OERLIKON

CITOWAVE / CITOPULS

Manual MIG/MAG digital welding equipment for use in advanced technological processes.

Aim for digital precision!

2221-001

www.oerlikon-welding.com

AIR LIQUIDE WELDING

CITOWAVE /CITOPULS, welding expertise available to

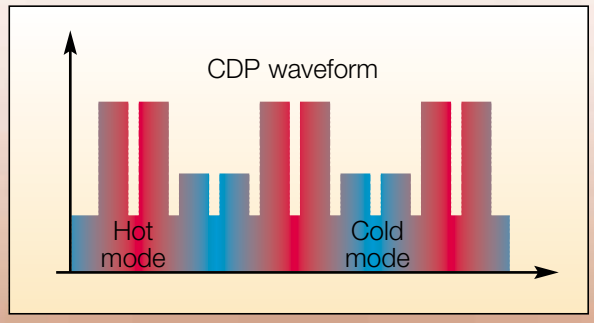
The CITOWAVE and CITOPULS ranges represent leading edge MIG equipment technology from OERLIKON. High precision digital welding technology is combined with the ability to auto regulate the welding parameters to produce high quality welds for the widest range of industrial applications.

Products designed to satisfy the demanding environment of today's modern enterpri

Reduction of noise and pollution and ease of use and operation for improved welding conditions, increase in the power av by down loading the software directly from a workstation.

Digital technology for welding:

- A complete range of unique products to meet your requirements both now and in the future.
- New processes giving total versatility: Smooth current [Short arc, Speed Short Arc (SSA™), Spray arc], Pulsed current [Standard pulsed, Low noise pulsed (SSP™)], Modulated current (Spray-MODAL™)
- Total control of aluminium welding: Processes and options adapted for facilitating striking and significantly reducing porosity.
- More synergic curves stored: 135 synergic curves as standard that optimize parameter settings depending on the material to be welded, the gas and the wire (solid or flux-cored).
- Process control and PC connection: Control and monitoring of parameters, malfunction indication, parameter locking at several levels, parameter printing, memory card, parameter calibration, PC connection.

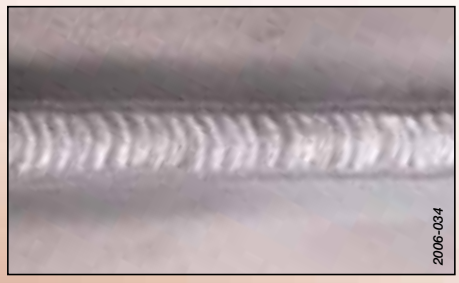


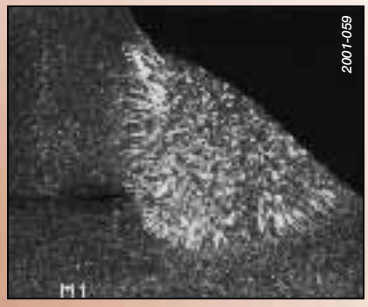
large market segments

Developed in conjunction with European industrial fabricators for the precision joining of a wide range of materials and joint configurations, from very thin sections of aluminium through to thick steel sections, from manual to robotic applications. Designed to ensure that innovative technology is translated into the ability to reliably make the correct joint the first.

se:

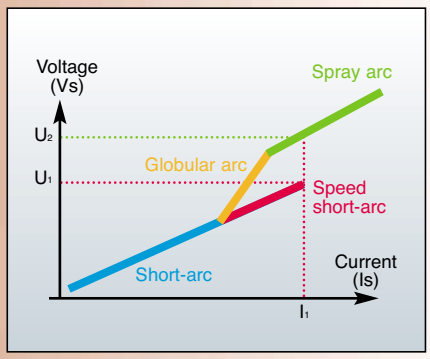
ailable for difficult applications and the assurance of having available the latest technological developments





Decisive advantages for greater efficiency:

- A wide choice for optimising operational conditions and efficiency however demanding the application.
- A large graphic screen to allow all the performance of the power source to be utilised easily and to give access to the 100 programs stored in CITOWAVE.
- Or direct access to the optimum settings for your application by using the 5 buttons of the CITOPULS .
- A range of 5 welding currents: 280, 320, 400, 420 or 500 amps.
- A large choice of wire feeding solutions whatever your manual or automatic applications with our wire feeders which have been especially designed for the most exacting robotic applications.
- And the possibility of using our CITOTORCH range of torches whether conventional, with integrated setting and control or push-pull.



CITOWAVE/CITOPULS, a wide range of EXPERT or EA

The CITOWAVE has been designed for all applications requiring very high quality welding for all thicknesses and all materials used in the main industry sectors. A wide graphic screen allows the operator to navigate easily around a menu bar for adjusting the various parameters of the unit. User-friendliness and high level performance make the CITOWAVE the ideal partner for your manual, automatic and robotic welding.

