Automating – Robust & Dynamic @activeIO

www.trsystems.de

TRS – product family

Industrial-PC

_ VPC/EPC/MIPC - Industrial PC for progressive control engineering
_ User-Interface visualization

SPC – Slot-SPS

_ Central control
_ Fieldbus master
_ PCI-Slot
_ Standard PC-Interfaces

@activeIO

_ Fieldbus based automation system with decentralized intelligence
_ Fieldbus-ready
_ Standard sensors and actuators

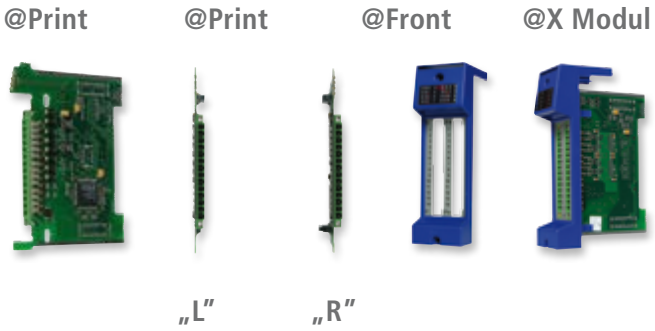
@activeIO

The system

There are two basic series to choose from that fit into the industrial environment. First, the @Control module with @ Modules sideways attached for flexible setup; and second, the
@Box module where @X modules are inserted for extreme robust applications with higher shock and vibration resistance. There are three performance classes that offer scalable power according to the application: the µController 80C165, the Net-ARM-Prozessor with TCP/IP-Stack onboard and the PC core.

@Print

The @Prints are the determining I/O components. A conglomeration of @Prints build the foundation of the I/O level.

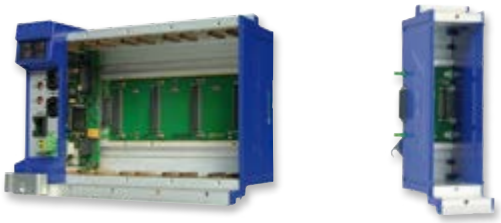


@X-Modul

By putting one or two @Prints into an @Front, one gets an @X module.

@Box housing

By inserting an @X module into an @Box housing one gets an @Module.
If one needs more @X modules they can be inserted into the front of an @Box module. Advantage: it is modular, but also constructed extremely rugged.



@Modul

The @Module has a left and a right slot, and it is able with its compact and rugged construction to include up to two @ Prints. The @Print's identifaction for the left slot is "@PxxxxL" and for the right slot is "@PxxxxR".
Multiple @Modules can be put together sideways to make an @Control module.

@Control module

The intelligence of an I/O system is in the @Control module.

@ctiveIO – The Components

E/A-Module

Our variety of I/O modules is as big as the world of automation. Two submodules (@Print) are put together to make one module (@Module). Therefore, different forms of signals can be combined in one module.
One controller typically provides up to 20 sub-modules (equals 10 fully equipped modules) with data. The supply voltage for the I/O will be supplied separately to each sub-module; therefore, the digital and analog I/O are galvanically separated from the signal processing.

Housing

Due to various requirements in logistics and modularity, we provide @ctiveIO in two basic housing forms, which also can be combined.

@Box

A complete fieldbus node can be incorporated into the box, and therefore, it is easy to handle. Further, you can equip it as you wish and it is ideal for serial production.

@Module

We also deliver controller and modules in separate housings so you can freely combine the nodes as you wish. They can be stringed together on a DIN rail mounted PC and fastened with a hook. An electrical connection can be established via high-quality connectors.

Controller

Controller

The @C controllers are the head of the @ctiveIO system. They establish the connection to superior systems via fieldbus or ethernet and communicate with the attached I/O modules. Further, they have the technology function as a controller algorithm, cam controller.

@C100
These controllers bring all of the I/O data to the bus.

