

# **CITOPULS II**

MIG/MAG welding equipment



# CITOPULS II



**CITOPULS II** is the only product on the MIG/MAG welding market offering superior quality welding and advanced welding processes with a simple interface at the price of standard welding equipment. Moreover CITOPULS II is designed in a modular system for a better fit with the users' requirements.

## Superior quality welding Advanced processes and features

- Fully digitally controlled inverter: for process repeatability and consequently higher welding quality and simpler regulation
- In Synergic mode, more than 100 synergies are available
- Soft switching inverter (increased efficiency of the power source)
- Full range of processes
  - Standard MIG/MAG
  - Pulsed MIG/MAG
  - Speed Short Arc™ (for high quality thin sheet welding & root pass)
  - Spray Modal™ (special for high quality welding of aluminium)
  - Cold Double Pulse (producing very high quality welds on thin material)
  - MIG brazing
  - MMA coated electrodes
- Powerful installation up to 420 A at 60%
- Full A1 automatic interface. This level of synchronization does not require an additional card, for simpler automatisisation
- Storage of 100 welding programs (with expert wire feeder DMU P500 or advanced remote control RC JOB)
- Parameter locking with a digit code (with expert wire feeder DMU P500 or advanced remote control RC JOB). When this function is activated, the welder can still fine-tune the parameters in a +/- 20% range





## A user interface designed for a really easy to use front panel

- Power source and wire feeder

## A modular concept for a better fit with the users' requirements

### Specify and build your installation:

- Power sources
- Wire feeders
- Cooling unit
- Harnesses (up to 50 m for shipbuilding applications)
- Trolleys for the installation and the wire-feeder
- Remote control
- Torches (standard, with potentiometer, push-pull, automatic...)

## More benefits for the user

- Small machine for easier access
- Light installation (37 kg for the power source)
- Compatible with motor generator
- A powerful wire feeder unit with **4 drive rollers** as standard

# Focus on advanced processes for thin sheet welding



Speed Short Arc™ (SSA™)



MIG Brazing



Cold Double Pulse

CITOPULS II integrated advanced welding processes in an easy to use interface.

## Speed Short Arc™ (SSA™)

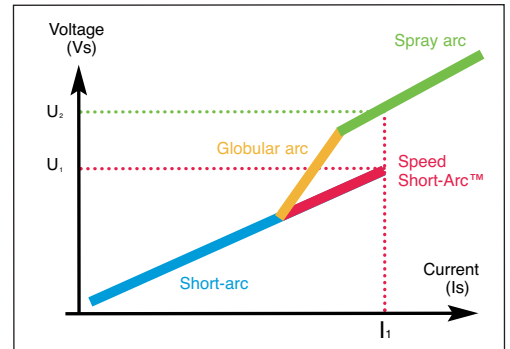
Speed Short Arc™ provides a transfer mode using short circuits in a wire speed domain usually governed by globular conditions.

The current values used in this mode are very different from those used in conventional “short arc” operation.

Faster wire speeds require a medium current together with a large peak current in order to form and detach the droplet more quickly.

This is done by programming a digitally-regulated inverter where the current is controlled and where, for wire speeds governed by globular conditions, a specific current profile is required (particularly the rise and fall gradients of the current as well as the maximum peak current).

This means the appearance of short-circuits is “forced” in a mode where, under natural conditions, they appear only erratically.



As can be seen in the diagram below, in applying Speed Short Arc™ to the welding of medium-thickness sheet (2mm), the large increase in travel speed induces a much lower linear energy than that of the conventional mode.

### SSA™ advantages

- Large increase in travel speed
- Reduction in distortion
- Reduction of adhering spatter
- Reduction of fume

#### Main applications:

Parts and products in alloy steels; Containers, steel trailers, infrastructure, agricultural trailers, public works plant.

## MIG Brazing

MIG brazing appeared in the late 1990' s as a better replacement for flame brazing.

Since this time, it has gone from strength to strength and has become an essential process in automobile construction.

The use of digital technology further increases the performance of this process both from the point of view of the quality of the joint produced, the productivity obtained and also the preservation of coatings applied to steel sheets for corrosion protection.

### MIG Brazing advantages

- Effective on thin coated sheets
- Reduces distortion
- Large joint tolerance
- Good mechanical characteristics

#### Main applications:

Parts and products in aluminium; automobile construction and repair, metal furniture, ventilation ducting.

## Cold Double Pulse

Cold Double Pulse produces very high quality welds on thin material while avoiding distortion.