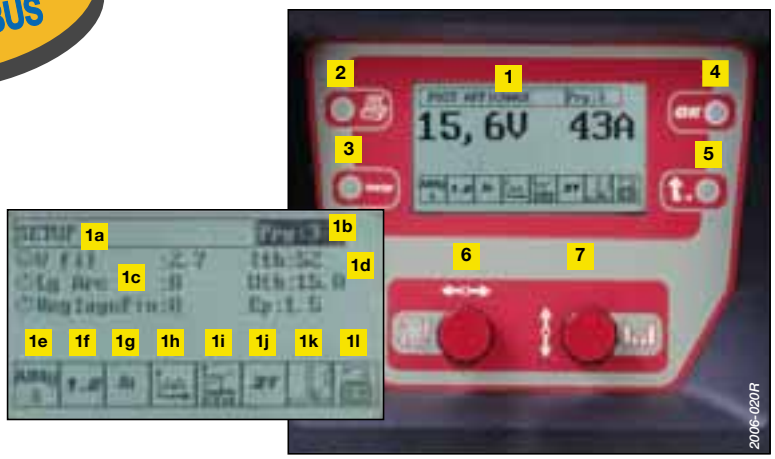
CITOWAVE installation

- **A** Welding power source
- **B** Wire feeder
- **C** Connection harness 2/5/10 & 15 m
- **D** Welding torch
- **E** Workshop trolley
- **F** Wire feed trolley
- **G** Main power on/off switch
- **H** Torch connector
- **I** Sling rings

Main characteristics	CITOWAVE		
	280 A Compact air	400 A Separate water	500 A Separate water
Standard interface	Expert (graphic screen, extended setup)		
Main applications	Automobile construction and repair. Rail, road and naval construction. Metalwork, infrastructures, energy. Food industry.		
Uses	Manual/Automatic and Robotic at A1, A2, A3 levels and in TOPMIG use		
Processes	Electrodes, Short arc regimes smooth current MIG/MAG, Speed Short arc™ and Spray arc, Pulsed and Low Noise Pulsed™, MODULE in Spray-MODAL™ regime		
Synergic curves available (wire/gas combinations)	115	152	153
Number of welding and storable programs	100		

Communication by ADC BUS

CITOWAVE interface

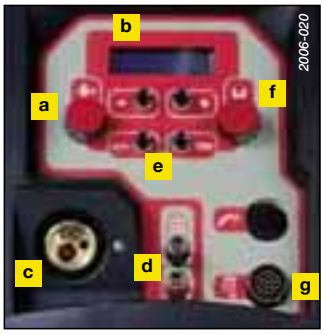


1 Graphic screen, parameter pre-selection

- a - Menu
- b - Programme no.
- c - Presets
- d - Pre-display
- e - Wire grade
- f - Wire diameter
- g - Gas
- h - Transfer mode
- i - Setting mode
- j - Welding mode
- k - Position
- l - Locking

2 Parameter print button
3 Help button
4 Selection validation button
5 Return to previous menu button
6 Screen navigation button
7 Setting button

DMX 5000



- **a** Wire speed regulation
- **b** Display
- **c** Torch connector
- **d** Coolant connections
- **e** Setting and selection keys
- **f** Arc length setting
- **g** CAD connector

SY products for greater flexibility.

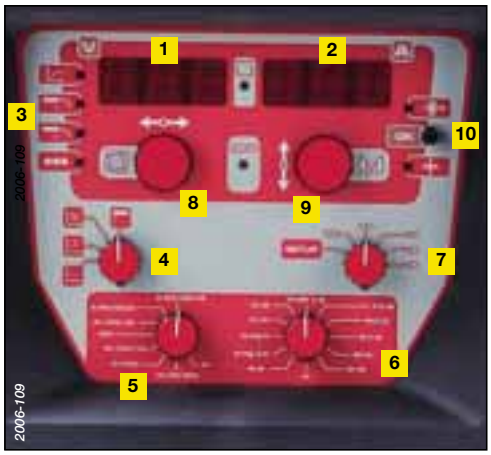
The CITOPULS has the same welding performance as the CITOWAVE. Its front panel is simplified to give direct access to the welding parameters. Parameter optimization is carried out after selection of the wire grades and diameter, the gas and the material thickness. It is provided with most of the advanced processes (Pulsed, Speed Short Arc (SSA™) etc. (see table on pages 14 and 15).

Main characteristics	CITOPULS		
	320 A Separate air	320 A Separate water	420 A Separate water
Standard interface	Easy (2 displays 7 segments, restricted setup)		
Main applications	Traditional rail, road and naval construction. Metal construction, steel and stainless steel metalwork, infrastructures.		
Uses	Manual/Automatic and Robotic at A1 level		
Processes	Electrodes, Short arc modes smooth current MIG/MAG, Speed Short arc™ and Spray arc™, pulsed current		
Synergic curves available (wire/gas combinations)	99		121
Number of welding and storable programs	100		

CITOPULS installation

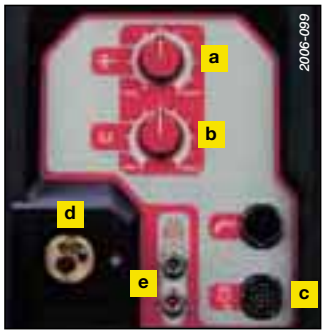
- **A** Welding power source
- **B** Wire feeder
- **C** Connection harness 2/5/10 & 15 m
- **D** Welding torch
- **E** Workshop trolley
- **F** Wire feed trolley
- **G** Main power on/off switch
- **H** Torch connector
- **I** Sling rings

CITOPULS interface



- **1** Welding voltage and setup 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 setup parameters
- **9** Parameter setting
- **10** Selector for wire speed or thickness display

DMY 4000



- **a** Wire speed regulation
- **b** Arc length setting
- **c** CAD connector
- **d** Torch connector
- **e** Coolant connections

CITOWAVE/CITOPULS, for full and complete assembly

Welding processes must be fully compatible with the technological changes taking place in the large industrial sectors and in particular the transport sector. These applications require very high performance welded joints in order to cope with the higher and higher stress and load levels now demanded for automobile, rail and road transport vehicles and even in the field of naval construction.

