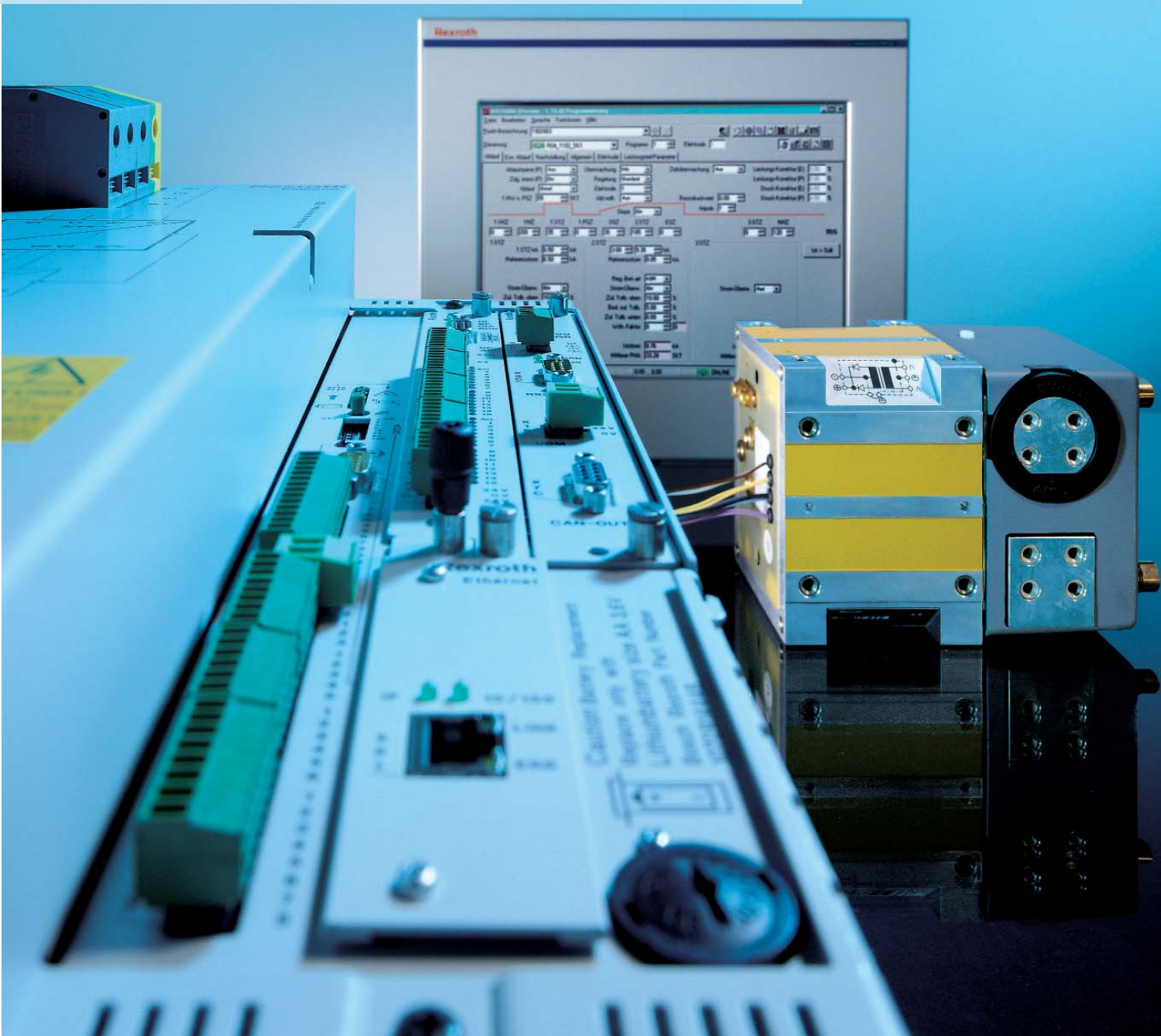


Rexroth PS 6000

The integrated system for the highest quality in resistance welding

Safe, flexible and economical



Rexroth PS 6000 – powerful in medium frequency and AC applications

Used in countless applications, welding systems made by the European market leader Rexroth, are the first choice of satisfied car manufacturers, tier one suppliers, and welding equipment manufacturers worldwide. Our new PS 6000 system for applications up to 360 kA is the sequel to this success story.

