

Model 3569-V1A/V1D
16/32-channel Analog MUX
INSTRUCTION MANUAL

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SEE REPLY CARD FOLLOWING WARRANTY

WARRANTY

KPG:rem(WP)

KineticSystems Corporation

Standardized Data Acquisition and Control Systems

3569

16/32-channel Analog Mux

ADVANCE INFORMATION

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FEATURES

- 16- and 32-channel options (2-pole, lowpass filters on 16-channel option)
- Multiplexer for use with a 3518 ADC

APPLICATIONS

- Jet and rocket engine testing
- Thermocouple monitoring
- Analog voltage monitoring

GENERAL DESCRIPTION

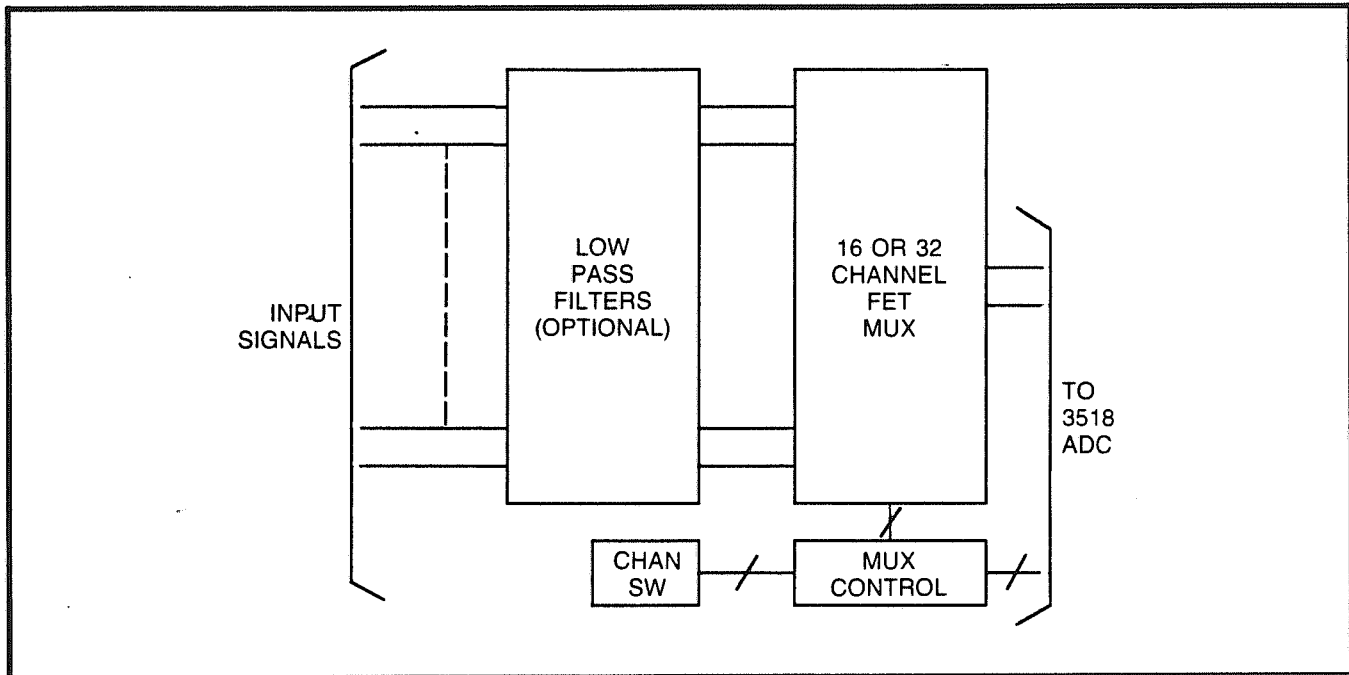
The Model 3569 is a single-width CAMAC module providing 16 or 32 channels of general-purpose analog signal monitoring as well as 16 or 32 channels of input multiplexing. It is used with the Model 3518 16-bit Scanning A/D Converter Host module. The 32-channel version does not include input filters. The 16-channel version includes a 2-pole, lowpass filter per channel.

Analog signals are brought into the 3569 via one or two AMP, 36-contact, high-density, rectangular connectors mounted to the front panel (for the 16- or 32-channel version of the module). These connectors mate directly with the Model 5944-Z1A mating connectors and with the Model 5855-Series of cable assemblies. The multiplexer output and control signals are bussed between the front panel of the 3569, other signal conditioning modules, and the 3518 ADC module via the Model 5840-Series of 10-wire flat ribbon cable assemblies. The front panel also contains a LED which flashes whenever the module is addressed.

