SIMATIC 505
General

Application

Fig. 5/1 SIMATIC 505 programmable controllers

The SIMATIC 505 programmable controllers provide a special combination of open-loop control tasks, closed-loop control tasks and complex mathematical functions for a large variety of applications in process engineering.

Design

Compactness

The SIMATIC 505 programmable controllers have an extremely compact design corresponding to the state-of-the-art of integrated circuits (ASICs). The latest design technology ensures low space requirements with high performance. System costs and space requirements decrease at the same time as system reliability increases.

Intelligent I/O modules

The SIMATIC 505 programmable controllers have different digital, analog and intelligent I/O modules as well as communications processors available. There are digital module versions with 8, 16, 32 inputs/outputs, and relay module versions with 8, 16, 32 outputs. Analog input/output modules acquire signals from thermocouples and RTD inputs. In addition, there are AT-compatible PC modules and different communications processors (for example, with RS 232 interfaces) available.

Distributed control

The SIMATIC 505 programmable controllers let you take a truly distribued approach to your plant control. First of all they are designed to meet the latest IEC safety and reliability standards to withstand the toughest industrial environments so that they can be placed wherever they are needed. Secondly, a powerful, remote I/O capability enables I/O modules and subracks to be placed as far as 1000 m/3280 ft from the controller itself, thus eliminating the need for long, multiple cable runs to remote sensors and actuators.

Design (continued)

Redundant systems

For critical process applications, the SIMATIC 560T/TI565T systems can be combined with the TI505 I/O modules to form a redundant system. The redundant design reduces any possible down time to a minimum.

Hot backup with single-channel I/O design

The hot backup system consists of a redundant configuration of the CPUs.

The active PLC and the standby PLC are each equipped with a hot backup card.

A fiber-optic connection between the active and the standby PLC executes self monitoring and synchronization of the programs up to four times per cycle.

The active PLC updates the standby PLC automatically and hands over control as soon as a serious fault occurs.

The hot backup system requires no additional programming by the user.

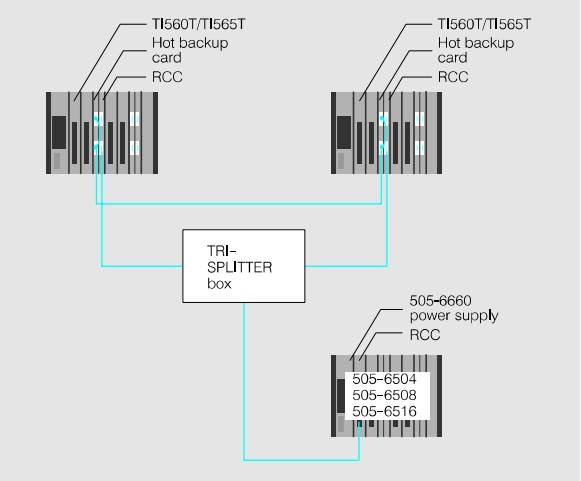

Fig. 5/2 Hot backup with single-channel I/O

It guarantees the integrity of both PLCs even during on-line program edits.

Hot backup with two-channel I/O design

The TI505 I/O system can also operate redundantly.

For this purpose, a special power supply module and the RBC (remote base controller) are installed redundantly (double) in a special redundantly designed mounting rack. The RF-RBC is an intelligent interface between the RCC (remote channel controller) and the redundant mounting rack.

The redundant mounting rack, equipped with 11 slots, contains two power supply modules (110/220 V AC or 24 V DC) and two RBCs. In addition, each redundant mounting rack has two cables so that if one line fails an automatic switch can be made to the other.

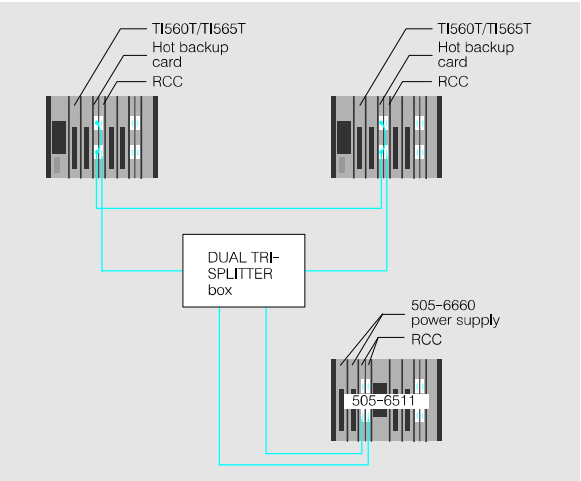

Fig. 5/3 Hot backup with two-channel I/O

In normal mode, one of the redundant RCBs is active and the other is in standby. If an fatal fault occurs in the active RCB, communications are automatically switched to the redundant standby RCB. This takes place within one PLC cycle.