The benefits for you: increased process reliability, reduced rework costs and consistent spot weld quality – even with the most demanding material combinations.

The modular concept behind the PS 6000 integrates fully compatible and coordinated components in one particularly cost-effective system:

- Intelligent inverter
- High-dynamic electric servo cylinder
- Precision pneumatic servo cylinder
- Powerful medium frequency transformers

The flexible control system, adaptive control modes and highly-dynamic servo drives allow you to break into new innovative applications. Standard functions, such as constant-current regulation, pressure regulation, electrode management and tip dressing, ensure the weld quality lives up to your demands.

Benefits with the power to convince

- High reliability achieved through the use of tried and tested technology
- Maximum flexibility in the I/O and network area thanks to plug-in cards such as PROFIBUS, PROFINet, DeviceNet, INTERBUS and Ethernet
- 100% quality control and documentation of spot welds derived from the latest ultrasonic technology
- Expulsion reduction achieved by adaptive control of the welding process
- Electric or pneumatic servo gun drives integrated into the compact weld control
- Windows-based user interface for all process functions with SQL database
- Innovative functions for process monitoring and component protection
- Flexibility for retrofitting function and process modules



Rexroth PS 6000 – the powerful system solution for the automotive industry and for suppliers and manufacturers of welding systems



Intelligent inverter

Modular medium frequency resistance welding control system with integrated servo gun control (servo electric or servo pneumatic) and PSQ 6000 process module. Upgrades are possible with plug-in I/O modules for all commonly-used networks.



Highly-dynamic electric servo cylinder

Our innovative drive with an integrated force sensor allows for opening and closing the welding guns with position and force accurately with user definable settings. The regulated and safe operation improves process quality.



Precision pneumatic servo cylinder

The optimum combination of intelligent electronics, along with the force and cost of pneumatics. The precision control ensures high speed with “soft touch” positioning, free position control and maximum repeat and “follow-up” accuracy of the electrode force.



Powerful medium frequency transformers

Medium frequency transformers combining high power density with compact dimensions and low weight. Included features: temperature monitoring, secondary current sensor and voltage tap.

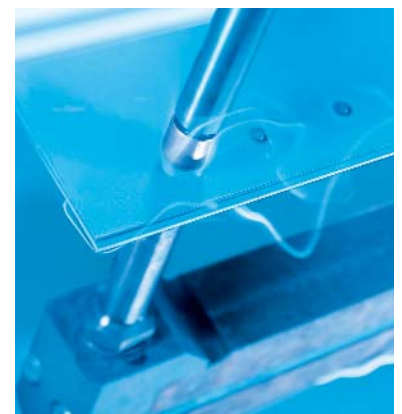
System components



Development/Engineering



System solution



Rexroth PSI 6000 – the right inverter for any application

The intelligent PSI 6000 inverters have been specifically designed for spot, projection and resistance seam welding. The extensive control functions guarantee high process reliability. The PSI 6000 family offers a variety of additional functions for welding high-strength metals, aluminium and three-member joints.

The 1,000 Hz medium frequency/ DC technology has proven its economic efficiency in many applications compared to other processes:

- Weld quality improved by more dynamic current control than can be achieved with mains frequency
- Weld ability of many materials increased by more intensive energy supply
- Expulsion reduced by decreased welding current and/or current time
- Electrode life lengthened thanks to lower thermal and mechanical load on the electrode caps
- Smaller and lighter transformers for integration into the weld gun



PSI 6100/6300 inverter

The international benchmark for robotic applications up to 36 kA

- Air-cooled
- PSQ 6000 quality control board (optional)
- Connection to PSG 6130 MF transformer