FUNCTION CODES

Command	Q	Action
F(1):A(0) RD2	1	Reads the state of the channel selection switches.

Note: X=1 for all valid addressed commands.

SIMPLIFIED BLOCK DIAGRAM**OPTIONAL FILTERS**

The 16-channel version of the 3569 contains a passive, lowpass filter per channel. These filters provide a nominal 3dB attenuation at 10 hertz with a rolloff of 12 dB per octave above 10 hertz.

CHANNEL SELECTION

The 3569-V1A contains 32 channels and its Channel Address switch is normally set to "0" (with its first channel corresponding to the first channel of a 3518 scan). The 3569-V1D contains 16 channels and its Channel Address switch is normally set to 0 or 4 (with its 16 channels scanned as 0 to 15 or 16 to 31 by the host 3518). The number of scanned channels in the 3569 is also switch-selectable from four to 16 or 32 (depending upon option) in increments of four. The First Channel address and the number of scanned channels can be read via the Dataway for verification.

ORDERING INFORMATION

Weight: .62 kg. (1 lb. 6 oz.)

- Model 3569-V1A** — 32-channel Analog Mux w/o Filters
- Model 3569-V1D** — 16-channel Analog Mux w/Filters
- Accessories** —
 - Model 3518-Z1A 16-bit Scanning A/D Converter Host
 - Model 5944-Z1A Mating Connector (two connectors required for 3569-V1A)
 - Model 1854-A2A Termination Panel with 5855-B30J Cables (two cables required for 3569-V1A)
 - Model 5855-A30J Cable Assembly (two cables required for 3569-V1A)
 - Model 5840-M000-V000 Ribbon Cable - 10 Conductor (one cable required for 3569-V1A or V1D)

Model 3569-V1A/V1D

MODULE CONNECTIONS

The analog inputs are connected to the front panel connectors, P1 and P2. Connector P1 contains channels 1-16 and connector P2 contains channels 17-32. These connectors mate directly with the Model 5944-Z1A mating connectors and with the Model 5855-Series of cable assemblies.

The multiplexer output and control signals are bussed between front panel connector P3 of the 3569, other signal conditioning modules and the 3518 ADC module via a 10 wire flat ribbon cable, Model 5840 M000-V000. See pages 7-9 for connector pinouts.

READ INSTRUCTIONS

The CAMAC command F(1)A(0) is used to read the state of the channel selection switches.

CHANNEL SELECTION REGISTER AND SWITCH SETTINGS

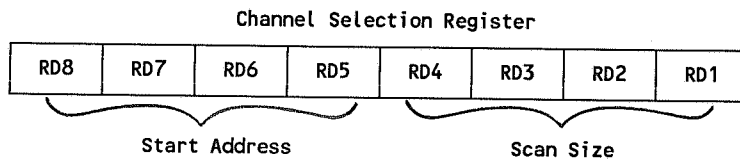
The 3569 is part of the 3518 family of signal conditioning modules. The 3518 acts as a signal conditioner host and interfaces to any combination of 3563, 3564, 3565 and 3569 modules through a single, 10-pin, front panel connector. Since all of the signal conditioning modules share this common bus, address switches must be set on each module to enable the analog output onto the bus at the appropriate times. The 3518 is capable of digitizing 32 channels of analog input. The output from a given signal conditioning module may lie anywhere within the 3518's 32-channel spectrum. The starting channel and number of channels to be scanned are switch selectable in groups of four at the signal conditioning module.

Figure 1 shows a sample configuration involving multiple types of signal conditioning modules. Figure 2 shows the switch selections required for various starting addresses and scan sizes. When setting these switches at each signal conditioning module, care must be taken to insure that no two modules occupy the same portion of the 3518's address spectrum. If an overlap condition does occur, the 3518 will detect it and flash the ERROR LED until the configuration is corrected. The 3518 will also disable all signal conditioners during the overlap period to protect the equipment. On the Model 3569-V1A/V1D, the first channel scanned switch (start address) is SW1 and the scan size switch is SW2. The first Channel Address and the number of scanned channels can be read via the Dataway for verification by using the CAMAC command F(1)A(0). See Figure 3 for switch locations.

