Alpha 636 ISOLATED DIGITAL AND ANALOGUE I/P PROCESSOR

What is the Alpha 636 Isolated Digital and Analogue I/P Processor?

The 636 module provides six digital input channels for counting, frequency or status measurements. Counting and frequency measurements on these channels support input rates 15KHz. The first four channels can also be configured in pairs as one or two quadrature phase decoder channels for rotary and linear displacement sensors. 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. Other Integration times can be programmed for each channel, enabling measurements to be made with high 50 or 60Hz mains interference rejection and fast update rates.
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 an overload on one channel much less likely to affect other channels. Four additional lower speed opto-isolated channels are provided for counting, low frequency, period, interval, RPM and digital status measurement. These channels support counting and frequency measurements to 1KHz, and period measurement to a resolution of 1mS. Multiple period measurements can provide a resolution down to 10uS.
Six isolated and fused relay outputs are provided as general purpose outputs. Complete measurement scans of all channels are typically completed at 100 scans per second or higher. To maintain accurate 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 636 standard firmware supports normal use of the I/O facilities returning measurements efficiently to a host computer using a RS485 communications port. Up to 99 modules can be connected to a single RS485 network. The firmware can be easily customised for 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

20 channels of 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 channels

High speed RS485 to 230KB (460KB)

Second local diagnostic serial interface

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Frequency, Counter, Status Channels

Number of channels	6
Input threshold	3.5V
Input operating range	3.5-12V
Input count rate	15KHZ
Isolation	Each channel is individually isolated

Phase Decoder Channels

Number of phase decoder inputs	2 pairs (using the 4 freq channels)
Input threshold	3.5V
Input operating range	3.5-12V
Resolution	Two pairs offer discrimination of each edge resolving 4 counts per pulse pair
Input count rate	15KHZ
Minimum pulse width/gap	20uS
Isolation	Each channel is individually isolated
Time base accuracy	Typically 0.02%

Analogue Input Channels

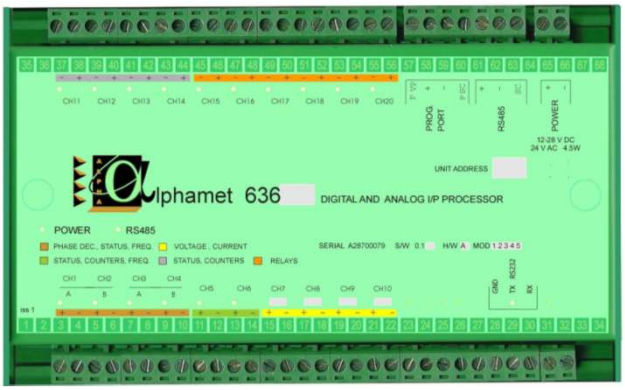
Number of status channels per unit	4
Input ranges	0-2V (standard) 4-20mA (build option) 0-10V (build option)

Other – Possible non standard. 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	60dB
50HZ	20mS integration time
60Hz	16.67mS integration time
Accuracy	2V range +-0.02% reading +-0.02% of range at 23°C
Temperature coefficient	typically 25ppm/°C

Status, Counter, Low Frequeny, Period Channels

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



Relay Ouput Channels

Number of relay outputs	6
Relay output rating	48V 2A Fused
Minimum output load (wetting)	12V / 10mA
Isolation	Each channel is an isolated contact pair

Status LED's

Colour	Red
Functions	Power RS485 Communications RS232 Communications Channel 1-6, 11-14 – Status level Status of output channels

Module Dimensions

Dimensions	180x120x65mm DIN rail mounting
Weight	0.6Kg

Connectors

2 part high quality rising cage clamp screw terminal

Communications

RS485 Communications Interface	Baud rates 38K4 to 230KB supported (460KB is available for some applications)
Number of Alphamet modules per link	99
Measurement throughput of link	10,000/sec (depends on application) 2000-4000/.module typ
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

636 - Power <4.5W

Issue 1.20 DS636 Refers to v0.33 firmware release.
Specifications subject to change without notice – correct at time publication