

WE COME BOOK

Critical Manufacturing Partner Network



Critical
manufacturing
an ASM PT company



Welcome to the Critical Manufacturing Partner Network!

Critical Manufacturing's Partners are a valued part of our go to market strategy. That's why we partner with Best in Class firms, around the world. Through the power and flexibility of our Manufacturing Execution System (MES) and the expertise of our partners, we deliver solutions that exceed our customers' expectations and ensure success.

Over the past four years, we've added the leading global consulting and implementation firms that specialize in the complex discrete industry to our roster of partners and we are pleased that you have chosen to work with us and share your expertise.

Partners are a critical element in our customer care methodology, as we see customers traveling on a continuum—they are also our partners in their journey to reach Digital Transformation. We believe that you as an implementation or consulting partner will provide the means for our customers to reach that transformation, with your proven methodologies and practices, unique to your company, but always following the Critical Manufacturing approach for successfully executing and maintaining a project as a result of our Certification program.

In this Welcome Book, that we suggest you to read in advance, you will find the basics about Critical Manufacturing and our modern MES, as well as some useful tips when staying in Porto for the Partner training program.

We hope you enjoy your time with us, and please feel free to contact me for anything you may need.

Best regards,

Maryanne Steidinger

Head of Partner Management

maryannesteidinger@criticalmanufacturing.com

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WELCOME TO CRITICAL MANUFACTURING

Meet Critical Manufacturing

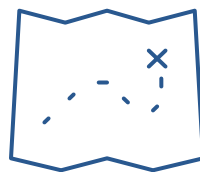
Critical Manufacturing, a subsidiary of ASM PT, provides the most modern, flexible and configurable Manufacturing Execution System (MES) available.

Critical Manufacturing MES helps manufacturers stay ahead of stringent product traceability and compliance requirements; reduce risk with inherent closed-loop quality; integrate seamlessly with enterprise systems and factory automation, and provide deep intelligence and visibility of global production operations.

As a result, our customers are Industry 4.0 ready. They can compete effectively and profitably by easily adapting their operations to changes in demand, opportunity or requirements, anywhere, at any time.

Vision

**Make Industry 4.0 a reality
for all manufacturers**



Mission

**Drive business value through the convergence
of intelligence, operations, and automation
technologies for Industry 4.0**



Values

- Innovation
- Agility
- Commitment





Quick Facts

2009

COMPANY
FOUNDED

+50

CUSTOMERS

+60

PLANTS
RUNNING
OUR MES

+1B

DATABASE
TRANSACTIONS
PER MINUTE

+250

EMPLOYEES

35%

YoY SALES GROWTH
(2019)

26%

EBITDA/SALES
(2019)





0

FINANCIAL
DEBT

Locations

- 1 Portugal (HQ)
- 2 Germany
- 3 USA
- 4 China

Segments

-  Semiconductors
-  Electronics
-  Medical Devices
-  Other Discrete

Customers

Infineon, Intel, Huawei,
ASE, OSRAM, Philips,
B. Braun, Panasonic,
GE Healthcare, Jabil,
Honeywell, Vishay,
AT&S, Medtronic

Global Partners

Accenture
ATS-Global
HCL Technologies
TCS

About ASM

16,300

EMPLOYEES

+2B

US\$ ANNUAL
SALES (2019)

1,400

TECHNOLOGY
PATENTS

12

MANUFACTURING
FACILITIES

2,000

R&D STAFF

10

R&D CENTERS
WORLDWIDE

10%

OF REVENUE
ON R&D P.A.

TOP100
GLOBAL TECH LEADER

2018 THOMSON
REUTERS



Headquartered in Singapore.



