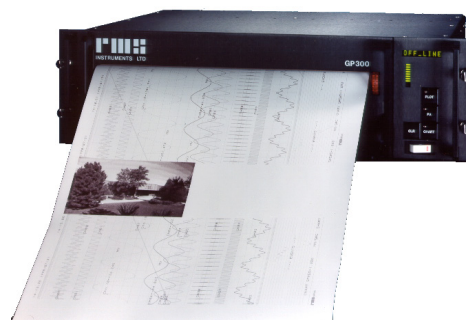
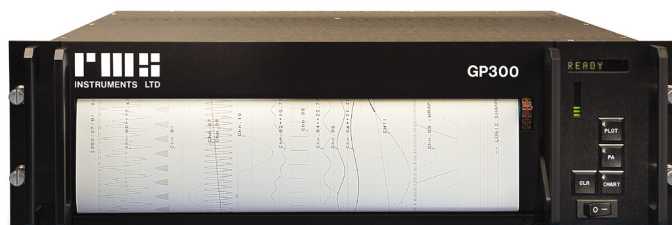


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GRAPHIC PRINTER CHART RECORDER

- **Laser printer resolution (300 x 300 dpi)**
- **Digital chart recorder with wide range of chart speeds**
- **32 fully programmable waveform channels and 16 event channels**
- **General-purpose printer for Windows NT/2000/XP/7**
- **Graphic printer with 16 gray levels for each pixel**
- **Support software for control, data monitoring & logging**
- **Internal paper take-up spool**
- **Outstanding reliability and low maintenance**



The GP300-series of Graphic Printers/Chart Recorders, comprises ruggedized, aerospace-grade instruments, based on multiple 32-bit microprocessors, and state-of-the-art electronics and thermal array technology. They offer laser-quality (300x300 dpi) resolution on a 300-mm record, unparalleled in chart recorders.

Based on the proven performance of the GR33 family of Chart Recorders, the GP300 has been designed for rugged applications and minimum maintenance. It is ideally suited for test & measurement, industrial, and an assortment of airborne and mobile applications.

In its role as a chart recorder, the GP300 accepts digital input signals from a host computer which controls the unit through one of several interface ports available. The GP300 supports 32 fully programmable (waveform) channels, plus an additional 16 event (logic) channels.

Real-time math on channels may be defined, as well as many different chart annotation messages and markers synchronized to time or external events. The GP300's unique *programmable sprites* offer outstanding trace differentiation. All information is printed simultaneously with one of the user-programmable background grids, eliminating any drift between waveforms and grid.

The GP300 can also operate both as an alphanumeric printer, and as a graphic printer/plotter in either black & white or gray scaling mode. In the latter, the GP300 offers near-photographic quality images using a true (not dithered) 16-level gray scaling approach – each individual dot's gray shade is modulated according to the image data. It is an excellent device for producing hard copies of computer generated images in applications such as radar, sonar, medical electronics, surveillance, and spectrum analysis

Interfacing

Whether operating as a digital chart recorder or as a graphic printer, the GP300 is essentially a peripheral device "slaved" to a host computer. Connection to the host can be via various ports available in an interface module in the unit. The standard version of the module includes 4 serial ports (up to 230.4 kbps), a parallel port, and a 32-bit digital I/O port. Other options are also available, e.g., Ethernet – consult RMS INSTRUMENTS for more information.

Configuration

The GP300 has a simple control panel with an 8-character display for status and error messages, four keys for basic control, and a 10-segment bargraph for display of paper level.

A number of choices are available for configuration –

- Flexible PC software allows easy configuration, and maintenance of a practically unlimited number of configuration files. The *CDW300 Control and Display for Windows* software package runs under Windows NT, 2000, XP (and Windows 7 in XP mode).
- Use the terminal operator interface (TOI) via one of the serial ports available. Any terminal (or PC running an emulation program) may be used to set up the GP300.
- Develop your own operator interface. The programming task is greatly simplified using, for example, the *Rtg300 Interface Library* for GP300.

System units

Work with the instrument using the units of your choice, metric or imperial. Define speeds in mm/sec, in/min, or perhaps mm/hr. Similarly, you may want to express scaling in PSI/in, Volts/mm, °C/cm, etc.

Record Layout

The user has total control over configuration and layout of up to 32 waveform channels and 16 logic channels. Waveforms may overlap, or be confined to user-specified areas. Channel scaling and positioning are conveniently specified using engineering units.

Background grids are fully programmable – e.g., use a linear scale for a group of channels, and a logarithmic scale for another.

Trace differentiation

An ample selection of trace drawing styles is offered. Use solid lines or patterned lines to join points. A *seismic* mode is available, where positive excursions are filled-in (solid or patterned). The width of traces is also user programmable.

The GP300's exclusive *programmable sprites* offer the ultimate in trace differentiation: each of the eight 8-dot by 8-dot sprites is user programmable, allowing the user to customize the appearance of traces (e.g., small triangles, circles, etc.) with outstanding clarity.

Trace wrapping

With the GP300's exclusive trace wrapping option, waveforms may *wrap around* boundary lines. With no limit to the number of times a trace may wrap, the user can view signals with very high resolution, without cluttering the chart.