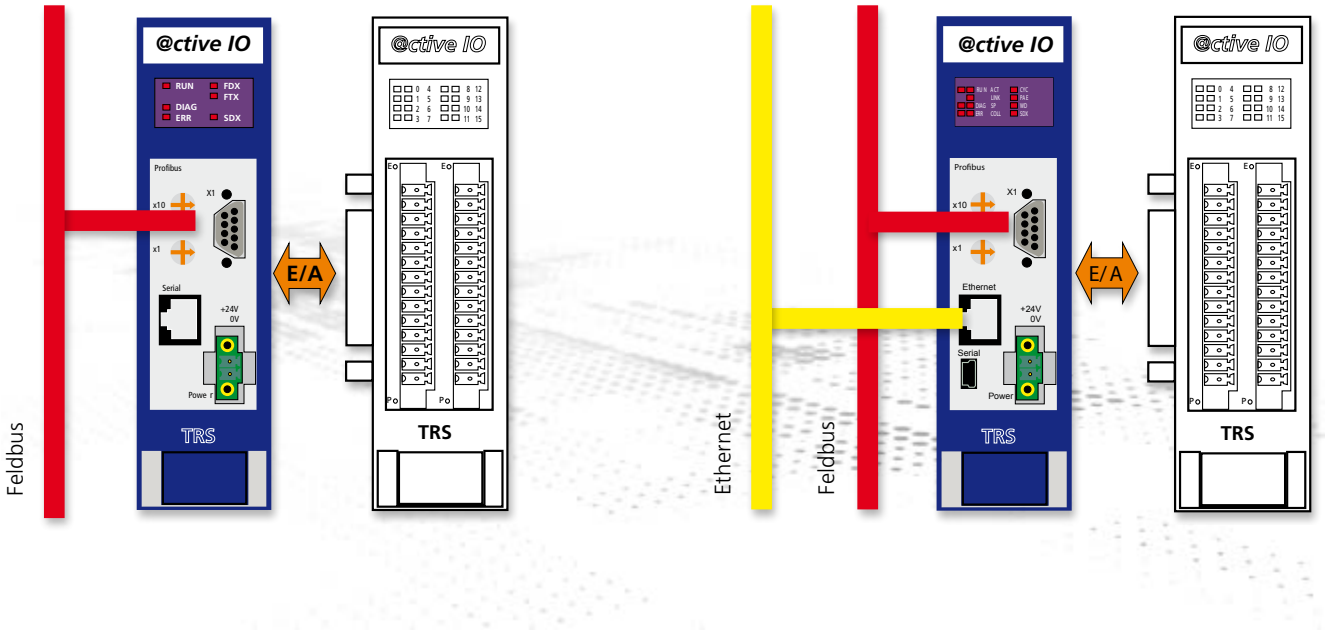
@C101
Fieldbus node with an enhanced storage area for technology functions.

@C200
Industrial Ethernet onboard. No matter how your version of the Industrial Ethernet is laid out, with the @C200 you also will have the option of fieldbus and ethernet.

@C201, 202, 203, 210
Ethernet node with enhanced technology functions.

@C500
PC power in the field.
May it be anything else? For the big things, we have an adequate PC core based on PC104. (Depending on the construction, you need 5 or more module sizes).

Controller-Module



Fieldbus node – @C1

The fieldbus nodes with C165 µController and RS232 interfaces are for diagnoses via @ctiveIO Toolkit.

Fieldbus node with ethernet – @C2

The Ethernet controller opens up a connection to Industrial Ethernet. There is standardized transfer of programs into the controller via Ftp (File Transfer Protocol) and the IP address allocation is implemented via the @ctiveIO Toolkit. You can displace alarm signals over an external modem via FTP, URL, UMP or PPP.

