



TPS 5000 Pipe
TPS 4000 MV Pipe
TPS 3200 460 V Pipe



Operating instructions

MIG/MAG power source



42,0426,0004,EN 005-17122020

General

Introduction Thank you for the trust you have placed in our company and congratulations on buying this high-quality Fronius product. This document supplements your machine's operating instructions.

Safety



WARNING!

Operating the equipment incorrectly can cause serious injury and damage.

Do not use the functions described until you have thoroughly read and understood the following documents:

- ▶ these operating instructions
 - ▶ all the operating instructions for the system components, especially the safety rules
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Machine concept The digital machine series is characterised by excellent welding properties and an unrivalled degree of precision in the welding process. Microprocessor controlled inverter power sources ensure exactly reproducible welding results. For welding pipelines, the TimeTwin Digital welding system is used in combination with an automatised welding process. Up to four Twin welding torches can be welding the pipeline at the same time.

Areas of utilisation The components used in the pipe series were specially designed for the laying of pipelines in extreme climatic conditions. With an operating temperature range of -50 °C to +40 °C, the machine can be used from Alaska to the Sahara.

System components System components for use in pipeline construction:

- Power source - TPS 3200 460 V Pipe or TPS 4000 MV Pipe
- Pipe wirefeeder (e.g. VR 1500 Pipe)
- Pipe cooling unit (e.g. FK 9000 R Pipe or FK 6000 Pipe „stand-alone“ for longer hosepacks)
- Robacta Pipe (Twin) welding torch
- Robot interface (e.g. Rob 4000/5000)

TPS 3200 460 V Pipe

General remarks The TPS 3200 460V Pipe is a completely digitised, microprocessor controlled inverter power source, specially designed for use in extreme climatic conditions. Compared to the standard power source, the TPS 3200 460V Pipe is able to integrate all the electronic components required to control the wirefeeder.

NOTE!

Information on function and operation can be found in the enclosed standard power source operating instructions.

Where a difference occurs between the properties or functions of the Pipe series and the standard power source, the information in this document takes precedence.

NOTE!

The push-pull unit MUST be calibrated:

- ▶ prior to each initial start-up
- ▶ after selecting another push-pull unit
- ▶ each time the wirefeeder software is updated

If the push-pull unit is not calibrated, the standard parameters will be used - which may result in the welding result not being satisfactory.

- Select the "PPU" function in the second (2nd) menu level (power source operating instructions)

Accessories and options

	TPS 3200 V Pipe High End	TPS 3200 460 V Pipe Basic
LHSB	provided	optional
Installation set VR 1500 Pipe*	optional	optional
Welding database		
- Twin	- provided	- option
- Pipeline edition	- provided	- provided
Dust filter	optional	optional

* The VR 1500 Pipe installation set consists of:

- SR 41 motor controller
- NT 60
- Connection socket VR 1500 Pipe

IMPORTANT!

The VR 1500 Pipe installation set is required to control the VR 1500 Pipe wirefeeder.

TPS 4000 MV Pipe, TPS 5000 Pipe

General remarks The TPS 4000 MV Pipe is a completely digitised, microprocessor controlled inverter power source, specially designed for use in extreme climatic conditions. Compared to the standard power source, the TPS 4000 MV Pipe has all the electronic components required to control the wirefeeder.

NOTE!

Information on function and operation can be found in the enclosed standard power source operating instructions.

Where a difference occurs between the properties or functions of the Pipe series and the standard power source, the information in this document takes precedence.

NOTE!

The pushpull-unit MUST be calibrated:

- ▶ prior to each initial start-up
 - ▶ after selecting another pushpull-unit
 - ▶ each time the wirefeeder software is updated
-

If the push-pull unit is not calibrated, the standard parameters will be used - which may result in the welding result not being satisfactory.

- Select the "PPU" function in the second (2nd) menu level (power source operating instructions)
-

Accessories

- Integrated control and connection socket for wirefeeder control lead
- Pipeline edition welding database
- Dust filter

Configuration examples

General remarks The system components in the digital machine series can be combined in whichever way the user chooses. The permissible temperature ranges of the individual system components must be observed.