Speed Short Arc™ (SSA™)

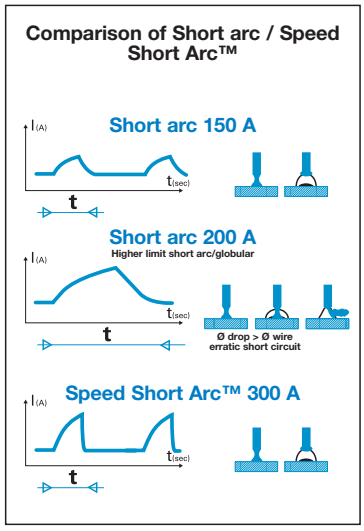
The Speed Short Arc™ provides a transfer mode using short circuits in a wire speed domain usually governed by globular conditions.

The current values used in this mode are clearly 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 quicker.

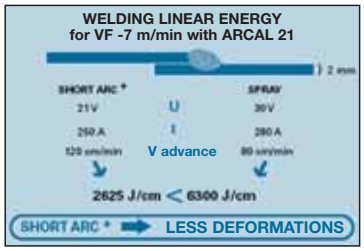
This is done by programming a digitally-regulated inverter where the current is controlled and where, for wire speeds governed by globular conditions, a current profile of the form described in the diagram opposite is required (particularly as regards the rise and fall gradients of the current as well 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.

The potential applications of Speed Short Arc™ are mainly in the welding of fine thickness

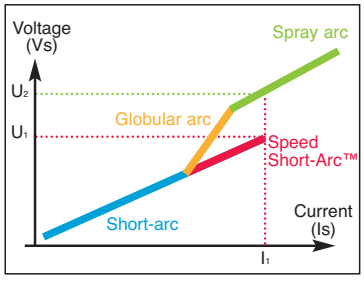


sheet over great lengths where distortion problems are generally observed with conventional arc modes.

Main applications :
Parts and products in alloy steels; Containers, steel trailers, infrastructure, agricultural trailers, public work plants.

SSA™ advantages
- **Large increase in travel speed**
- **Reduction in distortion**
- **Reduction of adhering spatter**
- **Reduction of fume**

Lap joint welding in Speed Short Arc™ mode on 2 mm at 1.2 m/min.



The CITOWAVE and CITOPULS offer a range of products which respond individually to the different quality and productivity levels required by these new applications.

Soft Silence Pulse™ (SSP™)

With the CITOWAVE, the power source delivers an optimized current wave required by the transfer mode associated with the process.

The SSP uses a special current wave form which enables a soft pulsed arc to be produced, i.e. one that is able to melt the hardest wires more gently.

This produces a pulsed arc which is much quieter than a normal one while at the same time increasing the wetting of the weld bead.

Great stability of the arc is also observed leading to a large reduction in spatter and an impeccable weld appearance.

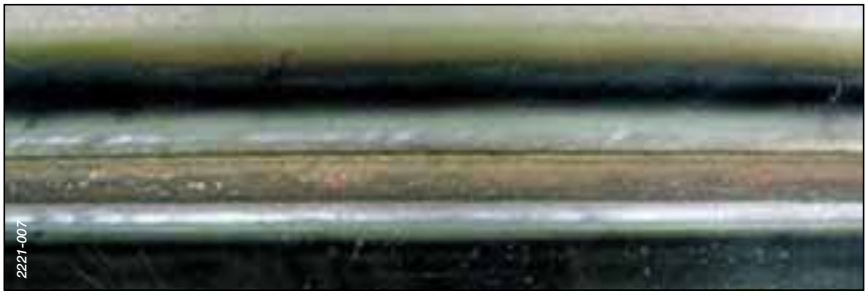
The SSP is mainly intended for stainless steel applications.

SSP™ advantages
- **Large reduction in noise**
- **Increased wetting of the weld bead**
- **Large reduction in spatter**
- **Gives a fine appearance to the weld**

Main applications:
Parts and products in stainless steel; containers, road tankers, food industry equipment, boilermaking.

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 fine coated sheets**
- **Reduces distortion**
- **Large joint tolerance**
- **Good mechanical characteristics**

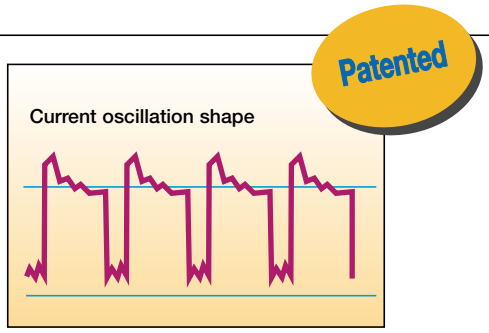
Main applications:
Parts and products in aluminium; automobile construction and repair, metal furniture, ventilation ducting.

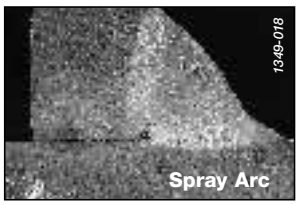
CITOWAVE/CITOPULS, total control of aluminium weld

The increasing use of aluminium in vehicles used for transporting passengers and goods means the production of weld joints of impeccable quality. Several years ago, Air Liquide Welding launched a research programme which focussed on improving aluminium welding and in particular the MIG process. This led to the development of new MIG processes along with specific options able to meet the strictest requirements in terms of weld

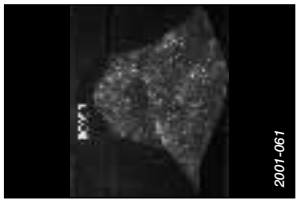
Spray-Modal™ (SM™)

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 useful for aluminium applications using sheet thicknesses of > 2mm.

