Product data sheet

Control unit DAI-1300

Areas Of Application

The inverter **DAI-1300** is an extremely compact and lightweight high performance tool for stud-welding process drawn arc and short-cycle. Through its strong performance and its extremely stable arc, the machine ensures high process reliability in all welding applications.

Easy to use with a multi-functional four-inch display screen and different saving of special user-defined welding programs allows the inverter for maximum operator comfort. The inverter is especially designed in mobile use on construction sites with easy handling and high reliability.

Technical features

- Extremely good welding-quality: Process reliability through precise and extremely fast constant current regulation, characterized particularly high process reliability in all welding tasks;
- Monitoring and rapid control of all parameters and functions in the welding circuit by high-performance microprocessor;
- Compact design with high power reserves;
- Wide range power supply for using with other voltages (320V AC ... 495 V AC 50 / 60Hz), also for the operation with generators, for example, suitable;
- Sophisticated cooling concept, therefore very high clock sequences possible (ideally suited for automation);
- Parameter setting at an upstream CNC control device possible;
- STOP function for all fault messages (internal or process-related), automatic interruption of the welding operation in fully automatic or semi-mechanized operation;
- State of the art HMI (Human-Machine-Interface): Simple Dialog operator interface with menu structure and single-button operation and display of all relevant parameters for the operator on a large four-inch display;
- Library Function: Permanently stored standard welding programs and additional variable, custom welding programs can be stored;
- Special functions for complex welding tasks;
- Lightweight: Ideal for portable use on construction sites;
- Low power consumption with very high efficiency: high energy efficiency and therefore better environmental compatibility;
- Thermostatically controlled fan.

Optional features:

- Intelligent multi-station technology: operation of up to four manual and / or automatic welding guns in connection with our new **Switchbox DA - 4** possible;
- In the multi-unit operation automatic detection of the respective welding gun by contact message and automatically switching to the respective settings menu on the inverter (user defined parameters can be stored);
- Parallel connection of up to three power units á 1000A (3000A max.);
- Simultaneous operation of up to four automatic welding heads in conjunction with our CNC technology possible;
- Integrated process data monitoring and evaluation of all electrical and mechanical welding parameters;
- USB interface for transmission of process data to an external PC / laptop or similar.

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Control unit DAI-1300

Specifications

Welding area (max. welding diameter)	M3 – M16 (RD), Ø2mm – 13mm, expandable with parallel connection up to Ø25mm / RD M30
Weldable material	carbon and stainless steel, aluminium-alloy
Welding application	Drawn-Arc (with ceramics or protective gas), Short-cycle
Welding current I(A)	100A – 1000A, infinitely variable, expandable up to 2000A and 3000A in parallel connection
Welding time t(ms)	5 – 1000ms (1500ms), infinitely variable
Welding guns connections	controlled separately of 4x welding guns connected while using the **Switchbox DA-4**
Applicable welding guns / welding heads	GAP / GAP-M, DA-10 / DA-10M, DA-12 / DA-12M, DA-19M, ATP-8 / ATP-8M*[1], KAH-100D*[2]; Rapidor QF*[2] **Optionally expandable on parallel connection to DA-22M and DA-25M** ***1: Automatic welding gun only in conjunction with optional automatic module** ***2: Automatic welding head for CNC and automatic applications**
fault diagnosis	Phase failure Over temperature Defective solenoid and / or control cable
Process control system (optional)	Monitoring and evaluation of welding current and arc voltage as internal energy content on the welding time with setting the upper and lower action limits. Monitoring and evaluation*[3] of data of an electromechanical measuring system (stud overlap, lift, depth of immersion, piston velocity with defining the upper and lower action limits. ***3: Evaluation only in conjunction with optional process control**
Interfaces (optional)	**USB-B:** Optional to transfer the data from the process control system to a computer **CNC-Interface:** Optional for transfer / exchange of control signals to a superordinate CNC control system in fully automatic mode.
Power supply U (V), wide range	320-495V – 50/60Hz – 32A (slow fuse)
Power connector	CEE 32A (with parallel connection each device)
Type of cooling	F (thermostatically controlled fan)
Protection class	I (basic insulation)
Degree of protection	IP 23
Dimensions (Length x Width x High)	720mm x 300mm x 395mm
Weight	30kg

Technical data parallel connections (also, pls. follow the above information)

Parallel connection	Welding current/-time	Welding diameter
2 x DAI-1300	2000A / 1000ms (1500ms)	Max. Ø 22mm
3 x DAI-1300	3000A / 1000ms (1500ms)	Max. Ø 25mm

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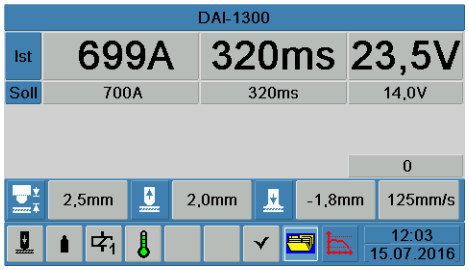
Control unit DAI-300

