

# LGR-5320 Series

## Stand-Alone, High-Speed, Multifunction Data Loggers



### Features

- Up to 200 kS/s synchronous sampling of all data
- 16 analog inputs up to  $\pm 30$  V
- 16-bit resolution
- 16 digital inputs up to 30 V
- Single Form C relay digital output configurable for triggering/alarming
- 4 counter inputs (quadrature available)
- 4 GB SD memory card included, supports up to 32 GB
- Multi-channel analog and digital triggering

### Software

- Includes DAQLog™ software for easy setup, configuration, and data retrieval
- Multiple trigger and alarming functions
- Ability to save data in .csv format for easy import into Excel®



LGR-5320 Series of high-speed, stand-alone data loggers allow users to collect correlated analog and digital data without a computer

### Overview

The LGR-5320 Series are high-speed, stand-alone data loggers for analog and digital signals. Each module offers 16 analog inputs, 16 digital inputs, one single Form C relay (0.5A) digital output for triggering/alarming, and four counter/encoder inputs. These devices allow users to collect high-speed correlated analog and digital data without a computer.

LGR-5320 devices perform high-speed, synchronous measurements, up to 200 kS/s, directly to a Secure Digital (SD) or SDHC memory card. Utilizing the advanced analog and digital triggering options, users can collect data to monitor systems and events without dedicating a PC. The LGR-5320 loggers include easy-to-use DAQLog software to configure the devices and retrieve data via the USB interface or SD memory card.

Three models are available in the LGR-5320 Series. The LGR-5325 features up to  $\pm 10$  V analog inputs, 100 kS/s sampling, four conventional counter inputs (non-quadrature), and single-channel trigger modes. The LGR-5327 features up to  $\pm 30$  V analog inputs, 200 kS/s sampling, four quadrature encoder inputs, and multi-channel trigger modes. The LGR-5329 includes all the functionality of the LGR-5327 plus isolated digital inputs.

### LGR-5320 Series Module Overview

Feature	LGR-5325	LGR-5327	LGR-5329
Sample rate*	100 kS/s	200 kS/s	200 kS/s
Analog inputs	16 SE/8 DE	16 SE/8 DE	16 SE/8 DE
Analog input range	up to $\pm 10$ V	up to $\pm 30$ V	up to $\pm 30$ V
Digital inputs**	16-channel TTL 28 V	16-channel 28 V	16-channel 30 V, isolated
Counters	4 conventional	4 quadrature	4 quadrature
Triggering	single-channel	multi-channel	multi-channel

\* Sample rates aggregate

\*\* Each logger includes one single Form C relay output

### Analog Input

16SE/8DE analog inputs are included on each data logger. The LGR-5325 features multiple analog input gain ranges up to  $\pm 10$  V. The LGR-5327 and 5329 add a  $\pm 30$  V analog input range for increased measurement capability. Each data logger provides 16-bit resolution.

### Synchronous, High-Speed Sampling

The LGR-5327 and LGR-5329 can sample input data at up to 200 kS/s while the LGR-5325 offers a 100 kS/s sample rate. Each module can sample all analog, digital, and counter data synchronously, making it easy to compare time between all channels.

### Configuration, Data Storage, and Retrieval

Each data logger can be configured through the SD memory card or via the on-board USB port. Simply configure the logging session with the included DAQLog software. All logging parameters are captured on the SD memory card. A 4 GB SD memory card is included with each data logger. Memory cards up to 32 GB are supported for extended data collection. Data is retrieved by removing the SD memory card from the logger and uploading to a PC or by connecting to the USB port on the logger.

# LGR-5320 Series

## General Information

### Triggering

LGR-5320 Series data loggers offer multiple triggering options for starting and stopping a data scan. These options vary by model. The LGR-5325 features single-channel analog and digital triggering. The LGR-5327 and LGR-5329 offer multi-channel and pattern triggering options. Multiple trigger options allow collection of only the desired data. External clocking is also supported.

