GEMINI 5200 - PRESETTABLE DUAL RATE INDICATOR WITH RATIO (A/B)

- *DIFFERENCE (A-B), OR DRAW [(A-B)/B] INDICATION*
- *6-DIGIT, 0.56" (14.2 mm) HIGH LED DISPLAY WITH NEGATIVE SIGN, OVERFLOW & DISPLAYED VALUE INDICATORS*
- *THREE SEPARATELY DISPLAYABLE VALUES: A, B, & C*
- *TWO PRESETS ASSIGNABLE TO A, B, OR C*
- *SEPARATE INPUT SCALING FOR BOTH RATE A & B CHANNELS*
- *ACCEPTS COUNT RATES TO 10 KHz*
- *SOLID-STATE CURRENT SINK OUTPUTS*
- *OPTIONAL 20 mA CURRENT LOOP FOR SERIAL DATA COMMUNICATION*
- *OPTIONAL RELAY OUTPUTS (Field Replaceable)*
- *PROGRAMMABILITY OF DECIMAL POINT LOCATION & LEADING ZERO BLANKING*
- *PROGRAMMABLE TIMED OUTPUTS (0.01 TO 599.99 sec.)*

- *ABILITY TO LOCK OUT FRONT PANEL FUNCTIONS*
- *SEALED FRONT PANEL CONSTRUCTION (NEMA 4/IP65)*
- *NON-VOLATILE MEMORY (E^2PROM)*

DESCRIPTION

The Gemini 5200 is a multifunction dual rate indicator which can fulfill almost any rate indication application. The unit can operate as two independent rate indicators, with scaling, decimal point placement, and update times separately programmable for each channel. The Gemini 5200 also has three other unit personalities. These personalities feature a third display Channel C, which can indicate the ratio, difference or draw between the A and B rate channels.

The programming of the rate channels and the calculated display is a very straightforward task. Setting up Channel C only requires programming the desired amount of resolution *(for ratio and draw)* and the appropriate decimal point location. The Gemini 5200 simply takes the two rate values and mathematically calculates display *"C"* accordingly.

The rate indicators use a time interval method *(1/tau)* to calculate the rate value. This method enables high resolution at all input rates. The unit counts input pulses and after a programmable minimum update time has occurred, it waits until the next count edge occurs, then takes the elapsed time and number of edges and calculates the rate value. At slower rates, averaging can be accomplished by programming the *"Rate Minimum Update Time"* (0.5 sec. to 16 sec.) for the desired response. The minimum input frequency is 0.03 counts/sec. or one pulse every 32 sec. Extensive scaling capabilities allow practically any desired reading at very slow input rates.

The 20 mA Current Loop Communications Option provides the capability of two-way serial communications between the Gemini and other equipment such as a printer, programmable controller, or host computer. The baud rate can be set to 300, 600, 1200, or 2400 baud. The format for transmitted and received data is 1 start bit, 7 data bits, 1 parity bit (odd), and a stop bit. When utilizing an external power supply (30 VDC max.), up to sixteen units can be installed in the loop, each with an individual address. When utilizing the Gemini's 20 mA current source, up to seven units can be installed in a loop. The Rate values, Presets, and Scale Factors can all be interrogated, while the Presets and Scale Factors can also be changed by sending the proper command codes and numerical data. Various *"Print Options"* can be selected to automatically interrogate the Rate values, Presets, or Scale Factors by activating the "Print Request" terminal when a printer is being used.