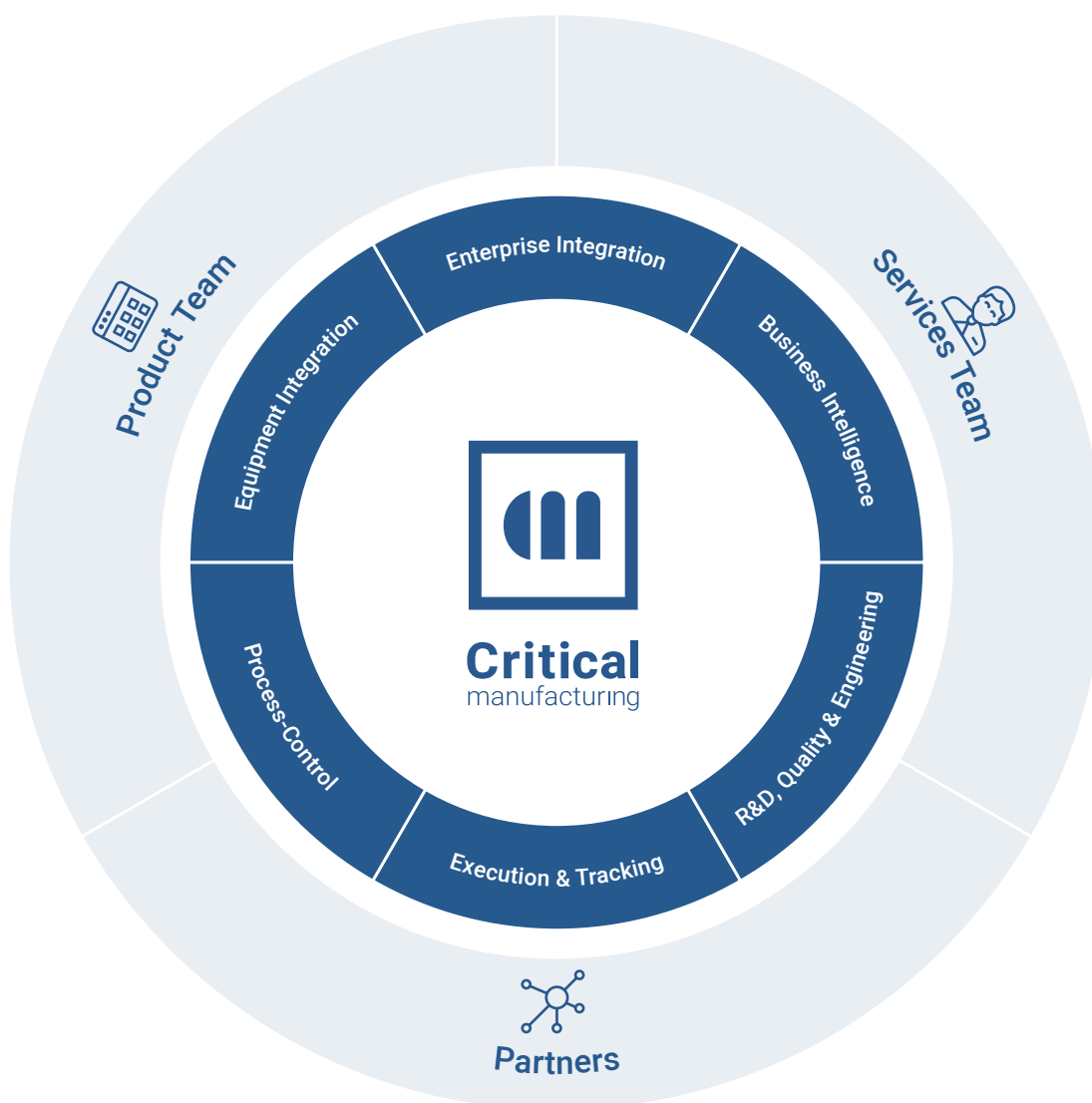
Listed in the HK Stock Exchange.



Present in more than 30 countries.



Scope of Activity



Product Team

Strong know-how in
Manufacturing Execution
Systems, Equipment Integration,
Factory and Systems Integration



Services Team

Strong knowledge in various
domains, developed by years
of joint work with strategic
customers



Partners

Global, regional and local
partner network provides
multi-site, segment, regional
and even customer-specific
knowledge and experience

Our Industries

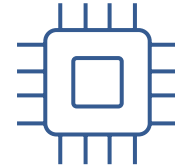
A woman in a blue lab coat and safety glasses is working on a smartphone in a factory setting. She is using a screwdriver to work on the internal components of the phone. In the background, other workers are visible, and the factory environment is filled with equipment and lights.

Main Segments for Critical Manufacturing MES

Semiconductors

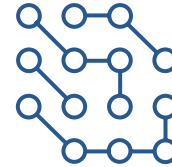
Semiconductor must migrate from aging legacy systems to deal with constant permanent change and meet increasingly complex customer requirements, to achieve 'connected and knowledge-intensive production.'

MES plan and control production in real time, enhancing efficiency, manufacturing flexibility and asset utilization.



Electronics

Faster, smarter, more sophisticated devices are released with ever growing frequency and Electronics manufacturers producing printed circuit boards (PCBs), printed circuit board assemblies (PCBAs), complex assemblies, and box build must improve manufacturing speed and lower the cost of innovation.