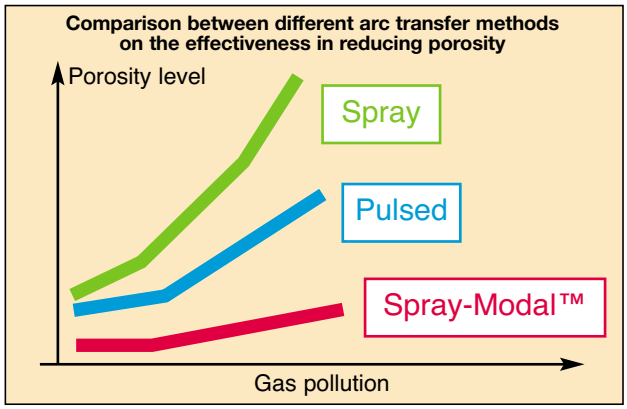


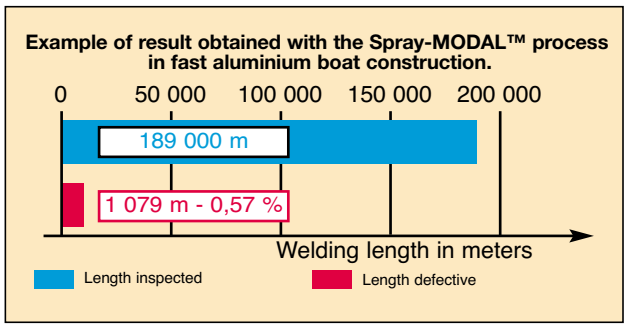


Porosity level: comparison of Spray Arc Spray-MODAL™



Horizontal Welding





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.

quality and especially productivity [twin-wire processes for automatic systems (TOPMAG), controlled pulsed current, modulated current (Spray-MODAL™), Cold Double Pulse™ (CDP™)]. The quality of the joint welded with aluminium alloy depends in part on the process chosen, but also indirectly on the judicious choice of add-ons and options especially developed for this material.

Essential add-ons and options

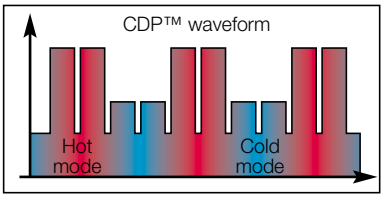
	Description	Advantages
 2004-956	**Harnesses** Makes a large contribution to obtaining a weld which is free from porosity as it carries pure gas without risk of impurities being added which could pollute it and subsequently the weld pool. An essential ingredient in obtaining "TOP ALU" quality levels.	• **Improves the quality of aluminium welding** • **Avoids rework arising from defects** • **Improves productivity**
 1415-042	**ALUKIT (aluminium wear parts)** Due to its lack of strength and rigidity, the feeding of aluminium and aluminium-alloy wire is the sensitive point in the installation. Specially designed for feeding these wires, the ALUKIT is thus the main component in obtaining regular and reproducible wire feeding.	• **Improves the quality of wire feeding** • **Avoids "corkscrew" problems** • **Improves productivity**
 1415-040	**ALUDRY (Coil heating system)** Humidity is everywhere in the atmosphere and condenses on the welding wire causing serious weld defects. Storing coils of wire in drying ovens each day and re-installing them in the machine in the morning is a costly solution which is not 100% effective. The solution Air Liquide Welding have developed is to incorporate a suitable heating system in the wire feeder which stays connected 24 hours a day thus avoiding coils becoming laden with moisture at any time of the day or night. An essential option in obtaining "TOP ALU" quality levels.	• **Large reduction in porosity levels** • **Time saved in handling** • **Energy economy** • **Avoids rework arising from defects** • **Improves productivity**
 1415-062	**Wire straightener** More than 50% of the thrust of the motor is against the friction of the wire in the conduit and wire guides due to the natural curvature of the wire as it leaves the coil. This force means the idle roller has to be tightened additionally which has the effect of distorting the wire and causing small particles of aluminium to become detached which can very quickly interfere with feeding or indeed block the wire altogether. The correct solution is to insert a system just after the coil which straightens the wire perfectly thus making feeding much more regular and reliable. An essential option in obtaining "TOP ALU" quality levels.	• **Improves the quality of wire feeding** • **Avoids "corkscrew" problems** • **Energy economy** • **Improves productivity**
 2000-260	**ALUNET (cleaning pad)** Always with the aim of perfecting and improving feed quality for aluminium wires the wire has to be cleaned before it enters the wire feed chain assembly. ALUNET is a pad impregnated with cleaning fluid which removes any traces of dust and dirt from the surface of the wire to avoid polluting the components of the wire feeding system and in particular the weld pool. An essential option in obtaining "TOP ALU" quality levels.	• **Easy to install** • **Economic and effective** • **Improves the quality of aluminium welding**

Cold Double Pulse™ (CDP™)

The main purpose of Cold Double Pulse™ is to reduce the HEAT INPUT to the weld bead.
This transfer mode uses two voltage/current levels in different transfer modes, one corresponding to the so-called "HOT" parameters to carry out penetration and the second to the so-called "COLD" parameters to reduce the temperature of the weld pool.