		PSI 6100 L1/L2 ¹⁾	PSI 6100 W1 ¹⁾	PSI 6200 W1 ¹⁾	PSI 6300 L1/L2 ¹⁾	PSI 6300 W1 ¹⁾	PSI 6500 W1 ¹⁾
Mains rated current (max. continuous thermal current)	A	110	110	220	110	110	660
Max. output current (continuous primary current)	A	400	400	1200	800	800	2400
Max. transformer-dependent welding current	kA	20	20	54	36	36	120
Recommended operating current range	kA	3 - 20	3 - 20	9 - 54	6 - 36	6 - 36	9 - 120
Conductor cross-section	mm ²	35	35	95	35	35	2 to 4 cables, each 120 mm ²
Weight	kg	21	25	56	21	25	70 mech. separable

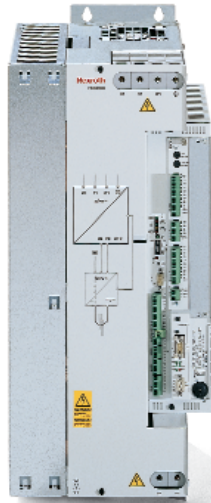
¹⁾ Mains voltage L1/W1: 400 V to 480 V, 50/60 Hz
L2: 480 V to 690 V, 50/60 Hz



PSI 63 S inverter

Inverter up to 36 kA with integrated servo gun control

- Air-cooled
- PSQ 6000 quality control board (optional)
- Connection to PSG 6130 MF transformer
- UL certified



PSI 6200 inverter

Inverter for steel and aluminium applications and resistance seam welding up to 54 kA

- Water-cooled
- PSQ 6000 quality control board (optional)
- Connection to PSG 6130 MF transformer



PSI 6500 inverter

Inverter for resistance seam and projection welding applications up to 120 kA

- Water-cooled
- Master-slave functions
- Parallel connection of max. 3 inverters for currents of up to 360 kA



PSI 6000 series – flexible in terms of plug-in I/O, fieldbus, function and process modules

Rexroth PSQ 6000 – for maximum quality in spot welding

The PSQ 6000 control board with the unique quality monitoring system will ensure maximum process reliability on your production line by means of intelligent ultrasonic pulse or ultrasonic control. At the same time you will be able to monitor the spot weld online. This process is supported by documentation, logging and statistical process control via the BOS 6000 user interface.



PSQ 6000 control board – for quality in spot welding

For process assurance Rexroth offers the option of retrofitting the PSQ 6000 control board which can be used for current/voltage and ultrasonic control. It is part of the PSQ 6000 quality assurance system which controls, monitors and logs the welding process.

Integrated ultrasonic control and testing

Integrated in the process, the ultrasonic measuring system monitors the quality of the spot welds during the actual welding process. Ultrasonic pulses are used to control the size of the molten weld nugget, and to calculate and display the spot diameter.