Medical Devices

Pricing and margin pressure from reimbursement and purchasing practices are driving companies to seek new ways to become more efficient, speed innovation and decrease costs, while being compliant within stricter guidelines.



	America	DACH	EMEA	Greater China	SE Asia
Medical Devices					
Semiconductor	Front End	Front End	Front End	Back End	Back End
Electronics	PCB / SMT	PCB / SMT	PCB / SMT	PCB / SMT	SMT
Automotive					
Aerospace		Partner - Led Industry Practices			
Other Discrete					

CM Strategic - Direct
 CM Strategic - Indirect
 Discrete Multi-Site

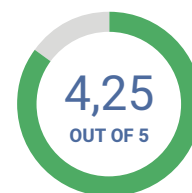
2020 Gartner Critical Capabilities for MES Report

Critical Manufacturing scored Highest in 3 use cases in the 2020 Gartner Critical Capabilities for MES Report

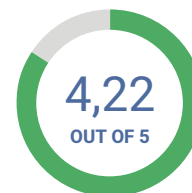
Critical Manufacturing is proud to be recognized in the Gartner Critical Capabilities Report for Manufacturing Execution Systems 2020, with the highest product scores out of 20 vendors for 3 out of 7 Use Cases for batch /repetitive flow and complex discrete manufacturing.



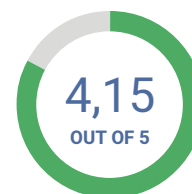
SCORED 1ST



Complex discrete
make to order

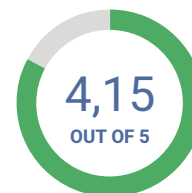


Complex discrete
engineer to order



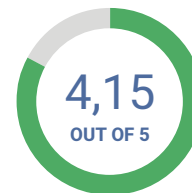
Batch/repetitive flow
engineer to order

SCORED 3RD



Batch/repetitive flow
make to order

SCORED 4TH



Batch/repetitive flow
make to stock

Critical Manufacturing MES



MES as a Critical Element of Industry 4.0

Connecting factories internally and externally through an integrated MES is essential

- Connecting machines and other assets to communicate across a common infrastructure is the first step to digitization.
- MES plans and controls production in real time, enhancing efficiency, manufacturing flexibility and asset utilization.
- MES systems need to be integrated with ERP for organization-wide optimization.
- Digitize not just internal processes, but across the entire supply chain as well.

Main Benefits of MES

Improve quality of products



Use it as a platform for continuous improvement



Reduce operational costs



Improve productivity



Better respond to customer demands



Improve flexibility of operations



Why Critical Manufacturing MES is Industry 4.0-ready

Critical Manufacturing MES represents a step change for manufacturers of complex, high-tech discrete products concerned with keeping up with increasing customer demands while simultaneously error-proofing and future-proofing their operations against constant change.

Is the most modern and complete modular MES available, including Digital Twin, Augmented Reality, Advanced Scheduling, Factory Automation and IIoT Integration, Closed-Loop Quality and more.

Has all the advanced functionality and capabilities to create true competitive advantage for innovative, complex industries.

Critical Manufacturing's Modular MES



Why Critical Manufacturing Industry 4.0 MES?

Industry 4.0 initiatives need a modern MES as the foundation to bring the vision to life and realize the full benefits. Critical Manufacturing MES has all the advanced functionality and capabilities to create true competitive advantage for innovative, complex industries.

Connectivity

- Connect to IoT-enabled products and equipment
- Manage and control untethered devices
- Secure physical and digital assets



Mobile

- Work anywhere
- Leverage location data effectively
- Use Augmented Reality for assets and products



Cloud

- Leverage hosted infrastructure
- Use up-to-date versions at all times
- Focus on strategy, not IT management



Advanced Analysis

- See real-time plant performance metrics
- Prevent problems with predictive and prescriptive analytics
- Feed contextualized data to enterprise big data



Decentralization

- Manage complex distributed plant floor processing from a unified system
- Record events in context for complete, accurate genealogy



Vertical Integration

- Use a dynamic, rule-based workflow engine
- Integrate seamlessly with equipment, IoT and automation
- Work with enterprise systems



Horizontal Integration

- Integrate seamlessly between plants
- Collaborate dynamically with suppliers
- Share efficiently and securely with customers



