



Application	
Application	for functionally safe applications with the ecomatBasic and the ecomatController
Function	software package for programming in CODESYS 3.5 SP18
System solutions consisting of software and hardware	
Software	CP100S
Hardware	CR403S, CR413S
	CR710S, CR711S
	CR720S, CR721S



Safety package for ecomatBasic and ecomatController

Controller safety package

Inputs / outputs		
CR403S		
Input function	safety inputs	12
	Connection	IN00xx, IN01xx, IN02xx, IN03xx, IN04xx, IN05xx
Output function	safety outputs	0
CR413S		
Input function	safety inputs	16
	Connection	IN00xx, IN01xx, IN02xx, IN03xx, IN04xx, IN05xx, IN06xx, IN07xx
Output function	safety outputs	4
	Connection	OUT02xx
CR710S		
Input function	safety inputs	20
	Connection	IN00xx, IN01xx, IN04xx, IN05xx, IN06xx, IN09xx
Output function	safety outputs	16
	Connection	OUT00xx, OUT01xx
CR711S		
Input function	safety inputs	64
	Connection	IN00xx, IN01xx, IN02xx, IN03xx, IN04xx, IN05xx, IN06xx, IN07xx, IN08xx, IN09xx
Output function	safety outputs	27
	Connection	OUT00xx, OUT01xx, OUT02xx
CR720S		
Input function	safety inputs	60
	Connection	IN00xx, IN01xx, IN02xx, IN03xx, IN04xx, IN05xx, IN06xx, IN07xx, IN08xx, IN09xx, IN10xx, IN11xx, IN13xx, IN15xx, IN16xx, IN17xx
Output function	safety outputs	36
	Connection	OUT00xx, OUT01xx, OUT02xx, OUT03xx
CR721S		
Input function	safety inputs	64
	Connection	IN00xx, IN01xx, IN02xx, IN03xx, IN04xx, IN05xx, IN06xx, IN07xx, IN08xx, IN09xx, IN10xx, IN11xx, IN12xx, IN13xx, IN14xx, IN15xx, IN16xx, IN17xx, IN18xx
Output function	safety outputs	68
	Connection	OUT00xx, OUT01xx, OUT02xx, OUT03xx, OUT04xx, OUT05xx
Interfaces		
Protocol	CANopen Safety; SAE J1939-76	
Tests / approvals		
EMC	DIN EN 61326-3-1	
Safety classification		
Complies with the requirements	IEC 61508 SIL 2	
	ISO 26262 ASIL C	



Safety package for ecomatBasic and ecomatController

Controller safety package

CR403S: according to IEC 61508		
Mission time TM	20 years	
PFH [1/h]	external one-channel input	< 5,0E-9
	external two-channel input	< 5,0E-10
	logic	< 2,0E-7
CR413S: according to IEC 61508		
Mission time TM	20 years	
PFH [1/h]	external one-channel input	< 5,0E-9
	external two-channel input	< 5,0E-10
	logic	< 2,0E-7
	external one-channel output	< 3,0E-8
CR403S, CR413S: according to ISO 26262		
Total Life Time	20 Jahre	
TTrip	10 h	
Typical use case	PMFH: 70 Fit	this classification applies to the following assumption:
		TLifetime (Total Operating Hours) = 40000 h
		(operating and non-operating phase of the device considered)
		(this is equivalent to operation for 20 years, 8 h a day on 250 days of the year or 10 h a day on 200 days)
Worst case	PMFH: 90 Fit	this classification applies to the following assumption:
		"always on"
		(non-operating phase of the device not considered)
CR710S, CR711S, CR720S, CR721S: according to IEC 61508		
Mission time TM	20 years	
PFH [1/h]	external one-channel input	4.0E-09
	external two-channel input	5.0E-10
	logic	1,0E-07
	external one-channel output	2.0E-08
	external two-channel output	1.0E-09
CR710S, CR711S, CR720S, CR721S: according to ISO 26262		
Total Life Time	20 Jahre	
TTrip	10 h	
Typical use case	PMFH: 48 Fit	this classification applies to the following assumption:
		TLifetime (Total Operating Hours) = 40000 h
		(operating and non-operating phase of the device considered)
		(this is equivalent to operation for 20 years, 8 h a day on 250 days of the year or 10 h a day on 200 days)
Worst case	PMFH: 73 Fit	this classification applies to the following assumption:
		"always on"
		(non-operating phase of the device not considered)

CP100S



Safety package for ecomatBasic and ecomatController

Controller safety package

Remarks	
Remarks	can be used in applications up to SIL 2 in accordance with IEC 62061
	can be used in applications up to PL d in accordance with ISO 13849-1
	can be used in applications up to AgPL d in accordance with ISO 25119
	can be used in applications in accordance with DIN EN ISO 13766-2