

BCS-XF325

Modular CODESYS-based controller

BCS-XF325 with 16 DI, 16 DO, 10 AI, 2 AO, 2xRJ45, RS485, USB, OPC UA, MQTT, Modbus TCP/RTU Client/Server, CANopen/J1939, EtherNet/IP Scanner/Adapter, PROFINET, EtherCAT, Docker
16 DI (9 fast), 16 DO (8 fast), 10 AI, 2 AO
High speed counter input/PTO and PWM outputs
OPC UA, MQTT, Sparkplug B, Modbus, CAN interfaces, Serial, USB, Memory card, EtherNet/IP, PROFINET, EtherCAT
Built in Firewall, Web server diagnostics, Secured connection via VPN
DNV, UL, cUL and Class 1 Division 2 certified
Docker for Virtualization

Facts

General

Part number	66.018.120-6
Warranty	Up to 2 years
Digital inputs (DI)	16 DI (9 fast)
Digital outputs (DO)	16 DO (8 fast)
Voltage and current analog inputs (AI)	10 (4 voltage, 6 current)
Voltage and current analog outputs (AO)	2
Ethernet TCP/IP interface	2
RS-485 serial interface	1
CAN interface	1
CANOpen Master protocol	Yes
J1939 Manager protocol	Yes
USB host port	1
Addressable input variables memory (%I)	64 KB
Addressable output variables memory (%Q)	64 KB
Addressable variables memory (%M)	32 KB
Symbolic variables memory	32 MB
Program memory	32 MB
Retain/persistent memory (user configurable)	128 KB
Source code memory (backup)	256 MB Total memory (Program + Source)
User files memory (backup)	2.5 GB (CPU + Docker Memory)
Maximum number of tasks	16
Programming languages	Structured Text (ST), Ladder Diagram (LD), Sequential Function Chart (SFC), Function Block Diagram (FBD), Continuous Function Chart (CFC)
Online changes	Yes
Watchdog	Yes
Real-time clock (RTC)	Yes
Real-time clock (RTC) resolution	Resolution of 1 ms, max. variance of 3 seconds per day, retention time of 14 days
Status and diagnostic indication	LEDs, web pages and CPU's internal memory
Isolation, Protective earth to all	1000 Vac / 1 minute
Isolation, Logic/RS-485/CAN/USB to all	1000 Vac / 1 minute
Isolation, Ethernet to all	1000 Vac / 1 minute
Isolation, Power supply/analog I/O to all	1000 Vac / 1 minute
Isolation, Digital inputs to all	1000 Vac / 1 minute
Isolation, Digital inputs group I0x to I1x	1000 Vac / 1 minute
Isolation, Digital outputs to all	1000 Vac / 1 minute
Maximum power dissipation	10 W
Maximum wire size	0.5 mm^2 (20 AWG) with ferrule, 1.5 mm^2 (16 AWG) without ferrule

IP level	IP 20
Conformal coating	Yes
Operating temperature	-20 to 60 °C
Storage temperature	-40 to 70°C
Operating and storage relative humidity	10 to 95 %, non-condensing
Standards	IEC 61131-2, CE, Electromagnetic Compatibility (EMC) and Low-Voltage Directive (LVD)
Module dimensions (W x H x D)	112.2 x 122.8 x 123.0 mm (102.8 x 122.8 x 110.8 mm without I/O termination and without cable cover)
Package dimensions (W x H x D)	128 x 138 x 138 mm
Weight	513.5 g
Weight with package	675.1 g

Certifications

General	CE, UL, cUL
Marine	DNV
Hazardous	UL C1D2

Power supply

Nominal input voltage	24 Vdc
Input voltage	18 to 30 Vdc
Maximum input current (in-rush)	15 A for 1 ms
Maximum input current	1.4 A at 18 Vdc

Digital inputs

Input type	Opto-isolated, sink/source
Input voltage	24 Vdc, 15 to 30 Vdc for logic level 1, 0 to 5 Vdc for logic level 0
Input impedance	4.95 kΩ
Maximum input current	6.2 mA @ 30 Vdc
Input state indication	Yes
Response time	2 ms
Input filter	2 ms to 255 ms – by software. The filter sampling is performed on MainTask (or Refresh function), then it's recommended to use multiple values of the task interval

