



# TIG Series Insquare

Insquare W 321/W 421/W 600.







# PERFECT WELDING TECHNOLOGY FOR THE REAL PROFESSIONALS

**The Insquare takes care of daily maximum performance.**

The TIG Inverter welding units offer professional performance all along the line. Five models, 320 A to 600 A, for DC and AC current fulfil even highest demands for industrial applications. Professionals are enthusiastic about the perfect technique and the easy operation of the Merkle Insquare welding units.

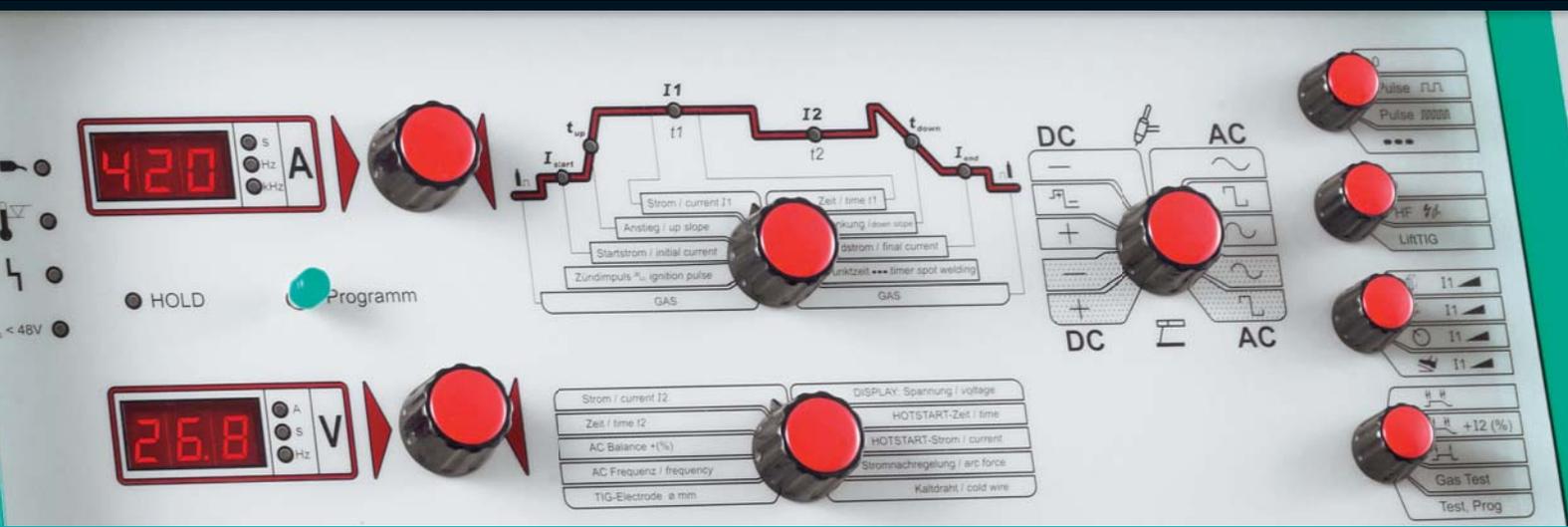
- IGBT inverter power sources.
- 3-phase inverter with low primary current.
- Stable arc in AC over the full range due to square wave or noise reduced wave.
- Continuous setting of the welding frequency in AC.
- MMA/stick electrode welding.
- Perfectly smoothed DC gives outstanding welding characteristics in TIG and electrode welding.
- DC high frequency pulse for concentrated arc (see page 6).
- Perfect arc ignition over the whole range due to separate ignition circuit.
- A minimum of radiation caused by the HF-ignition unit.
- Efficient cleaning in AC.
- Special filters mounted to avoid radiation.

# THE WATER COOLED INDUSTRIAL LINE



## Multitude of control functions

- TIG welding process:
  - TIG DC minus, TIG DC plus\*
  - TIG DC minus with start impulse\*
  - TIG AC "noise reduced"\*
  - TIG AC "square wave"\*
  - TIG AC "sinusoidal"\*.
- MMA/Electrode welding process:
  - Electrode minus, electrode plus\*
  - Electrode "sinus"\*
  - Electrode "square wave"\*.
- 20 programmable jobs.
- 2 welding currents separately adjustable; in 4-stroke recallable by a short touch on the torch trigger or using a welding torch with two triggers.
- Adjustable parameters: gas pre-flow and gas post-flow time, start and final current, timer for current up and down slope.
- Parameter pre-selection by 2 switches.
- 2 large LED-displays with pre-indication and Hold function for current, voltage, time and frequency.
- Pulse device and spot welding.
- High frequency pulsation up to 5 kHz.
- Current remote control with potentiometer at the torch (option).
- High frequency (HF) or lift arc ignition.
- 2-stroke, 4-stroke, 4-stroke with 2 currents.
- AC-frequency setting: 50–200 Hz\*.
- AC-balance: continuous setting of the plus/minus from 9 % to 91 %\*.
- Hand-, torch or foot remote control (optional).



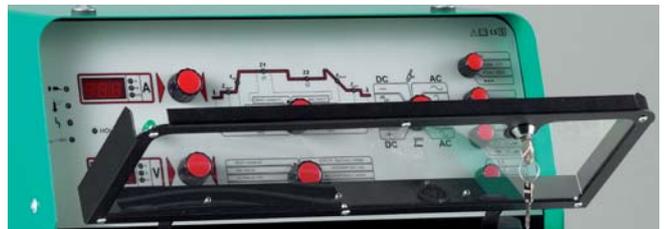
## The operation panel of the MERKLE Insquare.