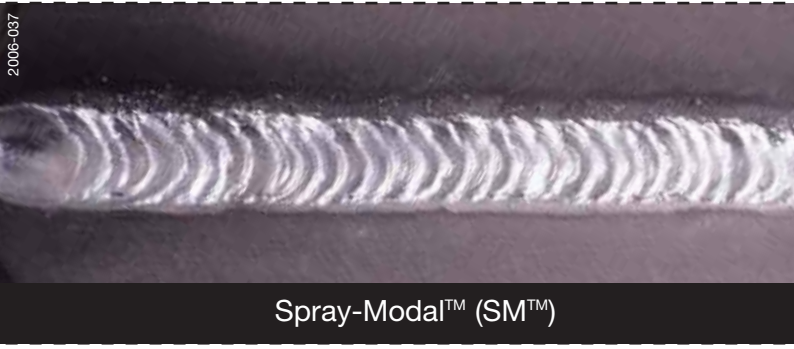
The operating technique is made easier due to good control of the weld pool even on badly-prepared sheets. This sequencer mode automatically chains hot arc and cold arc regimes together.

### Cold Double Pulse advantages

CDP™ gives a TIG appearance to the weld and is very effective on very thin aluminium or stainless steel sheet (< 2mm).

# Focus on advanced processes for high quality welding of aluminium

2006-037



Spray-Modal™ (SM™)

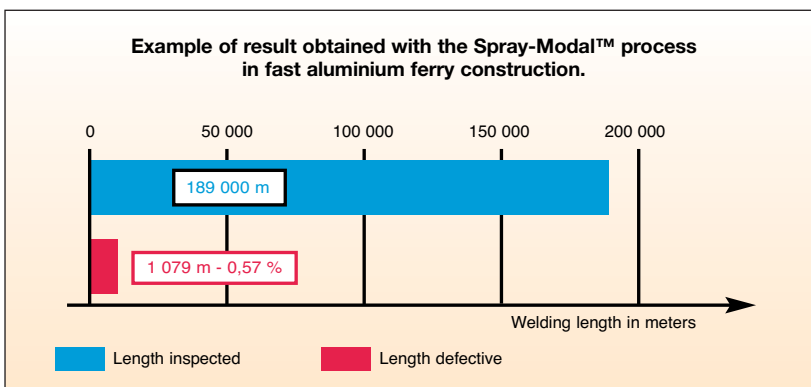
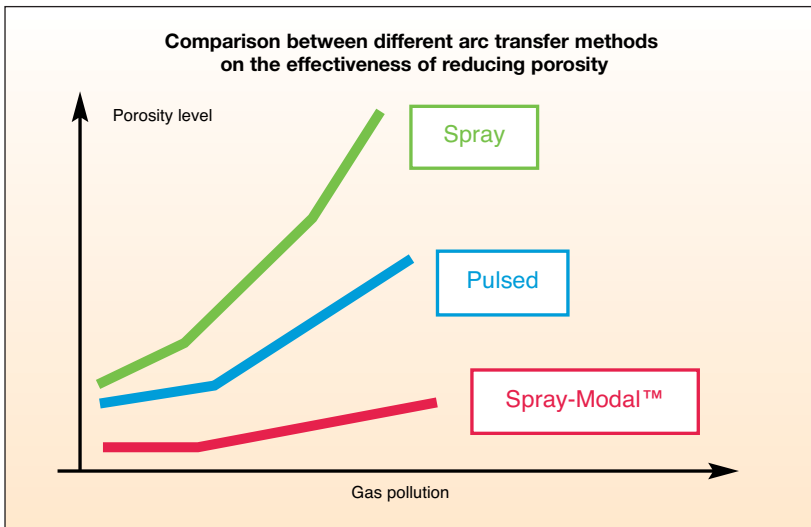
## Spray-Modal™

This is a special transfer mode which uses a modulated current at frequencies of 30 to 50 Hz that produce vibrations in the liquid weld pool that have the effect of removing most of the hydrogen bubbles before the metal solidifies.

These modulations strengthen the rigidity of the welding arc making it possible to use this process in all positions.

The use of low frequency modulation also gives a TIG-like appearance to the weld bead.

This process is particularly suitable for aluminium applications using sheet thicknesses of > 2 mm.

