

AS01

ABB Ability™ Symphony® Plus Hardware Selector



The AS01 Auto Synchronizer module provides automatic breaker closure during generator to line synchronization, or during Peer-to-Peer bus synchronization. The AS01 automatically matches voltage, frequency, and phase, and is also capable of detecting a dead bus to initiate safe breaker closure from a live bus to a de-energized bus. In addition to the main synchronization circuit, the AS01 uses an independent built-in synchronization check circuit for maximum safety and reliability.

The AS01 module supports 2 analog “BUS” input channels, 7 digital input channels, and 7 digital output channels. The AS01 uses these I/O channels to implement high precision bus matching algorithms for generator to line or line to line synchronization. The AS01 is part of a distributed modular I/O system.

Features and benefits

- 2 Bus input channels, each electrically duplicated
- Rated up to 134 VAC, 40 to 70 Hz
- 2 A/D converters, 16-Bit unipolar resolution
- Accuracy is $\pm 0.1\%$ of Full Scale Range where FSR = 134 VAC
- 7 Group isolated 24-48VDC Digital Inputs
- 7 CH-2-CH isolated, high load, Form A contact Digital Outputs
- Available G3 conformally coated

| General info | |
|-----------------------------|---|
| Article number | 2VAA008174R01 (AS01) |
| Type | Auto Synchronizer |
| Signal specification | AI: 0...120VACDI: 24...48 VDCDO: Form A contact |
| Life cycle status | ACTIVE |
| Number of channels | 16 |
| Signal type | 2x AI + 7x DI + 7x DO |
| HART | No |
| SOE | Yes |
| Redundancy | No |
| Form factor | Standard (190 mm) |
| Mounting | Horizontal Row or Vertical Column |
| MTBF (per MIL-HDBK-217-FN2) | PR D: 241,065 Hours |
| MTTR (Hours) | 1 Hours |

| Detailed data | |
|-------------------------------------|--|
| Module power requirements | 24 VDC ± 10%, 175 mA typical, 205 mA max |
| Module power connection | POWER TB on cHBX01L or VBX01T |
| Field IO power | DI: 3.5 mA typical 5.0mA max @ 24 - 48 VDC ±10% |
| Digital Input Turn ON / OFF voltage | 24VDC: 17V(ON) 19V(OFF) 48VDC: 18V(ON) 28V(OFF) 110VDC: 74V(ON) 85V(OFF) 125VDC: 76V(ON) 92V(OFF) 100VAC: 54Vrms(ON) 64Vrms(OFF) 120VAC: 55Vrms(ON) 71Vrms(OFF) |
| Field IO Power, Digital Outputs | CH1-2: max 1.0 A @ 120 VAC / 150 VDC CH3-7: max 400mA @ 60 VDC / 40 VAC |
| Overvoltage category | Category I for power, inputs or outputs. Tested according to EN 61010-1 |
| Max field cable length | 600 meters (1968 feet) |
| Number of Channels | 14 Total (2x AI, 7x DI, 7x DO) Channels |
| Signal ranges and types | Analog Inputs: 0...120VAC Digital Inputs: 24-48 VDC Digital Outputs: Form A Contact, (CH1-2) 120 VAC / 150 VDC, (CH3-7) 60 VDC / 40 VAC |
| No. of HART modems | 1 HART modem per module |
| Max no. of secondary HART variables | Up to 20 secondary variables Total, up to 4 variables per CH (HART v 5.4) |
| Secondary HART variable update rate | 2.5 seconds typical, 8.0 seconds max |
| SOE timestamp accuracy | 1 msec resolution for 24 - 48 VDC |
| Output response time | 95% of AI Step change: Normal response = 2.4 seconds, Fast Response = 0.27 seconds |
| Input Impedance | ≥ 15 kΩ |
| Output load | 0 to 750 Ω Current mode, minimum 22kΩ voltage mode |
| A/D Conversion | 2 A/D converters, each with 4 input channels |
| A/D Resolution | 16-Bit Unipolar |
| A/D Update rate | 100 msec for all channels |
| D/A Conversion | 1 D/A converter for each AO channel |
| D/A Resolution | 12-Bits |
| Accuracy, FSR | ±0.1% FSR, FSR = 134 VAC |
| Temp effect on accuracy | Max ±0.003% per deg C |
| Field signal to Logic isolation | UL1577 1000 VRMS for 1 minute |
| Channel isolation | Digital Inputs are group isolated, Digital Outputs are CH-2-CH isolated |
| Open circuit detection time | Less than 5 seconds (for AI) |
| Short circuit protection | Max 2.7mA on DI Channels 1-2 |
| Normal mode noise rejection | -70 dB minimum (Normal AI Response mode), -37 dB minimum (Fast AI Response mode) |
| Common mode noise rejection | -90 dB minimum (Normal AI Response mode), -53 dB minimum (Fast AI Response mode) |

