

**Portable Measuring, Monitoring
and Scanning Receiver GPR 40.2
68-230 MHz**

CHASE



Introduction

The GPR 40 series of measuring receivers are tailored to specific applications, their modular design allows for easy upgrading. Three internal modules, RF Synthesizer, IF and Signal Processing and CPU and Memory are plugged into a common display and control assembly. Dedicated software and hardware gives the required frequency range and other specific functions, standard modules are used where possible.

This compact receiver incorporates a number of features never before available in a portable unit. Powerful internal software allows sophisticated measurements to be made with ease and speed.

Applications

- Site Surveys
- Interference Tracing
- Voice Monitoring
- Direction Finding
- Tracing of 'Rusty Bolt' Effects
- Band Occupancy Monitoring
- Remote Monitoring
- Field Checking of Transmitter Modulation

Features

- Portability
- Battery-powered (8-16 hours Re-chargeable)
- Direct reading of field strength
- Modulation measurements AM & FM
- Greater than 80 dB dynamic range
- Internal scanning of full or selectable frequency range
- 40 front panel set up stores including squelch
- Memory scan with variable dwell and hold times
- 2 priority channels with selectable sample times
- Variable averaging of measurement reading
- Switchable bandwidths
- Single-handed operation
- High sensitivity
- RS 232C interface
- Overload warning
- Variable channel step size
- Squelch-operated relays
- High shielding and blocking performance



The GPR 40 series of receivers from Chase are true field instruments. Both rugged and portable, with laboratory accuracy, a single push button enables more than 40 individual parameters to be set up and stored in non volatile memory, backed up for ten years. The L.C.D. display with an adjustable viewing angle is ideal for outdoor use. Using a 'soft' button, critical parameters can be changed instantly. Field strength and modulation readings can be either read directly or with a bargraph to indicate trends. 40 front panel settings including the squelch level can be stored and recalled with edit facilities.

Set Up (Display 1)

Set Up is achieved by selecting each required parameter from the Function List. Each selected function is indicated by a 'Flag' (display 2) each selection being automatically stored in non-volatile memory. A second Memory List (display 3) indicates the frequency of each memorised set up, and the availability of unallocated memories.

Field Strength Measurement

(Display 4)

In this mode the display indicates the main receiver parameters. Tuned Frequency, Audio Detector, Level Detector type and time constant, measurement bandwidth and 'soft' function, if set up. A numeric reading of field strength in selected units together with a bargraph indication of the measurement range of 84dB (total 124dB with selectable or auto RF attenuator). Squelch level is indicated on the bargraph and set from front panel.

Modulation Measurement

(Display 5 & 6)

The modulation level of speech transmissions can be measured dynamically under operational conditions. A direct reading of peak FM deviation or peak AM percentage is displayed.

Scanning

In the scanning mode Start and Stop frequencies can be set anywhere within the receiver's range, with the option of two priority channels each with a variable sample time. Up to 100 frequencies can be locked out during scanning. In addition all or selected 'set up' memories of the receiver, including squelch levels, can be scanned with a separate priority channel if required.

Warnings & Prompts (Display 7)

A number of help messages are automatically provided, each coupled to an audible warning.

Calibration

High level accuracy is ensured by the use of an accurate internal pulse source reference. Calibration can be made by push button, or automatically selected after each change in frequency.

Locking

All the receiver's controls can be locked.

Remote Control

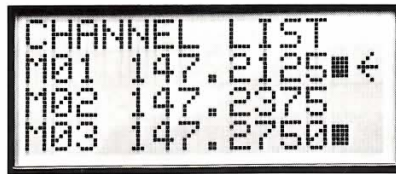
An RS 232C interface is provided for external control and data transfer. Using internal squelch operated relays, unattended monitoring systems can be configured.



1



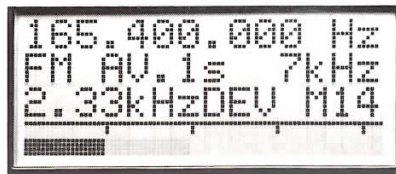
2



3



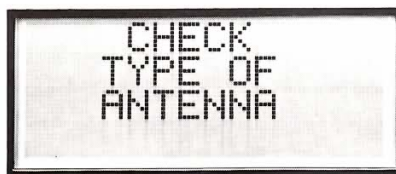
4



5



6

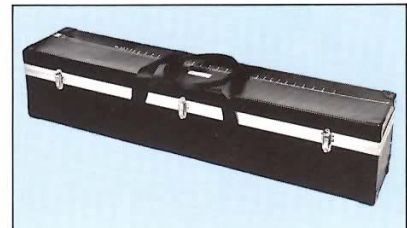


7

Accessories



Calibrated Antenna



Antenna Case



Battery Charger

Helical Antenna: 1872 Frequency to order.
Calibrated Antenna: GPR 40.2AS System comprising: Telescopic Dipole, Balun, 1 Metre Mast, Tripod, N-N Connecting Lead, Carrying Bag. (Total Height of system: 2 Metres).
Battery Charger: GPR 40.2BC System comprising: Battery Charger Main Unit, Charger d.c. Lead, Charger a.c. Lead, Headphones: 1750.

