

GOLDEN RIVER retriever

ENVIRONMENTAL COMPUTER.



FEATURES

- Low cost Prototype Development System (1802 μ P)
- FORTH™ Stack-based Operating System in 10K PROM including 280 I/O handlers, sub-routines
- EDITOR, ASSEMBLER, COMPILER included
- Storage for 500 lines High Level Program
- 32K Compiled Program and Data Store
- Expandable Interface with 8 Digital Inputs and Outputs
- VDU/Terminal Interface 110 baud — 19200 baud
- 8 Digit LCD Display, 17 Touch Pad Keys, 20 Bar Segment Display, and Beeper
- Real Time Clock and Calendar built in
- Five independent 16-bit Timers
- Full 16-bit and 32-bit Arithmetic Packages
- Typical 6–8 days autonomy from Internal Battery
- Environmentally protected in weatherproof cast aluminium case
- Developed Code can be ROM converted at nominal cost
- User Manual provides extensive documentation and applications
- Training Courses and full technical backup available

GENERAL DESCRIPTION

DIGILOG is a complete stand alone micro computer system with a powerful FORTH™ operating system. Application areas include:

- Low cost development system for RCA's 1802
- Programmable logger (32K bytes max. store)
- Programmable Controller (expandable output interface)
- Prototype demonstration
- Training aid for FORTH™ programming

DIGILOG's major advantage over existing systems is the ease and speed in which it can be programmed by the novice user to solve a given application. Furthermore, DIGILOG can be used as the prototype or final hardware, since its user defined display and keyboard operation can be assigned almost any use, and usually do not require the presence of a terminal. The construction and weatherproofing allow operation in hostile environmental conditions, whilst the inbuilt rechargeable battery will power the equipment for a typical 6–8 days.

The operating system allows for easy source program entry and editing, with fast compilation and test execution, all at the user's control. Individual routines can be tested at the keyboard allowing a structured "top down" program design, reducing debugging time significantly. Programming errors can be corrected quickly, and recompilation takes only seconds using DIGILOG's fast memory load and execution facilities.

APPLICATIONS

Since DIGILOG is user programmable, its application is only limited by its I/O and memory capability. However, here are some application ideas which may resemble your proposed use:-

- **Counter Logger**
Programmed to count input pulses arriving on up to 8 input lines, and to print individual totals, running totals, along with time and date every minute.
- **Sequence Controller**
Programmed to output to 8 digital lines according to a preloaded schedule of output states, for specific times and dates.
- **Telecoms Buffer**
Accepts input serial data at one baud rate, stores up to 30K characters, and later prints out or displays at a different rate.
- **Data Entry**
Accepts keyboard or bar code reader input and stores data captured for later direct input to computer, in specific format required.
- **Programmable Alarm**
Outputs required messages at preset times of day; should confirmation of action not be entered, then alarm condition set.
- **Data Decoding**
Receives data and applies code algorithm before printing; and vice versa for encoding, e.g. Morse code, or secret codes in ASCII.

USING DIGILOG

DIGILOG comes complete with a 100 page training/User Manual which will guide you step by step through use and applications of the operating system, in relation to your intended use. You will be using the DIGILOG to work through the manual and about one week should see you programming your own application. The interactive nature of the system helps testing and debugging in very short time scales, aided by the powerful editor and fast program compilation. During this phase, listings of the program can be made, and you can aid development by breakpoints to the terminal for examination of variables, inputs, etc.

When testing is complete, then actual trials with your sensors, or outputs can proceed, if necessary with error reports to the terminal. If the application does not require a terminal, special procedures are provided for automatic stand alone start up of your program.

Where the DIGILOG hardware satisfies your long term application, your program can be converted by GRC at nominal cost to reside in ROM. Attractive quantity prices are available with or without the FORTH™ operating system. GRC would be pleased to quote for your requirements. Custom programming is also available for DIGILOG applications.

DIGILOG ROUTINES

Selection of some of the 280 routines available.

INTERPRET	Accepts input numbers, predefined commands and new definitions from the terminal keyboard. Numbers are put on the stack, commands are executed, new definitions are compiled automatically into the program area.
.	Prints a number on top of the stack on the terminal.
+	Adds the 2 numbers on top of the stack.
*	Multiplies the 2 numbers on top of the stack (maximum 32 bit by 16 bit with 48 bit intermediate value).
BASE	Sets the output number base to any number e.g. 2 for binary, 8 for octal, 10 for decimal, etc.
AND	Logical AND of 2 numbers (each 16 bit) on the stack.
VARIABLE	Defines a variable location, and its symbolic name.
ARRAY	Defines an array of locations, with symbolic name.
FIND	Editor, finds a specific string.
DO-LOOP	Executes a loop structure "n" times.
BEGIN-END	Similar to DO-LOOP with different control.
.TIME	Prints time of day, HH:MM:SS.
S?	Prints the contents of the stack.

The DIGILOG user manual lists 25 pages of powerful definitions like these; the existing capability of DIGILOG's operating system reduces development time considerably.

