RMS INSTRUMENTS
Data Recording Systems

DAS8

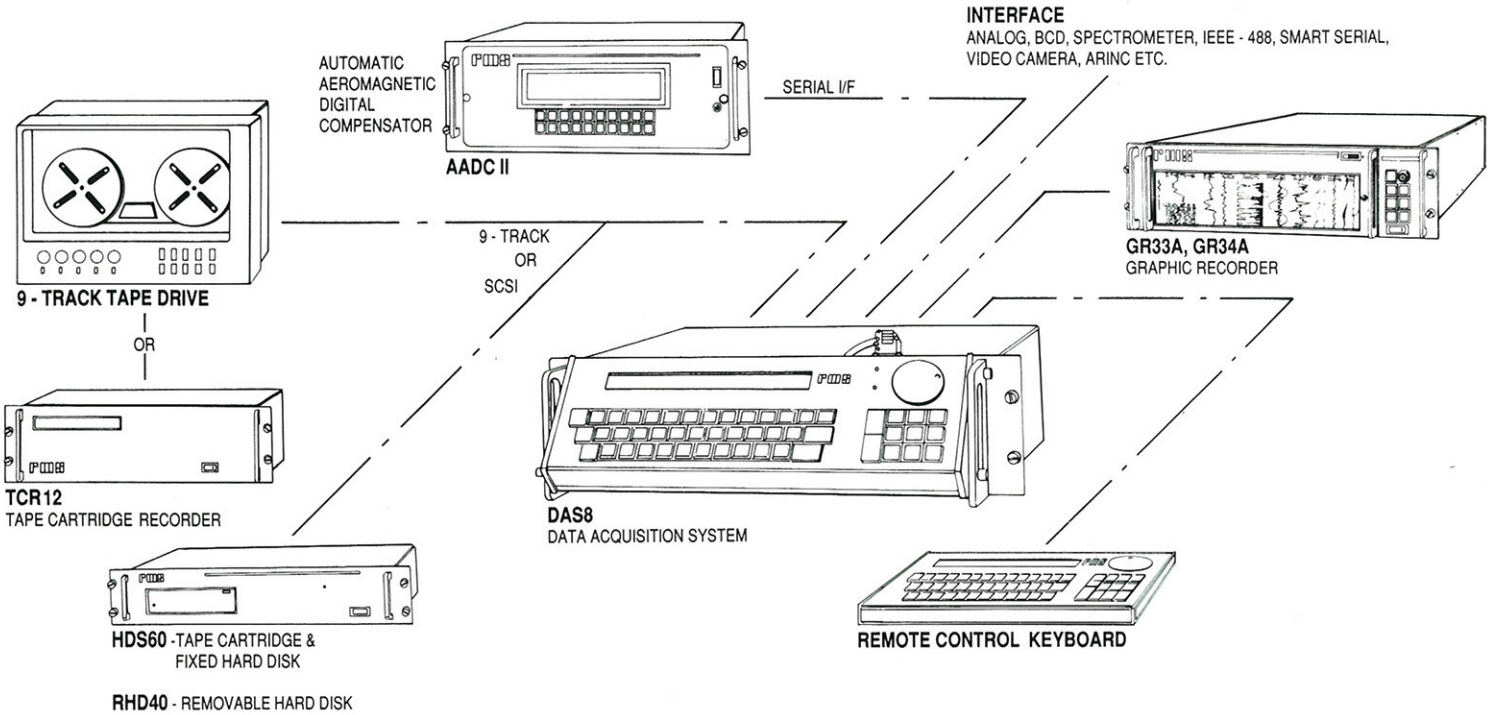
DATA ACQUISITION SYSTEM

USER PROGRAMMABLE

DAS8 DATA ACQUISITION SYSTEM

Features:

- User Programmable data collecting and monitoring from extensive configuration menus
- Light rugged package, ideal for airborne and mobile applications
- Multiple scans with variable rates
- Movable keyboard display allows remote control
- PC Compatible data when using SCSI interface
- Up to 96 Analog Inputs (16 bit resolution)
- Modular approach with wide selection of interface modules:
  Analog, Serial, Hard Disk (SCSI), Magnetic Tape, Video, ARINC, BCD,
  Spectrometer, IEEE-488, and many more
- Directly interfaces with the RMS Instruments':
  - HDS60 Hard Disk and Streamer Tape Drive
  - RHD40 Removable Hard Disk Cartridge Drive - data format
    MS-DOS compatible
  - TCR12 Magnetic Tape Cartridge or an industry standard
    9-Track 1/2 inch tape drive
  - GR33A & GR34A Graphic Recorders