SIMATIC 505
General, Ordering Data

Programming

Ease of use means different things to different people. That's why a choice of different development tools is offered.
The SIMATIC TISOFT package is available for programming the PLC. For those with previous knowledge of process automation, there is SIMATIC APT.

SIMATIC APT uses CASE (computer-aided software engineering) technology which provides for a structured approach to programming while simultaneously enabling mastery of sequential control processes and continuous closed-loop control functions.

APT ensures that the programs are well structured and documented. The data coherence check reduces programming errors to a minimum.

General technical specifications

Safety and reliability	SIMATIC 505 corresponds to the IEC 65A and DIN 41 494 standards for industrial and process control systems.	**Humidity**	In accordance with IEC 68-2-3 Ca. Fault-free operation under environmental conditions up to 95% humidity at 60 °C.
Insulation group	In accordance with IEC 801, Part 2, Paragraph 4. Protection against static electrical discharge to 15 kV.	**Mechanical shock test**	In accordance with IEC 68-2-21 EA test. No detrimental effect in the case of non-repetitive shocks.
Temperature range	In accordance with IEC 68-2-14 NB. Fault-free operation at temperatures fluctuating between 0 to 60 °C.	See Section 1 for further technical specifications	

Ordering data TI525 to TI565

	Order No.
Mounting racks	
for TI505	
4 slots	**PPX:505-6504**
8 slots	**PPX:505-6508**
11 slots, redundant	**PPX:505-6511**
16 slots	**PPX:505-6516**
Power supply units	
1 required per mounting rack	**PPX:505-6660**
2 per redundant mounting rack	**PPX:505-6660-A**
110/220 V AC, single	**PPX:505-6663**
110/220 V AC, single or redundant	
24 V DC, single or redundant	
CPUs	
TI525 Memory 10 KB, 512 digital/128 analog inputs/outputs	**PPX:525-1102**
TI535 Memory 40 KB, 1024 digital/1024 analog inputs/outputs	**PPX:535-1212**
TI545 Memory 192 KB, 2048 digital/1024 analog inputs/outputs, 64 controllers	**PPX:545-1102**
TI545 Memory 96 KB, 1024 digital/1024 analog inputs/outputs, 16 controllers	**PPX:545-1103**

	Order No.
CPUs (continued)	
Firmware upgrade kit	
for TI545-1101 Version 2.1.1	**PPX:2601099-8005**
for TI545-1102 Version 3.1	**PPX:2601099-8006**
TI555 8192 digital/8192 analog inputs/outputs,	
memory 384 KB,	**PPX:555-1101**
memory 1920 KB	**PPX:555-1102**
TI560T (with power supply)	
for twisted-pair cable	
• 110 V AC, RS 485, RCC	**PPX:560T1KM-1101**
• 24 V DC, RS 485, RCC	**PPX:560T1KM-1102**
for coaxial cable connection	
• 110 V AC, RCC	**PPX:560T4KM-1101**
• 24 V DC, RCC	**PPX:560T4KM-1102**
TI565T (with power supply)	
for twisted-pair cable	
• 110 V AC, RS 485, RCC	**PPX:565T1KM-1101**
• 24 V DC, RS 485, RCC	**PPX:565T1KM-1102**
for coaxial cable connection	
• 110 V AC, RCC	**PPX:565T4KM-1101**
• 24 V DC, RCC	**PPX:565T4KM-1102**