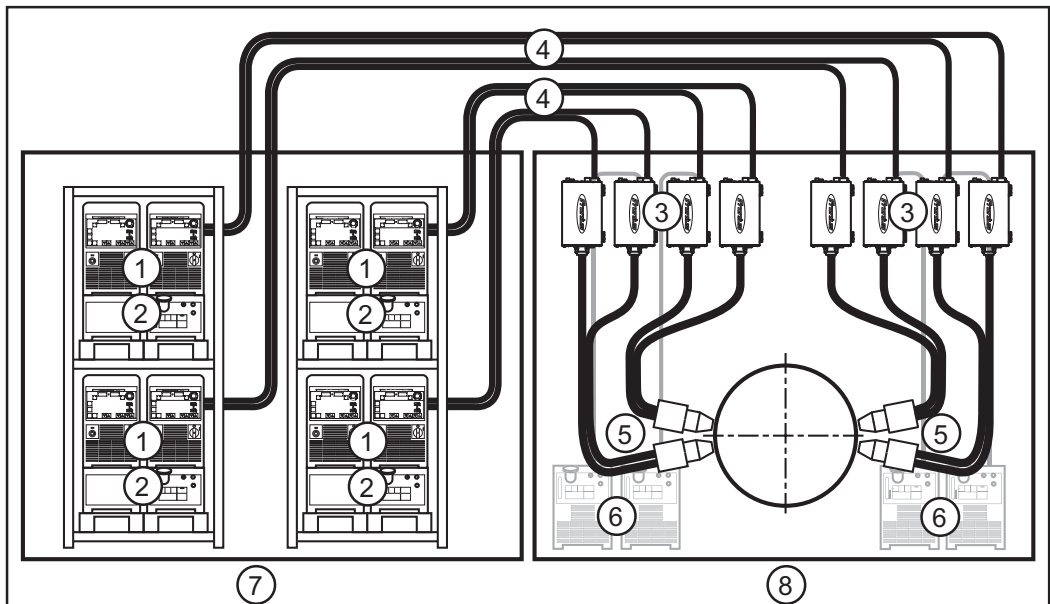
NOTE!

At temperatures below -5 °C the power sources must be kept in a climatised cabinet at as constant a temperature as possible.

Wirefeeders and torches can be used under more severe conditions.

Double tandem welding process

For welding pipelines with large diameters and long sections, the TimeTwin Digital welding system is used in conjunction with an automatised double tandem welding process. The double tandem welding process allows four Twin welding torches to weld the pipeline at the same time.



Configuration example for double tandem welding process

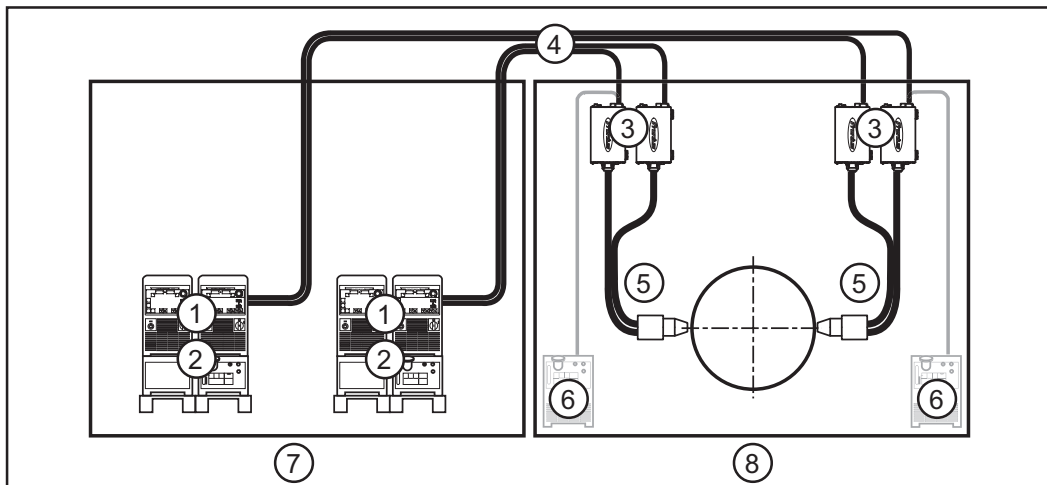
- | | | |
|-----|------------------------------------------------------------------------------------|-----|
| (1) | Power source* | x 8 |
| (2) | Cooling unit FK 9000 R Pipe or, for long hosepacks: FK 6000 Pipe „Stand-alone“ (6) | x 4 |
| (3) | Wirefeeder VR 1500 Pipe | x 8 |
| (4) | Verbindungs-Schlauchpaket Pipe | x 8 |
| (5) | Pipe interconnecting hosepipe | x 4 |
| (7) | Climatised cabinet (-5 to +40 °C) | |
| (8) | Working area (-50 to +40 °C) | |

As an option, the welding system can be equipped with the RCU 4000 or RCU 5000i remote control unit.

* TPS 3200 460 V Pipe with installation set VR 1500 Pipe or TPS 4000 MV Pipe

Single tandem welding process

To weld medium diameter pipelines, the TimeTwin Digital welding system is used in conjunction with an automatised tandem welding process. The tandem welding process allows two Twin welding torches to weld the pipeline at the same time.