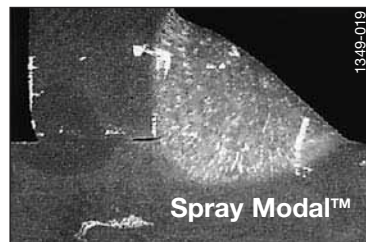
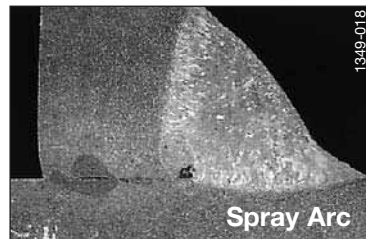
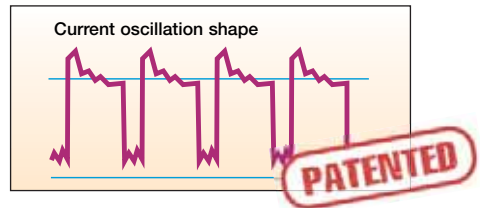


## Spray-Modal™ advantages

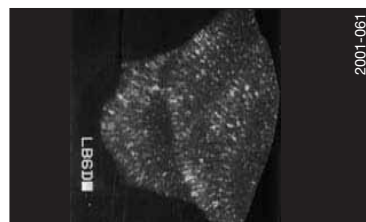
- Large reduction in porosity
- Increases penetration
- Increase in travel speeds
- All-position welding

### Main applications:

Parts and products in aluminium; automobile construction and repair, metal furniture, ventilation ducting.



Porosity level: comparison of Spray Arc, Spray-Modal™



Horizontal Welding

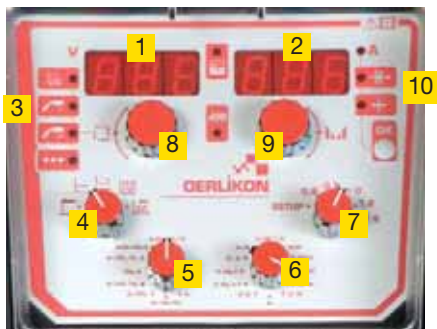
# Front panels are easy to understand and use

2010-500



CITOPULS II power source and wire feeder have been designed to facilitate the welder's activities. They are built with an user interface designed for a really easy to understand and to use front panel.

## Power source

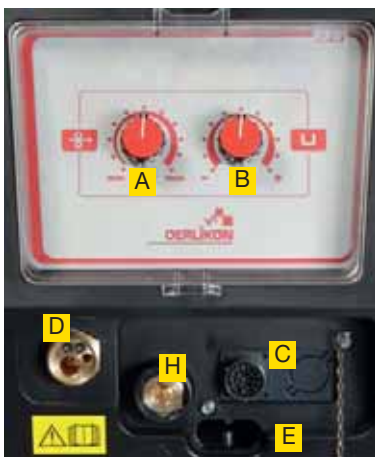


2010-506

- 1 Welding voltage and set up parameter display
- 2 Welding current or wire speed or thickness display
- 3 Mode and welding cycle selection LEDs
- 4 Process choice selector
- 5 Gas selector
- 6 Wire grade selector
- 7 Wire diameter selector
- 8 Scrolling of set up parameters
- 9 Parameter setting
- 10 Selector for wire speed or thickness display

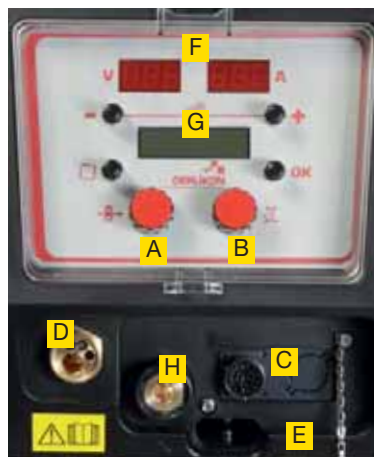
## Wire feeders

DMU P400



2010-493

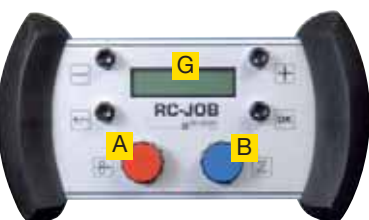
DMU P500



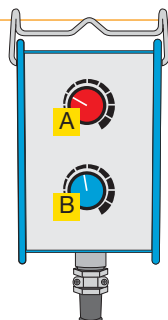
2010-496

- A Wire speed regulation
- B Arc length setting
- C Remote control and push-pull connector
- D Torch connector
- E Coolant connections
- F Display of welding parameters
- G Program selection and advance parameters display and buttons
- H MMA electrode holder connection

## Remote control



2008-778



- A Wire speed regulation
- B Arc length setting
- G Program selection and advance parameters display and buttons