DESCRIPTION

The DAS8 is a multiprocessor based data acquistion and recording system which is capable of receiving data from a variety of sources and recording all or selected portions of this data on various media. A movable keyboard/display is included for operating, programming and monitoring the instrument. The DAS8 is designed to operate in moderately harsh environments, making it ideally suited for airborne and mobile applications. The modular approach allows the flexibility of selecting a cost effective system for an immediate specific data acquisition requirement, yet provides for future alteration and expansion as requirements change and grow.

DATA ACQUISITION

The system software allows the user to easily program a routine(s) to acquire data from a number of different sources analog or digital and to output to various recording media such as hard disk drives, and tapes etc. as well as to the RMS Instruments' GR33A graphic recorder. When interface modules are added or removed, the software automatically provides access to the related menus for easy programming. There is no need to return the system to the factory for application specific software. A current program that is stored in the system's nonvolatile memory is ready for immediate use at power on. Other programs can be stored on disk or tape and loaded when required. Three separate scans are provided allowing different data to be sampled or functions to be performed at different rates.

COMPLETE DATA ACQUISITION SYSTEM

When the DAS8 is combined with any of the RMS Instruments' recording media, such as the HDS60, RHD40, or TCR12 series of hard disk and tape drives, and the model GR33A graphic recorder, a complete system is realized. These systems combine a programmable data acquisition system with a hard copy multi-channel chart recorder, and also the ability to store data on an easily transportable medium for processing and analysis in the field or at a data centre.

EASY OPERATION

Upon power-up, the operator can quickly begin to collect and monitor data using the program stored in the nonvolatile memory. In addition, provisions are made for manual entries such as project numbers etc. Monitoring of the systems' performance can be conveniently and clearly presented on the GR33A graphic recorder, as well as on the keyboard/display which can be mounted up to 5 meters away from the console.

EASY PROGRAMMING

The built-in system software allows the user to configure a data collecting routine to suit their own requirement even when modules are added or deleted from the system. The system software provides this flexibility through an extensive array of menus that allows the user to select the data, the rate of sampling as well as the organization of how the data is to be recorded on both the GR33A chart recorder and the magnetic media. Data and function routines are referred to by system 'names' and 'letters', and when these symbolic names are included in a list, they are executed automatically when the scanning sequence encounters them - **NO SOFTWARE PROGRAMMING BACKGROUND IS NECESSARY!**

EASY DATA VERIFICATION

With the use of the resident utility programs, a user may confirm or verify data by reading back the contents of the tape, disk or a data buffer, and display them on the keyboard/display, the built-in recorder, or a terminal. Other routines are provided to copy from disk to tape/tape to disk, upload programs or to produce traces from recorded data on the chart recorder, and many more.

EXTENDED DATA BUFFERING

The Tape and SCSI Interface modules, provide 60 Kbytes (15 pages x 4K) of buffering which greatly minimizes any data loss due when another acquisition period begins and the recording device reports "busy". Without buffering, this can be a serious problem in real time data acquisition and recording.

EASY INTERFACING

The modular approach of the DAS8 makes expanding a basic system a simple matter of installing an interface module and using the built-in configuration menus to program a new data collecting routine. A wide selection of interface modules are available to meet most applications and details follow.

DAS8 and HDS60 Data Acquisition and Recording System.

BASIC DAS8 DATA ACQUISITION SYSTEM

RMS4183A Microcomputer Module
RMS4185A 32 Channel Analog Input Module (plus 6 event inputs)
RMS4526 SCSI Interface Module
RMS4137 Digital Interface Module (20 digit BCD)
RMS4186 Keyboard/Display

A total of 8 modules may be installed

OPTIONAL INTERFACE MODULES

RMS4272A 4 channel Smart Serial Interface
RMS4190 Video Interface
RMS4241A Spectrometer Interface
RMS4429A ARINC Interface
RMS4239A Tape Interface (9-track industry standard)
RMS4088 IEEE-488 Instrument Bus Interface
RMS4418 General Purpose Interface (1 parallel, 2 serial, 4 analog o/p, 4 pulse o/p and 4 counters)

