Squirrel 2020 series

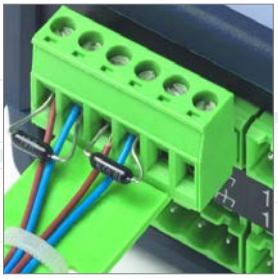
Powerful data loggers for standard and high speed applications

Overview

The Squirrel 2020 series offers high performance universal data loggers packed with powerful features to provide great flexibility to handle a wide range of routine and demanding applications.

Hand-held and lightweight, the Squirrel 2020 models are easy, fast and convenient to use – either as stand-alone loggers or as PC-linked data acquisition systems in industrial and scientific research and quality assurance applications.

Twin processors, multiple 24-bit analogue-to-digital converters, up to 16 universal channels and a choice of communications methods ensure that the Squirrel 2020 series provides state-of-the-art data logging and communication capability for sophisticated applications needs.



Key features

- Fully configurable via the integrated keypad
- 8 true differential or 16 single ended universal analogue inputs for voltage, current or resistance
- Analogue inputs can be used with thermistors, thermocouples, 2,3 or 4 wire RTD temperature sensors and 4-20mA signals
- Logging rates of up to 100Hz on up to 2 channels (2F8 only)
- Ethernet (2F8 only), USB and RS232 communication ports
- Large non-volatile internal memory storage for up to 14 million readings
- Removable MMC / SD card
- Sensor power and FET outputs for use with external devices
- Clear 128*68 dot graphical LCD display

Analogue inputs supported

- Thermistors
- Thermocouples
- Pt100 / Pt1000 (maximum of four 3- or 4-wire Pt100 / Pt1000 sensors — model 2F8 only)
- Voltage
- Current
- Resistance

The Squirrel 2020 series comprises two models:

- **Squirrel 2020 – 1F8**
  - Up to 20 readings per second on 1 channel
- **Squirrel 2020–2F8 (high speed model)**
  - Up to 100 readings per second on 2 channels
  - In-built Ethernet connectivity
  - Up to four 3- or 4-wire Pt100 / Pt1000 sensor inputs

- Up to 16 universal inputs
- High precision (0.05% of reading + 0.025% of range)
- Advanced data management to MMC / SD card or PC
- Flexible communications (USB, Ethernet, Wi-Fi, RS232)
- High speed option (100Hz)

Communications

Ethernet (2F8 only), USB and RS232 serial ports are inbuilt. This allows simple connection to either a PC based TCP/IP network, a wireless to PC connection or to a GSM modem for remote data downloading. This flexibility enables global data access and retrieval as well as complete system integration of the SQ2020 series into complex and critical applications

Multiple configurations stored in the logger:

Up to six logger configurations (channel type, names, logging speeds, triggers etc.) together with the current configuration can be held in the logger`s internal memory. Additional configuration settings can also be loaded from the external MMC/SD memory card. This allows the operator to quickly and easily switch between logger configurations without the need for a PC

Software configuration via SquirrelView:

The SquirrelView software (supplied with the SQ2020 series data loggers) allows logger configuration, data download and export whilst giving the user full control over SQ2020. The optional SquirrelView Plus gives the user access to many advanced data analyses and archiving/transfer features. Refer to SquirrelView data sheet for specifications.

Concurrent sampling:

The SQ2020 series uses multiple analogue and digital converters that enables true concurrent sampling and logging. It allows the user to configure a channel to log at a rate of 100Hz(20Hz on 1F8) whilst retaining different sample speeds on the other channels. Ideal for measuring dynamic parameters that change at different rates such as temperature and pressure.