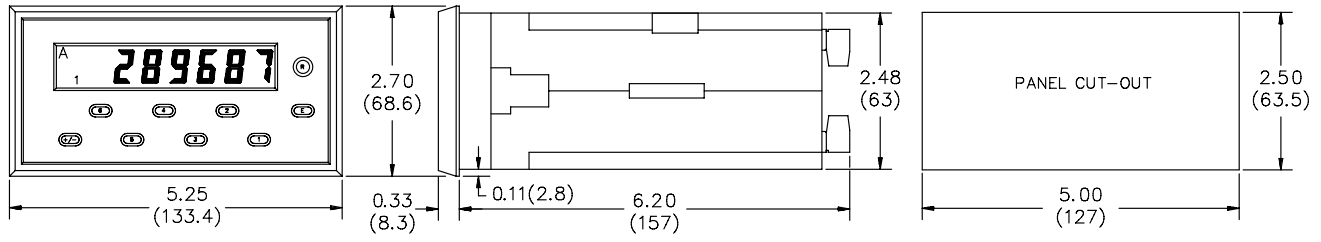
The construction of the Gemini 5200 features a metal die-cast bezel, offering maximum durability with a high quality appearance. The sealed front panel meets NEMA 4/IP65 specifications for wash-down and/or dust when properly installed. Electrical connections are made via plug-in terminal strips. Clamp-type pressure plate terminals accept stripped #14 AWG wire without lugs.

SPECIFICATIONS

1. **DISPLAY:** 6-digit 0.56" (14.2 mm) High LED display.
2. **POWER REQUIREMENTS:**
   AC Power: Switch selectable 115/230 VAC (±10%), 50/60 Hz, 20 VA
   DC Power: 11 to 14 VDC @ 0.7 A max.
3. **SENSOR POWER:** +12 VDC (±25%) @ 100 mA.
4. **MEMORY:** Non-volatile E^2PROM memory retains all programming information when power is removed or interrupted.
   Power Cycles (ON/OFF): 100,000 min.
   Data Retention: 10 years min.
5. **INPUTS A AND B:** Switch selectable to accept pulses from a variety of sources including switch contacts, outputs from CMOS or TTL circuits, and all standard RLC sensors.
   Current Sourcing: Unit provides 3.9 KΩ pull-down resistor for sensors with current sourcing outputs. (Max. input voltage = 28 VDC @ 7 mA.)
   Current Sinking: Unit provides 7.8 KΩ pull-up resistor for sensors with current sinking outputs. (Max. sensor current = 1.6 mA.)
   Debounce: Damping capacitor provided for switch contact debounce. Limits rate to 100 Hz max. with 50% duty cycle.
   Lo Bias: Input trigger levels V_{IL} = 1.5 V, V_{IH} = 3.75 V
   Hi Bias: Input trigger levels V_{IL} = 5.5 V, V_{IH} = 7.5 V
   Note: Bias levels given are ±10% @ 12 VDC. They vary proportionally with sensor supply voltage at "DC OUT" terminal.
6. **MAGNETIC PICKUP INPUTS A & B:**
   Sensitivity: 150 mV peak (typical @ 12 VDC)
   Hysteresis: 100 mV
   Input Impedance: 26.5 KΩ @ 60 Hz
   Maximum Input Voltage: ±50 Vp

DIMENSIONS *In inches (mm)*

Note: Recommended minimum clearance (behind the panel) for mounting clip installation is 6.8" (173) W.



SPECIFICATIONS (Cont'd)