Enquire regarding additional interfaces

MAGNETIC RECORDING SYSTEMS:

HDS60 Hard Disk & Streamer Drive
RHD40 Removable Hard Disk Cartridge
TCR12 Magnetic Tape Cartridge

GRAPHIC RECORDER:

GR33A Graphic Chart Recorder

MODULE DESCRIPTIONS

RMS4183A MICROCOMPUTER MODULE

The RMS4183A Microcomputer Module (MCM) is a high performance, multiprocessor controlled module which contains in EPROM, the built-in system software. The data system is in a multiprocessor configuration with the MCM in a supervisory role controlling data transfer functions and timing between the keyboard, other interface modules, and the Chart Recorder. The nonvolatile memory for the storing of a program is also located on this module, as well as the CMOS real-time calendar clock with battery backup. The MCM also has an interface controlled by a separate processor to communicate directly with the GR33A Chart Recorder. Menus are provided for the configuring of the Recorder where the user has the choice of fully or partially controlling the Recorder.

RMS4185A ANALOG INPUT MODULE

(Up to 96 channels)

Each microprocessor based Analog Input Module provides 32 differential analog inputs, plus 6 TTL/CMOS compatible event inputs, and one pulse input. The analog inputs are digitized to 16 bit resolution over the range of ±10V. The data is available in 2's complement form (2 bytes/channel) or can be converted to ASCII (7 bytes/channel) by programming in one of the built-in routines. Menus are provided for the application of built-in digital filters, the assignment of signals to the Chart Recorder, polarity inversion, etc.

Analog Inputs: 32 differential (balanced), 1 megohm each input to common 1.4 megohm differential
Maximum Safe Input Voltage: ±20 volts continuous, 75 volts pulsed at 1 msec
Input Voltage Range: ±10 volts
Sensitivity: 300 µV
Resolution: 16 bits
Accuracy/Linearity: 0.07%/0.007% of full scale
Full Scale Drift: ±15 ppm/°C
Crosstalk Rejection Ratio: DC -89 dB typical, 100 KHz -65 dB maximum
Common Mode Rejection: DC - 60 Hz 1K balanced Rs -89 dB typical, 1K unbalanced Rs -60 dB
Sampling Rate: programmable by scan rate
Event Inputs: 6 event marker inputs plus remote chart On/Off
CMOS/TTL compatible
Vmax. = 30V, Rin = 10K ohm,
minimum pulse width = 10 msec.

RMS4526 SCSI INTERFACE MODULE

The SCSI (small computer system interface) provides for the recording of data collected by the DAS8 to be recorded on hard disks, optical disks and tape recorders that are readily available on this bus. This module is totally compatible with the RMS Instruments' HDS60 Hard Disk and Tape Streamer Drive, and the RHD40 Removable Disk Cartridge recording systems. Refer to the data sheets for more details on these products. The data format on these hard drives is MS-DOS compatible making it ideal for those processing data in the PC environment.

Maximum number of drives:
2 (1 Random access device - hard disk & 1 sequential device - tape)
Record Length: Variable to 4 Kbytes max
Buffering: 15 x 4 Kbytes
Maximum Throughput to Recording Device: 16 Kbytes/sec

RMS4137 DIGITAL INTERFACE MODULE

(2 modules maximun)

Each Digital Interface Module provides 20 parallel BCD digit inputs or 80 general purpose lines. The data system provides BCD to ASCII conversion as well as access to the raw data.

- Configurable as 20 BCD or hexadecimal digits, 10 ASCII characters, or 80 general purpose digital lines.
- Data can be externally strobed, or an internal strobe can be programmed from a scan.
- 4 programmable output pulses
- Traces for the GR33A chart recorder can be defined directly from the input data.

RMS4186 REMOTE CONTROL KEYBOARD/DISPLAY

The movable keyboard/display is an intelligent unit containing its own microprocessor, communicating via a serial link to the Microcomputer Module in the DGR33A console. The backlit LCD display provides 2 lines of 80 characters each for system monitoring and programming with the menu driven items. The keyboard / display is also equipped with a rotary encoded wheel to facilitate cursor positioning, and for scrolling vertically or horizontally through messages which are greater in size than the LCD display window. During programming, the wheel is also used for scrolling through lists of items for selection.