Power source	<i>CITOPULS II 320</i>	<i>CITOPULS II 420</i>
<b>PRIMARY</b>		
Power supply - 3 Phases - 50/60 Hz	400 V (+ 15% / - 20%)	
Maximum primary consumption (100%)	21.2 A	29 A
Temporised fuses	32 A	
<b>SECONDARY</b>		
Open circuit voltage	86 V	
Welding range	15 A - 320 A	15 A - 420 A
Duty cycle 60%	320 A	420 A
Duty cycle 100%	270 A	350 A
<b>APPLICATION</b>		
Processes	MIG-MAG / Speed Short Arc™ / MIG-MAG pulsed / Cold Double Pulse / Spray Modal™ / MIG Brazing / MMA	
Additional Feature	Synergic machine	
Programs	100 (with expert wire feeder or RC JOB)	
<b>GENERAL</b>		
Standard	EN 60974-1 - EN 60974-10	
Protection index	IP 23S	
Dimensions (l x w x h)	738 x 273 x 521 mm	
Weight	37 kg	

Wire feeder	<i>DMU P400</i>	<i>DMU P500 expert</i>
Rollers	4 drive rollers	
Wire speed	1 to 25 m/min	
Wire Ø - Stainless steel	0.6 - 1.6 mm	
Wire Ø Cored wires	1.0 - 1.6 mm	
Wire Ø Aluminium	1.0 - 1.6 mm	
Regulation	2 potentiometers	2 encoders
Additional feature		Programs management
Display	-	2 Displays + LCD
<b>GENERAL</b>		
Protection / Insulation	IP 23S - H	
Standards	EN 60974-5 - EN 60974-10	
Dimensions (l x w x h)	265 x 590 x 383 mm	
Weight	17.5 kg	

Cooling unit	<i>COOLER II</i>
Cooling power	1.3 kW
Maximum pressure	4.5 bar
Dimensions (l x w x h)	720 x 280 x 270 mm
Weight	16 kg

This equipment is designed for industrial and professional use only and it does not comply with with EN 61000-3-2/12. If it is connected to a public low voltage system, it is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment may be connected. (See also the instruction manual)

# References

The modular concept of CITOPULS II allow to build the perfect configuration for any kind of needs. From offshore & shipbuilding to boiler makers, train production and small workshops.

## 1 Power sources



320 A @ 60 %	CITOPULS II 320	W000275262
420 A @ 60 %	CITOPULS II 420	W000275264

## 2 Wire feeders



DMU P400 (Standard)	W000275265
DMU P500 (Expert)	W000275915

- Expert**
- 100 programs
  - possibility to lock welding parameters
  - LCD display

## 3 Cooling unit



COOLER II | W000273516

## 4 Trolley for installation



TROLLEY II  
W000279927

## 4<sub>2</sub> Trolley extension



ARMS TROLLEY II | W000279930

## 5 Trolley for wire feeder



TROLLEY WF II | W000275908

## 7 Harnesses



HARNESS II 2M AIR	W000275894
HARNESS II 5M AIR	W000275895
HARNESS II 10M AIR	W000275896
HARNESS II 15M AIR	W000275897
HARNESS II 2M WATER	W000275898
HARNESS II 5M WATER	W000275899
HARNESS II 10M WATER	W000275900
HARNESS II 15M WATER	W000275901
HARNESS II 50M	On request

## 6 Swivel



SWIVEL TROLLEY II  
W000279932

## 8 Remote control



RC JOB (10 m)  
W000273134

RC SIMPLE (10 m)  
W000275904

## 9 Push-pull Puls II electronic circuit

Push-pull puls II | W000275907  
Allowing to connect a push-pull torch or gun.

## 10 Flowmeter to measure gas flowrate

Flowmeter  
W000275905



## 11 Aluminium welding kit

ALUKIT DMU 0.8-1.0	W000277622
ALUKIT DMU 1.2-1.6	W000277623

A composition of wire guides and rollers for perfect aluminium welding



## Examples of configuration

### CITOPULS II 320 air - DMU P400 2 m long harness

#### Is composed of:

- 1 Power source  
CITOPULS II 320  
W000275262
- 2 Wire feeder  
DMU P400  
W000275265
- 7 Harness II air  
2 m long  
W000275894



### CITOPULS II 420 water - DMU P400 2 m long harness

#### Is composed of:

- 1 Power source  
CITOPULS II 420  
W000275264
- 2 Wire feeder DMU P400  
W000275265
- 3 Cooling unit  
W000273516
- 7 Harness II water  
2 m long  
W000275898



### CITOPULS II 320 Expert air - DMU P500 10 m long harness + Trolley + Swivel

#### Is composed of:

- 1 Power source  
CITOPULS II 320  
W000275262
- 2 Wire feeder  
DMU P500 expert  
W000275915
- 4 Trolley for power  
source  
W000279927
- 4 Trolley extension  
W000279930
- 6 Swivel  
W000279932
- 7 Harness II air  
10 m long  
W000275896