CDP™ advantages

- **Weld pool temperature reduced**
- **Reduces distortion**
- **Enables very fine thicknesses to be welded**
- **Gives a TIG-like appearance to the weld bead**



Alternating these hot and cold modes produces perfect weld beads on thin thicknesses with much better operational control than that of normal pulsed mode.
This process thus gives a TIG-like appearance to the weld bead.
CDP™ is particularly useful for aluminium applications where sheet thicknesses of < 2mm are used..


2221-002

Main applications:
Parts and products in aluminium; automobile construction and repair, metal furniture, tanks, etc. And also for horizontal welding.

CITOWAVE/CITOPULS, add-ons and options

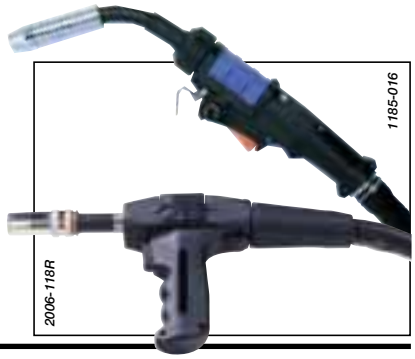
Although it is true that welding performance is linked to the technology of the current source and the correct regulation of the wire speed, the welding torch makes an equally important contribution. The parameters sent by the power source must be very accurately transferred by the torch in the arc.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

Push-pull torches

Several push-pull systems are available for use with CITOWAVE and CITOPULS.

The ALUTORCH range offers great operational conditions due to the miniaturization of the wire drive system in line with the push-pull wire feeding axis.

These torches give an excellent wire feeding quality, and therefore an excellent weld quality and are particularly recommended for aluminium applications or usage with small diameter wires.



Digital torches with integral settings

These top of the range torches use advanced digital technology to obtain system miniaturization in order to fit the maximum number of possibilities for settings and parameters into the smallest possible space. The CITORCH range has met the challenge of making the torch as small and easy to handle as a conventional torch with, in addition, the inclusion of almost complete remote control facilities.

CITORCH "E"		for CITOWAVE: integrated setting and displays			
Type		241	341	341 W	441 W
Duty cycle	60 %	270 A	350 A	-	-
	100 %	-	-	370 A	450 A
Wire diameter range		0.8 - 1.0 mm possible (1.2)	1.0 - 1.2 mm possible (0.8 and 1.6)	1.0 - 1.2 mm possible (0.8 and 1.6)	1.0 - 1.6 mm
Standard lengths	3 m	W 000 261 579	W 000 255 640	W 000 261 581	W 000 255 643
	4 m	W 000 261 580	W 000 255 641	W 000 261 582	W 000 255 642
Cooling		air	air	water	water

CITORCH "P"		for CITOPULS: integrated setting		
Type		341	341 W	441 W
Duty cycle	60 %	350 A	-	-
	100 %	-	370 A	450 A
Wire diameter range		1.0 - 1.2 mm possible (0.8 and 1.6)	1.0 - 1.2 mm possible (0.8 and 1.6)	1.0 - 1.6 mm
Standard lengths	3 m	W 000 255 647	W 000 261 583	W 000 255 644
	4 m	W 000 255 646	W 000 261 584	W 000 255 645
Cooling		air	water	water

CITORCH advantages
- **Setting direct on torch**
- **Adjustment during welding**
- **Parameter reading (on CITORCH M E)**
- **Ease of use**

Conventional torches

Complete range of manual MIG-MAG torches which are innovative, powerful and suited to quality applications in the various market sectors. Torches comply with the EN 60974-7 standard and use European standard connections.

CITORCH M	241	341	341 W	441 W	450 W
Duty cycle	270 A	350 A	370 A	450 A	500 A
Wire diameter range	0.8 - 1.0 mm possible (1.2)	1.0 - 1.2 mm possible (0.8 and 1.6)	1.0 - 1.2 mm possible (0.8 and 1.6)	1.0 - 1.6 mm	1.0 - 1.6 mm
Standard lengths	3, 4 and 5 m	3, 4 and 5 m	3, 4 and 5 m	3, 4 and 5 m	3, 4 and 5 m
Options	Stick-out setting High-current alum. wear condui	Stick-out setting High-current alum. wear conduit Tip + high-current contact tube	Stick-out setting High-current alum. wear conduit Tip + high-current contact tube	Stick-out setting High-current alum. wear conduit	Stick-out setting High-current alum. wear conduit

Wire feeders with digital regulation

wire feeders are provided with regulation using an optic encoder which guarantees precision and consistency of feeding even at very slow speeds. The double-disconnectable ducted harnesses with quick connectors are instantly interchangeable. The reel cover with half-shell opening gives easy access to the reel which is in a semi-inclined position to obtain improved wire feeding.

- **a** Reel cover
- **b** Double-disconnectable harness
- **c** Display
- **d** Parameter settings
- **e** Torch connector
- **f** Coolant connections
- **g** CAD connector

Wire feeding precision

CITOWAVE DMX 5000 wire feeder

CITOPULS DMY 4000 wire feeder

Harnesses	Length
Steel air	2 m - 5 m - 10 m
Steel water	2 m - 5 m - 10 m - 15 m
Alu water	2 m - 10 m - 15 m - 25 m

Wire feed	Diameter
Wire speed	1 - 25 m/min.
Steel	0.6 - 0.8 - 1.0 - 1.2 - 1.4 - 1.2 - 1.6 mm
Stainless steel	0.8 - 1.0 - 1.2 - 1.4 - 1.2 - 1.6 mm
Alum.	1.0 - 1.2 - 1.4 - 1.2 - 1.6 - 2.4 mm

Wire feeder options

Wire feed trolley

Wire feed pivot

Wire feed suspension cradle

Other wire feeder options[1]:

- Push-pull kit
- Wire feeder heater
- Digital flowmeter
- Wire straightener
- Soft Arc Striking Kit (retractable)

[1] Alu wire feeder

CITOWAVE/CITOPULS, welding expertise for all autom

CITOWAVE and, in part CITOPULS, cover the vast majority of automatic and robotic applications used in the market sectors. The basic unit is designed to receive the option(s) specific to the application depending on the desired integration level.