DIN rail mounted PC – @C5

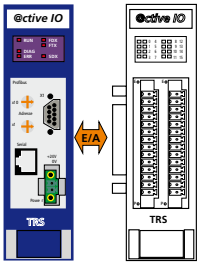
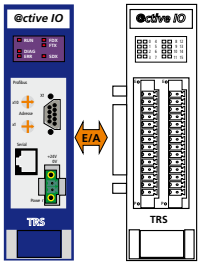
@C5 – Modular platform with high processing power

The DIN rail mounted PC @C500 has a similar modularity as our industrial PC series and a great variety of configuration possibilities. You can put the components together to realize the demand of controller and measurement assignments decentralized in the field.

@C5 – direct contact to your application

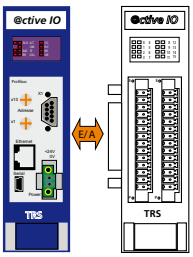
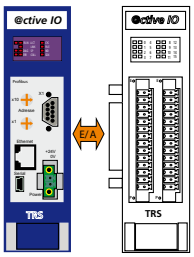
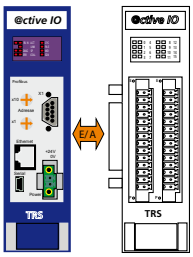
The CPU has immediate access to the @ctiveIO back plane bus; and further, (via our I/O modules) direct access to your plant. Therefore, your application does benefit from the processing speed. For your disposal, you have additional fieldbus masters (as control system) or fieldbus slaves (for the implementation of the @C500 in a control system). Needless to say that all standard PC interfaces (LAN, LPT, COM, USB,…) are available.

Fieldbus node
@C1_

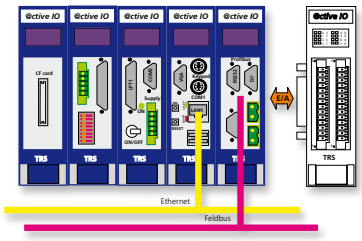
product	@C100 	@C101 
Processor	C165, 44 MHz	C165, 44 MHz
Storage – standard **_Flash** **_SRAM** **_NVRAM** **Storage – enhanced** **_RTC** **_SRAM**	 1 MByte (16 Bits) 512 kByte (16 Bits)	 1 MByte (16 Bits) 1 MByte (16 Bits) 32 kByte (8 Bits)
Power supply	24 VDC, ±20%	24 VDC, ±20%
Classification **_CANopen** **_FiberOptic IIO** **_Profibus DP** **_DeviceNet** **_Ethernet**	 @C100-CO @C100-FO @C100-PB @C100-DN	 @C101-CO @C101-FO @C101-PB @C101-DN
	Fieldbus node to connect the I/O with the fieldbus	Fieldbus node for technology functions as @PLC
weblink	www.tr-electronic.com/f/TRS-DOC-000036	-
QR-Code		-

Can't find the right variant? Please contact us (info@tr-electronic.de)

Fieldbus node
@C1_

product	@C200	@C201	@C203
			
Processor	ARM 7, 44 MHz	ARM 7, 44 MHz	ARM 7, 44 MHz
Storage – standard **_Flash** **_SRAM** **_NVRAM** **Storage – enhanced** **_RTC** **_SRAM**	2 MByte (16 Bits) 8 MByte (32 Bits)	2 MByte (16 Bits) 8 MByte (32 Bits) 32 kByte (8 Bits)	4 MByte (16 Bits) 8 MByte (32 Bits) 32 kByte (8 Bits) × 512 kByte (16 Bits) im Co-Prozessor
Power supply	24 VDC, ±20%	24 VDC, ±20%	24 VDC, ±20%
Classification **_CANopen** **_FiberOptic IIO** **_Profibus DP** **_DeviceNet** **_Ethernet**	@C200-EN	@C201-EN	@C203-EN
	Fieldbus node to connect the I/O with the fieldbus and/or ethernet	Fieldbus node for technology functions as @PLC	Fieldbus node for technology functions like @PLC, additionally with digital co-processor for use as cam switch e.g.
weblink	-	-	-
QR-Code	-	-	-