- Qwerty type keyboard with numeric keypad
- Flywheel cursor positioning and parameter modification
- 5 function keys
- Size: 5.25 x 1.75 x 16.0 inches (133 x 44.5 x 406 mm)
- Weight: 3 pounds (1.36 Kg)

RMS4272A SMART SERIAL INTERFACE MODULE

The microprocessor based Serial Interface Module is a 4-channel synchronous/asynchronous full duplex RS232/RS422 interface with high speed capabilities used to transmit or receive serial data streams.

- Baud Rates programmable for each channel: RS232C, 300 - 19.2 Kb; High Speed to 61.5 Kb
- Parity/Stop bits programmable for each channel
- Programmable preamble for keying received data fields
- Define up to 6 masks for extracting data
- Programmable transmit data list
- Traces may be defined from serial data and assigned to channels on the GR33A chart recorder

RMS4088 IEEE-488 INSTRUMENT BUS INTERFACE MODULE

The IEEE-488 Interface Module permits operation as a talker/listener on an IEEE-488 compatible instrument bus. The interface provides for the sending or receiving of data, as well as the receiving of control and programming data.

RMS4190 VIDEO INTERFACE MODULE

The Video Interface Module provides for the superimposing of data from the DAS8 onto a video signal for display and recording. Up to 2 lines of 32 characters each of alphanumeric information can be defined and superimposed on the video signal, e.g. the real-time clock, project I.D., event number, navigation data, etc. A moving crosshair can be activated by the user and is positioned in the X and Y axis by 2 signals applied to the RMS4185A Analog Input Module.

- Interfaces easily to readily available video cameras and VCR's
- Programmable video overlay

RMS4241A SPECTROMETER INTERFACE MODULE

The microprocessor based Spectrometer Interface Module is compatible with the EG&G Geometrics' GR-800D and Exploranium's GR-820 Spectrometers (inquire regarding other makes and models). This module utilizes a parallel interface for the digital data transfer.

- Data can be converted to ASCII and monitored on the keyboard/display utilizing the User Defined Display facility
- Programmable data length to 2K bytes
- 100KHz throughput (bytes or nibbles)
- The spectrometer can be a scan source or be triggered by the DAS8 via the module
- Traces can be defined from the data and assigned to the recorder
- Spectrum can be plotted on the GR33A chart recorder using the built-in utilities.

RMS4429A ARINC INTERFACE MODULE

This four channel ARINC microprocessor based interface can be individually configured for the following ARINC data transfer standards: 429 (high or low speed), 419, 561, 568, 571, 575 and 579 formats. The ARINC data can be recorded on tape, transmitted out of the data system via the RMS4272A Serial Interface, or produce a trace or alphanumeric printout on the Recorder.

- Programmable label masking
- Programmable equipment I.D. masking
- Traces for the recorder can be defined from the data

RMS4239A TAPE INTERFACE MODULE

The microprocessor based Tape Interface Module provides an interface between the DAS8 Data Acquisition System to an industry standard 9-track 1/2 inch tape drive with built-in formatter, or the RMS Instruments' TCR12 Tape Cartridge Recorder. Menus are provided to configure block (record) data transfers, control tape movement, as well as utilize the built-in utilities to play back data.

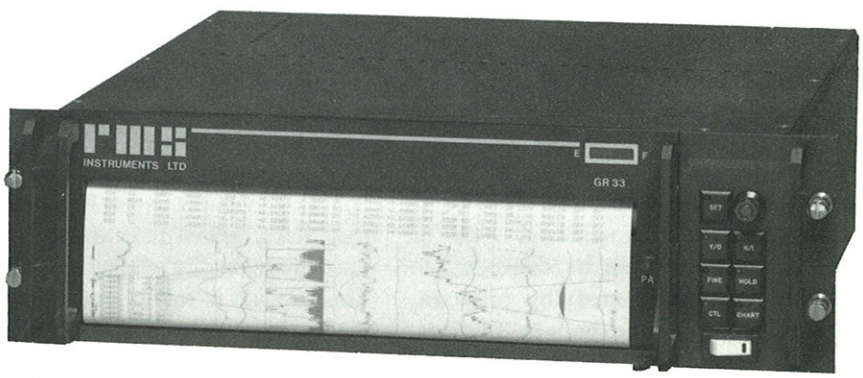
Maximum number of drives:
Up to four tape transports with auto-stepping