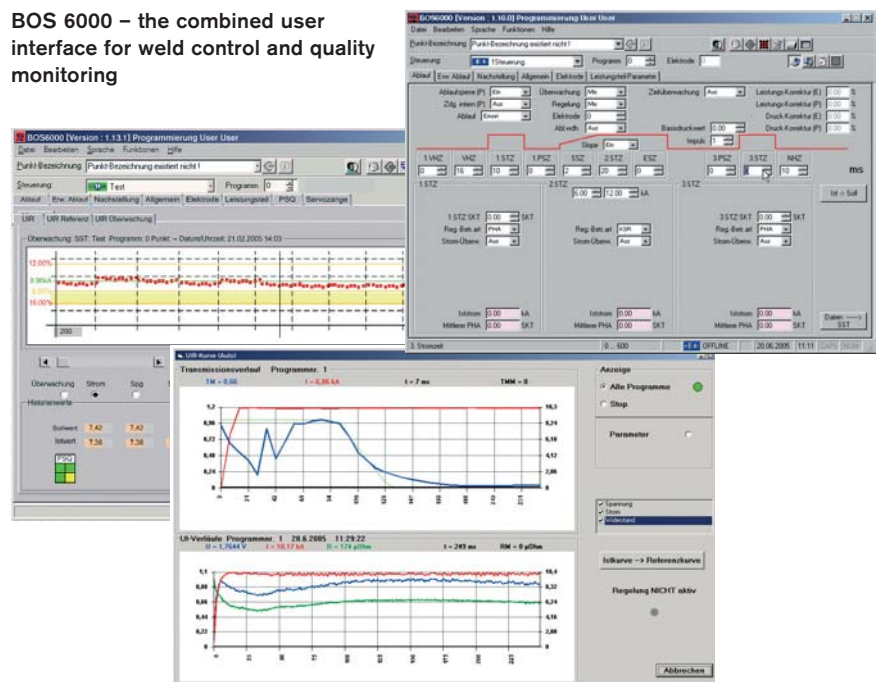
Adaptive ultrasonic pulse control

For demanding material and metal combinations Rexroth offers adaptive current/voltage control with monitoring functions for pass/fail assessments.

Combined ultrasonic pulse control and ultrasonic testing

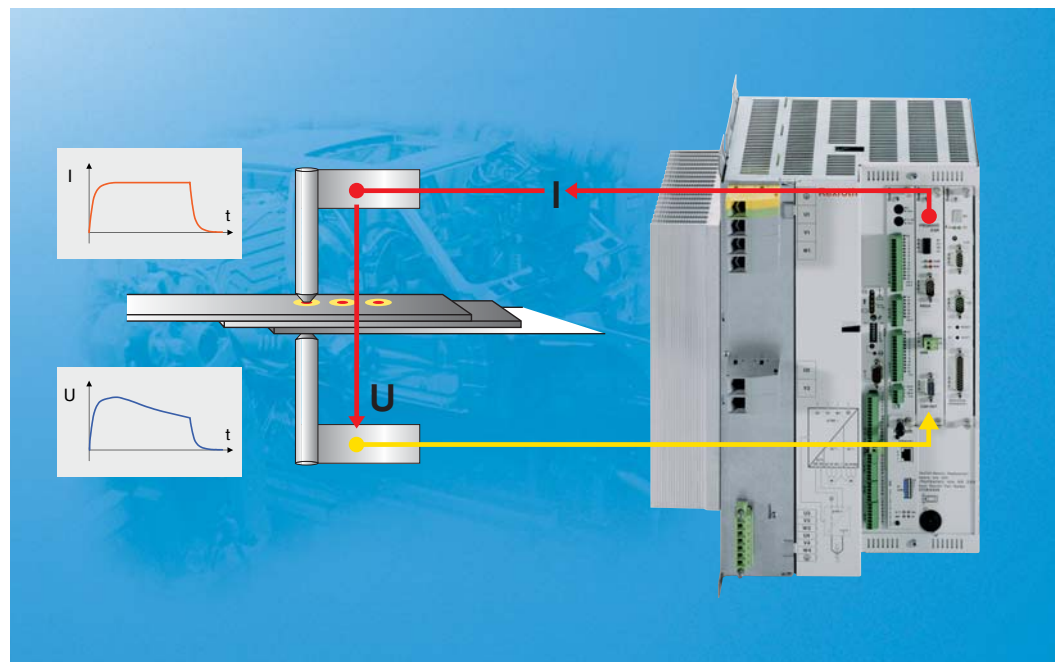
This allows accurate inspection of the molten state of the spot welds and includes online display of the ultrasonic transmission variations concurrent with current, voltage and resistance characteristics in one diagram.