DIN rail mounted PC – Configuration @C5_ series

product	500	520	550	570
				
Bus _1 PC 104 slot _2 PC 104 slots _Housing	× 175 × 100,5 mm	 × 280 × 100,5 mm	× 175 × 142,7 mm	 × 280 × 142,7 mm
Processor _standard _optional	AMD LX 800 500 MHz Intel Celeron M 1 GHz			
Drives _standard _optional	Compact Flash HDD 2,5“			
Interfaces _standard	PS2, COM, LPT, LAN (10/100 MBit), VGA, USB			
Power supply _Standard _auf Anfrage	24 VDC, ±20% UPS, other power supply voltage			
Versorgungsspannung _Möglichkeiten	Profibus-DP/FMS combi master, INTERBUS master, CANopen, DeviceNet Master, alternatively as slave			
weblink	-	-	-	-
QR-Code	-	-	-	-

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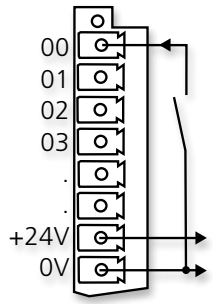
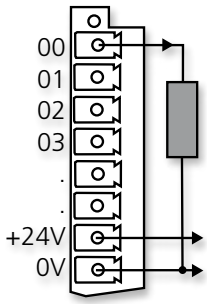
Digital

Digital input – @P1__

	4 channels	8 channels
		
NAMUR Input	@P1410	
24 VDC Input filter 2 ms		@P1800
24 VDC Input filter 200 µs		@P1801
12 VDC Input filter 2 ms		@P1803
24 VDC Input filter 2 ms 10 kW Pull down		

Digital output – @P2__

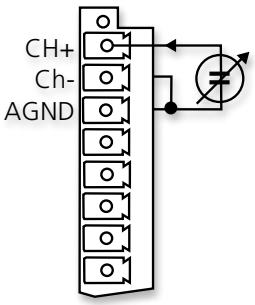
	4 channels	8 channels
		
24 VDC 1,5 A	@P2411	
24 VDC 2,5 A	@P2412	
24 VDC 0,8 A		@P2810
12 VDC 0,8 A		@P2813
Relay _Potential free, 24 VDC, 1 A, directional contact _230 VAC	@P2430 @P2420	

Accessories for analog and digital I/O

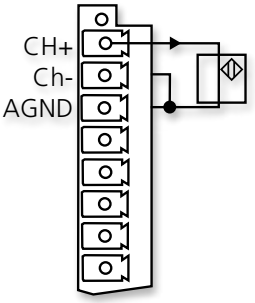
	Connecting plug …
Plug in with tension spring	@S141
Plug in with screw terminal	@S142

Analog

Analog input – @P3__

	2 channels	4 channels
16 bit, synchronous sampling		
-10 … +10 V, Ri = 1 MW	@P3200	@P3400
-10 … +10 V, Ri = 100 kW	@P3202	@P3402
0 … +5 V, Ri = 1MW	@P3204	@P3404
-20 … +20 mA, Ri = 50 W	@P3210	@P3410
4 mA ICP, für FFT-Modul	@P3285	
temperature/RTD		
2-wire technology, 16 bit	@P3220	@P3420
3-wire technology, 18 bit	@P3221	@P3421
4-wire technology, 18 bit	@P3222	

Analog output – @P4__

	2 channels	4 channels
16 bit, synchronous output		
-10 … +10 V	@P4200	@P4400
-20 … +20 mA	@P4210	@P4410