Maximum Speed: 9-track 1/2 inch tape - 37.5 ips
TCR12 Tape Cartridge - 30 ips @ 6400 BPI

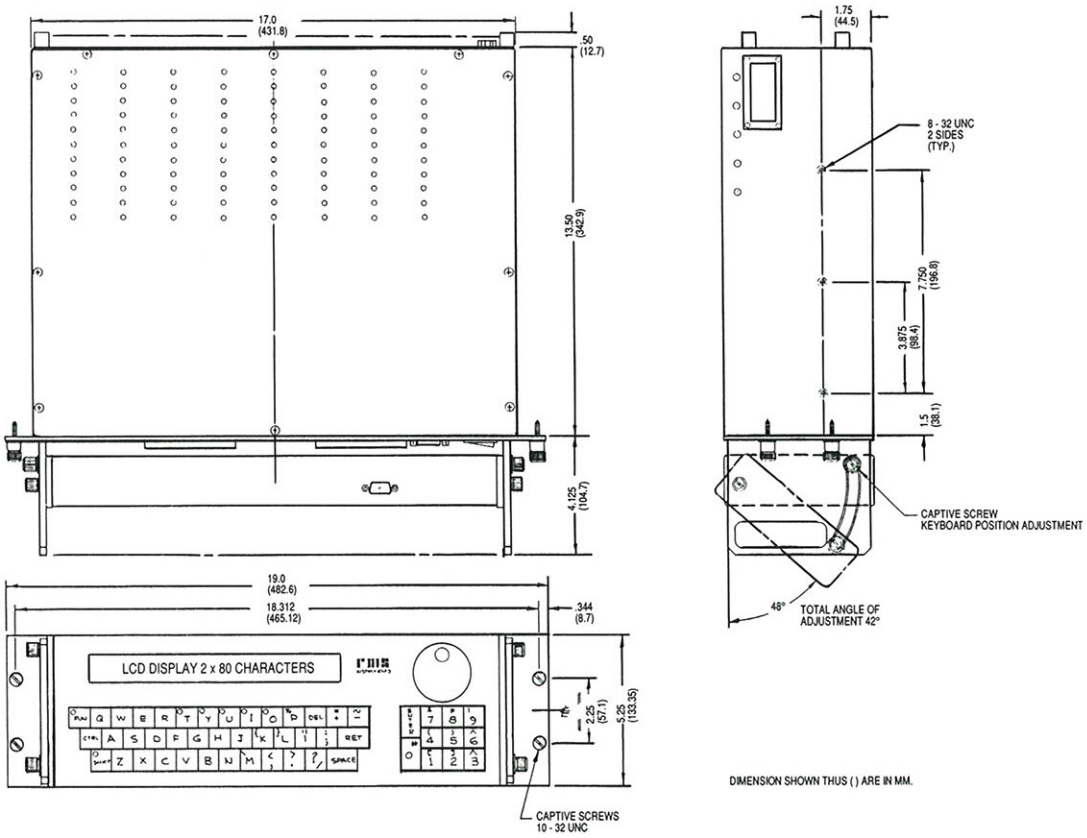
Record Length: Variable to 4 Kbytes max.

Maximum Throughput to Recording Device: 16 Kbytes/sec

Buffering: 15 x 4 Kbyte



GR33A Graphic Recorder



INSTALLATION

SIZE:	19.0 X 5.25 inches (483 X 133.4 mm) 19 inch rack mount 18.1 inch (460 mm) overall depth, extending 14.0 inch (355.6 mm) behind mounting surface
POWER:	28 VDC, (23-32 VDC) 2.5 Amps average (optional: 12 VDC & 115/220 VAC)
WEIGHT:	20 lbs. (9.09 Kg), including 5 modules and keyboard
TEMPERATURE:	Operation: -10 °C to +45 °C Storage: -40 °C to +70 °C
HUMIDITY:	5% - 95% non-condensing

* MS-DOS - TRADEMARK OF MICROSOFT CORP.
SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

For additional information on these and other products, contact;

Distributed By:

RMS INSTRUMENTS
Data Recording Systems

6877-1 Goreway Drive
Mississauga, Ontario
Canada L4V 1L9

Tel: (905) 677-5533
Fax: (905) 677-5030

e-mail:rms@rmsinst.com
WEB:http://www.rmsinst.com

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