Competitive Differentiators

Industry 4.0-Ready

- Manufacturing Execution Digital Twin (fabLIVE 3D)
- Native support for IIoT devices
- Support for cyber-physical systems
- Full mobile experience for all shop floor functions
- Unique shop floor-level Augmented Reality



Single Solution

- Single, modular solution
- Single technology stack
- Single user experience for administration, configurations and execution of all functions
- Broad functionality of native modules
- No integration efforts



Broadest functionality

- Advanced Planning and Scheduling
- Hierarchical Material, Container, Equipment, Data Collection and Checklist models
- Quality: SPC, Exception Protocols, Experiments, Sampling, Documentation
- Efficiency: Labor, Maintenance, Costing and Warehouse
- Visibility and Analytics, Data Warehouse, fabLive, Alarms, etc.



Integration and Automation

- Same solution to integrate standard (OPC, SECS/GEM,...) and IoT (BLE, MQTT) interfaces
- Configuration of automation workflows with drag-and-drop and no code
- Debug automation workflows without external simulators
- One-click central deployment (mass, selective and rollback)



Flexibility and Ease of Use

- Flexible Configuration
- Easy setup (e.g. flows, rules, transactions, wizards, data views)
- User-configurable Advanced Operator Interfaces
- Easy configuration done by Process Owners
- Handle all levels of manufacturing complexity and processes within the same system
- Low code / No code



Our Customers



A Few of Our Global Customers

North America

Semiconductors



Medical Devices



Other Discrete



South America

Semiconductors



Germany & Austria

Semiconductors



Electronics



Other Europe

Semiconductors



Medical Devices



Other Discrete



China

Semiconductors



Electronics



Other Asia

Semiconductors



Medical Devices



Electronics



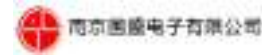
What Our Customers Say

“Critical Manufacturing MES had the modeling flexibility, and represented the best match for our needs. Critical Manufacturing’s product and the people working on this project exceeded our expectations.”



Ayush Jain
Director of IT
for SoloPower

“The Critical Manufacturing MES provides us with the interactive production monitoring capabilities we need to improve performance and quality on the production side, and the integrated maintenance, materials and exceptions management modules that help us to manage the business side more efficiently.”



Yu Chen,
CIO of Nanjing
GuoShen Electronics

“The biggest benefit of this solution compared to others we have used is that real-time visibility into machine state. Understanding this state immediately and at all times allows a much greater control to ensure high yield at low cost.”



Fred Lu
Advanced Semiconductor
Engineering Group

“We needed a system that would allow us the right levels of flexibility, reliability in data collection and feature richness as well as automation. From the different systems we looked at during our evaluation, Critical Manufacturing was the more promising. We’re now confirming the choice was absolutely right and will yield outstanding results for our customers.”



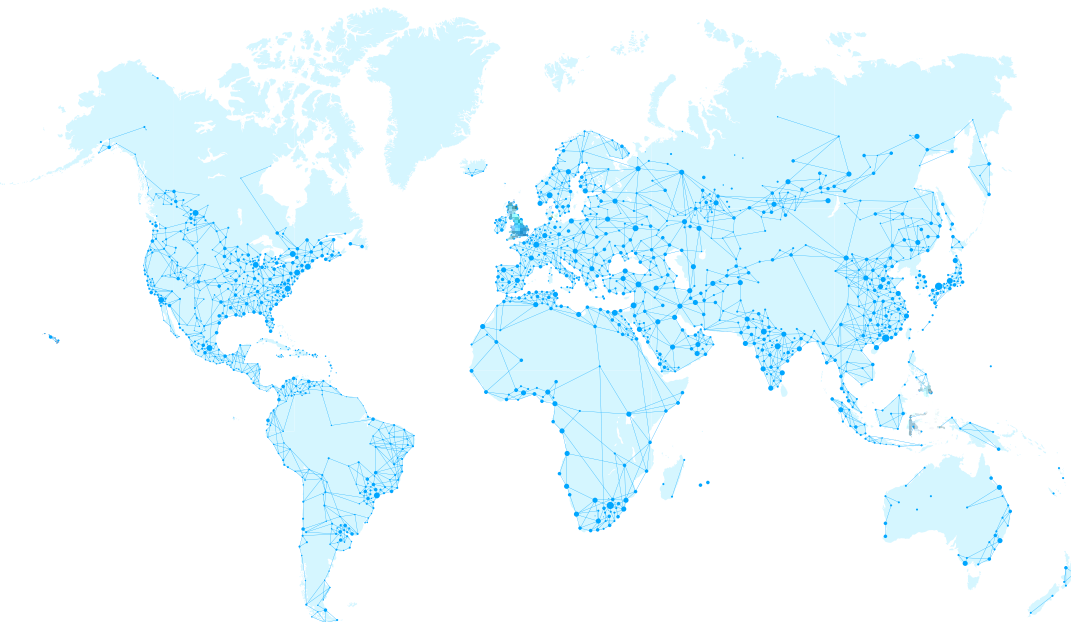
Prof. Dr. Peter Kücher,
Director of
Fraunhofer CNT

Our Partners



Who Are Our Partners?