Chart annotation

The GP300 provides a set of *vertical messages* (printed along the time axis), and sets of *horizontal messages* (along the amplitude axis). The contents, position, print repetition interval and orientation of messages are programmable. *Channel identification labels*, "follow" channel traces and are printed next to them.

Mnemonics representing configuration variables may be included in the text of messages. At the time of printing, they are "expanded" to show the current value of the variable.

Use the language of your choice – messages may contain any characters from the standard ASCII character set, or from the extended set (per ISO 8859-1).

Event channels

The user may define up to sixteen event (logic) channels. Each has a counter, may be plotted in a variety of ways, and may be positioned anywhere on the chart. Logic channels are driven by digital inputs, or from a host computer. Combined with the conventional waveform channels, they make the GP300 ideal for 'mixed signal' applications, where continuous-time signals must be analyzed, in real-time, relative to multiple digital control signals.

Signal Processing

With its built-in hardware floating point capability, the GP300 offers powerful real-time signal processing. The input signal to a waveform channel may be processed, in any order, by programmable digital filters, a linearization algorithm, and an offset (or bias). In addition, 4 individually programmable setpoints may be processed.

Digital filters

You may configure a filter for fast, integer-arithmetic implementation using a preset architecture (low-pass, high-pass, band-reject), with user defined parameters to specify filter order and frequency domain characteristics. If you need more flexibility, define the filter as a *general transfer function* – you specify poles and zeros, and the filter is efficiently implemented using hardware floating-point arithmetic.

Setpoints

Multiple user-programmable *high setpoints* and *low setpoints* are available for each channel. On an alarm condition *setpoint extensions* are drawn on the appropriate trace(s), clearly identifying the abnormal condition. Setpoints are not restricted to fixed values – with *variable setpoints*, any waveform channel may be assigned as any of the setpoints for another channel.

Real-time math

The GP300 supports user programs written in a Basic-like language. User programs allow mathematical computations involving any of the 32 waveform channels to be performed in real-time. Programs may be entered and edited using the programming environment supported via the terminal operator interface, or they may be downloaded from a host computer.

Data Logging

Set up the GP300 for real-time data transmission via a serial port, connect to a PC running the *CDW300 Control & Display for Windows* software, and you have a powerful data monitoring and logging station. When the application allows it, record on paper only "on demand" – waveforms are viewed on the screen, and all data is logged to a file on disk.

Reliability & Product Support

RMS INSTRUMENTS has an unparalleled reputation for supplying reliable products. Hardware and firmware have been professionally developed and strenuously tested. The solid mechanical design uses a very simple paper drive mechanism, with only a few moving parts. Powerful diagnostic features are built-in, and proprietary algorithms ensure long printhead operating life.

Our customer support and service remain outstanding. Use of Flash memory devices allows simple field-upgrading of firmware and programmable-hardware.

Printer/Plotter Modes

In addition to the conventional *chart recorder* mode of operation, the following operating modes are available under control of a host computer. A large (1-Mbyte) input buffer in the GP300 expedites communications.

Raster Graphics with Gray Scaling

In this mode the GP300 offers 300 x 300 dpi resolution and *true* gray scaling with 16 shades of gray – the gray shade of each printing element is individually modulated by the image data. The GP300 constantly monitors printhead temperature and print rates and adjusts its operation accordingly, thus maintaining the outstanding photographic quality of the resulting images. A special thermal film that ensures optimum print quality is available from RMS INSTRUMENTS.

Raster Graphics

In this mode the GP300 is a fast, high-resolution (300x300 dpi), black-and-white graphic printer. It accepts data in a raster scan format, where each bit controls one print element. Several variations of this operating mode are supported, some especially designed for use with RMS INSTRUMENTS' Windows Printer Drivers (see Support Software, below). With this, the GP300 becomes a fast, rugged, and reliable general-purpose printer for Windows applications.

Alphanumeric Printer

This mode is ideal for fast text printing or chart annotation. The full standard and extended (ISO 8859-1) ASCII character sets are supported. Printing may be in *data logger* or *line printer* orientation.

Support Software

- *CDW300 Control & Display for Windows* – Advanced Windows-based operator interface for control and setup of the GP300. Includes data monitoring, logging and playback capabilities. Runs under Windows NT, 2000, XP (and Windows 7 in XP mode).
- *Rtg300 Interface Library* – a dynamic-link library (DLL) for Windows NT/2000/XP, that supports the entire GP300 command set.
- *PDb3XX Windows Printer Drivers* – Allow the GP300 to be used as a general-purpose 300-dpi printer. Any Windows application (word processor, spreadsheet, etc.) can use the GP300 as a standard laser-quality printer:
 - PDb300*: basic performance (non-compressed data); Windows NT, 2000 or XP.
 - PDb310*: advanced performance (compressed data); Windows NT, 2000 or XP.
 - PDb320*: advanced performance (compressed data); Windows XP or 7.
- Legacy software packages: *PC300 Control/Interface Software*; *DISP300 Virtual Chart Recorder Display*.