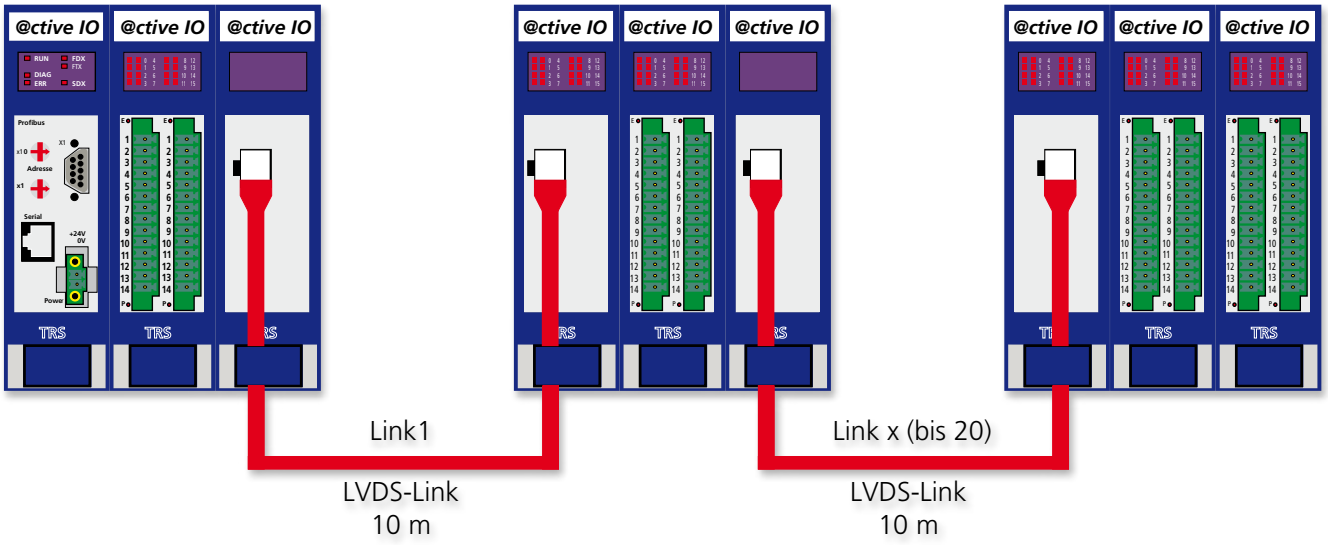
Accessories for analog and digital I/O

	Bridge for @ctivelO system bus
Power distribution (24 V/7 channels)	@P6010
Blind slot	@P6011
Passive connector	@P6012

Communication

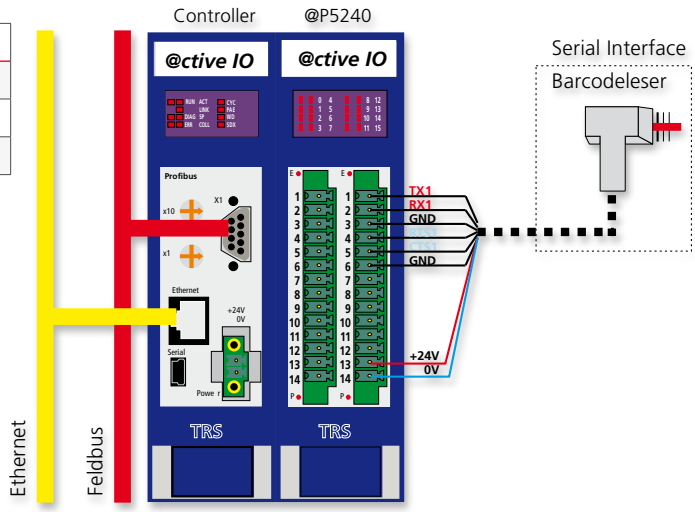
LVDS – fieldbus extension @C01_

	Sender	Receiver
Bus extension	@C011	@C010
Including galvanic isolation	@C015	@C014
Connecting cable	@LVDS-LINK 3 - 11,25 m	



