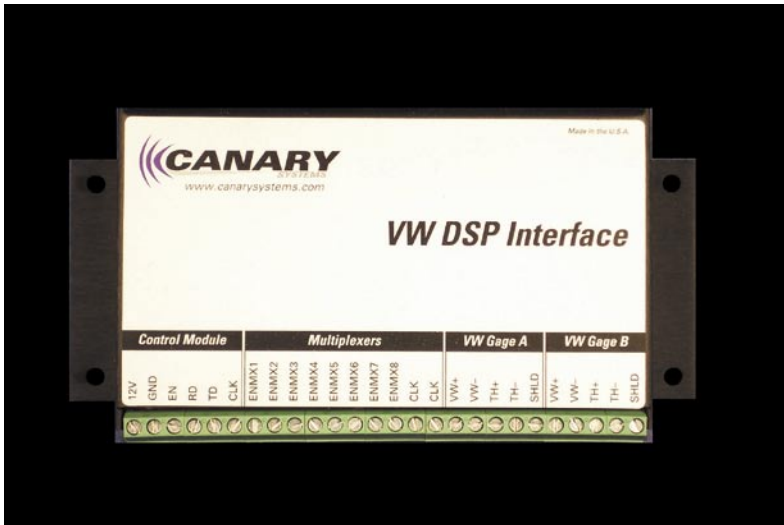


FIG 23. MULTISENSOR INTERFACE

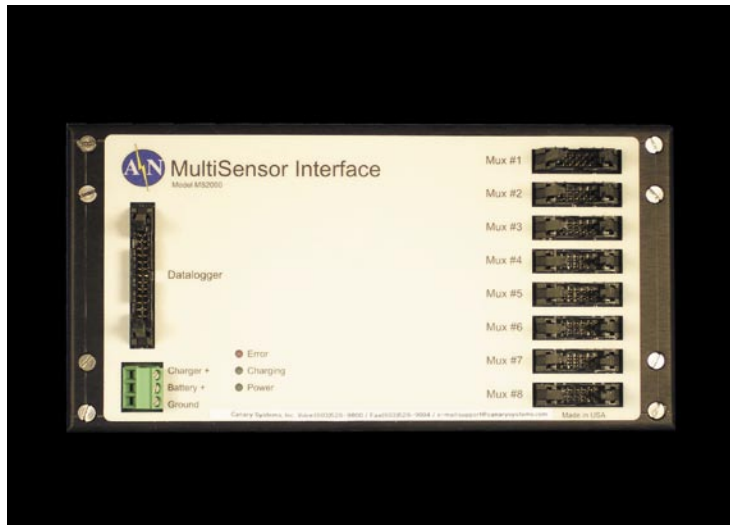


FIG 24. VWDSP VIBRATING WIRE INTERFACE



System Peripherals

Canary Systems Services

Canary Systems offers a range of services to meet the needs of our customers.

These services include:

- Instrumentation Selection
- System Design
- System Fabrication
- System Installation
- Product Training
- Commissioning and Troubleshooting
- Electronic Product Development
- Software Product Development
- Database Development
- Database Hosting
- Web Interface Development



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Check out our website at www.CanarySystems.com

More detailed information about us and our products is found at our website. Check out our comprehensive support directory, listing answers to commonly asked application questions, and current versions of all of our software (to access some of the downloads you will be required to purchase and register your software).

Contact us for pricelists, project references and data sheets.

We look forward to hearing from you soon!