

# Universal Signal Conditioner v1 USC701

## DESCRIPTION

The **USC701** is a *universal* signal conditioner that combines measurement and control functions in a single instrument to provide user selectable solutions for most signal conditioning applications. The USC701 can be programmed directly using the Access Module or a personal computer. The user can also adjust basic calibration functions such as zero, span and trip point via a function switch and digital encoder accessible on the lid. The USC701 has a comprehensive range of *user selectable hardware options*. These include dual analogue inputs, dual digital inputs, current or voltage retransmission, sensor supply and isolated trip relays. The USC701 provides a substantial range of software functionality. These include maximum demand control, dual input functions with A\*B, A/B, A+B, A-B, largest of A and B, average of A and B, 100 point linearise, PID control, speed measurement, digital filter options.



## General Specifications

Size: 80W x 70H x 110D mm.  
 Housing material: Polycarbonate, aluminium.  
 Mounting: DIN-Rail, gear plate.  
 Termination: Plug in screw terminals.  
 Weight: 0.3 kg.  
 Protection class: IP40 (IP65 Enclosure opt.)  
 Electromagnetic compatibility: Complies with AS/NZS 4251.1 (EN 50081.1)

Operating temp. range: 0...+70°C.  
 Storage temp. range: -20...+70°C.  
 Isolation: 1000Vac r.m.s. /1500Vdc.  
 Temperature effect: 0.02% per °C.  
 Measurement Linearity: ±0.01% of range  
 Measurement Accuracy: typ ±0.05%dc, ±0.2%ac input range

Resolution: ±0.0025% of range  
 Update time: 16.6 msec minimum  
 Filtering/averaging: programmable  
 Power Supply -1: 80-300Vdc / 80-280Vac  
 Power Supply -2: 10 - 60Vdc / 16 - 42Vac  
 Power requirement: 4VA

## Auxiliary Excitation Output

Voltage source: 3V to 18V @ 50 mA max  
 Current source: 1 x 100µA external,  
 1 x 100µA internal.

## Mathematical functions

+, -, \*, /, absolute value, minimum, maximum, scaling, taring; plus logical functions

## Application Functions

Minimum and maximum hold, multiple one hundred and one point linearisation plus alarm functions.

## Analogue Inputs

Number of channels: either 2 single ended or one differential pair.

Input resistance: 15k to 4.4MΩ (V), 83Ω (I)

## Programmable ranges

Voltage dc: ±(400, 100, 30, 10, 4.5, 1Vdc)  
 mV dc: ±(300, 100, 30mV)  
 Current dc: ±(75, 30, 10, 1mA)  
 Voltage ac: 300, 75, 25, 7, 3Vac (25-70 Hz)  
 mVac: 700, 250, 75, 20mV (25-70 Hz)  
 Current ac: 50, 20, 7, 0.7mA (25-70 Hz).  
 Resistance: 30, 10, 3, 1, 0.3kΩ (2, 3, or 4 wire).

Potentiometer: 100Ω minimum  
 RTD (Pt100) linearised to ±0.1°C  
 850°C ±0.2°C, 600°C ±0.1°C

Thermocouple: linearised to ± 0.1°C  
 types: B, E, J, K, N, R, S, T  
 accuracy depends on Type & range  
 cold junction comp ± 1°C  
 ±0.05°C  
 Up/downscale burn-out by external resistor

## Accessories

Order Code	Unit Type
<b>AM702-02</b>	<b>Access Module</b>
<b>COA703-01</b>	<b>Computer Adaptor</b>

For input / output combinations refer to TYPE NO. DESIGNATION overleaf.

## Two Relay Outputs

Contacts: N/O 8A/250Vac resistive,  
3.5A/250Vac Inductive  
Action: Programmable: direct,  
Reverse, window, latch  
Dead band: Programmable.  
Delays: on/off up to 1 hour  
Contact isolation: 2kV.

## Digital Inputs

Number of channels: 2  
Range: +/-30V,  
Input resistance: 20k  
Trigger level: 0 to 28V adjustable  
Programmable ranges  
Frequency: 1pulse/hr to 5kHz  
resolution: 0.002%, accuracy:

Mains Frequency transducer:  
ranges as required e.g.  
48-52Hz  
Phase: ±180° (for frequencies to  
100Hz)  
Other functions: hold, reset, enable

## Isolated Analog/Open Collector Output

Open-collector: 45V, 150mA  
Current dc: 0 to 22 mA (20V drive)  
Voltage dc: 0 to 20V range (20mA  
drive)  
Accuracy: 0.1% of range.  
Linearity: 0.05% of range  
Response time: 50msec  
Output load change effect: less than 0.2%

## Isolated Digital Output

Physical: RS485, RS232 (factory  
set)  
Protocol: Modbus (RTU, ASCII),  
talk only.

## Order Code

**USC701-X X X 1**

**Supply:** \_\_\_\_\_  
1 = 80-300Vdc / 80-280Vac 50/60Hz  
2 = 10V - 60Vdc / 16 - 42Vac 50/60Hz

**Fieldbus:** \_\_\_\_\_  
0 = None  
\*) 1 = Modbus and Talk Only, RS232.  
\*) 2 = Modbus and Talk Only, RS485.

**Option:** \_\_\_\_\_  
0 = None  
\*) 1 = Custom labelling (min order 50).

\*) = Price Extra.

Specifications are typical after 30-minute warm-up.

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