

Akzent-5000 Welding Controller

Short-Form Catalogue

Your application:

- Single Spot or Serial Spot Welding (2-Phase 50/60Hz, 3-Phase DC or medium frequency 1000 Hz)
- Seam Welding (2-Phase 50/60Hz or 3-Phase DC with current program)
- Projection Welding (2-Phase 50/60Hz, 3-Phase DC or medium frequency 1000 Hz)
- Other special welding applications (Multiple spot, wire netting, cascade applications, flash welding, etc.)

The process conditions might be unstable (surface quality, material strength etc). An integrated adaptive process control and process monitoring system therefore is mandatory.

Your requirements:

The weld results must be of flawless quality even on coated or soiled material. Faulty material must be sorted out prior to welding. The welding control system must include data collection facilities monitoring the welding process..

Our answer:

Akzent 5000. Our all-purpose welding control concept for almost all welding tasks in resistance welding. It has been designed for complex welding applications requiring sophisticated quality and reliability.



The Concept

The Akzent-5000 is a multifunctional welding control system for high quality resistance welding applications.

The main features are:

- QSP Quality assurance controller for surveillance, disturbance detection and adaptive control
- Programmable measurement inputs for current, voltage, force and path sensors
- 3 programmable analog output channels e.g. to control proportional valves
- P2/P3 functionality
- Field bus interface e.g. profibus, profinet or interbus
- CAN-bus for the internal communication of the system components
- ARC-Net interface for connection with the PC based process control and documentation system SPV-5000
- 512 programmes (programme selection via display, digital inputs or field bus)
- Operating system on memory card
- Alternatively 4-line full text display or 5,7" graphical LCD touch screen
- Thyristor power modules from 100 A to 3100 A
- Medium frequency inverter from 400 A to 1900 A

The modular concept makes it possible to configure a welding control system for nearly every resistance welding application. When you think there is no way, with the Akzent 5000 you will find a way.

The complete system Akzent-5000 consists essentially of three components

- System controller SC-5000
- Operating terminal T-5000 or T-9000 or SPV-5000
- Power module (with thyristor TS-5000 or medium frequency inverter MFI-1)

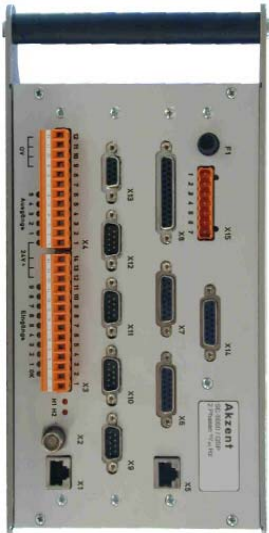
The schematic overview about the system is shown at the end of this document. The central unit is the SC 5000 system controller. Each controller can manage up to 12 power modules of type TS-5/x (Thyristor controlled 50/60 Hz) or one MFI-1 (Medium frequency inverter).

The system controller SC 5000 is operated by the terminal T-5000 or T-9000. Terminal and system controller are connected via CAN-Bus interface. Instead of the terminal or in addition to it the system controller can be operated via the PC software SPV 5000. It is a very powerful software tool specially designed for the Akzent-5000 welding controller system. For more details please have a look into the short-catalogue information of the SPV 5000.

System Controller SC-5000

The heart of the system is the system controller SC-5000. The controller is connected via CAN-Bus with the operating terminal. Alternatively the system controller can be operated via ARC-net interface by a PC with SPV-5000 software.

The SC-5000 controller provides the possibility to define different access rights for different users and user levels. A personal PIN-code can be assigned to every authorized user. Depending on his access rights the user can change only predefined settings and parameters. This feature gives the supervisor the opportunity, to minimize the possibility of maladjustments by the worker.



All input and output cables are connected by Sub-D plug connectors. Status LED's indicates witch input or output channels are actually active.

The centralised connection of all input and output cables to the system controller offers a high flexibility for the installation of the operating terminal T-5000.

All welding and configuration parameters are stored on an integrated PCMCIA memory card. Extensions of functionality can be done by changing the PCMCIA memory card on condition that no hardware changes are necessary.

For different work pieces or multi-spot welding applications different welding programs can be necessary. The SC-5000 controller can manage up to 512 different welding programs. An integrated sequence control unit offers the possibility to program different welding program sequences.

As QSP-type, the system controller SC-5000/QSP is equipped with a 5 channel measuring card. The five measuring input channels can be individually programmed for each welding program. By this way for example the current distribution of a simultaneous projection welding of up to 4 welding nuts can be measured and surveyed in one cycle. This is a strong benefit for process reliability, saving costs an cycle time.

The SC-5000/QSP controller provides different control modes for different welding applications and potential malfunctions. Often for the operator it is not easy to decide which control mode is the right one to achieve an optimal welding result. The SC-5000/QSP has an integrated malfunction detection. The SC-5000/QSP controller chooses automatically the optimal control mode for the actual welding application. Stepper function, automatic start detection, supervision of voltage, current, pressure, final electrode force and path measurement are matter of courses for the SC-5000/QSP controller.

Terminal T-5000

The terminal T-5000 is the standard operating interface for the complete system. It is connected via CAN-Bus to the system controller SC-5000.