Ordering Information

- *GP300-1* – DC-powered, digital inputs only
- *GP300-2* – AC-powered, digital inputs only

GP300 GRAPHIC PRINTER/CHART RECORDER SPECIFICATIONS

GENERAL

CHANNELS:

- 32 fully programmable waveform channels. Flexible scaling, positioning (overlapping or separate recording areas), signal processing, etc.
- 16 logic channels.
- Input source: digital-only (from a host computer), for all channels.

RECORDING METHOD/WIDTH:

Thermal-array printhead with 3552 individual printing elements. Record is 300.8 mm (11.84 in) wide on 321 mm (12.625 in) paper.

RESOLUTION:

Amplitude axis – 11.8 dots/mm (300 dots/in).

Time axis –

11.8 dots/mm (300 dots/in) to 130 mm/sec.

5.9 dots/mm (150 dots/in) from 130 to 260 mm/sec.

PAPER TRANSPORT

DRIVE MECHANISM:

Crystal controlled DC micro-stepping motor; internal paper take-up spool.

CHART SPEED:

Programmable in user-selectable units. Up to 130 mm/sec (300 dpi), or 260 mm/sec (150 dpi).*

PAPER ADVANCE:

Paper may be advanced at 25.4 mm/sec (1 in/sec) without printing.

PAPER LEVEL:

Solid-state level sensor and 10-segment LED bargraph level indicator.

PAPER VIEWING AREA:

84 mm (3.3 in) when using internal take-up spool, 134.6 mm (5.3 in) using RMS3307 Writing Platen.

CONFIGURATION

CHART LAYOUT:

Fully programmable grids, trace styles, real-time math, digital filtering, engineering units, annotation, time/event markers, etc.

NONVOLATILE MEMORY:

3 setup tables. Data retention > 10 yrs.

REMOTE CONTROL

PORTS, INPUT BUFFER:

Serial port A or Parallel. 1-MB buffer.

CONTROL & CONFIGURATION:

All variables and features in chart mode (binary protocol command set).

PRINTER/PLOTTER MODES:

Alphanumeric, Raster Graphics (RG), RG Compressed, RG Gray Scaling, Windows NT Printer B&W.

INTERFACES

FOUR ASYNCH. SERIAL PORTS:

Up to 230.4 kbps, optional hardware handshaking.

- Port A: Remote control or printer/plotter. DE-9P connector. RS-232D or RS422.
- Port B: Test port. Internal 10-pin header. RS-232D.
- Port C: Real-time data output. DE-9P connector. RS232D or RS-422.
- Port D: Terminal Operator Interface (TOI). DE-9P connector and internal 10-pin header. RS-232D.

PARALLEL PORT:

Remote control port. Centronics type, PC-compatible. Up to 150 kbytes/sec. DB-25S connector (J6).

32-BIT DIGITAL I/O PORT:

- DC-37S connector (J3).
- 16 programmable inputs/outputs; latched outputs.
- 16 inputs (event channels).

ETHERNET:

(Optional – Consult RMS Instruments for availability)

- Remote control port (replaces serial port A).
- 10/100Base-TX, TCP/IP.

SUPPORT SOFTWARE

CDW300 – Control & Display for Windows.

Rtg300 – Interface Library, with (-2) or without (-1) source code.

PDb300, PDb310, PDb320 – Windows Printer Drivers.

PC300 – Control/Interface Software (Legacy).

DISP300 – Virtual Chart Recorder Display (Legacy).

INSTALLATION

SIZE:

Rack mountable, 482.6 x 133.4 mm (19.0 x 5.25 in), overall depth 414.5 mm (16.3 in) extending 368 mm (14.5 in) behind mounting surface.

WEIGHT:

10 kg (22 lb) excluding options/paper.

POWER REQUIREMENTS:

GP300-1: 22 – 32 VDC input.

GP300-2: 85 – 265 VAC, 47 – 63 Hz. Less than 120 Watts typical.

TEMPERATURE:

- Operating range: 0°C to +40°C (0°C to +50°C with optional additional RMS2836 cooling fan).
- Storage: –40°C to +60°C (excluding paper).

HUMIDITY:

5% – 90% non-condensing.

ALTITUDE:

To 15,228 m (50,000 feet).

VIBRATION:

10 cycles, each consisting of 4 hours at +40°C with 10 minutes of vibration at 1G, 60 Hz every hour, and one hour cold cycle down to 0°C.

BURN-IN TESTING:

12 hours at 0°C to +40°C (to +50°C with optional RMS2836 cooling fan).

OPTIONAL ACCESSORIES

Recording Paper:

RMS2030-5: Plain thermal paper roll 12.625 in (321 mm) wide x 200 ft (60 m) long.

RMS2030-7: As above, perforated each 8.5 inches.

RMS2030-6: Thermal film roll.

RMS3307 Writing Platen

RMS2836 Cooling fan – for extended operating temperature range.

NOTES

[*] In chart recorders supporting only digital inputs, such as the GP300-1 and GP300-2, the *chart speed* parameter must be interpreted carefully, and has limited significance. A more relevant specification is the *chart mode throughput*. Consult RMS Instruments for additional information.

Specifications subject to change without notice (November 2011)

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