



Systems for mobile machines

# Twice as powerful: TÜV certified safety and standard PLC in one unit



Controllers



**Powerful 32-bit triple-core controllers with large application memory in one unit**

**Certified as safety controller (SIL 2 / PL d) with CANopen Safety support**

**Independent internal controllers with scalable I/O assignment for standard and safety applications**

**Two Ethernet ports with internal switch**



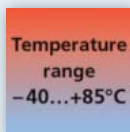
Ethernet



CODESYS



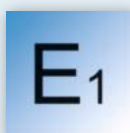
IP 65  
IP 67



Temperature  
range  
-40...+85°C



SIL 2  
PLd



E1

## Powerful standard and safety PLC in one unit

Modern vehicles and mobile machines need very powerful control electronics to process the high number of input and output signals. That is why the new TÜV certified ecomatController was developed. It has two independent, internal PLCs, one of which can be used as a safety controller.

In addition to its multifunctional inputs and outputs with diagnostic capabilities, the unit features two Ethernet ports as well as four CAN interfaces. The latter support all important bus protocols (CANopen, CANopen Safety and J1939) as well as the transparent and preprocessed data exchange. The control functions are easily integrated into the application program thanks to CODESYS programming (version 3.5).



## Features and benefits

### Sturdy mechanical design

The control electronics are integrated into a compact metal housing with front-mounted, coded central plugs for mobile use, providing all the necessary connections for inputs, outputs, communication and programming. RGB status LEDs indicate the most important system messages.

### • Powerful electronics

The core of the controller, which has been designed according to the applicable standards for electronics in mobile applications, is one of the most advanced multi-core 32-bit processors with 300 MHz clock frequency. Its 6 MByte application memory includes a 1 MByte file storage system.

Two internal, independently programmable controllers allow for subdivision of the application software if required. Consequently, the safe program part can be executed without interference from the general program execution. This ensures reliable operation even with complex control functions. The controller is certified for applications up to ISO 13849 PL d and IEC 62061 SIL CL 2.

### • inputs and outputs

The inputs and outputs can be configured as digital, frequency or analogue inputs with diagnostic function or as inputs for resistance measurement. The analogue inputs enable both current and voltage measurement. The outputs can be configured as digital or PWM outputs with diagnostic capabilities, with or without current control.

All inputs and outputs can also be configured as safe channels if required. Thus, safe sensors and actuators can be directly connected and processed in the application software.

### • Programmable to IEC 61131-3 with CODESYS

Programming is done by means of the standardised IEC 61131-3 languages. Established and certified libraries are available for special functions and safe applications.

Maintenance, diagnosis and updates are performed using TFTP via Ethernet and the maintenance tool. Additionally, these functions can be accessed via an application interface for ifm's PDM displays and via a software development kit for customer applications.

### • Interfaces with extended functionality

Besides an RS-232 interface and the Ethernet interface with internal switch, all controllers provide four CAN interfaces to ISO 11898.

All CAN interfaces support the essential bus protocols CANopen, CANopen Safety and J1939.

ecomatController	Order no.			
	CR710S	CR711S	CR720S	CR721S
<b>Number of inputs (can be configured)</b>				
Analogue Multifunctional/digital	8	16	24	24
Frequency/digital (pos./neg. signals)	8	8	16	16
Resistance/digital	4	4	4	4
Digital	–	4	16	24
Sensor supply	•	•	•	•
<b>Number of outputs (can be configured)</b>				
PWMi/digital 4.0 A / H-bridge	4	6	8	12
PWMi/digital 4.0 A	–	3	4	6
PWMi/digital 2.5 A	6	9	12	18
Digital 2.5 A	6	9	12	18
Analogue output	1	1	2	2

Common technical data ecomatController	
Housing	metal housing
Device connection	1 x 81-pole Tyco/AMP, 4 x M12 – CR071x 2 x 81-pole Tyco/AMP, 4 x M12 – CR072x
Protection	IP 67
Operating voltage [V DC]	8...32
Temperature range operation/storage [°C]	-40...85
Indication	8 x status LED
CAN interface	CAN ISO 11898, 20 kbits/s...1 Mbit/s Ethernet 10/100 Mbits/s RS232 9.6...115.2 kbits/s
Protocols	CAN CANopen, SAE J 1939 or free protocol Ethernet TCP/IP, Modbus
Programming	CODESYS V 3.5
Application memory [MB]	6
Safety-related characteristics	IEC 62061 SIL CL 2 ISO 13849-1 PL d
Standards and tests (extract)	CE, E1 (UN-ECE R10), EN 50 155

Accessories Description	Order no.
Connection cable, 58-pole, 2.5 m, plug code A	EC0710
Connection cable, 81-pole, 2.5 m, plug code A	EC0711
Connection cable, 47-pole, 2.5 m, plug code B	EC0720
Connection cable, 73-pole, 2.5 m, plug code B	EC0721
Plug unwired incl. contacts, code A	EC0701
Plug unwired incl. contacts, code B	EC0702
Ethernet cable cross-link, 2 m, M12/RJ45, PVC	E11898
CAN programming interface CANfox	EC2112
Adapter set CAN/RS232 for CANfox	EC2113