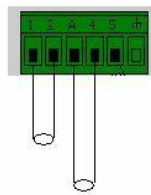
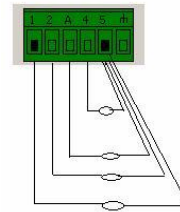


SQ2040 2F16 channel inputs

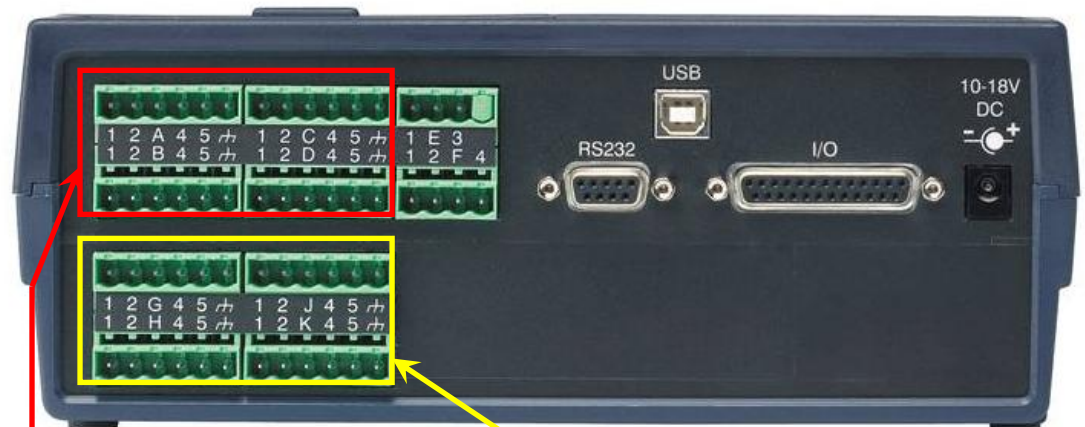
The SQ2040 2F16 Squirrel data logger has two analogue to digital converters (A/D's) which increases logging flexibility over the 1F8 model. The first corresponds to inputs on blocks A, B, C and D and the second corresponds to inputs on blocks G, H, J and K (see below). Each connection block will accept 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



The First A/D uses input blocks A, B, C & D

The Second A/D uses input blocks G, H, J & K

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.

Grant Instruments
(Cambridge) Ltd
Shepreth
Cambridgeshire
SG8 6GB

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

With Mains Rejection turned on (default setting)

The SQ2040 2F16 can take up to 10 readings per second on blocks A, B, C and D, and 10 readings per second on blocks G, H, J and K. This can be 10 readings on a single channel or 10 readings spread across multiple channels across blocks A, B, C and D, and 10 readings on a single channel or 10 readings spread across multiple channels across blocks G, H, J and K.

When wanting to log *once* a second or faster with mains rejection turned on the SQ2040 2F16 can have any **ONE** of the following configurations across blocks A, B, C and D, and **ONE** of the following configurations across blocks G, H, J and K.

Per A/D	Samples per Second			
	10	5	2	1
Configuration 1	1			
Configuration 2		2		
Configuration 3			5	
Configuration 4				10
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
Configuration 11			1	8

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 2F16 can take up to 100 readings per second on blocks A, B, C and D, and up to 100 readings per second on blocks G, H, 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, B, C and D, and 100 readings per second on a single channel or 20 readings per second spread across multiple channels across blocks G, H, 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 2F16 can have any **ONE** of the following configurations across blocks A, B, C and D, and **ONE** of the following configurations across blocks G, H, J and K.