Serialized communication @P5_4_

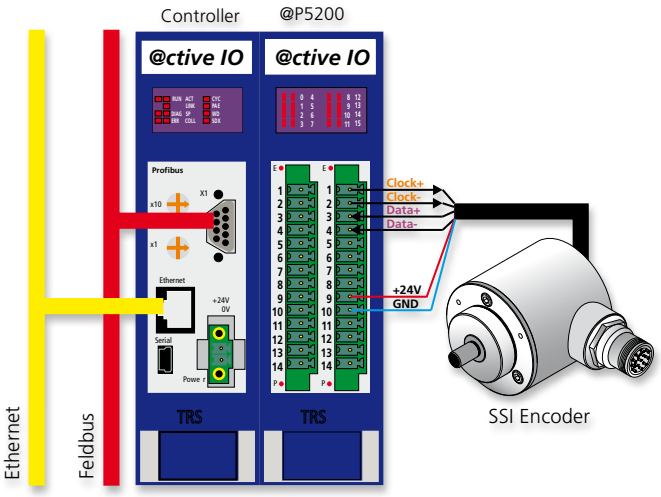
	2 channels	4 channels
RS232 RTS, CTS	@P5240	
RS232		@P5440
RS422	@P5242	



Sensor Interface

Measurement system - input
@P5___

	1 channel	2 channels
SSI	@P5100	@P5200
incremental 5 VDC	@P5110	
Inkremental 24 VDC	@P5111	
BiSS	@P5130	



Measurement system - output
@P5___

	1 channel	2 channels
ISI / Incremental output 5 VDC	@P5112	
Virtual incremental encoder	@P5190	
Repeater for @P5190	@P5191	
SSI output		@P5220

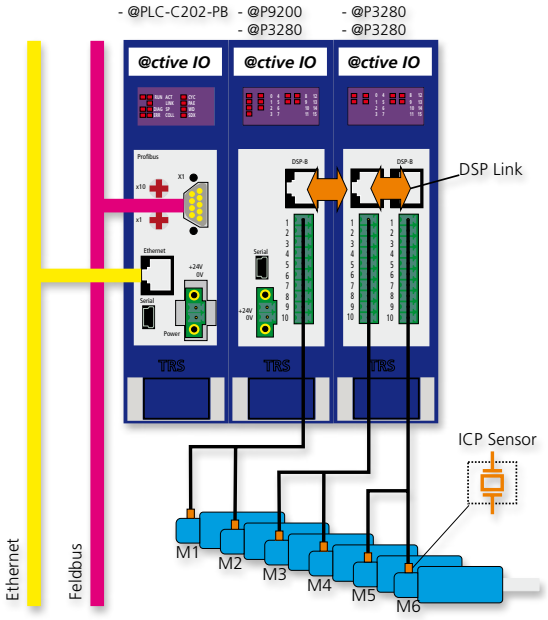
Condition Monitoring

@DIAG

Are you interested in the early detection of deterioration and high availability of your system? Then the @DIAG is exactly the right thing for you.
The technology module of the @ctiveIO series of TRsystems was developed for the dynamic vibration analysis of industrial machines.
You can realize the real time frequency analysis via fast signal processing technology. You can use the advatage of an early-warning system to recognize damages of the roller bearing. Detect plant damages when they emerge.

Properties

_ capture impact sound based signals according to the ICP (Integrated Circuit Piezoelectronic) Standard
_ deterministic capturing of analog values (40 µs, 10 channels)
_ fast mathematics to calculate the analysis data (z.B. FFT)
_ filtering and pre-processing of sensor information (frequency band 1 Hz … 11,5 kHz, variable/processing image at the PLC)