SIMATIC 505
Ordering data

Ordering data 525 to 565	Order No.
Spares for TI525 to TI555	
• Connector: Side access (qty 1)	**PPX:2587705-8010**
• Connector: Front access (qty 1)	**PPX:2587705-8011**
• dummy plate (pack of 5)	**PPX:2587705-8003**
• Fuse holder for power supply (pack of 4)	**PPX:2587704-8001**
• Screws for dummy plate (pack of 10)	**PPX:2587705-8001**
• 505 RTD calibration connector	**PPX:2587705-8009**
• EEPROM for 525/535 for 545/555, 128 KB for 555, 256 KB	 **PPX:2587681-8020** **PPX:2587681-8022** **PPX:2587681-8031**
• EPROM for 525/535 for CPU 545/555, 128 KB for 555, 256 KB	 **PPX:2587681-8012** on request **PPX:2587681-8030**
• Backup battery for 525/535/545/650T/656T	**PPX:2587678-8005**
• Programming cable for 545	**PPX:2601094-8001**
• Memory expansion for 545-1101, 256 KB	**PPX:545-1111**
• Relay, 5 A, pack of 5	**PPX:2587704-8002**

Spares for 525 to 555 (continued)	Order No.
Fuses	
• Set, 3 A/125 V, pack of 5, for 505-45xx	**PPX:2587679-8012**
• Set, 3 A/250 V, pack of 5, for 505-48xx	**PPX:2587679-8013**
• Set, 3 A/250 V, pack of 5, for 505-46xx	**PPX:2587679-8014**
• Set, 3 A/250 V, pack of 5, for 505-6660	**PPX:2587679-8015**
Spares for TI560/565	
• 560T digital CPU	**PPX:560-2820**
• 565T special function CPU	**PPX:565-2820**
• 560T/565T power supply module, 110/220 V AC	**PPX:560-2122**
• 560T/565T power supply module, 24 V DC	**PPX:560-2123**
• Remote channel controller (RCC) (FM)	**PPX:560-2126-B**
• Remote channel controller (RCC) (RS 485)	**PPX:560-2127-B**
• Hot backup card	**PPX:560-2128-A**
• Hot backup upgrade kit (2 modules + cable)	**PPX:560-2129-A**
• Memory expansion module 64 K words	**PPX:560-2130**
• Memory expansion module 256 K words	**PPX:560-2136**
• Distributor box for 565T hot backup, tri splitter	**PPX:2587755-8001**
• Fiber- optic cable for 565 HBU	**PPX:2587693-8010**

Ordering data 575	Order No.
575 CPU 832 KB	**PPX:575-2103**
System manual for 575	**PPX:575-8101-4**
575 user manual	**PPX:575-8104-1**
Power supply modules (VME)	
• 115 V AC, 185 watts	**PPX:575-6660**
• 115/230 V AC, 300 watts	**PPX:575-6663**
Interface for expansion unit (RCC) Plug-in card in CPU 575	**PPX:575-2126**
Digital input module (VME) with 32 inputs, 110 V AC	**PPX:575-4232**
Digital output module (VME) with 16 outputs, 110 V AC	**PPX:575-4616**
Digital input/output module (VME) with 16 I/O, 24 V DC	**PPX:575-4366**
Mounting rack (VME) 1.0”	
• with 9 slots	**PPX:575-2124**
• with 14 slots	**PPX:575-2128**
• with 16 slots	**PPX:575-2130**
Coprocessor (optional, Motorola 68882)	**PPX:2589739-8010**

Accessories	Order No.
• Connecting cable with RS232 interface (for connecting programming devices)	**PPX:VPU200-3605**
• dummy plate 1” for 575-2124 (9 slots)	**PPX:2589739-8003**
• dummy plate 0.2” for 575-2124 (9 slots) or for 575-2128 (14 slots)	**PPX:2589739-8004**
• dummy plate 0.4” for 575-2124 (9 slots) or for 575-2128 (14 slots)	**PPX:2589739-8005**
• dummy plate 0.6” for 575-2130 (16 slots)	**PPX:2589739-8014**
• dummy plate 0.8” for 575-2130 (16 slots)	**PPX:2589739-8015**
• Mounting rail for 575-2124 (9 slots)	**PPX:2589739-8001**
• Mounting rail for 575-2128 (14 slots)	**PPX:2589739-8002**
• Mounting rail for 575-2130 (16 slots)	**PPX:2589739-8016**
• Ventilator set for 575-2130, 115/230 V AC	**PPX:575-2131**
• J2 backplane bus connector for power supply, 1 slot for all devices (optional)	**PPX:2589739-8012**
• Daisy chain bridging connector for 575-2124 or for 575-2128	**PPX:2589739-8011**
• Spare I/O connector	**PPX:2589739-8007**
• Spare battery, 4 V, 5 Ah	**PPX:2589739-8006**
• Spare fuse for 575-6660, 8 A	**PPX:2589739-8008**

5