Model 3569-V1A/V1D

CHANNEL	INPUT	START ADDR. SWITCH	SCAN SIZE SWITCH
0			
1			
2	3564-V1A		
3	Filtered Strain Gage	0	0
4	(4)		
5			
6			
7			
8	3563-V1D		
9	Filtered Thermocouple	1	2
10	(12)		
11			
12			
13			
14			
15			
16			
17			
18	3565-V1A		
19	Filtered RTD (8)	4	1
20			
21			
22			
23			
24			
25			
26			
27	3569-V1D	6	1
28	Filtered Analog (8)		
29			
30			
31			

FIGURE 1 - ADDRESS CONFIGURATION EXAMPLE



SW1 Switch Position	First Channel Scanned	Start Address RD8-RD5	SW2 Switch Position	Number of Channels Scanned	Scan Size RD4-RD1
0	0	0 0 0 0	0	4	0 0 0 0
1	4	0 0 0 1	1	8	0 0 0 1
2	8	0 0 1 0	2	12	0 0 1 0
3	12	0 0 1 1	3	16	0 0 1 1
4	16	0 1 0 0	4	20	0 1 0 0
5	20	0 1 0 1	5	24	0 1 0 1
6	24	0 1 1 0	6	28	0 1 1 0
7	28	0 1 1 1	7	32	0 1 1 1

Model 3569-V1A/V1D

Example:

RD8	RD7	RD6	RD5	RD4	RD3	RD2	RD1
0	0	1	0	0	0	1	1

= Start at channel 8, scan 16 channels

FIGURE 2 - Channel Selection Register Example

Note: SW2 switch positions 4-7 are only valid for Model 3569-V1A (32-channel option).