Configuration example for tandem welding process

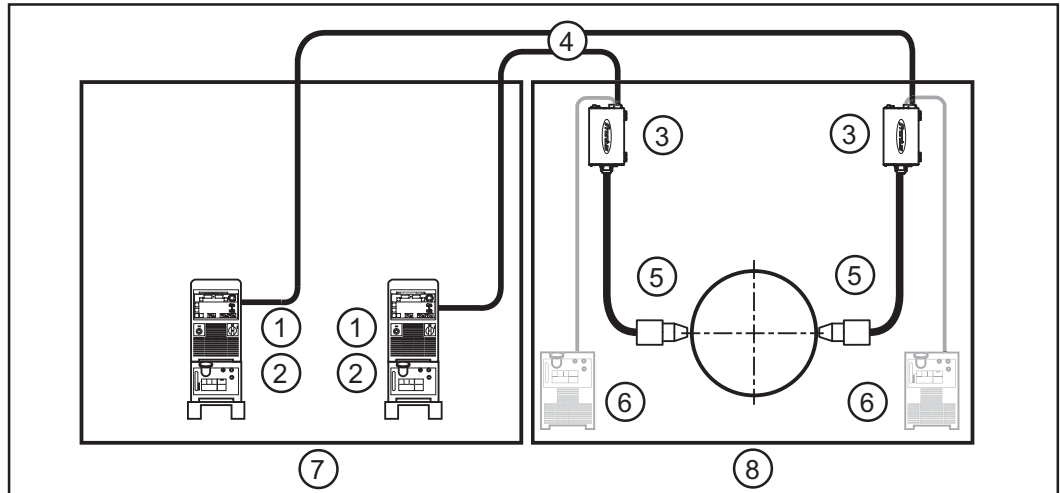
- | | | |
|-----|------------------------------------------------------------------------------------|-----|
| (1) | Power source* | x 4 |
| (2) | Cooling unit FK 9000 R Pipe or, for long hosepacks: FK 6000 Pipe „Stand-alone“ (6) | x 2 |
| (3) | Wirefeeder VR 1500 Pipe | x 2 |
| (4) | Pipe interconnecting hosepipe | x 2 |
| (5) | Robacta Twin Pipe welding torch | x 2 |
| (7) | Climatised cabinet (-5 to +40 °C) | |
| (8) | Working area (-50 to +40 °C) | |

As an option, the welding system can be equipped with the RCU 4000 or RCU 5000i remote control unit.

* TPS 3200 460 V Pipe with installation set VR 1500 Pipe or TPS 4000 MV Pipe

Single welding process

To weld small diameter pipelines, two TPS 4000 MV Pipe power sources are used. The single welding process allows two single welding torches to weld the pipeline at the same time.



Configuration example for single welding process

- | | | |
|-----|------------------------------------------------------------------------------------|-----|
| (1) | Power source* | x 2 |
| (2) | Cooling unit FK 4000 R Pipe or, for long hosepacks: FK 6000 Pipe „Stand-alone“ (6) | x 2 |
| (3) | Wirefeeder VR 1500 Pipe | x 2 |
| (4) | Pipe interconnecting hosepipe | x 2 |
| (5) | Robacta Pipe welding torch | x 2 |
| (7) | Climatised cabinet (-5 to +40 °C) | |
| (8) | Working area (-50 to +40 °C) | |

As an option, the welding system can be equipped with the RCU 4000 or RCU 5000i remote control unit.

* TPS 3200 460 V Pipe with installation set VR 1500 Pipe or TPS 4000 MV Pipe

Average consumption values during welding

Average wire electrode consumption during MIG/MAG welding

Average wire electrode consumption at a wire speed of 5 m/min			
	1.0 mm wire electrode diameter	1.2 mm wire electrode diameter	1.6 mm wire electrode diameter
Steel wire electrode	1.8 kg/h	2.7 kg/h	4.7 kg/h
Aluminium wire electrode	0.6 kg/h	0.9 kg/h	1.6 kg/h
CrNi wire electrode	1.9 kg/h	2.8 kg/h	4.8 kg/h

Average wire electrode consumption at a wire speed of 10 m/min			
	1.0 mm wire electrode diameter	1.2 mm wire electrode diameter	1.6 mm wire electrode diameter
Steel wire electrode	3.7 kg/h	5.3 kg/h	9.5 kg/h
Aluminium wire electrode	1.3 kg/h	1.8 kg/h	3.2 kg/h
CrNi wire electrode	3.8 kg/h	5.4 kg/h	9.6 kg/h

Average shielding gas consumption during MIG/MAG welding

Wire electrode diameter	1.0 mm	1.2 mm	1.6 mm	2.0 mm	2 x 1.2 mm (TWIN)
Average consumption	10 l/min	12 l/min	16 l/min	20 l/min	24 l/min