### CITOPULS II 420 Expert air - DMU P500 10 m long harness + Trolley + Swivel

#### Is composed of:

- 1 Power source  
CITOPULS II 420  
W000275264
- 2 Wire feeder  
DMU P500 expert  
W000275915
- 4 Trolley for power  
source  
W000279927
- 4 Trolley extension  
W000279930
- 3 Cooling unit  
W000273516
- 6 Swivel  
W000279932
- 7 Harness II water  
10 m long  
W000275900



# Torches



Although it is true that welding performance is linked to the technology of the current source and the correct regulation of the wire speed, the welding torch makes an equally important contribution. The parameters sent by the power source must be very accurately transferred by the torch to the arc.

## Conventional torches

OERLIKON propose a complete range of manual MIG-MAG torches **CITORCH M NG** which are innovative, powerful and suited to quality applications in the various market sectors. Torches comply with the EN 60974-7 standard and use the European standard connector.



## Torches with integrated potentiometer

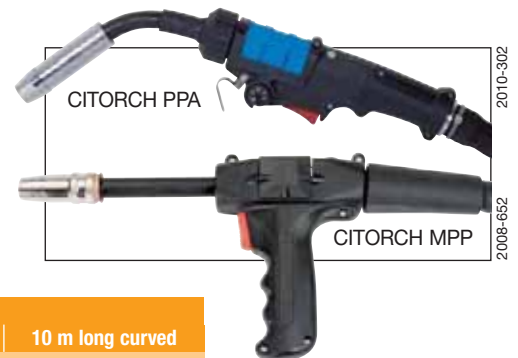
The **CITORCH MP** range meets the challenge of making the torch as small and easy to handle as a conventional torch with the inclusion of remote control facilities.



Designation	Duty Cycle Ar+CO <sub>2</sub>	Cooling	Ordering information		
			3 m long	4 m long	5 m long
<b>Conventional torches</b>					
CITORCH M 341 NG	320A @ 60%	Air	W000345091	W000345092	W000345093
CITORCH M 441 NG	380A @ 60%	Air	W000345097	W000345098	W000345099
CITORCH M 341W NG	320A @ 100%	Water	W000345094	W000345095	W000345096
CITORCH M 441W NG	380A @ 100%	Water	W000345100	W000345101	W000345102
CITORCH M 450W NG	450A @ 100%	Water	W000274868	W000274869	W000274870
<b>Torches with potentiometer</b>					
CITORCH MP 341	320A @ 60%	Air	-	W000345118	-
CITORCH MP 341W	320A @ 100%	Water	-	W000345120	-
CITORCH MP 441W	380A @ 100%	Water	-	W000345122	-
CITORCH MP 450W	450A @ 100%	Water	-	W000278705	-

## Push-pull torches and guns

Several push-pull systems are available for use with **CITOPULS II**. The **CITORCH PPA (torches)** and **CITORCH MPP (guns)** ranges have excellent operation due to the miniaturization of the wire drive system in line with the push-pull wire feeding axis. These torches and guns give an excellent wire feeding quality, and therefore an excellent weld quality and are particularly recommended for aluminium applications or use with small diameter wires. They can be easily adapted with a push-pull kit.



Designation	Duty Cycle Ar+CO <sub>2</sub>	Cooling	Ordering information		
			8 m long curved 45°	8 m long straight	10 m long curved
<b>Push-Pull Torches</b>					
CITORCH PPA 342	300 A @ 40%	Air	-	-	W000265068
CITORCH PPA 441W	450 A @ 60%	Water	-	-	W000265069
<b>Push-Pull Guns</b>					
CITORCH MPP 352	270 A @ 60%	Air	W000267609	-	-
CITORCH MPP 451W	450 A @ 60%	Water	W000267608	W000271007	-

## Automatic torch

The **TR600** is the most popular torch in the OERLIKON range for applications application. The torch is available with a 0° neck and in standard lengths of 3 or 4 m.



Designation	Duty Cycle Ar+CO <sub>2</sub>	Cooling	Ordering information		
			0° neck	3 m long harness	4 m long harness
TR600	400 A @ 100%	Water	W000370103	W000370111	W000370112

# Segment Activities

The CITOPULS II high tech MIG/MAG equipment fits perfectly with the needs of the most demanding welding applications in various segments of activity. Whatever your requirements, you will find with the CITOPULS II a superior welding quality with advanced processes with simple settings through an easy to use interface.

## Energy

Petrochemicals



Wind turbines



Thermal power stations



Hydroelectric



## Transport

Rail



Shipbuilding



Road



## Infrastructure



## Offshore



## General industry