Global Partners



Regional Partners

North America



Europe



China



Other Asia



Thought Leadership – MES for Industry 4.0

We invite you to read and share our thought leadership content.

On our [website](#) you will find a wide range of white papers and case studies about the most important topics for Industry 4.0, reflecting the crucial role of MES.



Manufacturing Software for Industry 4.0. Embracing Change and Decentralization for Success



The New MES: Backbone of Industry 4.0



IIoT Has a "Thing" for MES. Why IIoT Platforms Won't Replace MES for Industry 4.0



APS Goes Native for Industry 4.0. Why Advanced Planning and Scheduling Must be an MES Capability



MedTech must embrace Industry 4.0 to thrive in the outcome economy



Digital Twin and Augmented Reality: From Ideal to Real with MES



WEL COME TO PORTO, PORTUGAL

Word of Welcome

Welcome to City of Porto!

This section is meant to provide you the most essential information before and upon arrival in Porto, Portugal. It will give you insight to the various services you might need over the course of your stay.

Here, you will find important information regarding practical matters such as:

- accommodation
- transport
- geography and culture of Portugal

Should you have any questions or concerns please use the contact information provided below. Don't hesitate to ask any questions you might have.

We look forward to meeting you soon.

On behalf of Critical Manufacturing,
Welcome Team

Critical Manufacturing

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4470-605 Moreira da Maia, Portugal
t: +351 229 446 927

 contact@criticalmanufacturing.com

 www.criticalmanufacturing.com

gps: 41°15'32.87"N, 8°38'28.46"W  Google Maps

National Emergency Number: 112



Porto

It was in the Porto and in the North regions that Portugal was founded in the 12th century and the Portuguese became a people and a nation.

Porto, a World Heritage city, is known for the Port wine which is shipped from here all over the world, but also for a heritage which combines ancient churches and monuments, such as the [Cathedral](#) and the [Church of São Francisco](#), and modern buildings, such as [Casa da Música](#) and the [Serralves Museum](#). And also for its [School of Architecture](#) which bred names like Álvaro Siza Vieira and Eduardo Souto de Moura, both winners of the Pritzker Prize.

The region is crossed by the [River Douro](#) which enters Portugal between the ravines and mountains of the interior to flow through the entire World Heritage landscape where the [Port and Douro wines](#) are produced. It is from here that the wine is sent to the [lodges at Vila Nova de Gaia](#), as the cruises touring the region make their way upriver.

Tourist Association of Porto e Norte Region

Tel. +351 22 332 67 51 / Fax. +351 22 332 67 52



E-mail: info@visitportoandnorth.travel



Website: www.visitportoandnorth.travel

How to get to Porto

By Air

Portugal's excellent geographical position makes it a stopover point for many foreign airlines at airports all over the country. The main country's airports are located in Lisboa and Porto.

Lisbon - Portela Airport - Phone: +351 218 413 500

Oporto - Dr. Francisco Sá Carneiro Airport - Phone: +351 229 432 400

TAP - Air Portugal is the country's "flagship" airline and has scheduled flights to more than 75 international destinations and domestic flights between Lisbon, Oporto, Faro, Madeira and the Azores, and also between Madeira and Porto Santo.



Website: www.flytap.com

By car

Portugal has a good road network.

There are two types of motorways:

- The traditional motorways with toll booths, where payment is made either in cash or by bank card. These motorways also have a Via Verde (green channel), which is an electronic toll system that allows drivers to make the payment by bank debit and is intended for use solely by those who have an electronic device identifying their vehicle, which they have previously acquired at one of the respective sales outlets (www.viaverde.pt).
- Motorways that have an exclusively electronic toll system, where tolls are collected by exclusively electronic means. As vehicles pass through the toll gates, they are picked up by electronic detectors placed at the entry to the channels, which are identified with the words "Electronic toll only". For information about the roads covered by this system and the respective forms of payment, consult www.portugaltolls.com

There are car rental services at airports, international rail terminuses and in the main towns and cities.

