SECTION 1

GENERAL INFORMATION

1.1 Introduction

This manual contains information required to operate, program, check and maintain the GX5000 - 50 MHz PROGRAMMABLE PULSE GENERATOR.

1.2 Description

The GX5000 is a high performance programmable pulse generator.
The instrument generates pulses with a repetition rate to 50MHz, width from 10ns, variable delay, variable transition times and amplitude. The pulses can be output in continuous, triggered, gated or burst mode with an internal or external trigger signal.

The GX5000 can be remotely operated via the IEEE488 interface bus and is SCPI compatible.

1.3 Safety Remarks

The GX5000 is a SAFETY CLASS 1 instrument. Before operation, review the SAFETY SUMMARY at the front of this manual.

1.4 SPECIFICATIONS

The following specifications describe the instrument performance after a 20 minute warm-up period into a 50 ohms load providing an internal calibration has been performed at the current operating temperature ± 5°C. All timing characteristics are measured at 50% of amplitude with fastest edges.

PULSE FUNCTIONS

Single - One pulse at each selected period up to 50MHz repetition rate.

Double - One pair of pulses at each period up to 25MHz repetition rate. Both pulses have the same selected width; the position of the second pulse set by the delay control.

OPERATING MODES

Continuous - Output continuous at programmed period rate.

Triggered - Output quiescent until triggered by an internal, external, GPIB or manual trigger, then generates one cycle at programmed period rate.

Gated - Same as triggered mode except pulses are output for the duration of the gated signal. The last cycle started is completed.

Burst - Same as triggered mode for programmed number of cycles from 2 to 999,999 as set by the N-BURST function.

External Width - Trigger duration and rate sets pulse width and repetition.

TIMING CHARACTERISTICS

PERIOD

Range	-	20 ns to 10 s (50MHz to 0.1Hz repetition rate).
Resolution	-	Up to 6 digits limited to 0.1ns.
Accuracy	-	±(1% of setting +1ns)
Jitter	-	< 0.1% of setting +50ps on fastest range, decreasing to 0.01% on slowest range.

WIDTH

Range	-	10ns to 9.99999s limited by 8ns off time.
Resolution	-	Up to 6 digits limited to 0.1ns.
Accuracy	-	±(2% of setting +2ns)
Jitter	-	< 0.1% of setting +50ps, decreasing to 0.005% on slowest range.

DELAY

Range	-	0ns to 9.99999s limited by the pulse width and 8ns off time.
Resolution	-	Up to 6 digits limited to 0.1ns.
Accuracy	-	±(2% of setting +2ns)
Jitter	-	< 0.1% of setting +50ps, decreasing to 0.005% on slowest range.

DUTY CYCLE

Range	-	1 to 99%.
Resolution	-	3 digits (0.1%).
Accuracy:	-	Limited by width and pulse accuracy.

OUTPUT CHARACTERISTICS

AMPLITUDE

High Level Range	-	-9.50V to +10V into 50 ohms load (-19.00V to +20V into open circuit).
Low Level Range	-	-10V to +9.50V into 50 ohms load (-20V to +19.00V into open circuit).
Amplitude Range	-	0.5V to 10V p-p into 50 ohms load (20V p-p max into open circuit).
Resolution	-	3 digits limited to 10mV.
Accuracy	-	±(1% of level setting +2% of p-p amplitude +50mV) into 50 ohms load.
Aberrations	-	<5% + 50mV into 50 ohms load, for pulse levels between ±5V.
Output Resistance	-	50 ohms ±2.5 ohms.

TRANSITION TIMES

Range	-	<5ns to 10ms variable. Leading and trailing edges settable separately and limited to 20:1 ratio between settings into one of the following ranges: 5ns-100ns; 50ns-1.0us; 500ns-10us; 5.0us-100us; 50us-1.0ms; 500us-10ms.
Resolution	-	3 digits limited to 0.1ns.
Accuracy	-	±(5% of setting +2ns) [5ns maximum when set to 5ns]
Linearity	-	<5% deviation from a straight line between 10% and 90% points.

INTERNAL TRIGGER

Range	-	100ns to 1000s.
Resolution	-	4 digits limited to 100ns.
Accuracy	-	±(0.01% +1ns)
Jitter	-	<0.1% of setting +50ps.

INPUT AND OUTPUT

TRIGGER INPUT

Sensitivity	-	150mVp-p minimum.
Minimum Width	-	10ns.
Maximum Rate	-	50MHz.
Input Impedance	-	1 MΩ ±5%.
Input Protection	-	±15V DC plus peak AC.
Range	-	Selectable from -9.99V to +9.99V.
Resolution	-	3 digits limited to 10mV.
Accuracy	-	±(5% of setting +25mV)
Slope Selection	-	Positive or Negative.

SYNC OUTPUT

A TTL level pulse at the programmed period. Output impedance is 50 ohms, protected against short circuit and up to ±15V accidental input. The high level is >2V into 50 ohms and with 3.5ns typical transition times.

GPIB PROGRAMMING

Internal	-	IEEE-488.2 and SCPI compatible.
Address	-	0-30 front panel selected.
Subsets	-	SH1, AH1, T6, L4, SR1, RL1, PP0, DC1,DT1, C0, E2.

GENERAL

Memory	-	Non volatile, stores up to 99 complete panel settings. Last user setup also retained at power down.
Power Requirements	-	92-128V, 186-256V switch selectable, 48-66 Hz, 130VA maximum.
Dimensions	-	Height 8.9cm (3.5 in); Width 21.3 cm (5.25 in); Length 45.7cm (18 in).
Weight	-	5.5kg Net.
Regulatory Standards	-	EN 61010-1, Installation Category II, Pollution Degree 2.
Operating Temperature	-	0°C to +50°C.
Storage Temperature	-	-20°C to +60°C.
Humidity	-	95% RH at 0°C to 30°C, 75% RH to 40°C, 45% RH to 50°C.
Accessories	-	19" rack mount kit.

NOTES

Specifications are verified according to the Performance Check Procedure in this manual. Specifications not qualified in this manual are either explanatory notes or general performance characteristics only.