Application area

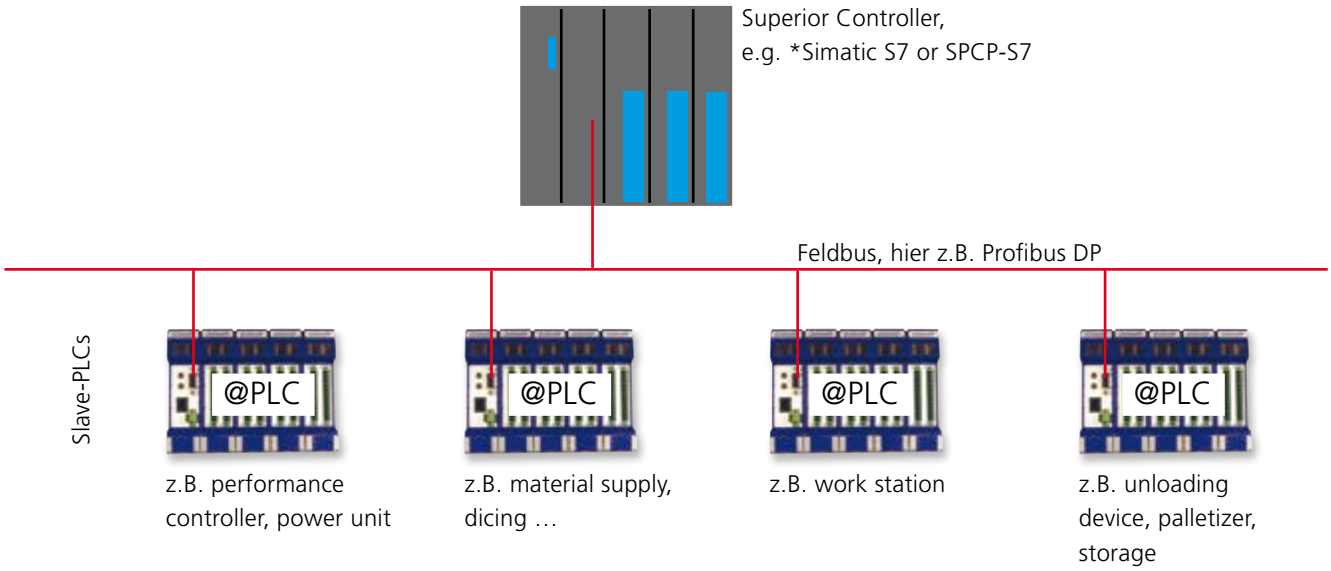
Possible application areas are the diagnosis of rotating machines, pressing and stamping machines or for the general control of roller and radial thrust bearing applications. Repair tasks can be planned and efficiently executed.

Decentralized PLC

@PLC

Modular decentralized allocation of intelligence is key to flexible machine conception as it is required more and more on the market. @PLC is our answer to this challenge. It does appear as a fieldbus node, but the @PLC does hard work in the field at a high-performance level to prepare decentralized signals and to operate independent subprocesses. Therefore, it relieves the master control system and fielbus Machine components can then be built up independently from each other. Another advantage is the standardized programming language IEC-61131 which means continuity throughout your whole plant.