Transistor digital outputs

Output type	Optoisolated transistor source type
Maximum output current	1.5 A per output (single - unprotected) 6 A total
Leakage current	35 µA
On state resistance	100 mΩ
External power supply	19.2 to 30 Vdc
Switching time	3 µs - off-to-on transition @ 24 Vdc. 50 µs - on-to-off transition @ 24 Vdc
Maximum switching frequency	250 Hz
Configurable parameters	Yes
Output state indication	Yes
Output protections	Yes, protection against surge voltages

Analog inputs

Input type	Voltage or current input, single ended, individually configured
Data format	16 bits in two’s complement, justified to the left
Converter resolution	12 bits monotonicity guaranteed, no missing codes
Conversion time	400 µs (all channels enabled)
Input state indication	Yes
Module protections	Yes, protection against surge voltages and polarity inversion

Voltage input mode

Range	0 to 10 Vdc
Engineering scale	0 to 30,000
Resolution	2.52 mV
Precision	± 0.3 % of full scale rating @ 25 °C. ± 0.010 % of full scale rating / °C
Over scale	3 % of full scale
Maximum input voltage	14 Vdc
Input impedance	21 kΩ
Configurable parameters	Signal type per input. Filters
Low pass filter time constant	100 ms, 1 s, 10 s or disabled

Current input mode

Range	0 to 20 mA, 4 to 20 mA
Engineering scale	0 to 30,000
Resolution	5.03 µA
Precision	± 0.3 % of full scale rating @ 25 °C. ± 0.010 % of full scale rating / °C
Over scale	3 % of full scale
Maximum input current	30 mA
Input impedance	119 Ω
Configurable parameters	Filters, open loop value
Low pass filter time constant	100 ms, 1 s, 10 s or disabled

Analog outputs

Output type	Voltage or current output, individually configured
Data format	16 bits in two's complement, left-justified
Converter resolution	12 bits monotonicity guaranteed, no missing codes
Update time	450 us (all outputs enabled)
Output state indication	Yes (LED)
Module protections	Yes, protection against surge voltage and polarity inversion

Voltage output mode

Range	0 to 10 V
Engineering scale	0 to 30,000
Resolution	2.5 mV
Precision	± 0.3 % of full scale rating @ 25 °C. ± 0.010 % of full scale rating / °C
Stabilization time	4 ms
Maximum output value	3 % of full scale
Load impedance	> 1 kΩ
Configurable parameters	Signal type per output (voltage or current)

Current output mode

Range	0 to 20 mA, 4 to 20 mA
Engineering scale	0 to 30,000
Resolution	5.03 µA
Precision	± 0.3 % of full scale rating @ 25 °C. ± 0.015 % of full scale rating / °C
Stabilization time	4 ms
Maximum output value	3 % of full scale
Load impedance	< 600 Ω
Configurable parameters	Signal type per output (voltage or current)

RS-485

Connector	4-pin terminal block (D+, D-, GND and shield)
Physical interface	RS-485
RS-485 maximum transceivers	32
Termination	Yes (through mechanical switch)
Baud rate	9600, 19200, 38400, 57600, 115200 bps
Protocols	Master/Slave MODBUS RTU, Open protocol

CAN

Connector	4-pin terminal block (H, L, GND and shield)
Physical interface	CAN bus
CAN maximum nodes	64
Termination	Yes (through mechanical switch)

USB

Connector	USB Type-A (female)
Physical interface	USB V2.0
Baud rate	1.5 Mbps (Low Speed), 12 Mbps (Full Speed) and 480 Mbps (High Speed)

Ethernet

Connector	NET1 and NET2, Shielded female RJ45
Auto crossover	Yes
Maximum cable length	100 m
Cable type	UTP or ScTP, category 5
Baud rate	10/100 Mbps
Physical layer	10/100 BASE-TX
Data link layer	LLC
Network layer	IP
Transport layer	TCP (Transmission Control Protocol). UDP (User Datagram Protocol)
Application layer	EtherCat Master, Ethernet/IP Scanner/Adapter, PROFINET Controller, ModbusTCP client/server, Modbus RTU master/slave, User defined protocol, OPC UA/DA server, MQTT client, CANOpen Master protocol, CAN low level, J1939 Manager protocol, HTTP Server, BCS Tools programming protocol, SNTP Client, SNMP Agent
Diagnostics	LED (Link/Activity)

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