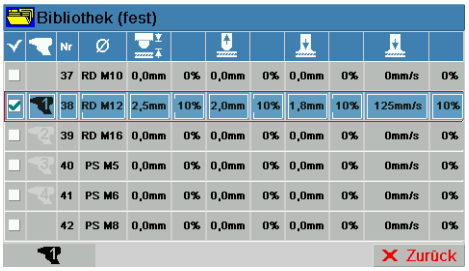
Digital process control system

The optionally available **digital process control** consists of **process data acquisition** and **process data storage**. It documents **welding current, welding time** and **arc voltage**. The energy content in joules is calculated and recorded either on the basis of firmly determined firing voltage values or as a result of a measurement-technical detection (eg. at the welding head) and constantly compared with the results from reference welds.

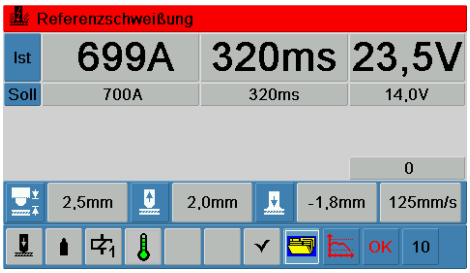
In addition to the recording of the electrical parameters, the mechanical parameters for **stud-overlap, lift measure, immersion and piston velocity** can be measured and read out by means of the optional welding guns with integrated electromechanical position measuring system.



- Measurement of the way of stud (stud overlap, lift measure, depth of immersion und velocity of the piston)
- Display of the values by means of clear warning symbols in the display and recording in the ring memory and process data memory



- Monitoring the welding process
- Constant comparison of nominal and actual values with preset intervention limits (in percent)
- Indication of the impermissible deviations by means of clear warning symbols in the display and recording in the ring memory and process data memory



- Simple referencing, that means training of the system with using of min. 10 reference welds or more
- Actuation of the "OK button" only after perfect optical and / or mechanical evaluation of the respective individual welds

Advantages:

- Easy and comfortable adjustment and monitoring of the lifting measure as well as stud -overlap directly on the display;

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- The complex manual conventional measuring is no longer needed;
- In conjunction with the digital process control, constant comparison of actual and preset setpoints with warning or blocking of the power unit.

Technical data welding-guns

As follow all welding guns with and without a position measuring system, which can be used with the **DAI-1300** in its performance class. The **welding-guns** with **integrated position measuring system** enable simple adjustment and correction of the **stud overlap, lift adjustment, depth of immersion and piston speed** by simple reading on the inverter. **These parameters are immediately displayed when the gun is connected to the inverter without having activated the electrical process control.**
Together with the optional electrical process control, these data are stored for monitoring the quality.

Type of welding gun	**GAP/ GAP-M*1**	**DA-10 / DA-10M*1**	**DA-12 / DA-12M*1**	**DA-19M*1**	**ATP-8*2 / ATP-8M*1 and 2**
Welding process	Short-cycle welding process (with or without protection gas)		Drawn arc process with ceramic or gas		All stud-welding processes, without ceramic welding
Welding area	Carbon and stainless steel and not treatable aluminium alloys*3				
Welding range	metrics M3 – M10(Ø11mm*3)		metrics M3 – M12(Ø12mm*3)	metrics M8 – M20(Ø16mm*3)	metrics M3 – M8
Piston guide	Linear ball guide	Slide bearing guide (optional: linaer ball guide)	Linear ball guide	Double linear ball guide	Slide bearing guide
Position measuring system	**Only for welding-guns from M-series: For position measuring of stud-overlap, lift, depth of immersion and piston velocity**				
Lift adjustment	1,0...4,0mm, infinitely adjustable via scale at welding gun	Constant lift 1,5mm	Constant Lift 2,0mm	2,0mm...6mm, in steps á 0,5mm (lift read and adjustable via scale and in case of connected position measuring system monitored at the display of DAI-1300)	1,0...6,0mm, infinitely adjustable
Vertical positioning	Manually, without circular level			Vertical adjustment with circular level (welding position PA, circular level integrated in the end cap)	Manually, without circular level
Length compensation		Ball carrier system			
Piston damper	./.			Hydraulics damper (continiously adjustable)	./.
Welding cable	3m, 25mm²	5m, 35mm²		5m, 50mm²	3m, 25mm²
Housing material	Reinforced thermoplastic				
Housing colour					
Weight (without cable)	0,85kg			2,10kg	1,8kg

***1: Welding-guns with integrated measurement system (Indication „M“)**

***2: Required automatic module in control unit**

***3: Maximum welding-diameter (according standard DIN EN 13918); Material, group of material and class of mechanical strength of usable welding elements and allowed welding-joints of studs und ground material see DVS-Roule 0902 “Drawn arc welding” and DVS-Roule 0967 „Calculation of welding joints”**

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