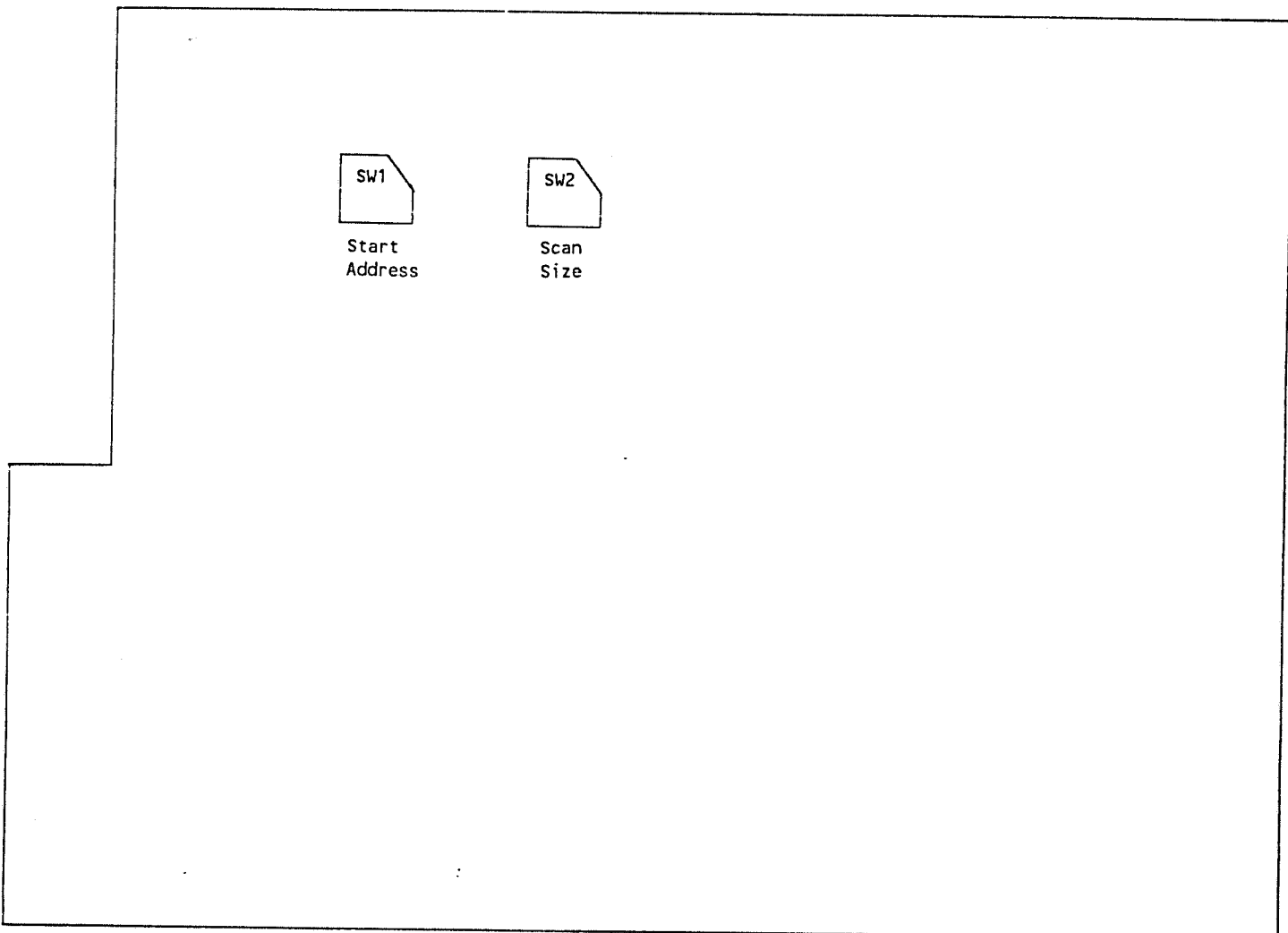


FIGURE 3 - Model 3569 Switch Locations

P 1

A 1	B 1	C 1
A 2	B 2	C 2
A 3	B 3	C 3
A 4	B 4	C 4
A 5	B 5	C 5
A 6	B 6	C 6
A 7	B 7	C 7
A 8	B 8	C 8
A 9	B 9	C 9
A10	B10	C10
A11	B11	C11
A12	B12	C12

P 2

A 1	B 1	C 1
A 2	B 2	C 2
A 3	B 3	C 3
A 4	B 4	C 4
A 5	B 5	C 5
A 6	B 6	C 6
A 7	B 7	C 7
A 8	B 8	C 8
A 9	B 9	C 9
A10	B10	C10
A11	B11	C11
A12	B12	C12

Model 3569-V1A/V1D

Pin No.	Nomenclature
A1	Channel 1 Signal (Input)
A2	Channel 1 Return (Input)
A3	Channel 2 Signal (Input)
A4	Channel 2 Return (Input)
A5	Channel 3 Signal (Input)
A6	Channel 3 Return (Input)
A7	Channel 4 Signal (Input)
A8	Channel 4 Return (Input)
A9	Channel 5 Signal (Input)
A10	Channel 5 Return (Input)
A11	Channel 6 Signal (Input)
A12	Channel 6 Return (Input)
B1	Channel 7 Signal (Input)
B2	Channel 7 Return (Input)
B3	Channel 8 Signal (Input)
B4	Channel 8 Return (Input)
B5	Channel 9 Signal (Input)
B6	Channel 9 Return (Input)
B7	Channel 10 Signal (Input)
B8	Channel 10 Return (Input)
B9	Channel 11 Signal (Input)
B10	Channel 11 Return (Input)
B11	Channel 12 Signal (Input)
B12	Channel 12 Return (Input)
C1	Channel 13 Signal (Input)
C2	Channel 13 Return (Input)
C3	Channel 14 Signal (Input)
C4	Channel 14 Return (Input)
C5	Channel 15 Signal (Input)
C6	Channel 15 Return (Input)
C7	Channel 16 Signal (Input)
C8	Channel 16 Return (Input)
C9	Digital Ground
C10	Digital Ground
C11	Digital Ground
C12	Digital Ground

Connector P1 Pin-Out

Model 3569-V1A/V1D

Pin No.	Nomenclature
A1	Channel 17 Signal(Input)
A2	Channel 17 Return(Input)
A3	Channel 18 Signal(Input)
A4	Channel 18 Return(Input)
A5	Channel 19 Signal(Input)
A6	Channel 19 Return(Input)
A7	Channel 20 Signal(Input)
A8	Channel 20 Return(Input)
A9	Channel 21 Signal(Input)
A10	Channel 21 Return(Input)
A11	Channel 22 Signal(Input)
A12	Channel 22 Return(Input)
B1	Channel 23 Signal(Input)
B2	Channel 23 Return(Input)
B3	Channel 24 Signal(Input)
B4	Channel 24 Return(Input)
B5	Channel 25 Signal(Input)
B6	Channel 25 Return(Input)
B7	Channel 26 Signal(Input)
B8	Channel 26 Return(Input)
B9	Channel 27 Signal(Input)
B10	Channel 27 Return(Input)
B11	Channel 28 Signal(Input)
B12	Channel 28 Return(Input)
C1	Channel 29 Signal(Input)
C2	Channel 29 Return(Input)
C3	Channel 30 Signal(Input)
C4	Channel 30 Return(Input)
C5	Channel 31 Signal(Input)
C6	Channel 31 Return(Input)
C7	Channel 32 Signal(Input)
C8	Channel 32 Return(Input)
C9	Digital Ground
C10	Digital Ground
C11	Digital Ground
C12	Digital Ground

Connector P2 Pin-Out

Model 3569-V1A (32-channel option only)

Model 3569-V1A/V1D

Pin No.	Nomenclature
1	Ground
2	Signal
3	Return
4	Ground
5	Ground
6	Unused
7	Increment
8	Clear Channel
9	Error
10	Overlap Detect

Connector P3 Pin-Out