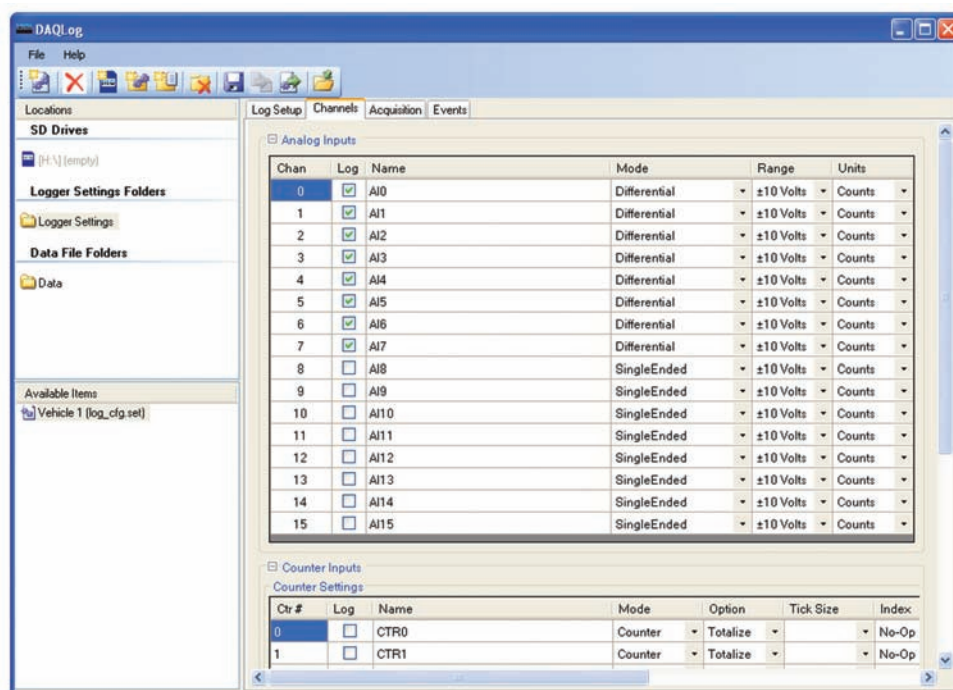
### Digital I/O

16 digital inputs are included with each data logger. These inputs can be sampled synchronously with analog input data. The LGR-5325 and LGR-5327 feature up to 28 V digital inputs while the LGR-5329 features up to 30 V digital inputs. The digital inputs on the LGR-5329 also provide 500 VDC isolation.

Each data logger also features one digital output relay channel. The Form C relay can be programmed via the included DAQLog software to alarm when desired conditions are met.

### Counters

Four counter inputs are built into the LGR-5320 Series. The LGR-5325 features conventional up/down counters. The LGR-5327 and LGR-5329 include quadrature and conventional counter inputs. Multiple count modes are also supported.



Included DAQLog software for configuration, channel setup, logging parameters, and data retrieval

### Push Button Logging Controls

Onboard one touch logging controls are featured on each module for quick and simple operation. These controls can be used for a variety of functions including:

- Configuration loading from SD memory card
- Start/stop logging
- Force trigger/user event
- Device reset
- Control of status LEDs

LEDs on each module provide instant logging and trigger status and activity state.

### DAQLog Software

DAQLog Software is an easy to use application included with each LGR-5320 Series data logger. DAQLog uses a spreadsheet style interface that allows simple setup of channel and logging parameters.

DAQLog includes the following functions:

- Data logger configuration
- Channel setup
- Trigger setup
- Data conversion
- Scan rate and acquisition length
- Trigger, event, and alarm parameters

Data can be saved in .csv format for easy import into Excel®.

# LGR-5320 Series

## Specifications



All specifications are subject to change without notice.  
Typical for 25°C unless otherwise specified.

### Analog input

**A/D Converter:** 16-bit successive approximation type

**Input Ranges:** Software selectable per channel;

5325:  $\pm 10$  V,  $\pm 5$  V,  $\pm 1$  V

5327, 5329:  $\pm 30$  V,  $\pm 10$  V,  $\pm 5$  V,  $\pm 1$  V

**Number of Channels:** 8 differential/16 single-ended, software configurable

**Input Configuration:** Multiplexed

**Absolute Max Input Voltage**

5325: CH<sub>x</sub> to AGND,  $\pm 25$  V max (power ON/OFF)

5327, 5329: CH<sub>x</sub> to AGND,  $\pm 38$  V max (power ON/OFF)

**Input Impedance**

5325:  $\pm 10$  V,  $\pm 5$  V,  $\pm 1$  V range, 10 G $\Omega$  (power ON), 1 k $\Omega$  (power OFF)

5327, 5329:  $\pm 30$  V range, 1 M $\Omega$  (power ON), 1 G $\Omega$  (power OFF);

$\pm 10$  V,  $\pm 5$  V,  $\pm 1$  V range, 10 G $\Omega$  (power ON), 1 G $\Omega$  (power OFF)