APPLICATION EXAMPLE

A manufacturer of pressure switches was hand testing units with a pressure feed and monitoring the output with an oscilloscope. DIGILOG was programmed to drive the pressure feed and measure the output signals. The testing time was reduced by a factor of 3, and a printed output given for each unit listing:-

Time and date of test, unit serial number, threshold pressure level, output pulse width in mS, pass or fail.

At the end of the day a summary is printed of tested units showing percentage pass rate, mean threshold pressure level, mean output pulse width, along with minimum and maximum values. Results of individual tests can also be printed.

The program for this application consisted of 70 lines of program, and took 2 days to develop. An increase in throughput was achieved as a result of small capital investment. The software has subsequently been expanded to cover other areas of testing in the same factory.

PRINTOUT EXAMPLE

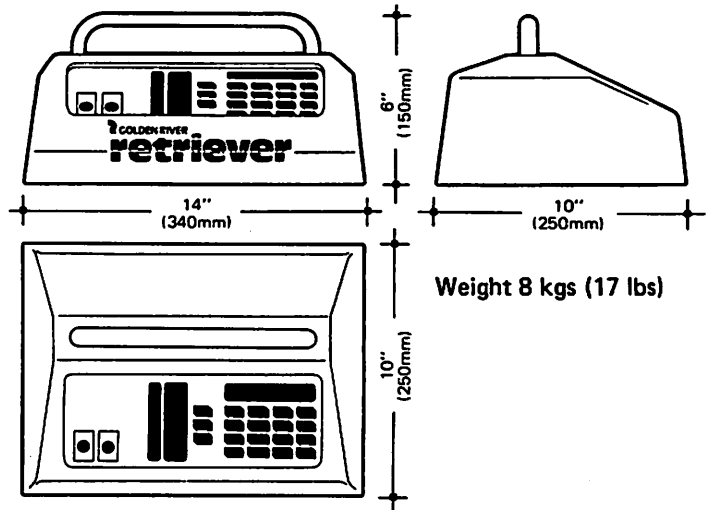
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27
0 ( SOS IN HORSE                               4TH 26/ 2/81 )
1
2 : UNIT 100 MILLISEC ;                       ( TIME UNIT )
3 CODE ON SED NEXT                            ( TRANSMITTER ON )
4 CODE OFF REQ NEXT                          ( TRANSMITTER OFF )
5 : ?SUNK PRESSURE 20 > ;                    ( READ WATER PRESS )
6
7 : DOT ON UNIT OFF UNIT ;                   ( SEND A DOT )
8 : DASH ON UNIT UNIT UNIT OFF UNIT ;       ( SEND A DASH )
9 : GAP UNIT ;                               ( INTER BIT SPACE )
10 : GAPS 0 DO GAP LOOP ;                   ( MAKES N SPACES )
11
12 : S DOT DOT DOT GAP ;                     ( SEND CHARACTER S )
13 : O DASH DASH DASH GAP ;                 ( SEND CHARACTER O )
14 : HELP S O S 3 GAPS ;                    ( SEND SOS )
15 : SINKING BEGIN HELP ?SUNK END ;         ( CONTINUOUS SOS )
    
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NOTICE

Due to legal requirements, this equipment is no longer named DIGILOG, but is now the Golden River ENVIRONMENTAL COMPUTER. Please use the name ENVIRONMENTAL COMPUTER when referring to this product.

DIMENSIONS



SPECIFICATION

Type	DIGILOG Logger/Controller
Memory	10K operating system ROM 2K spare position ROM 2K CMOS RAM 32K dynamic MOS RAM
Operating System	FORTH™ plus GR extensions
Routines Supplied	280, see examples in text
Facilities	Editor, 1802 Assembler, Compiler
I/O	8 digit L.C.D. display 17 touch type key pads 8 digital inputs with handshake 8 digital outputs with handshake
Expansion	Digital I/O up to 16 ports
Terminal	RS232, CCITT V24 Interface at 110 to 19200 baud
Clock	24 hour clock HH:MM:SS
Calendar	Full leap year calendar, YY:MM:DD
Timers	5 16-bit counters
Source Format	30 "screens" each having 16 lines of 64 characters source text
Editor	Type a line Insert a line or string Delete a line or string Find a string Replace a string Copy a screen
Assembler	All RCA instructions plus macro's
Compiler	Fast, one pass compiler
Power	6 volt 10Ah battery, 50mA typical total
Temperature	-10°C to +55°C (-15°F to +130°F)
Connectors	MIL bayonet for I/O, XLR for Terminal
Accessories	Battery Charger/Interface Unit (essential) 6 Channel 12 bit Analog input card Additional 8 bit Digital I/O card Connector Box Assembly Connector

This leaflet describes all the current features of the DIGILOG and accessories. Some items described are optional extra cost items over the basic equipment, please contact GOLDEN RIVER for details. In the interest of continuing product improvement, GOLDEN RIVER reserves the right to alter specifications and features of the equipment in this leaflet. This leaflet shall not form part of a contract involving GOLDEN RIVER unless specifically stated in writing.

User and Application Manual available separately at nominal charge.



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