| Diagnostics | |
|---------------------|--|
| Front plate LED's | STATUS LEDs: R (Run) and F (Fault) + I/O CH Status |
| Local availability | Mini USB connection on module front plate |
| Remote availability | HN800 device diagnostics via SPE |

| Environment and certification | |
|--|--|
| Temperature, Operating | -20 to +55 °C Tested according to IEC/EN 60068-2-1, IEC/EN 60068-2-2 |
| Temperature, Storage | -40 to +85 °C Tested according to MIL-STD-810G |
| Relative humidity | 20% to 95% @ 40°C non-condensing. Tested according to IEC/EN 60068-2-78, IEC/EN 61298-3 |
| Vibration (operational sinusoidal) | 5 to 60 Hz 0.137 mm (0.0054 in.), 60 to 150 Hz 1.0 G. Tested according to IEC/EN 60068-2-6 |
| Vibration (transportation) | 10 to 500 Hz. Tested according to MIL-STD-810G |
| Shock (storage) | 15 G, 11 msec. Tested according to IEC/EN 60068-2-27 |
| Drop | 100 mm. Tested according to IEC/EN 60068-2-31 |
| Protection class | IP20 according to EN 60529, IEC 529 |
| Altitude (operational) | Sea level to 3,048 meters (10,000 ft.) Tested according to MIL-STD-810G |
| Altitude (storage) | Sea level to 12,192 meters (40,000 ft.) Tested according to MIL-STD-810G |
| Air quality | ISA S71.04 G1, ISA S71.04 G3 compliant versions SPCxxxA are also available |
| ESD immunity | Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-2, Severity level 3 |
| Surge immunity | Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-5, Severity level 3 |
| Electrical fast transient immunity | Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-4, Severity level 3 |
| Radiated RFI immunity | Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-3, Severity level 3 |
| Conducted Immunity | Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-6, Severity level 3 |
| Magnetic field immunity | Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-8, Severity level 4 |
| Radiated emission | Tested according to IEC/EN 61000-6-4, CISPR 11 + A1, CISPR 16-1-1, Group 1, Class A, ISM equipment according to IEC/EN 61000-6-2, IEC/EN 61000-4-6, Severity level 3 |
| Conducted emission | Tested according to IEC/EN 61000-6-4, CISPR 11 + A1, CISPR 16-1-1, Group 1, Class A, ISM equipment |
| Voltage dips and interruption immunity | Tested according to IEC/EN 61000-6-2, IEC/EN 61000-4-11 |
| CSA non-hazardous locations | Certified for use as process control equipment in an ordinary (non-hazardous) location |
| CSA hazardous, nonincendive locations | Class I, Division 2, Groups A, B, C, D |
| CE Mark | CE Mark EMC directive 2004/108/EC & Low Voltage Directive 2006/95/EC |
| RoHS compliance | RoHS Directive 2015/863 |
| WEEE compliance | DIRECTIVE/2012/19/EU |

Compatibility

| | |
|-----------------------------|----------------------------|
| Use with MTU | HBS01-TCM, VBS01-TCM |
| Module keying code for base | slot #1 = 12, slot #2 = 22 |

Dimensions

| | |
|--------|--------|
| Width | 27 mm |
| Depth | 106 mm |
| Height | 190 mm |
| Weight | 294 g |

solutions.abb.com/symphonyplus
solutions.abb.com/controlsystems

800xA and Symphony Plus is a registered trademark of ABB. All rights to other trademarks reside with their respective owners.

We reserve the right to make technical changes to the products or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB does not assume any responsibility for any errors or incomplete information in this document.

We reserve all rights to this document and the items and images it contains. The reproduction, disclosure to third parties or the use of the content of this document – including parts thereof – are prohibited without ABB's prior written permission.

Copyright© 2024 ABB All rights reserved