**Input Leakage Current:**  $\pm 100$  pA

**Input Capacitance:**  $\pm 30$  V range, 90 pF;  $\pm 10$  V,  $\pm 5$  V,  $\pm 1$  V range, 55 pF

**Max Working Voltage (signal+ common mode):**  $\pm 30$  V range,  $\pm 30.05$  V;  
 $\pm 10$  V,  $\pm 5$  V,  $\pm 1$  V range,  $\pm 10.2$  V

**Common Mode Rejection Ratio:**  $f_{in} = 60$  Hz,  $\pm 30$  V range, 65 dB min;

$f_{in} = 60$  Hz, all other ranges, 75 dB min

**Crosstalk:** DC to 25 kHz, adjacent differential mode channels, -80 dB

**ADC Resolution:** 16 bits

**Input Bandwidth (-3 dB):** All input ranges, 450 kHz min

**Input Coupling:** DC

**Max Sample Rate**

5325: 100 kHz

5327, 5329: 200 kHz

**A/D Pacing Sources:** See input sequencer section

**Warm Up Time:** 30 minutes, min

**Absolute Accuracy:** All ranges, 0.07% FSR

**Noise:** Differential mode, 2 LSB rms

### Analog Input Calibration

**Calibration Method:** Factory calibration

**Calibration Interval:** 1 year

### Triggering

**Mode**

**External Digital via DTRIG (pin 76):** Software configurable for rising or falling edge

**External Analog via ATRIG (pin 78):** See external analog trigger

5327, 5329:

**Multi-Channel Analog:** Level-sensitive based on acquired data.

Up to 16 channels may be used as independent trigger sources.

**Digital Pattern Trigger:** Trigger when a user-defined 1 to 16 bit digital pattern is matched on the DIN0-DIN15 pins. Programmable mask bits.

**External Digital Trigger Latency**

**Non-Pretrigger Acquisition:** 100 ns typical, 1  $\mu$ s max

**Pretrigger Acquisition:** 1 scan period max

**External Trigger Pulse Width:** 1  $\mu$ s min

**Internal Trigger Latency:** 2\* (1/per-channel sample rate)

### External Analog Trigger

**External Analog Trigger Source:** ATRIG input (pin 78)

**Analog Trigger Input Ranges**

5325:  $\pm 10$  V

5327, 5329:  $\pm 30$  V,  $\pm 10$  V, software selectable

**Absolute Maximum Input Voltage**

5325: ATRIG\_IN to AGND,  $\pm 25$  V max (power ON/OFF)

5327, 5329: ATRIG\_IN to AGND,  $\pm 38$  V max (power ON/OFF)

**Input Impedance**

5325:  $\pm 10$  V range, 10 G $\Omega$  (power ON), 1 k $\Omega$  (power OFF)

5327, 5329:  $\pm 30$  V range, 1 M $\Omega$  (power ON), 1 G $\Omega$  (power OFF);

$\pm 10$  V range, 10 G $\Omega$  (power ON), 1 G $\Omega$  (power OFF)

**Trigger Modes:** Configurable for positive or negative slope, level

**Trigger/Hysteresis Resolution:** 12 bits, 1 in 4096

**Trigger/Hysteresis Levels:**  $\pm 10$  V/4096 or  $\pm 30$  V/4096, software selectable

**Trigger/Hysteresis Accuracy:**  $\pm 2\%$  of reading,  $\pm 50$  mV offset

**Latency:** 1.5  $\mu$ s

**Full Power Bandwidth (-3 dB):** 1 MHz

### Digital Input

**Number of Inputs:** 16 channels

5325

**Input Voltage Range:** 0 to +28 V

**Input Type:** TTL

**Input Characteristics:** 47 k $\Omega$  pull-down resistor, 39.2 k $\Omega$  series resistor

**Max Input Voltage Level:** 0 to +32 V (power ON/OFF)

**Min High Level Input Voltage Threshold:** 2.0 V max

**Max Low Level Input Voltage Threshold:** 0.8 V min

5327

**Input Voltage Range:** 0 to +28 V

**Input Type:** TTL

**Input Characteristics:** 47 k $\Omega$  pull-down resistor, 39.2 k $\Omega$  series resistor

**Max Input Voltage Level:** 0 to +32 V (power ON/OFF)

**Min High Level Input Voltage Threshold:** 2.0 V max

**Max Low Level Input Voltage Threshold:** 0.8 V min

**Event Logging:** Change of state, pattern recognition; event time stamped using real time clock

5329

**Input Voltage Range:** 0 to +30 V

**Input Characteristics:** Resistor divider 39.2 k $\Omega$  series resistor and 10 k $\Omega$  shunt resistor connected to IGND