Architecture of automatic options


PC-TOOL option

Network option


DVR auto wire feeder


JOBMATIC option

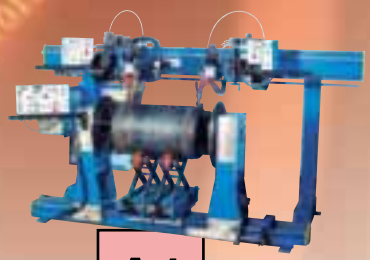

MUXAL option

PC-TOOL option

Cycle card

AUTO-CARD option

AUTO-BUS option



A1

A2

A3

atic and robotic applications.

CITOWAVE is perfectly flexible. It adapts to all situations found in industry and by adding modules can become the most complete product on the market meeting the most sophisticated requirements.

Automation levels

	CITOWAVE														CITOPULS			
	280		400 W						500 W						320 (W)		420	
Automation level	A1	A2	A1	A1	A2	A2	A3	A3	A1	A1	A2	A2	A3	A3	A1	A1	A1	A1
DMY 4000 manual wire feeder																●		●
DV-R 400 robot wire feeder															●		●	
DMX 5000 manual wire feeder				●						●								
DV-R 500 robot wire feeder			●		●		●		●			●		●				
DV-R 600 robot wire feeder						●		●			●		●					
CITOJOB remote control	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
AUTO-CARD auto card	A2	●			●	●	●	●			●	●	●	●				
AUTO-BUS auto card	A3						●	●					●	●				
PC-TOOL option		■			■	■	■	■			■	■	■	■				
WELDSOFT PC software		■			■	■	■	■			■	■	■	■				

Recommended configuration ● *Required equipment* ■ *Optional equipment*

A1 Automation

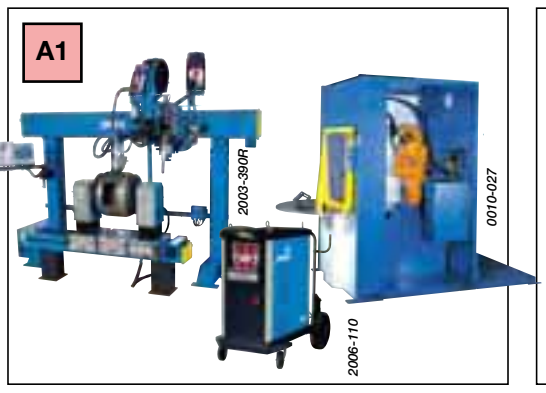
The A1 automation level allows direct connection of a CITOWAVE or a CITOPULS to an automatic welding machine as standard. A DV-R 400 robot wire feeder is recommended, but these installations can also operate with a manual wire feeder.
This level of synchronization does not require an additional card.

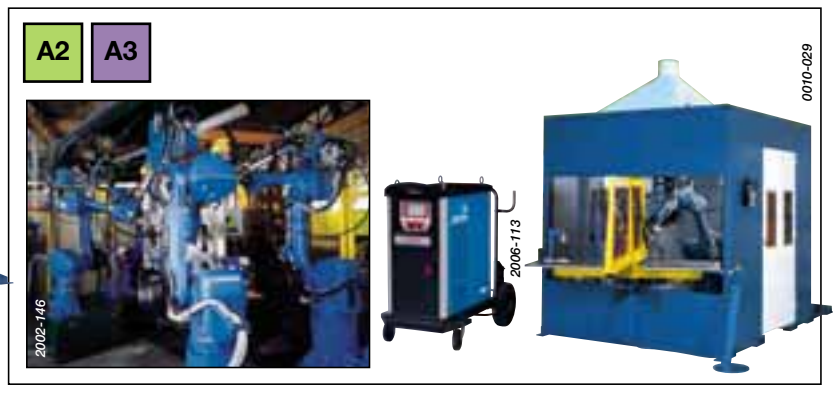
A2 Automation kits

The A2 automation level with the PC-Card option allows a CITOWAVE to be interfaced with a robot or automatic welding machine. This controlled process works by program selection or by instructions for adjusting the parameters. These installations require a DV-R 500 or DV-R 600 HD robot wire feeder for applications with a very high duty cycle. The PC-TOOL option enables download and backup on a USB key and the data can be used with the WELDSOFT software.

A3 Automation kits.

The A3 automation level with the AUTO-CARD and AUTO-BUS options allows a CITOWAVE to be interfaced to a robot with a field bus link. This controlled process works with an advanced protocol. These installations require a DV-R 500 or DV-R 600 HD robot wire feeder for applications with a very high duty cycle. The PC-TOOL option enables download and backup on USB key and the data can be used with the WELDSOFT software.