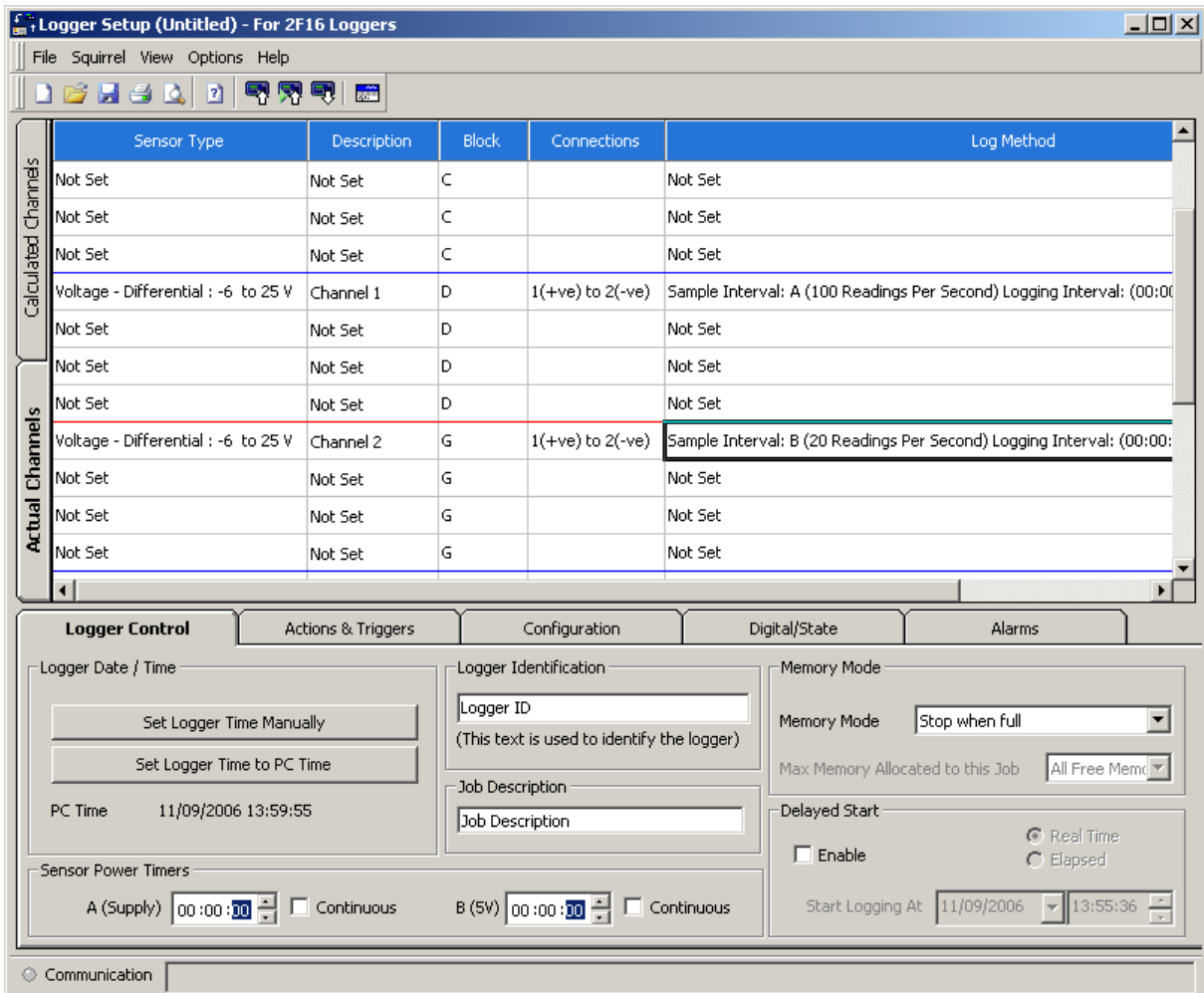
Per A/D	Samples per Second					
	100	20	10	5	2	1
Configuration 1	1					
Configuration 2		1				
Configuration 3			2			
Configuration 4				4		
Configuration 5					10	
Configuration 6						16
Configuration 7			1	2		
Configuration 8			1	1	2	1
Configuration 9			1	1		5
Configuration 10			1		5	
Configuration 11			1		4	2
Configuration 12			1		3	4
Configuration 13			1		2	6
Configuration 14			1		1	8
Configuration 15			1			10
Configuration 16				3	2	1
Configuration 17				3		5
Configuration 18				2	5	
Configuration 19				2	4	2
Configuration 20				2	3	4
Configuration 21				2	2	6
Configuration 22				2	1	8
Configuration 23				2		10
Configuration 24					9	2
Configuration 25					8	4
Configuration 26					7	6
Configuration 27					6	8
Configuration 28					5	10
Configuration 29					4	12
Configuration 30					3	13
Configuration 31					2	14
Configuration 32					1	15

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 line denotes the divider between the 2 A/D's and in the case below there is one channel at 100 Hz on the first A/D and one channel at 20 Hz on the second A/D.



The screenshot shows the 'Logger Setup (Untitled) - For 2F16 Loggers' window. It features a table with columns for Sensor Type, Description, Block, Connections, and Log Method. The table is divided into 'Calculated Channels' and 'Actual Channels' sections. A red horizontal line is drawn between the 'Actual Channels' section and the 'Calculated Channels' section, indicating the divider between the two A/D converters. The 'Actual Channels' section shows two channels: Channel 1 (Voltage - Differential: -6 to 25 V) and Channel 2 (Voltage - Differential: -6 to 25 V). Channel 1 is configured with a sample interval of 100 readings per second, and Channel 2 is configured with a sample interval of 20 readings per second. The 'Logger Control' section at the bottom includes fields for Logger Date/Time, Logger Identification, Job Description, Memory Mode, and Sensor Power Timers.

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