BOS 6000 – the combined user interface for weld control and quality monitoring



Adaptive current/voltage control for the highest spot weld quality

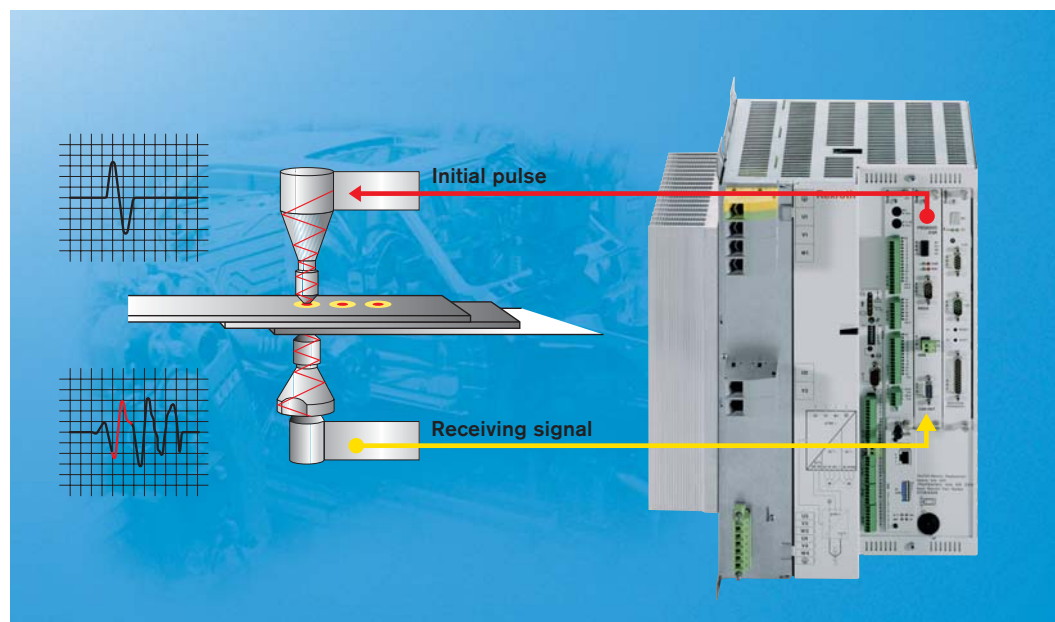
The adaptive current/voltage control mode gives you added flexibility for future requirements in the welding process. By measuring current and voltage, the course of resistance and energy can also be recorded, controlled and accurately evaluated during welding. The adaptive control algorithm ensures constant weld quality and reduced expulsion. Expensive rework is therefore no longer required.



Adaptive current/voltage control – consistent weld quality and reduced expulsion

Ultrasonic control for constant weld spot diameter

The ultrasonic measuring and monitoring system ensures the quality of the spot welds during the actual welding process. Being based on an independent measurement, the advantage of the ultrasonic transmission curve is its reliability in displaying and documenting the weld spot diameter. The destructive testing of spot welds with hammer and chisel can be omitted. The ultrasonic system comprises the XQR control board, UDM signal processor and ultrasonic sensors.



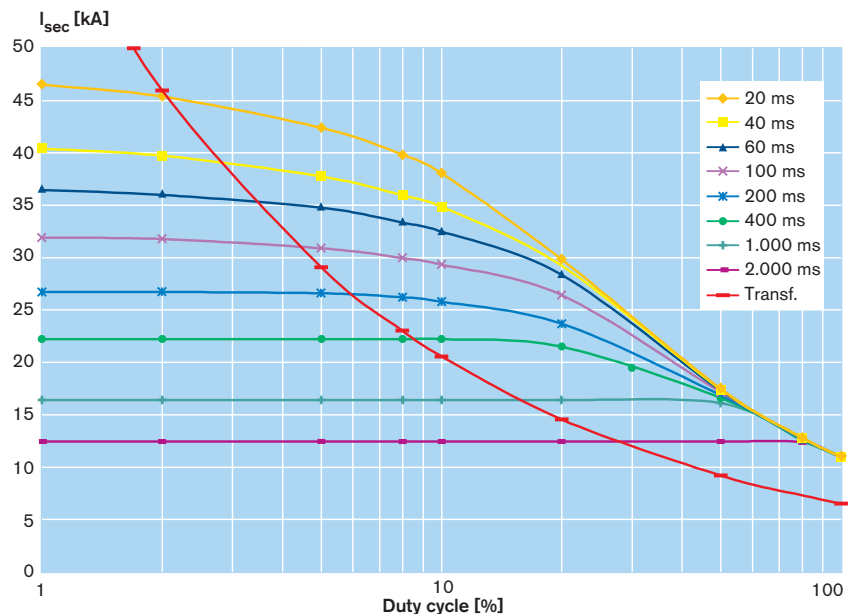
Ultrasonic control – quality assured during the actual welding process

Rexroth PSG 6000 – compact MF transformer series

The certified PSG 6000 transformers are an additional asset to our successful PSI 6000 inverter system. Precisely coordinated and perfectly compatible, these system components facilitate optimum power transfer and additional monitoring functions between the inverter and transformer, resulting in greater profitability and enhanced precision in welding.



