

## **16 CHANNEL TRANSIENT RECORDER SYSTEM WITH "FASTCAMAC" READ**

### **FEATURES:**

- 16 SIMULTANEOUSLY SAMPLED DIFFERENTIAL ANALOG INPUTS
- ACTIVE CHANNELS SELECTABLE 1, 2, 4, 8, 16
- MODULE IS EXPANDABLE FOR LARGER SYSTEMS
- ONE MEGAWORD OF SRAM, ACTIVE MEMORY SIZE SELECTABLE
- "FASTCAMAC" READ
- READOUT RESOLUTION 0.610mv / BIT ALL RANGES, R1-16, 2's COMP.
- INDIVIDUAL CHANNEL GAIN SELECTION 1, 2, 4, 8
- RESOLUTION 12 BITS, INPUT IMPEDANCE 800K
- COMMON MODE VOLTAGE  $\pm 200$  VOLTS DC
- OPERATING MODES: PRE/POST TRIGGER, POST TRIGGER  
MULTIBURST POST TRIGGER, SINGLE SCAN
- MAXIMUM OPERATING SPEED: 1 CH / 160KHZ, 16 CH's / 10KHZ
- INDIVIDUAL CHANNEL READOUT TO SIMPLIFY DATA HANDLING

The JOERGER ENTERPRISES INC. MODEL TR16S/H is a 16 channel transient recorder system. It can accept up to 16 differential inputs with common mode voltages of up to 200 volts DC. Each input has a high speed sample and hold amplifier providing simultaneous sampling on all 16 channels. The ADC has a resolution of 12 bits. The module has been designed with a number of features to broaden its applications. The gain of each individual channel can be set and to simplify data readout it is shifted according to the gain set for each channel. This standardizes the output data with the least significant bit always set to 0.610mv regardless of the gain selected. The active channels can be set to 1, 2, 4, 8 or all 16 channels and the crystal controlled operating speed can be selected with the maximum speed determined by the number of active channels. The module can store a maximum of one megawords in on board SRAM. In order to handle a variety of applications the module has four operating modes, programmably selectable. It can operate in a pre/post trigger mode with the active memory size and post trigger size selectable. It can also operate in the post trigger mode with the selected active memory filled in response to a trigger. A multiple burst mode is also available and in response to each trigger the selected post trigger size is filled. This will continue until the selected memory size is filled, completing the cycle. The last mode is a single scan mode which when triggered will scan the active channels once and stop. A LAM is set to indicate when a cycle has been completed. Although the module is multi channel the data readout is always geared to a specific active channel. The channel to be read out is selected with command F17 and that channels data is read in sequence using a Q scan mode command F2 or for "FASTCAMAC" read F5 is used. This read out sequence would then be repeated for each channel to be read, greatly simplifying data readout. The module can be operated completely independently or in the case where more than 16 channels are required, interconnected and operated in sync with one selected as master.



## ***SPECIFICATIONS***

NUMBER OF INPUTS	16 differential inputs, each with S/H amplifier & off adj.
INPUT RANGE PER CHANNEL	$\pm 10\text{v}$ , $\pm 5\text{v}$ , $\pm 2.5\text{v}$ , $\pm 1.25\text{v}$ selectable
COMMON MODE INPUT	$\pm 200\text{v}$ with 800 Kohms input impedance
ADC RESOLUTION	12 bits, with 0.1% of full scale accuracy
DATA READOUT	2's compliment sign extended to R16. Data shifted for LSB = 0.610mv for all ranges.
SAMPLING RATE	DC to 10khz with 16 active channels (160khz for 1 ch)
APERTURE UNCERTAINTY	<100nsec (channel to channel) max.
OPERATING MODES	Single scan, post trig, multi burst post trig, pre/post trig
MEMORY SIZES AVAILABLE	256K standard, 1M word optional
READ OUT MODE	Each channel is readout independently by subaddress
NUMBER OF ACTIVE CHANNELS	1, 2, 4, 8 or 16 selectable
ACTIVE MEMORY SELECTABLE	1M, 512K, 256K, 128K, 64K, 32K, 16K, 8K
POST TRIGGER SIZE	1M to 32, in 16 steps
CLOCK SELECTABLE	7 internal clocks or external clock

## ***CAMAC COMMANDS***

0 <sub>0</sub>	Read Control Register #1, R1-8
0 <sub>1</sub>	Read Control Register #2, R1-8
2 <sub>0</sub>	Reads out active channel selected by 17(A0), increments by the active number of channels so each channel is read individually. Q=0 when readout is complete
5 <sub>0</sub>	"FASTCAMAC" Read, 2MHz max. speed
3 <sub>0</sub>	Read module identity and status of active and armed
4 <sub>0-15</sub>	Read gain on R1 and R2 (only if not armed)
8 <sub>0</sub>	Test LAM status
9 <sub>0</sub>	Clear address register
10 <sub>0</sub>	Clear LAM status
11 <sub>0</sub>	Arm module
16 <sub>0</sub>	Write control register #1 W1-8, active channels (3), clock(3), operating mode(2)
16 <sub>1</sub>	Write control register #2 W1-8, active memory (3), post trigger (4), slave status (1)
17 <sub>0</sub>	Select channel to be read by F2 or F5
20 <sub>0-15</sub>	Set amplifier gain for channels 1-16, W1,2 (only if not armed)
24 <sub>0</sub>	Disable LAM response
25 <sub>0</sub>	Trigger cycle
25 <sub>1</sub>	Abort (stop data acquisition or read cycle)
26 <sub>0</sub>	Enable LAM response
27 <sub>0</sub>	Test LAM status, Q = 1 if LAM is set
27 <sub>1</sub>	Test LAM enable, Q = 1 if LAM is enabled
Z or POWER UP	Reset control registers, set gains to 1, clear and disable LAM

## ***INDICATORS***

"N", "ARMED", "ACTIVE"

## ***CONTROL SIGNALS***

CLOCK IN / OUT, TRIGGER IN / OUT Negative TTL

## ***MEMORY***

256K standard; 1024K optional

## ***CONNECTORS***

DC37S (DC37P optional); LEMO RA00250

## ***SIZE***

Single width CAMAC module, all memory sizes

## ***POWER REQUIREMENTS***

+6v 400ma;  $\pm 24\text{v}$  210ma

## ***TEMPERATURE RANGE***

20°C to 50°C

PLEASE NOTE: When choosing an analog input module many factors should be considered. It is recommended reading “SELECTING AN ANALOG INPUT MODULE” on our web site: [www.joergerinc.com](http://www.joergerinc.com) , under “What’s New”



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