Average shielding gas consumption during TIG welding

Gas nozzle size	4	5	6	7	8	10
Average consumption	6 l/min	8 l/min	10 l/min	12 l/min	12 l/min	15 l/min

Technical data

TPS 3200 460 V Pipe

Storage temperature	- 50 °C to + 55 °C - 58 °F to + 131 °F		
Operating temperature	- 40 °C to + 50 °C - 40 °F to + 122 °F		
Mains voltage	3 x 380 - 460 V		
Mains voltage tolerance	+/- 10 %		
Mains frequency	50 / 60 Hz		
Mains connection ¹⁾	Restrictions possible		
Cos Phi	0,99		
Welding current range	3 - 320 A		
Welding current at			
	10 min / 40 °C (104 °F)	40 % d.c. ²⁾	320 A
	10 min / 40 °C (104 °F)	60 % d.c. ²⁾	260 A
	10 min / 40 °C (104 °F)	100 % d.c. ²⁾	220 A
Open-circuit voltage	65 V		
Working voltage	14,2 - 30,0 V		
Degree of protection	IP 23		
Dimensions l x w x h	625 x 2904 x 475 mm 24.6 x 11.4 x 18.7 in.		
Weight	35,2 kg 77.6 lb.		
Power source efficiency at 400 V	33.5 W		
Idle state power consumption at 320 A / 32.8 V	89 %		

¹⁾ connected to public grid at 230/400 V and 50 Hz

²⁾ d.c. = Duty cycle

**TPS 4000 MV
Pipe**

Storage temperature	- 50 °C to + 55 °C - 58 °F to + 131 °F		
Operating temperature	- 40 °C to + 50 °C - 40 °F to + 122 °F		
Mains voltage	3 x 200 - 240 V 3 x 380 - 460 V		
Mains voltage tolerance	+/- 10 %		
Mains frequency	50 / 60 Hz		
Mains connection ¹⁾	Restrictions possible		
Cos Phi	0,99		
Welding current range	3 - 400 A		
Welding current at			
	10 min / 40 °C (104 °F)	40 % d.c. ²⁾	400 A
	10 min / 40 °C (104 °F)	60 % d.c. ²⁾	365 A
	10 min / 40 °C (104 °F)	100 % d.c. ²⁾	300 A
Open-circuit voltage	65 V		
Working voltage	14,2 - 34,0 V		
Degree of protection	IP 23		
Dimensions l x w x h	625 x 2904 x 475 mm 24.6 x 11.4 x 18.7 in.		
Weight	35,2 kg 77.6 lb.		
Power source efficiency at 400 V	44.3 W		
Idle state power consumption at 400 A / 36 V	90 %		

¹⁾ connected to public grid at 230/400 V and 50 Hz

²⁾ d.c. = Duty cycle

TPS 5000 Pipe

Storage temperature	- 50 °C to + 55 °C - 58 °F to + 131 °F
Operating temperature	- 40 °C to + 50 °C - 40 °F to + 122 °F
Mains voltage	3 x 200 - 240 V 3 x 380 - 460 V
Mains voltage tolerance	+/- 10 %
Mains frequency	50 / 60 Hz
Mains connection ¹⁾	Restrictions possible
Cos Phi	0,99
Welding current range	3 - 500 A
Welding current at	
	10 min / 40 °C (104 °F) 40 % d.c. ²⁾ 500 A
	10 min / 40 °C (104 °F) 60 % d.c. ²⁾ 450 A
	10 min / 40 °C (104 °F) 100 % d.c. ²⁾ 340 A
Open-circuit voltage	65 V
Working voltage	14,2 - 34,0 V
Degree of protection	IP 23
Dimensions l x w x h	625 x 2904 x 475 mm 24.6 x 11.4 x 18.7 in.
Weight	35,2 kg 77.6 lb.
Power source efficiency at 400 V	31.8 W
Idle state power consumption at 500 A / 40 V	90 %

¹⁾ connected to public grid at 230/400 V and 50 Hz

²⁾ d.c. = Duty cycle

Overview with critical raw materials, year of production of the device**Overview with critical raw materials:**

An overview of which critical raw materials are contained in this device can be found at the following Internet address.

www.fronius.com/en/about-fronius/sustainability.

To calculate the year of production of the device:

- Each device is provided with a serial number
- The serial number consists of 8 digits - for example 28020099
- The first two digits give the number from which the year of production of the device can be calculated
- This figure minus 11 gives the year of production
 - For example: Serial number = **28**020065, calculation of the year of production = **28** - 11 = 17, year of production = 2017

FRONIUS INTERNATIONAL GMBH

Froniusstraße 1
A-4643 Pettenbach
AUSTRIA
contact@fronius.com
www.fronius.com

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