The new Rexroth PSG 6130 MF transformers in the PSG 6000 series are optimized for greater power and operating efficiency in resistance welding – all in a particularly compact package.

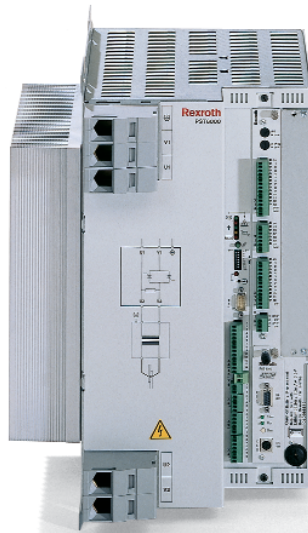


PSG 6130 transformer		
Output	P (kVA at 20% duty cycle)	130
Nominal DC voltage	U_{sec} (V)	9
Continuous on-state current	I_{sec} (kA)	6.5
Cooling water flow	\dot{m} (l/min)	8
Dimensions	W x H x D (mm)	160 x 127 x 262
Mass	m (kg)	16

Combination		Nominal DC voltage	Secondary current	
Inverter	Transformer	U_{sec} (V)	$I_{const.}$ (kA)	I_{max} (kA)
PSI 6100	PSG 3075	8.4	4.2	18
	PSG 6130	9.0	6.5	20
PSI 6300	2 x PSG 3075	8.4	6.5	36
	PSG 6130	9.0	6.5	36
PSI 6200	2 x PSG 6130	9.0	13.0	66
	PSG 3200	13.0	6.5	40
PSI 6500	6 x PSG 6130	9.0	36.5	132
	3 x PSG 3200	13.0	19.5	91

Rexroth PST 6000 – cost-effective AC series for standard applications

Ideal for standard applications – the PST 6000 AC series developed by Rexroth. In mechanical terms, these AC control systems are identical to those of the PSI 6300/6100 series of inverters. This gives you the option of converting your system at a later date from AC to medium frequency without too much additional outlay. Naturally, these control systems offer you the same flexibility in the I/O area and all the control functions of the entire PS 6000 system.



The AC control systems are designed for applications up to 250 kVA

- Air-cooled
- Optimum weld result by means of primary or secondary current control
- Competitive solution for standard applications



PST 6000 – plug-in I/O and fieldbus cards bring flexibility



		PST 6100L	PST 6250L
Mains voltage		400 V to 600 V, 50/60 Hz	
Mains rated current, max. continuous thermal current	A	130	200
Conductor cross-section	mm ²	50	95
Weight	kg	12.5	13

Rexroth BOS 6000 – operation and observation to perfection

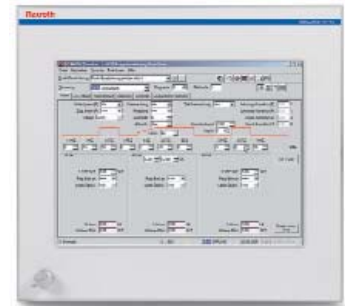
The BOS 6000 user interface is the future-proof concept for particularly user-friendly operation and monitoring, running in the modern 32-bit Windows environment with integrated SQL database functionality. The BOS 6000 allows joint operation of the weld control system, process module and servo gun control in one standard interface.