7. **RATE ACCURACY AND REPEATABILITY:** +0.025%
8. **RATE MINIMUM INPUT FREQUENCY:** 0.03 Hz
   Note: At frequencies below 0.03 Hz (1 pulse every 32 sec.) the rate indicator will display a zero.
9. **RATE MAXIMUM INPUT FREQUENCY:** 10 KHz
10. **CONTROL INPUTS:**
   Reset: Active low (V_{IL} = 1.5 V max.) internally pulled up to +12 VDC (I_{SNK} = 3 mA), Activation and De-activation response time = 10 msec.
   Program Disable: Active low (V_{IL} = 1.5 V max.), internally pulled up to +5 VDC (I_{SNK} = 1 mA).
   Print Request: (GEM521xx only) Active low (V_{IL} = 1.5 V max.), internally pulled up to +5 VDC (I_{SNK} = 1 mA).
11. **SERIAL COMMUNICATIONS (Optional):**
   Type: Bi-directional 20 mA current loop, 20 mA source provided. *(Powers up to seven units in a loop with internal current source.)*
   Baud Rate: Programmable 300 to 2400.
   Maximum Address: 16 units. *(Actual number in a single loop is limited by serial hardware specifications.)*
   Data Format: 10 bit frame, Odd parity *(one start bit, 7 data bits, one odd parity bit, and one stop bit.)*
   Serial Hardware Specifications:
      SO - Output Transistor Rating: V_{MAX} = 30 VDC, V_{SAT} = 1 V_{MAX} @ 20 mA.
      SI - Input Diode Rating: V_F = 1.25 V_{TYP}; 1.5 V_{MAX}
      Note: The compliance voltage rating of the source must be greater than the sum of the voltage drops around the loop.
12. **OUTPUTS:**
   Solid-State: Current sinking NPN Open Collector Transistors. I_{SNK} = 100 mA max. @ V_{CE} = 1 V. V_{OH} = 30 VDC max. (Internal Zener Diode Protection).
   Relays: Mounted on a field-replaceable PC board. Form C contacts rated at 5 A @ 120/240 VAC or 28 VDC *(resistive load)*, 1/8 H.P. @120 VAC *(inductive load)*. The operate time is 5 msec nominal and the release time is 3 msec nominal.
   Relay Life Expectancy: 100,000 cycles at Max. Rating. *(As load level decreases, life expectancy increases.)*
   Programmed Timed Outputs: The timed outputs can be set from 0.01 to 599.99 seconds, ±(0.01% + 10 msec).
13. **CERTIFICATIONS AND COMPLIANCES:**
   SAFETY
      IEC 1010-1, EN 61010-1: Safety requirements for electrical equipment for measurement, control, and laboratory use, Part 1.
      IP65 Enclosure rating (Face only), IEC529
      Type 4 Enclosure rating (Face only), UL50
   ELECTROMAGNETIC COMPATIBILITY

Immunity to EN 50082-2		
Electrostatic discharge	EN 61000-4-2	Level 2; 4 Kv contact [1] Level 3; 8 Kv air
Electromagnetic RF fields	EN 61000-4-3	Level 3; 10 V/m 80 MHz - 1 GHz
Fast transients (burst)	EN 61000-4-4	Level 4; 2 Kv I/O Level 3; 2 Kv power [2]
RF conducted interference	EN 61000-4-6	Level 3; 10 V/rms 150 KHz - 80 MHz
Power frequency magnetic fields	EN 61000-4-8	Level 4; 30 A/m
Emissions to EN 50081-2		
RF interference	EN 55011	Enclosure class A Power mains class A

   Notes:
   1. Metal bezel of unit connected with ground from rear bezel screw to metal mounting panel.
   2. When the unit is DC powered, a power line filter (RLC# LFIL0000 or equivalent) was installed, so as not to impair the function of the unit.
   Refer to the EMC Installation Guidelines section of the manual for additional information.
14. **ENVIRONMENTAL CONDITIONS:**
   Operating Temperature: 0 to 50°C
   Storage Temperature: -40 to 70°C
   Operating and Storage Humidity: 85% max. relative humidity (non-condensing) from 0°C to 50°C.
   Altitude: Up to 2000 meters
15. **CONSTRUCTION:**
   Metal die-cast bezel, plastic case. This unit is rated for NEMA 4/IP65 indoor use. Installation Category II, Pollution Degree 2.
16. **WEIGHT:** 2.1 lbs. (0.9 kg)

MODEL NO.	DESCRIPTION	W/20 mA CURRENT LOOP	PART NUMBERS
			115/230 VAC
GEM52	Gemini 5200	No	GEM52060
		Yes	GEM52160
_	Gemini 5200 Relay Board		RLYBD002
For more information on Pricing, Enclosures & Panel Mount Kits refer to the RLC Catalog or contact your local RLC distributor.			