CITOWAVE/CITOPULS, optimise your choice depending

CITOWAVE and CITOPULS installations have been designed with the same objective to satisfy welding performance. The CITOWAVE has a wider range of processes and "one-button" laws, and much wider communication possibilities especially with regard to automation. The CITOPULS has been designed for small and medium-sized businesses who want to increase their productivity and weld quality while at the same time having a product which is easy to install and use. Although simple to use,

	CITOWAVE™			CITOPULS™	
Configuration	**280**	**400**	**500**	**320**	**420**
Compact air	●				
Separate air				●	
Separate water		●	●	●	●
Processes					
Electrode	●	●	●	●	●
Smooth current MIG	●	●	●	●	●
Speed Short Arc™ (SSA™) MIG	●	●	●	●	●
Pulsed MIG	●	●	●	●	●
Soft Silence Pulse™ (SSP™) MIG	●	●	●		
Spray-MODAL™ (SM™) MIG	●	●	●		
Cold Double Pulse™ (CDP™) MIG	●	●	●	●	●
MIG brazing	●	●	●	●	●
Base synergic laws					
Mild steel	0.6/0.8/1.0/1.2	0.8/1.0/1.2/1.6	0.8/1.0/1.2/1.6	0.6/0.8/1.0/1.2	0.8/1.0/1.2/1.6
Stainless steel	0.6/0.8/1.0/1.2	0.8/1.0/1.2/1.6	0.8/1.0/1.2/1.6	0.8/1.0/1.2	0.8/1.0/1.2/1.6
Pure aluminium (series 1000)	1.0/1.2	1.2/1.6	1.2/1.6/2.4	1.2	1.2/1.6
Pure silicon (series 4000)	1.0/1.2	1.2/1.6	1.2/1.6/2.4	1.2	1.2/1.6
Aluminium magnesium AG3 (series 5000)	0.8/1.0/1.2	1.0/1.2/1.6	1.2/1.6/2.4	1.0/1.2	1.0/1.2/1.6
Aluminium magnesium AG5 (series 5000)	0.8/1.0/1.2	1.0/1.2/1.6	1.2/1.6/2.4	1.0/1.2	1.0/1.2/1.6
Cupro aluminium	1.0/1.2	1.0/1.2	1.0/1.2	1.0/1.2	1.0/1.2
Cupro silicon	1.0/1.2	1.0/1.2	1.0/1.2	1.0/1.2	1.0/1.2
CITOFUX GALVA	1.0/1.2	1.0/1.2	1.0/1.2	1.0/1.2	1.0/1.2/1.6
CITOFLUX R 00	1.0/1.2	1.0/1.2/1.6	1.0/1.2/1.6	1.0/1.2	1.0/1.2/1.6
CITOFLUX M 00	1.0/1.2	1.0/1.2/1.6	1.0/1.2/1.6	1.0/1.2	1.0/1.2/1.6
CITOFLUX B 00	1.2	1.2/1.6	1.2/1.6	1.2	1.2/1.6
Additional equipment					
Workshop trolley	●	●	●	●	●
Worksite trolley	●	●	●	●	●
DMY 4000 wire feeder				●	●
DMX 5000 wire feeder		●	●		
DV-R 400, 500 and 600 HD wire feeder		●	●	●	●
Wire feed trolley		●	●	●	●
Wire feed pivot		●	●	●	●
Wire feed suspension cradle		●	●	●	●
Double-disconnectable air harnesses				●	
Double-disconnectable water harnesses		●	●		●
Double-disconnectable water harnesses		●	●		●

on your requirements

the CITOPULS can also be integrated into a simplified automatic installation or onto a robot.

Basic prewiring	CITOWAVE™ 280	CITOWAVE™ 400	CITOWAVE™ 500	CITOPULS™ 320	CITOPULS™ 420
Auto A1 connector	●	●	●	●	●
Graphic display source	●	●	●		
7-segment display source				●	●
Enclosed wire feed	●	●	●	●	●
Wire feed display	●	●	●		
Gas purge	●	●	●	●	●
Wire feed inch	●	●	●	●	●
Remote control connector	●	●	●	●	●
Push-pull prewiring	●	●	●	●	●
Torch display wiring	●	●	●		
Torch potentiometer wiring				●	●
Heating prewiring		●	●		
Automatic prewiring	●	●	●	●	●
PC-TOOL link prewiring	●	●	●		

Basic functions

Wire speed setting (empty)	●	●	●	●	●
Wire speed setting (welding)	● (CITOJOB)	●	●	●	●
Arc length setting (empty)	●	●	●	●	●
Arc length setting (welding)	● (CITOJOB)	●	●	●	●
End setting (empty)	●	●	●	●	●
End setting (welding)	● (CITOJOB)	●	●	●	●
Spot 2T / 4T / cycle	●	●	●	●	●
Hot start	●	●	●	●	●
Soft start	●	●	●		
Fading	●	●	●	●	●
Hot Start	●	●	●	●	●
Spray end	●	●	●	●	●
Synergic mode	●	●	●	●	●
Semi- synergic mode	●	●	●	●	●
Manual mode (free)	●	●	●		
Staged mode	●	●	●		
Parameter blocking	●	●	●		
Parameter limitation	●	●	●		
Parameter saving	●	●	●	● (CITOJOB)	● (CITOJOB)
Calibration	●	●	●	●	●
Calibration	●	●	●	●	●
Software update	●	●	●	●	●
Parameter printing	●	●	●		
Error messages	●	●	●	●	●
Clock	●	●	●		
Maintenance configuration	●	●	●		
Language choice	●	●	●	● (CITOJOB)	● (CITOJOB)