Capabilities

- Create complex schedules of logging rates, triggers and alarm outputs
- Scale and view readings in real time on the integral display or on a PC running SquirrelView
- Select logging rates up to 100 readings per second on up to 2 channels (20Hz maximum on Squirrel model 2020-1F8)
- Derive up to 16 calculated (virtual) channels from real input channels using mathematical functions

Applications


Manufacturing


Biological Sciences


Medical Research

Squirrel 2020 Technical Specifications

	SQ2020-1F8	SQ2020-2F8
Analogue Input Channel Options	**Analogue to digital converters:** 1 **Differential:** 8 **Single Ended*:** 16 **3 or 4 wire:** 0	**Analogue to digital converters:** 2 **Differential:** 8 **Single Ended*:** 16 **3 or 4 wire:** 4
Additional Channels	**Pulse:** (2 x fast-64kHz)& (2 x slow - 100Hz) **Event/digital:** 8 state inputs or 1 x 8 bit binary	**Pulse:** (2 x fast-64kHz)& (2 x slow - 100Hz) **Event/digital:** 8 state inputs or 1 x 8 bit binary
Logging Speed	20 readings / sec on 1 channel only	100 readings / sec on 2 channels only
Communication	**Standard:** RS232 (Auto bauding to 115200 baud) USB 1.1 & 2.0 compatible **External options:** GSM, Wifi and PSTN Modems	**Standard:** RS232 (Auto bauding to 115200 baud) USB 1.1 & 2.0 compatible Ethernet 10/100 base TCP/IP (Requires external power supply) **External options:** GSM, Wi-Fi and PSTN Modems
Analogue Inputs	Accuracy: (at 25°C) voltage and resistance (± 0.05% readings + 0.025% range) Common mode rejection: 100dB Linearity: 0.015% Input impedance: > 1MΩ Series mode line rejection: 50/60Hz 100dB	
Analogue - Digital Conversion	Type: Sigma - Delta Resolution: 24bit Sampling rate: up to 10, 20* or 100* readings per sec. per ADC. No 100Hz on 1F8 (* with mains rejection off)	
Thermistor Ranges	**Y & U-type:** - 50 to 150°C **Pt100/ Pt1000:** - 200 to - 850°C (2 wire only on 1F8) **Customer specific thermistor range**	
Thermocouple Ranges; Differential and Single Ended	**K-type:** - 200 to 1372°C **R-type:** - 50 to 1768°C **B-type:** 250 to 1820°C **T-type:** - 200 to 400°C **S-type:** - 50 to 1768°C **C-type:** 0 to 2320°C **N-type:** - 200 to 1300°C **J-type:** -200 to 1200°C **D-type:** 0 to 2320°C	
Working Environment	- 30 to 65°C, RH up to 95% (non-condensing)	
Voltage Ranges; Differential and Single Ended	- 0.075V to 0.075V, - 0.15V to 0.15V, - 0.3V to 0.3V, - 0.6V to 0.6V, 0.6V to 1.2V, 0.6V to 2.4V, - 3V to 3V, - 6V to 6V, -6V to 12V, - 6V to 25V	
High Voltage Input Range	4V to 20V, 4V to 4V, 4V to 60V (max 2 may be selected)	
Current Ranges, Differential (Requires external 10Ω shunt)	-30 to 30mA, 4 to 20mA	
Resistance Ranges, all 2 wire	0 to 1250Ω, 0 to 5000Ω, 0 to 20000Ω, 0 to 300000Ω	
Resistance Range 3 and 4 wire (2F8)	0 to 500Ω, 0 to 4000Ω	
Digital/Alarm Outputs	4 open drain FET (18V 0.1A)	
Memory	Internal: up tp 128Mb (up to 14 million readings) External: Up to 1Gb - removable MMC/ SD (for transferring internal memory and storing setups only)	
Internal Memory Modes	Stop when full or overwrite	
Calculated Channels	Up to 16 virtual channels derived from physical input channels	
Resolution	Up to 6 significant digits	
Display/Keypad	128*64 dot graphical display, 4 button keypad	
Power Supply	Internal: 6 x AA alkaline batteries External: 10-18VDC. Reverse and polarity and over-voltage protected	
Power Consumption @ 9V	Sleep mode: 600µA Logging: 40 - 80 mA	
Power Output for External Device	Regulated 5VDC at 50mA or logger supply voltage at 100mA	
Time and Date	In-built clock in 3 formats	
Programming / Logger setup	SquirrelView or SquirrelView Plus Software	
Dimensions (w x d x h), Weight	235 mm x 175 mm x 55 mm, 1.2 kg, enclosure material ABS	

Note: SQ2020 is supplied with software, manual, USB cable, wall bracket, batteries and 4 current shunt resistors.