BT 6 – the compact operator terminal

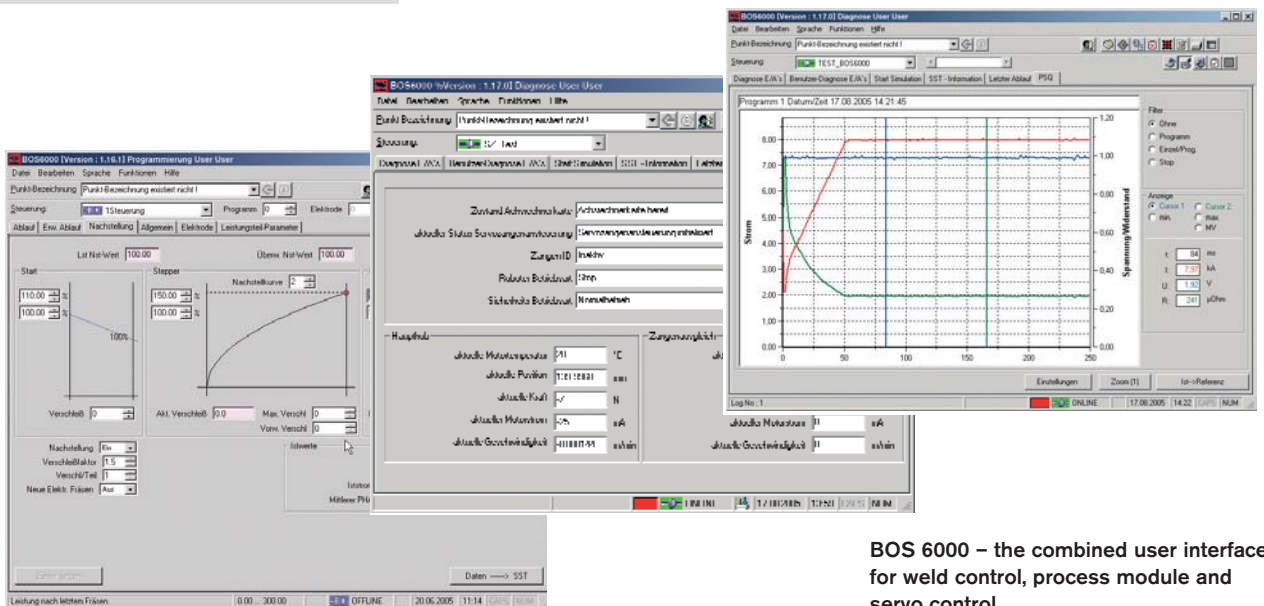


Given its dimensions, the space-saving BT 6 control and diagnostic unit is ideal for installation in control cabinet doors or operator consoles. For flexible use on site we can also supply this terminal as a handheld programming unit.

IndraControl VPP 40 – the robust industrial PC



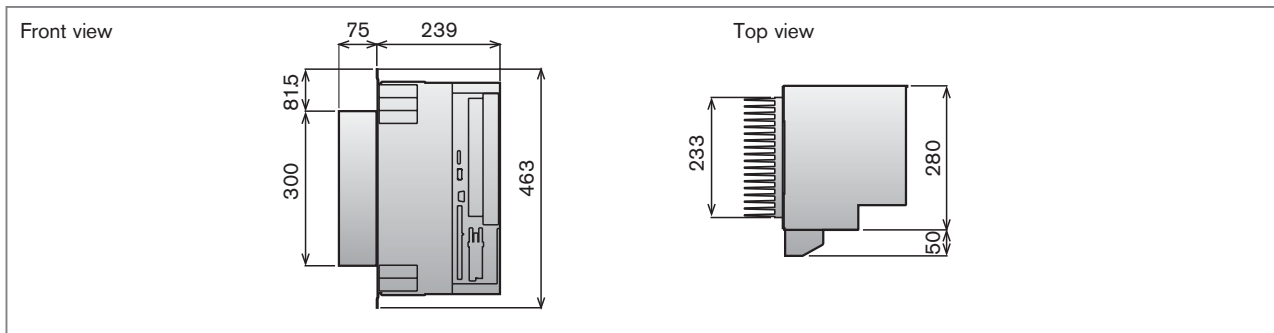
The VPP 40 industrial PC is the complete solution for control, operation and visualization. It is specifically designed for use as a cellular or wired PC and can be integrated inexpensively in control cabinets. Depending on the operating requirements, this PC can be supplied with a touch screen or keys.