Technical data

		CITOWAVE™			CITOPULS™	
		280	400	500	320	420
Primary						
Three-phase power supply		400 V - 50/60 Hz				
Consumption	**45 %**	-	-	-	-	37.5 A
	60 %	-	34.5 A	44,5 A	-	34.5 A
	100 %	31.4 A	29.8 A	39 A	25.9 A	29.8 A
Secondary						
Open circuit voltage		106 V				
Welding current		20 A - 280 A	20 A - 400 A	20 A - 500 A	20 A/320 A	20 A/420 A
Duty cycle at 100 %	**MIG**	280 A/28 V	350 A/31.5 V	440 A/36 V	320 A/30 V	350 A/31.5 V
	EE	280 A/31.2 V	350 A/34 V	440 A/36.6 V	320 A/32.8 V	350 A/34 V
Duty cycle at 60 %	**MIG**	-	400 A/34 V	500 A/39 V	-	420 A/305 V (45%)
	EE	-	400 A/36 V	500 A/40 V	-	420 A/36.8 V (45%)
Measurements						
Dimensions (L x w x h)		1 150 x 750 x 1 150 mm				
Net weight		80 kg	91 kg	105 kg	83 kg air 91 kg water	91 kg
Standards		EN 60974-1 / EN 60974-10				
Protection class		IP 23				
Cooling						
Fan		-	230 V single-phase		230 V single-phase	
Pump		-	400 V single-phase		400 V single-phase	
Maximum pressure		-	4 bar		4 bar	
Maximum flow rate		-	4.5 l/min.		4.5 l/min.	

Options

CITOJOB remote control	●	●	●	●	●
Auto A1	●	●	●	●	●
Auto A2	●	●	●		
Auto A3		●	●		
PC-TOOL	●	●	●		
WELDSOFT software	●	●	●		
Push-pull torch	●	●	●	●	●
Push-pull gun	●	●	●	●	●
CITORCH “E” torch	●	●	●		
CITORCH “P” torch				●	●
Genius mode	●	●	●		
Wire straightener (aluminium)	●	●	●	●	●
Coil heater (aluminium)	●	●	●		
Dust filter	●	●	●	●	●

To order

Current sources:		P/N
CITOWAVE MX 280	**Compact air cooling**	**W 000 055 013**
MXW 400	**Separate liquid cooling**	**W 000 257 777**
MXW 500	**Separate liquid cooling**	**W 000 055 022**
CITOPULS MX 320	**Separate air cooling**	**W 000 055 002**
MXW 320	**Separate liquid cooling**	**W 000 055 003**
MXW 420	**Separate liquid cooling**	**W 000 257 776**

Wire feeder:		
DMY 4000	**CITOPULS manual**	**W 000 257 873**
DMX 5000	**CITOWAVE manual**	**W 000 257 782**
DV-R 400	**CITOPULS Robotic**	**W 000 055 084**
DV-R 500	**CITOWAVE Robotic**	**W 000 055 087**
DV-R 600 HD	**HD CITOWAVE Robotic**	**W 000 055 068**

Harnesses (for use with steel):					
Length	2 m	5 m	10 m	15 m	25 m
Air cooling	**W 000 055 088**	**W 000 055 089**	**W 000 055 090**	**-**	**-**
Liquid cooling	**W 000 055 091**	**W 000 055 092**	**W 000 055 093**	**W 000 055 094**	**-**

Harnesses (for use with aluminium):					
Liquid cooling	**W 000 055 095**	**W 000 055 096**	**-**	**W 000 055 097**	**W 000 055 098**

Add-ons:	
Workshop trolley for power source	**W 000 055 046**
Worksite trolley for power source	**W 000 055 047**
Wire feed pivot (requires power source workshop trolley)	**W 000 055 048**
Workshop trolley for wire feeder	**W 000 055 050**
Wire feed suspension support	**W 000 055 101**

Options :	
Manual push-pull card (PP-card)	**W 000 055 061**
Remote control (CITOJOB)	**W 000 055 077**
Remote control on power source (CAD-plug)	**W 000 055 040**
Anti-dust filter	**W 000 055 049**
Automatic/robotic interface card (auto-card A2)	**W 000 055 024**
Retrofit automatic/robotic multiplexer box (MUXAL)	**W 000 055 037**
Communication card (PC-TOOL)	**W 000 055 081**
WELDSOFT software	**W 000 055 043**
Winclean	**W 000 055 069**

Torches	3 m	4 m	5 m
CITORCH M 241	**W 000 261 556**	**W 000 261 557**	**W 000 261 558**
CITORCH M 341	**W 000 261 559**	**W 000 261 561**	**W 000 261 562**
CITORCH M 341 W	**W 000 261 573**	**W 000 261 574**	**W 000 261 575**
CITORCH M 441 W	**W 000 261 576**	**W 000 261 577**	**W 000 261 578**
CITORCH M 450 W	**W 000 145 176**	**W 000 145 177**	**W 000 145 178**
CITORCH M “E” 241	**W 000 261 579**	**W 000 261 580**	**-**
CITORCH M “E” 341	**W 000 255 640**	**W 000 255 641**	**-**
CITORCH M “E” 341 W	**W 000 261 581**	**W 000 261 582**	**-**
CITORCH M “E” 441 W	**W 000 255 643**	**W 000 255 642**	**-**
CITORCH M “P” 341	**W 000 255 647**	**W 000 255 646**	**-**
CITORCH M “P” 341 W	**W 000 261 583**	**W 000 261 584**	**-**
CITORCH M “P” 441 W	**W 000 255 644**	**W 000 255 645**	**-**
Push-pull TORCHES		**Please ask for details**	

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AIR LIQUIDE
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