Specification GPR 40.2

Frequency

Frequency Range	68-230 MHz
Frequency Accuracy	$\pm 0.001\%$ of frequency or ± 1 kHz, whichever is the greater at 20°C
Frequency Stability	± 1 part in 10^5 over operating temperature range
Tuning Increments	Selectable. Increments of 5, 6.25, 10, 12.5, 20, 25, 50 kHz steps
Tuning Speed	Automatically variable
Frequency Scanning	User-adjustable Start/Stop frequencies
Hold Time	Adjustable 0-9.9 seconds
Dwell Time	Adjustable 0-9.9 seconds
Resume Time	Adjustable 0-9.9 seconds and off

Amplitude

Measuring Range 7.5 kHz bandwidth average detection	-10 dB μ V to +60 dB μ V (without RF attenuator), +30 dB μ V to +100 dB μ V with RF attenuator
Level Readout Resolution	To within 0.1 dB over the measuring range
Displayed Range	84 dB bargraph display
Level Accuracy 7.5 kHz bandwidth average .1 s	± 1.5 dB over operating temperature range ± 3 dB with 40 dB RF attenuator in, over operating temperature range
Level Detection Level Detection Time Constants	Average, Peak Average 5ms, 0.1s, 1s, Peak hold time 1s
Measuring Units Relative Level Range	dB μ V, μ V, dB relative, dB μ V/metre, dBm μ V - from 0 μ V to 99 mV dB μ V - from -99 dB μ V to +100 dB μ V dBm - from -7 dBm to -207 dBm dB μ Vm - as μ V but with antenna correction added
Squelch Threshold	Adjustable over whole measuring range Visually indicated
Squelch Operated Relays	2 each with isolated change-over contacts
Internal Cal. Reference Auto Cal.	Impulse generator When frequency or bandwidth changed (Switchable)
Calibration Time	Approx 1 sec.

Selectivity

IF Frequencies	21.4 MHz, 455 kHz
Bandwidth 3 dB	7.5 kHz, 15 kHz selectable
Adjacent Channel Rejection	≥ 60 dB (12.5 kHz channel spacing) ≥ 70 dB (25.0 kHz channel spacing)
Image Rejection	≥ 60 dB. Typically 80 dB
IF Rejection	≥ 80 dB. Typically 90 dB
Spurious Response Rejection	≥ 60 dB
Blocking Level	≥ 90 dB μ V (for ≤ 1 dB change in measurement reading 2 MHz away from wanted signal of 0 dB μ V)
Intermodulation	≥ 60 dB (1 mV input 50 kHz separation)

Input

RF Input Impedance	Nominally 50 Ω
Antenna Input	N Connector
Input VSWR	$< 2:1$ without RF attenuator $< 1.4:1$ with RF attenuator
RF Attenuator	40 dB ± 1.5 dB
Maximum Safe Level	3.5V rms (250 mW) +23 dBm at maximum sensitivity
Overload Display	Visual and audible

Your Representative:

Audio

Audio Demodulation	AM, FM (50 μ s de-emphasis)
Signal to Noise Ratio (30 dB μ V, audio filter selected)	
FM 15 kHz bandwidth	7.5 kHz deviation. Typically 46 dB
FM 7.5 kHz bandwidth	3.75 kHz deviation. Typically 40 dB
AM 7.5 kHz bandwidth	50% modulation. Typically 40 dB
Signal to Noise Ratio (0 dB μ V, audio filter selected)	
FM 15 kHz bandwidth	7.5 kHz deviation. Typically 34 dB
FM 7.5 kHz bandwidth	3.75 kHz deviation. Typically 28 dB
AM 7.5 kHz bandwidth	50% modulation. Typically 40 dB
Audio Filter	300 Hz -1 dB to 2.4 kHz -3 dB (including 50 μ s de-emphasis). (Switchable)
600 Ω Line Output	Adjustable from front panel. Nominally 0 dBm (600 Ω)
Audio Output	1W to 3W (dependent on battery state)

Modulation Measurement (400 Hz Modulating Frequency)

AM	
Range	0-90%, (0-126% indicated)
Accuracy	$\pm 2.5\%$
FM	
15 kHz bandwidth Range	0-3.7 kHz peak deviation (0-4.2 kHz indicated)
Accuracy	± 100 Hz
7.5 kHz bandwidth Range	0-7.5 kHz peak deviation (0-8.4 kHz indicated)
Accuracy	± 200 Hz

Memory

Memory	40 memories of receiver status
Memory Scanning	All 40 memories or any selected number
Hold Time	Adjustable 0-9.9 seconds
Dwell Time	Adjustable 0-9.9 seconds
Resume Time	Adjustable 0-9.9 seconds and off
Memory Backup Battery Life	10 years

Auxiliary Connections

External Control	RS 232C
Data Transfer	RS 232C
Loudspeaker	1 W to 3 W into 8 Ω (dependent on battery state)
Low level audio	Variable on front panel control but nominally 0 dBm (600 Ω)
Signal level	Full scale on bargraph 6 V. Noise level ≈ 1 V
Squelch operated relay contacts	Contact rating 0.5 A 28 V D.C.

General

Locking	All front panel controls
Screening	60 dB
Spurious Emissions	≤ 1 nW
Battery State Indicator	Visual on display plus audible warning
Battery Life	
Standard Batteries	> 8 hours, dependent on volume level
High Capacity Batteries	> 10 hours, dependent on volume level
Battery Charge Time	
Standard Batteries	14 hours
High Capacity Batteries	16 hours
Weight	5 kg including case and batteries
Dimensions	300 x 90 x 170 mm (including case)
Operating Temperature Range	0-40°C

Options

High Capacity Batteries	Option 01
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Chase Electrics Limited reserve the right to change these specifications.

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