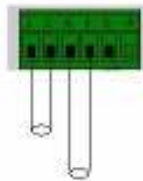
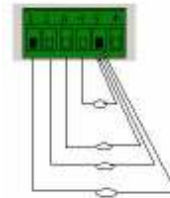


## SQ2040 4F16 channel inputs

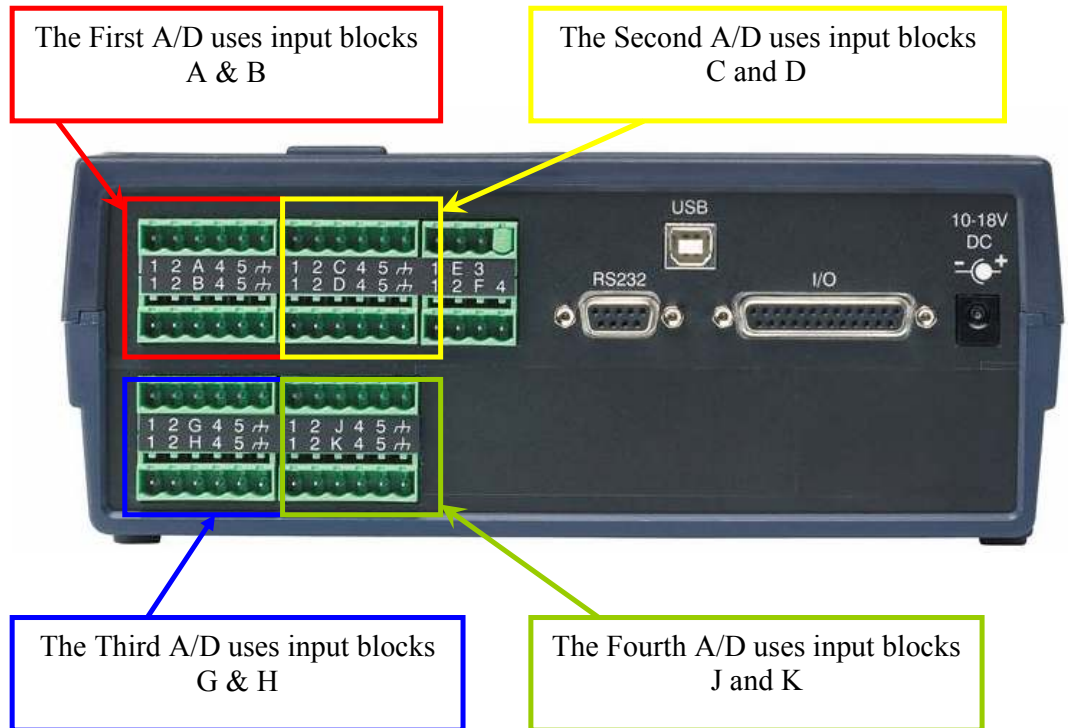
The SQ2040 4F16 Squirrel data logger has four analogue to digital converters (A/D's) which increases logging flexibility over the other SQ2020 and SQ2040 models. The first corresponds to inputs on blocks A and B, the second corresponds to inputs on blocks C and D, the third corresponds to inputs on blocks G and H and the fourth corresponds to inputs on blocks J and K (see below). Each connection block will accept up to 2 differential inputs or up to 4 single ended inputs (it is **not** possible to mix single ended and differential inputs on a block).



Differential Inputs



Single Ended Inputs



Grant Instruments  
 (Cambridge) Ltd  
 Shepreth  
 Cambridgeshire  
 SG8 6GB

Tel: 01763 260811  
 Fax: 01763 262410  
 www.grant.co.uk

Reference No:

# DATA ACQUISITION

## Technical Information



### Mains rejection – what is it?

With mains rejection activated, the Squirrel data logger compensates for any interference from the local mains electricity supply (at either 50 or 60 Hz). This can be set in the logger setup screen in SquirrelView.

For higher logging speeds, the mains rejection can be turned off. However, this will have the effect of reducing the reading accuracy dependant upon the level of interference then experienced by the Squirrel data logger

### With Mains Rejection turned on (default setting)

The SQ2040 4F16 can take up to 10 readings per second on blocks A and B, 10 readings per second on blocks C and D, 10 readings per second on blocks G and H and 10 readings per second on blocks J and K. This can be 10 readings on a single channel or 10 readings spread across multiple channels across blocks A and B, 10 readings on a single channel or 10 readings spread across multiple channels across blocks B and C, 10 readings on a single channel or 10 readings spread across multiple channels across blocks G and H and 10 readings on a single channel or 10 readings spread across multiple channels across blocks J and K.

When wanting to log once a second or faster with mains rejection turned on the SQ2040 4F16 can have any **ONE** of the following configurations across blocks A and B, **ONE** of the following configurations across blocks C and D, **ONE** of the following configurations across blocks G and H and **ONE** of the following configurations across blocks J and K.

Per A/D	Samples per Second			
	10	5	2	1
Configuration 1	1			
Configuration 2		2		
Configuration 3			5	
Configuration 4				8
Configuration 5		1	2	1
Configuration 6		1	1	3
Configuration 7		1		5
Configuration 8			4	2
Configuration 9			3	4
Configuration 10			2	6

**Note:** Each configuration refers to the maximum number of inputs possible with the selected sample speed.

For example: Configuration 5 has 1 input at 5 samples per second, 2 inputs at 2 samples per second and 1 input at 1 sample per second. Therefore the maximum number of channels that can be logging on a single A/D in this configuration is 4.

