Alpha 933 EVENT RECORDER

What is the Alpha 933 Event Recorder?

The 933 event recorder is designed to accurately record events as they are detected. The module provides 18 fully isolated inputs for event measurement. The intended application is for monitoring the sequence of events such as trips and control reaction in industrial plant so that for example cause and effect can be studied or the operation logged. The main function of the 933 is to record changes in inputs against a real time reference. These events are buffered and available to be read into a host computer without the risk of missing subsequent events in process. Each 933 has an independent buffer which can be interrogated as required. Input signals are conditioned. Common problems, such as contact bounce, are handled flexibly so that multiple events are not recorded on mechanical contacts. The resolution of event recording is 1ms and synchronisation can be maintained between all 933 units in a distributed application. Input state changes can also be counted without affecting the event recording function. The current sense or status and counter value of input channels can be returned to the host as required. Counting or frequency measurements can be made on all inputs up to a maximum frequency of 400Hz and on 4 channels the maximum input frequency is 20khz. Cycle period and interval measurements can be made on 4 inputs for improved resolution on low frequency signals.

AUXILIARY INPUT/OUTPUTS

The 933 has three auxiliary digital outputs and one digital input which can be used by a host as general purpose I/O or used internally by the firmware to achieve a local function. Example uses include, synchronisation to an external signal, or local indication of events or status of input signals. Specific operation can be easily programmed for custom applications.

Features

Status, Counting, Frequency, Period, Interval and Plant Event Timing Functions

18 Channels per unit in compact DIN rail module,

**4 Channels support up to 20khz Counting and Frequency Measurements**

4 Channels support Period measurement

Synchronised Timing measurements on all Input Channel State changes - 1ms Integrity across all 933 modules.

Timing measurements synchronised with other Networked 933 Modules

Local Storage of Data and programming. Second local programming and diagnostic interface.

High speed communications.
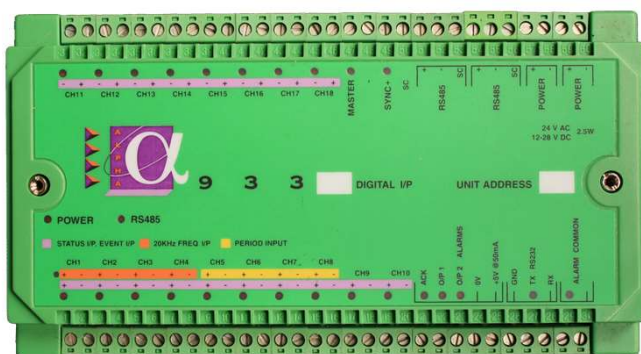
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Specifications Details

Input Channels:

Number of channels per unit:	18
Input isolation channel to channel:	tested at 1500 Volts
Input threshold for logic 1:	>4.5V
Input threshold for logic 0:	<1.5V
Input operational range:	4.5-24V
Input current:	2.0mA @5V
Debounce Options:	1-200ms (1 setting for channels 1-4 in event mode and channels 5-18 in all modes

Event Timing Measurements

Number of Channels	18
Event measurement resolution	1ms
Event registration between 933 units	1ms using sync connection
Max input state change rate for counting and events recording	400 cycles/sec 1:1 mark space800 changes/sec/channel to aggregate maximum of 4000 Changes/sec 0.05% reading +-/ms
Buffer capacity for processing events	250 per 18 channels

Note: In the event of the processed events exceeding the buffer capacity the event recording would, freeze preserving the first 250 events encountered. One event however is defined as all input changes within the specified debounce interval. (If several channels change within 100 ms period, for example and the de-bounce interval was set for 100 ms, then only one event entry would be recorded for all these channels). Aggregate limit applies to the number of input changes on all input channels in counting and frequency modes together excluding 20,000 frequency mode on channels 1 - 4

Sync Interface

In application using more than one 933 where the measurement of events captured on different units must be in agreement to 1 ms, then the units are connected using the SYNC terminals. A twin conductor is required which links the SYNC I/O terminals on each 933 requiring synchronisation.

An LED indicates successful synchronisation and is illuminated continuously when lock is achieved on slave 933 units.

A second LED indicates the 933 unit is set up as SYNC master.

Counting Measurement

Number of channels	18
Max. count frequency	65535
Max. count rate	20000 pulses/sec 1:1 on channels 1-4 (independent of aggregate limit) 400 pulse/sec channels 5-18 mark/ space ratio1:1 subject to aggregate max of 2000/sec

Auxiliary Channel Specification

Output switch ratings: Outputs 1,2	50mA @ 28VDC max Non isolated Suitable for driving small relays with isolated external supply
Output 3 Relay output Auxiliary Digital input	1.0A @ 48V AC/DC Contact closure to 0v External switch must be isolated

Frequency Measurement

Gate times	1 sec, 10 secs
Maximum input frequency	20000 pulses/sec 1:1 on channels 1-4 (independent of aggregate limit) 400 pulse/sec channels 5-18 at 1:1 mark space ratio (subject to aggregate max of 2000/sec)
Resolution (max)	0.1 cycles/sec
Accuracy	0.05% reading +- 1Hz (1 sec.gate)
Accuracy	0.05% reading +- 0.1Hz (10 sec.gate)

Period Measurement

Number of Channels	4 (channel 5-8)
Maximum cycle period	60 sec
Measurement resolution	1 ms to aggregate max of 4000 changes/sec
Accuracy	0.05% reading +- 1ms
Multiple period measurements Number of averaged periods	1-100 (channels 1-4)
Duration of multiple period	60 sec max
Effective period of resolution	10 Us to aggregate max of 4000 changes/sec
Accuracy	0.05% reading +- 1ms
Interval measurement Number of channels	4 (channel 5-8)
Maximum pulse duration	60 sec
Measurement resolution	1ms to aggregate max of 4000 changes/sec
Accuracy	0.05% reading +- 1ms

Power Requirement

Connector	2 pole screw terminal
Voltage	24V AC 12 to 28V DC
Current	200mA at 12V 120mA at 24V

General

RS485 INTERFACE	See Manual Baud rates to 153KB
RS232 INTERFACE 0V	RS232 Compatible Signals Rx Tx 5 volt signal levels 9k6, 19k2 Baud 8 bits, even parity, one stop bit 3 pole screw connector
STATUS LED's	7
Function	Power / Fault Communication RS485 Communication RS232 Outputs 1-3 Dig. Input 1
Operating temperature range	-20 to 70°C
Relative humidity	<90% 0 to 40°C
Vibration	3g 0 to 400Hz in 3 planes
Size	180x100x40mm
Weight	400g
Mounting	DIN rail Stackable

Stated accuracies are at 23°C

All Specifications subject to change without notice; correct at time of publication. Issue 4 specification relates to 1.01 firmware fit.