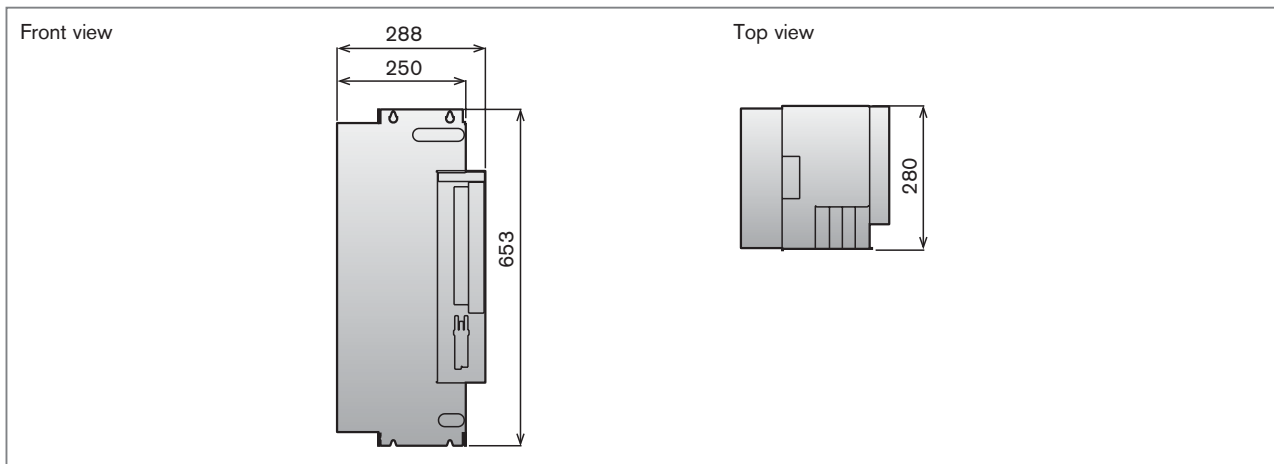
BOS 6000 – the combined user interface for weld control, process module and servo control

PS 6000 – maximum power in a compact design

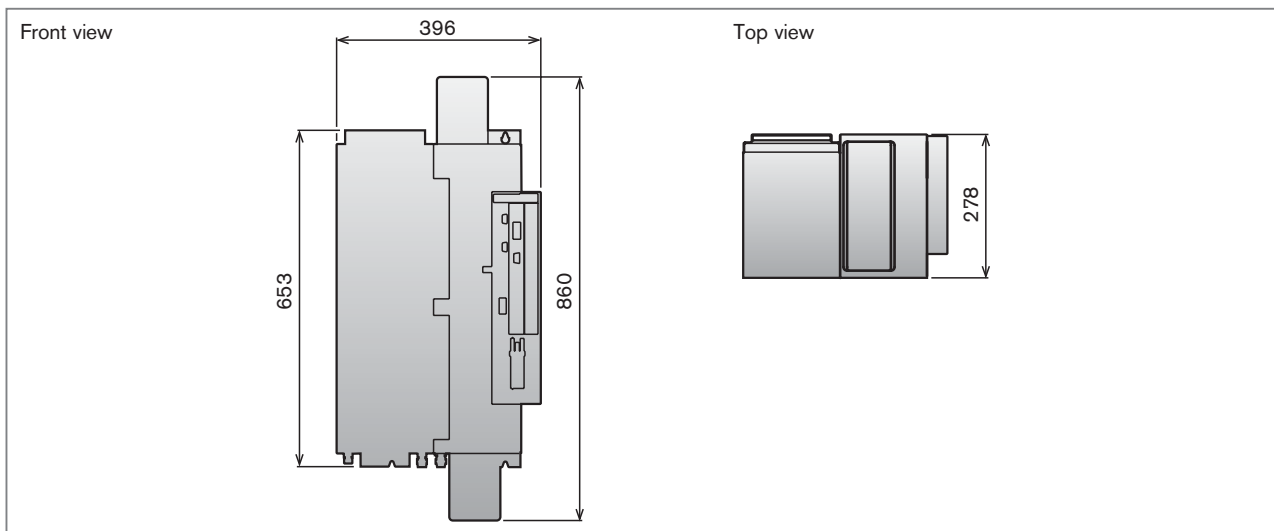
PSI 6100/6300 and PST 6000



PSI 6200



PSI 6500



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