All welding parameters, configuration settings and general process parameters can be adjusted by the terminal. There for the terminal is equipped with a numerical keyboard and several function keys.

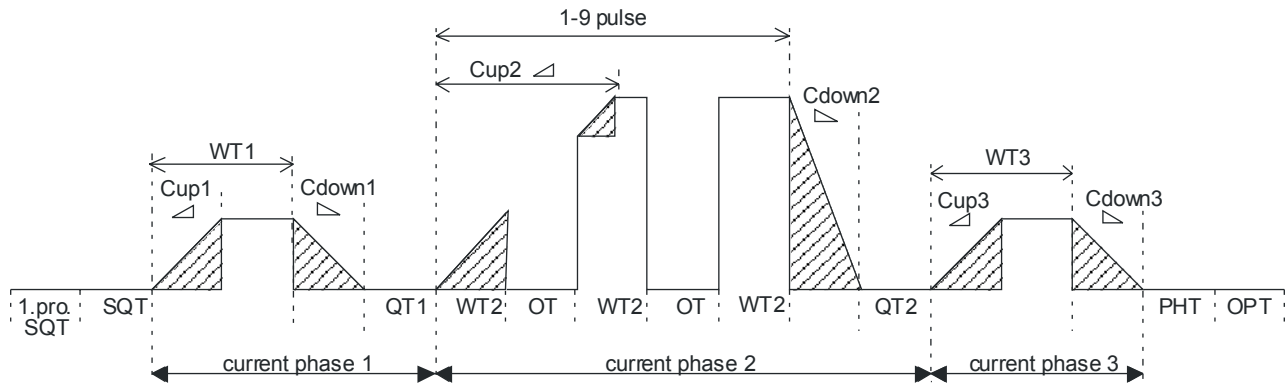
The other way round information's about malfunctions, process indicators and interrupts are transmitted online from the system controller to the terminal.

A 4-line full text display preserves the operator all relevant information's about parameter settings and process data. Single functions with logical interactions are linked together in so called tables. Every table has a significant number. The operator can jump directly to a specific table by typing the related number on the keyboard.

For simple export or print out parameter settings the terminal is equipped with a RS-232 interface.

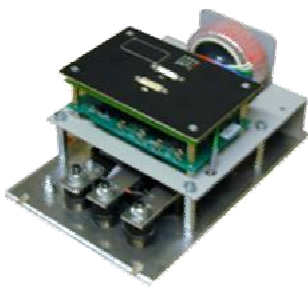
The Terminal T-9000 and the SPV-5000 are first choice, if intensive tools for process visualisation and/or process analysis are required (look at separate short-form-catalog for T-9000 and SPV-500).

Welding cycle times



Thyristor modules TS-5000

There are open and closed types of thyristor power modules with water and air cooling available for the Akzent-5000 system.



TS-5/C (open)

Water cooling: 250A - 1200A
Air cooling: 50A - 900A



TS-5/C (with cover)

Water cooling: 250A - 1200A
Air cooling: 50A - 900A



TS-5/E (hand protected)

Water cooling: 1400A - 3100A

The connectors for cooling water are placed on the right side or backside of the case. The electrical connectors are placed on the bottom and on the front of the case, clearly separated from the cooling water connectors.

Status LED's show the ignition pulse and the phase relationship

Up to 12 thyristor power modules can be connected to one SC-5000 controller.

Medium Frequency Inverters MFI-1

The system controller SC-5000 works together with 50/60Hz thyristor power modules type TS-5000 or medium frequency inverters type MFI-1.

For more details please have a look at the short-form-catalog for the medium frequency inverters.

Technical data

Size (WxHxD)mm:	T-5000	182,0 x 295 x 55,0
	T-5000/1	182,0 x 230 x 55,0
	T-5000/3	19"(483,0) x 133,0 x 56,0
	TS-5000/C	196 x 295 x 133
	TS-5000/E	190 x 310 x 177
Environmental temperature:	0°C...45°C	
Input connections:	19 digital inputs (free programmable)	
Measuring input channels:	As QSP-type 5 free programmable input channels (current, voltage, pressure/force, or path)	
Output connections:	13 digital outputs (1x24V, 2xRelais) the functionality is programmable for each output	
Analog output channels:	3 analog output channels - Variable output signal 0 - 10V/max.10mA - provision of +24V for solenoid valve	
Field Bus:	optional Profibus, Interbus o.e.	
Internal Bus:	CAN-Bus	
Additional Interfaces:	- Arc Net (PC-Network) - RS-232	
50 / 60 Hz:	Automatic 50 / 60Hz mains frequency detection, automatic phase detection	
Mains compensation:	Compensation of 15% to -15% mains voltage fluctuation	
Inverter:	Connector for HIE MFI-1 medium frequency inverter	
Programmes:	512 welding programmes	
Sequence control:	up to 20 time sequences (max. 10 current times) - up to 12 programmes can be set in sequence. This feature is optional - The assignment to the thyristors and welding transformers is programmable	
3-power seam welding:	1 current phase with 3 different currents levels	
Cascade:	Up to 12 transformers can be connected to one SC-5000 - electrical cascade - mechanical cascade with single starts for each transformer	
3-Phase:	Automatic detection of the phases	

Schematic overview