**Max Input Voltage Level:** +30 V (power ON/OFF)

**Min High Level Input Voltage Threshold:** 10.04 V max

**Max Low Level Input Voltage Threshold:** 3.85 V min

**Event Logging:** Change of state, pattern recognition; event time stamped using real time clock

**Isolation:** 500 VDC min

### Digital Output

**Number of Outputs:** 1

**Type:** Mechanical relay, NEC ED2/EF2 series

**Relay Configuration:** 1 Form C

**Relay Contact Resistance:** 0.075  $\Omega$

**Relay Contact Operate Time:** 3 mS (excluding bounce)

**Relay Contact Release Time:** 2 ms (excluding bounce)

**Relay Insulation Resistance:** 1000 M $\Omega$  at 500 VDC

**Relay Contact Ratings**

**Max Switching Voltage:** 220 VDC/250 VAC

**Max Switching Current:** 1.0 A

**Max Carrying Current:** 2.0 A

# LGR-5320 Series

## Specifications and Ordering Information



### Counters

5325

**Counter Type:** Conventional  
**Number of Channels:** 4  
**Inputs:** Counter, Up/Down, Gate  
**Resolution:** Fixed 32-bit or as sized by the modulo register  
**Count Modes:** Up/down, period/frequency, Modulon  
**De-Bounce Times (programmable):** 16 steps from 500 ns to 25 ms; positive or negative edge sensitive; glitch detect mode or de-bounce mode  
**Time-Base Accuracy:** 50 ppm  
**Input Voltage Range:** 0 to 5.5 V  
**Input Type:** TTL  
**Input Characteristics:** 49.9K pull-down resistor  
**Max Input Voltage Range:** -0.5 V to +7.0 V  
**Input High Voltage:** 2.0 V  
**Input Low Voltage:** 0.8 V

5327, 5329

**Counter Type:** Quadrature and conventional (x1, x2, x4)  
**Number of Channels:** 4  
**Inputs:** Phase A+/A-, Phase B+/B-, Index  $\pm$   
**Resolution:** Fixed 32-bit or as sized by the modulo register  
**Count Modes:** Quadrature, up/down, period/frequency, Modulon  
**De-Bounce Times (programmable):** 16 steps from 500 ns to 25 ms; positive or negative edge sensitive; glitch detect mode or de-bounce mode  
**Time-Base Accuracy:** 50 ppm  
**Receiver Type:** Quad differential receiver  
**Configuration:** Each channel consists of Phase A input, Phase B input and Index input; each input switch selectable as single-ended or differential  
**Differential:** Phase A, Phase B and Index (+) inputs at user connector routed to (+) inputs of differential receiver. Phase A, Phase B and Index (-) inputs at user connector routed to (-) inputs of differential receiver.  
**Single-Ended:** Phase A, Phase B and Index (+) inputs at user connector routed to (+) inputs of differential receiver. Phase A, Phase B and Index (-) inputs at user connector routed to ground. (-) Inputs of differential receiver routed to +3 V reference.  
**Common Mode Input Voltage Range:**  $\pm 12$  V max  
**Differential Input Voltage Range:**  $\pm 12$  V max  
**Input Sensitivity:**  $\pm 200$  mV  
**Input Hysteresis:** 50 mV typ  
**Input Impedance:** 12 k $\Omega$  min  
**Absolute Maximum Input Voltage:** Differential,  $\pm 14$  V max

### Power

**External Power Supply:** +9 V min, +30 V max

### Environmental

**Operating Temperature Range:** 0 to 55 °C  
**Storage Temperature Range:** -40 to 85 °C  
**Humidity:** 0 to 90% non-condensing

### Mechanical

**Dimensions:** 9.5" L x 5.0" W x 1.75" H

### Ordering Information

Description	Part No.
Stand-alone, high-speed 100 kS/s, multifunction data logger; includes one 4 GB SD memory card, and one USB cable	LGR-5325
Stand-alone, high-speed 200 kS/s, multifunction data logger; includes one 4 GB SD memory card, and one USB cable	LGR-5327
Stand-alone, high-speed 200 kS/s, multifunction data logger with isolated digital inputs; includes one 4 GB SD memory card, and one USB cable	LGR-5329

### BUY NOW!

For complete product specifications, pricing, and accessory information, call 1-800-234-4232 (U.S. only) or visit [mccdaq.com/LGR](http://mccdaq.com/LGR).