Alpha 934

ISOLATED DIGITAL AND ANALOGUE I/P PROCESSOR

What is the Alpha 934S and 934A Isolated Digital and Analogue I/P Processor?

The 934S module provides three pairs of digital inputs for three quadrature phase decoder channels each with two phase inputs. Four independently isolated analogue channels are included, with input range options. Each of these analogue channels has it's own ADC running continuously. The technique used is continuous integration, which offers the best noise performance in real world conditions by using all the available signal instead of sampling the signal at discrete intervals. The primary integration period is 3.3mS. Typically, three measurements are averaged to present 100 samples per second per channel for example. Other Integration times can be programmed enabling measurements to be made with 50 or 60Hz mains rejection. These measurements then derive from a continuous integration over one mains period offering fast update rates but high mains based noise rejection. Different integration times can be programmed for each analogue channel.

Each analogue channel is fully independently isolated from all digital inputs and other analogue channels using solid-state transformer isolation. This eliminates ground loop effects and provides protection to the equipment in the event of faults or incorrect wiring of input connections. It also makes a fault on one channel much less likely to affect other channels.

Ten additional opto-isolated channels are provided for medium speed counting, low frequency, period, interval, RPM and digital status measurement are included. These channels support counting and frequency measurements to 1KHz .

The 934A also includes four fused relay outputs are provided as general purpose auxiliary outputs.

Complete measurement scans of all channels are typically completed at 100 scans per second. To maintain exact measurement intervals and to allow a host computer some variability in communication times, the measurements are efficiently packed into a First In First Out (FIFO) measurement buffer within each 636 module.

The 934 standard firmware supports normal use of the I/O facilities returning measurements efficiently to a host computer using a RS485 communications port.. The firmware has also been designed to be easily customised to specific application requirements.

LOCAL SERIAL INTERFACE

As with other modules in the Alpha series, a local serial interface can be used to program and monitor operation locally independent of the communications on the RS485 network. This can be very convenient during installation or used later to diagnose application problems at the measurement site. Alternatively it could be used with a permanent local process display. Customised display output can be provided. All configuration settings are stored in secure non-volatile flash memory.

Features

- Analogue and digital measurements in compact DIN rail module
- Frequency and period measurements
- Quadrature phase decoder channel pairs
- Isolated 15/16 bit analogue channels
- Relay output auxiliary channels (934A)
- Second local diagnostic serial interface
- High speed comms 230KB (460KB)

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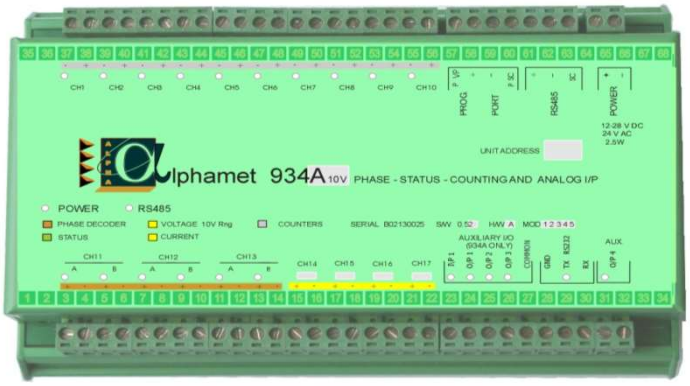
934S, 934A Specifications Details



Phase decoder channels:

Number of phase decoder inputs	3 pairs
Input threshold	3.5V
Input operating range	3.5-12V
Resolution	The 2 pairs offer discrimination of each edge resolving 4 counts per pulse pair
Input count rate	15 KHZ
Minimum pulse width/gap	10uS
Isolation	Each channel is individually isolated
Time base accuracy	Typically 0.02%

Analogue Input Channel

Number of Channels per unit	4
Input ranges	0-2V (standard) 4-20mA (build option) 0-10V (build option)
Each channel can be specified separately	
Isolation	Each channel is individually isolated
Resolution	15bits (300/sec) – 16bits (slower rates)
Programmable measurement rates	300, 150, 100, 50-60, 10/sec for each channel – individually
Base integration time – each measurement	3.3mS
Selectable true integration times	3.3mS, 10mS, 16.67-20mS, 100mS
Mains rejection – can be achieved by averaging consecutive measurements	
50HZ	6 measurements – 20mS integration time
60HZ	5 measurements – 16.667mS integration time
Accuracy	2V range +- 0.02% reading +- 0.02% of range at 23°C
Temperature coefficient	Typically <25ppm/°C

Status, Counter, Low Frequency, Period Channels

Number of status channels per module	10
Number of period measuring channels	6 or above 10
Measurement functions	Status, counting, frequency period, interval, RPM
Max count rate	1000/sec each channel (4 channel)
Input threshold	4V
Input operating range	4-24V
Isolation	Each channel is individually isolated
Update rate – counters or status function	1000/sec 4 channels 100/sec 6 channels
Period resolution	1mS – single period
Multiple period measurements	Up to 100 periods (60 secs total)
Effective resolution	Down to 10uS

Auxiliary Relay Output Channels (934A only)

Number of relay outputs	4
Relay output rating	48V 2A Fused
Minimum output load (wetting)	12V / 10mA
Isolation	One channel is an isolated contact pair Three have common connection

Status LED's

Colour	Red
Function	Power RS485 Communications RS232 Communications Channels 1-6, 11-14 – status level Status of Output channels

Module Dimensions

Size	180x120x65mm DIN rail mounting 0.6Kg

Connectors

2 part high quality rising cage clamp with screw terminal

Communications

RS485 Communications Interface	Baud rates to 230KB supported (460KB is available for some applications)
Measurement throughput of link	10,000/sec (dependes on application) 2000-4000/.module type
Local RS232 interface	Baud rates to 38K4 supported

Calibration

Software – no internet access required

Environmental

-20 to 60°C ambient. 0-90%RH

Power Requirements

12-36V DC or 24V AC	934A Power <4W 934S Power <3W

Specifications subject to change without notice – correct at time of publication
Issue 1.02 DS934A01 Refers to 0.52 firmware release.