Example



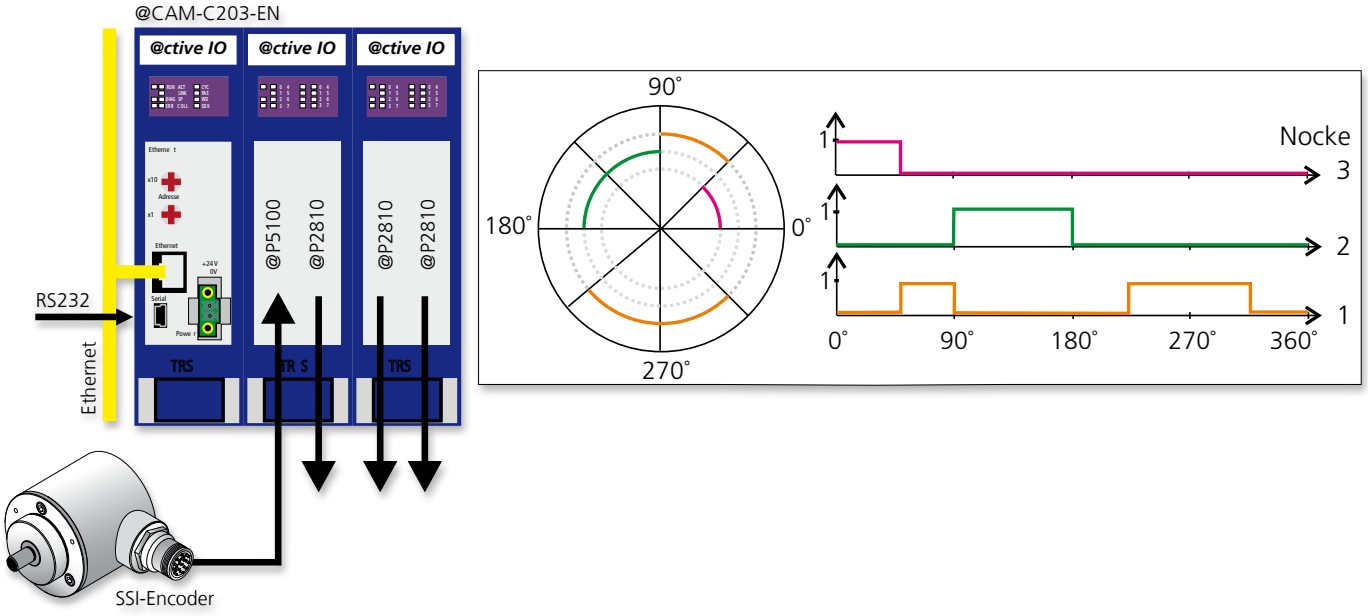
The @PLC acts the same way to a control system as a slave to a fieldbus. Therefore, it does not matter what programming language you use to program your controller. You have all the I/O modules to your disposal because we enter the same hardware like in the traditional fieldbus modules and of course with the full modularity of the @ctiveIO system.

*Simatic S7 is a registred trademark of Siemens AG

Camshaft Gear

@CAM

Fast processes need fast signals. The camshaft gear @CAM is able to achieve high performances due to optimized porgramming.



The @CAM module is a technical software solution to a mechanical camshaft gear. Regardless of whether you are using a distance or positioning measurement system, it simulates up to 255 dynamic cam tracks. There is a total of up to 1024 cams that can be programmed and allocated arbitrarily to the existing 255 cam tracks. For programming, every cam track has a dead time available for increasing and decreasing flanks. Each cam track can be allocated arbitrarily onto 256 outputs. Due to the existing RS232- and Ethernet interfaces, all cams are programmable and the cam images can be shown on other application and visualization programs. With its Ethernet (10 / 100 Mbit) interface, the CAM-C203-EN controller is your connection to Industrial Ethernet. Standard implementation of the module's configuration (TCP/IP settings) is done by the @ctiveIO Toolkit via RS232 and Ethernet interface. If a firmware update is needed, the @CAM module offers the possibility of updating your firmware via FTP (File Transfer Protocol).

Applications – Customer Oriented

@CUST

The TR system always has been the partner when you needed someone with founded experience and to develop components with specialized solutions according to your needs. The @ctiveIO is the optimal platform for many custom-made configurations. Basically, there are three models available:

1. Standard hardware with modified software

Is one of our technology modules close to your solution? Since we have the complete development know-how in our hands we find a way to fit your application. Customized test and standard algorithms, specialized cam programs or special PLC functions are some examples.

2. Our hardware, your software

Would you like to write your own software? We can provide you with the hardware performace of our technology compatible control module. We give you the know-how to control the fast backplane bus. A typical module would be the @C5__ , an industrial PC programmed by our customers themselves.

3. Custom-made hardware

From the specialized I/O modules of the @ctiveIO to complete controller technology made according to your requirements, we offer our service to every manufacturer. Particularly, you benefit from our substantial experience in the areas of fieldbus technology and decentralized allocation of plant intelligence.

Even if our standard program is solving all your tasks, we can give you a hand with logistical issues, especially concerning production. Choose if you would like to configurate the nodes yourself, or if you want us to deliver the finished product with pre-configurated and tested nodes to your own terms.

Pellet stove controller

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