### With Mains Rejection turn off

The SQ2040 4F16 can take up to 100 readings per second on blocks A and B, up to 100 readings per second on blocks B and C, up to 100 readings per second on blocks G and H and up to 100 readings per second on blocks J and K. This can be 100 readings per second on a single channel or 20 readings per second spread across multiple channels across blocks A and B, 100 readings per second on a single channel or 20 readings per second spread across multiple channels across blocks C and D, 100 readings per second on a single channel or 20 readings per second spread across multiple channels across blocks G and H, and 100 readings per second on a single channel or 20 readings per second spread across multiple channels across blocks J and K.

**Note:** 100 readings per second is not available when reading thermocouple inputs.

When wanting to log once a second or faster with mains rejection turned off the SQ2040 4F16 can have any **ONE** of the following configurations across blocks A and B, **ONE** of the following configurations across blocks C and D, **ONE** of the following configurations across blocks G and H and **ONE** of the following configurations across blocks J and K.

Per A/D	Samples per Second					
	100	20	10	5	2	1
Configuration 1	1					
Configuration 2		1				
Configuration 3			2			
Configuration 4				4		
Configuration 5					8	
Configuration 6						8
Configuration 7			1	2		
Configuration 8			1	1	2	1
Configuration 9			1	1		5
Configuration 10			1		5	
Configuration 11			1		4	2
Configuration 12			1		3	4
Configuration 13			1		2	5
Configuration 14			1		1	6
Configuration 15			1			7
Configuration 16				3	2	1
Configuration 17				3		5
Configuration 18				2	5	
Configuration 19				2	4	2
Configuration 20				2	3	3
Configuration 21				2	2	4
Configuration 22				2	1	5
Configuration 23				2		6
Configuration 24					7	1
Configuration 25					6	2
Configuration 26					5	3
Configuration 27					4	4
Configuration 28					3	5
Configuration 29					2	6
Configuration 30					1	7

# DATA ACQUISITION

## Technical Information



**Note:** Each configuration refers to the number of inputs possible with the selected sample speed.

For example: Configuration 19 has 2 inputs at 5 samples per second, 4 inputs at 2 samples per second and 2 inputs at 1 sample per second. Therefore the maximum number of channels that can be logging on a single A/D in this configuration is 8.

### Setting up Channels Squirrelview

When setting the channels in Squirrelview where you are not able to use every channel because of the sample rates, you need to make sure the setup is correct. In the diagram below you can see the red lines denotes the divider between A/D's and in the case below there is one channel at 100 Hz on the first A/D, one channel at 20 Hz on the second A/D and two channels at 10 Hz on the third A/D.

The screenshot shows the 'Logger Setup (Untitled) - For 4F16 Loggers' window. The main table lists channel configurations, divided into 'Calculated Channels' and 'Actual Channels' by red horizontal lines. Below the table are tabs for 'Logger Control', 'Actions & Triggers', 'Configuration', 'Digital/State', and 'Alarms'. The 'Logger Control' tab is active, showing settings for logger date/time, identification, memory mode, and power timers.

	Sensor Type	Description	Block	Connections	Log Method
Calculated Channels	Voltage - Single ended : -6 to 25 V	Channel 1	B	4(+ve) to 5(-ve)	Sample Interval: A (100 Readings Per Second) Logging Interval: (00:00:00)
	Not Set	Not Set	C		Not Set
	Not Set	Not Set	C		Not Set
	Not Set	Not Set	C		Not Set
Actual Channels	Voltage - Single ended : -6 to 25 V	Channel 2	C	4(+ve) to 5(-ve)	Sample Interval: B (20 Readings Per Second) Logging Interval: (00:00:00)
	Not Set	Not Set	D		Not Set
	Not Set	Not Set	D		Not Set
	Not Set	Not Set	D		Not Set
	Not Set	Not Set	D		Not Set
	Voltage - Single ended : -6 to 25 V	Channel 3	G	1(+ve) to 5(-ve)	Sample Interval: C (10 Readings Per Second) Logging Interval: (00:00:00)
	Voltage - Single ended : -6 to 25 V	Channel 4	G	2(+ve) to 5(-ve)	Sample Interval: C (10 Readings Per Second) Logging Interval: (00:00:00)

**Logger Control** Settings:

- Logger Date / Time:
  - Set Logger Time Manually
  - Set Logger Time to PC Time
  - PC Time: 11/09/2006 14:58:47
- Sensor Power Timers:
  - A (Supply): 00:00:00 [ ] Continuous
  - B (5V): 00:00:00 [ ] Continuous
- Logger Identification:
  - Logger ID: [ ]
  - Job Description: [ ]
- Memory Mode:
  - Memory Mode: Stop when full
  - Max Memory Allocated to this Job: All Free Mem
- Delayed Start:
  - Enable: [ ]
  - Real Time: [x] Elapsed: [ ]
  - Start Logging At: 11/09/2006 14:56:12