**Generous handling with highest comfort!**

**The display of the Merkle Insquare series has been designed to the like of the real professionals.**

Well-arranged operation panel, digital display and the easy adjustment of all welding parameters provide highest functionality and safety in the daily work. And

the new, lockable glass front of the models Insquare W 321 and W 421 offer even more protection of unintentional changing of the welding parameters.



### Merkle TIG welding torches with Quick TIG System

- Only few spare parts.
- Torch cap and back cap form one single part.
- Double button torch switch.
- Torch with integrated potentiometer (option).
- High-flexible torch lead with partial leather protection.
- Ball joint at the handle.



# MERKLE Insquare.

**Perfect welding for all applications!**

## Manual – automatic – and robot operation

The welding units are specially designed for industrial use and are optimally suitable for manual, automatic or robot operation. A PLC or a robot controls the following parameters:

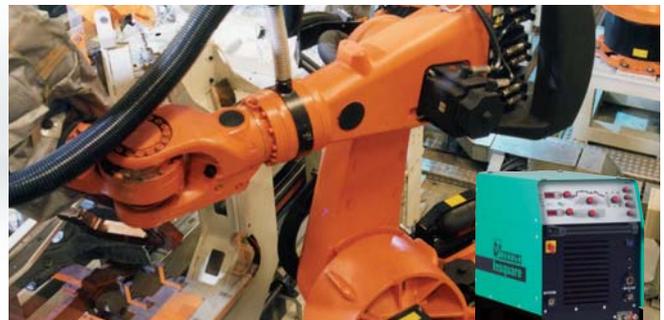
- Welding current.
- Welding frequency (AC-mode).
- AC balance



Hand welding



Automated welding



Robot welding

## High frequency DC pulse

The machines of the series Insquare come as a standard with the high frequency DC pulse. The arc can be pulsed with a frequency up to 5 kHz. The arc characteristics provide outstanding opportunities in TIG DC welding that are not available in the normal TIG arc:

### Characteristics:

- Extreme arc constriction.
- Arc similar to plasma welding.
- Less heat input.
- Higher welding speed.
- Extremely stable arc.
- Perfect for corner welds.



Standard TIG weld



High frequency DC pulse weld



High frequency pulse for perfect corner welds

# TIG Insquare Series.

## Technical data.



W 321 DC



W 321 AC/DC



W 421 DC



W 421 AC/DC



W 600 AC/DC

Power supply	3 x 400 V				
Frequency	50 (60) Hz				
Continuous power	13.2 kVA	13.2 kVA	14.5 kVA	14.5 kVA	24.2 kVA
Continuous current	19 A	19 A	21 A	21 A	35 A
cos phi	0.95	0.95	0.95	0.95	0.95

### Secondary:

Operation mode	DC	AC and DC	DC	AC and DC	AC and DC
No load voltage	80 V				
Welding voltage	10 - 22.8 V	10 - 22.8 V	10 - 26.8 V	10 - 26.8 V	10 - 34 V
Welding range DC	5 - 320 A	5 - 320 A	5 - 420 A	5 - 420 A	20 - 600 A
Welding range AC		5 - 320 A		5 - 400 A	20 - 600 A
Duty cycle 50 % (10 min)			420 A (20 °C)	420 A (20 °C)	
Duty cycle 60 % (10 min)	320 A (40 °C)	320 A (40 °C)	360 A (40 °C)	360 A (40 °C)	
Duty cycle 80 % (10 min)	300 A (40 °C)	300 A (40 °C)			600 A (40 °C)
Duty cycle 100 %	260 A (40 °C)	260 A (40 °C)	310 A (40 °C)	310 A (40 °C)	500 A (40 °C)

### MMA/Electrode Welding:

No load voltage	80 V	80 V	80 V	80 V	80 V
Welding voltage	20 - 32.8 V	20 - 32.8 V	20 - 36.8 V	20 - 36.8 V	20 - 44 V
Welding range	5 - 320 A	5 - 320 A	5 - 420 A	5 - 420 A	20 - 600 A

Protection mode	IP 23	IP 23	IP 23	IP 23	IP 23
Cooling	AF	AF	AF	AF	AF
Adjustings	2 rotary switches and 2 selectors for: current 1, time 1, current 2, time 2 (for pulsation), pre and post flow time, up and down slope time, start current, final current, timer spot welding, AC-balance, AC-frequency, Arc force, Hotstart time and current				
Timer functions	slow pulsation, quick pulsation (max. 5 kHz), spot welding				
Energy adjusting	at the unit, manual remote control, foot pedal, torch potentiometer				
Operation modes	2-stroke, 4-stroke, 4-stroke with 2 currents				
Indications	2 LED displays with pre-indication and Hold-function for current, voltage, time and frequency				
Ignition	high frequency (HF) or LiftTIG				
Generator	IGBT-inverter				
Norm	EN 60974-1 "S" / CE				
Torch connection	Euro connector with 5-pole plug				
Torch cooling	integrated water cooling system				
Weight	115 kg	140 kg	125 kg	150 kg	255 kg
Dimensions (LxWxH)	1020 x 476 x 970				1055 x 630 x 1290
Gas bottle holder	incl. gas bottle holder for 10, 20 or 50 l cylinders				

Technical changes reserved.



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- TIG Welding Units
- MMA / Stick Electrode Welding Units
- Plasma Welding and Cutting Units
- Turntables and Roller Drive Units
- Welding and Cutting Torches
- Automation Components and Solutions
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