By Rail

CP - Comboios de Portugal, the Portuguese railway company, offers a vast rail network covering the whole of mainland Portugal and also offers international train services to Vigo, Madrid and Paris.








There are a number of options to meet your needs:

- The top-of-the-range "Alfa Pendular" trains offer the fastest and most comfortable rail link between Lisbon and the Algarve and, in the north, Oporto or Braga, with stops in Coimbra.
- The "Intercidades" or Intercity service covers the Lisbon-Oporto-Guimarães, Lisbon-Guarda, Lisbon-Covilhã, Lisbon-Évora-Beja and Lisbon-Faro routes.
- The international Sud-Express train and Lusitânia hotel-train leave from Lisbon.
- There is a vast network of regional, inter-regional and suburban trains covering the whole of the country.



Website: www.cp.pt



Where to Stay

-  Intercontinental Hotel ★★★★★
www.ihg.com
-  The Yeatman Hotel ★★★★★
www.the-yeatman-hotel.com
-  Hotel da Música ★★★★★
www.hoteldamusica.com
-  Hotel HF Fénix Porto ★★★★★
www.hfhotels.com
-  HF Ipanema Park ★★★★★
www.hfhotels.com
-  BessaHotel Boavista ★★★★★
www.porto.bessahotel.com
-  Hotel HF Tuela ★★★
www.hfhotels.com

Where to Eat

-  Cafeína
www.cafeina.pt
-  Restaurante Traça
www.restaurantetraca.com
-  Oporto Café
www.facebook.com/restauranteoportocafe

Fish Restaurants:

-  O Tito I
Rua Heróis de França 279, Matosinhos
-  O Lusitano
www.restauranteolusitano.pt

Useful Information

Electricity

The electric current in Portugal is 230/400 volts at a frequency of 50 hertz and sockets comply with European standards.

You will need a 230 volt transformer and an adaptor to use American-style flat-prong plugs.

Money / Currency

Portugal is one of 19 European Union countries whose common official currency is the euro.

ATMs - Multibanco

Portugal has a national network of cash machines (ATMs) identified by the symbol MB (Multibanco), from which you can withdraw cash 24 hours a day.

Currency Exchange

You can exchange money at banks, which are open from 8.30 a.m. to 3 p.m. five working days a week, and at bureaux de change or automatic currency exchange machines (these are for currency sale transactions only).

Credit cards

In Portugal, the most commonly used credit cards are: Visa, MasterCard and Maestro. American Express, Diners Club, JCB might be accepted in some places.

If your Visa or MasterCard credit card is lost or stolen, contact the following telephone numbers for assistance:

- Visa: Tel. 800 811 107

- MasterCard: Tel. 800 811 272

Tipping

Service is included in the bill in restaurants, though it is customary to leave an additional tip of about 5-10% of the total.

It is also normal to tip taxi drivers 5-10 % or rounding up the amount paid to the nearest euro.

Official time

During winter time, i.e. from 1 a.m. on the last Sunday in October to 1 a.m. on the last Sunday in March, the official time in mainland Portugal is the Universal Time Coordinated (UTC).

The rest of the year (between 1 a.m. on the last Sunday in March and 1 a.m. on the last Sunday in October), summer time is in effect and the official time in mainland Portugal is Universal Time Coordinated plus one hour.

Services

Banks

Banks are open from 8.30 am to 3 pm five working days a week.

Portugal has a national network of cash machines (ATMs) identified by the symbol MB (Multibanco), from which you can withdraw cash 24 hours a day.

Pharmacies

In general, pharmacies are open on weekdays between 9am and 7pm (some close for lunch from 1 to 3 p.m.) and on Saturdays between 9am and 1pm.

They display an illuminated green cross outside when open at night.

All of them have information posted on the door indicating the nearest pharmacies that are open at night.



Open 24hours:

www.farmaciasdeservico.info/porto/porto

Shops

Traditionally, shops are open from Monday to Friday, from 9 or 10 a.m. to 7 p.m. Some close for lunch from 1 to 3 p.m. On Saturdays from January to November, shops generally close at 1 p.m. though in city centers some are open in the afternoon.

Shops tend to stay open on Saturday afternoons and sometimes even on Sundays in December for Christmas shopping.

There are plenty of shopping centers inside and outside the cities that are usually open from 10 a.m. to midnight every day of the week. They generally have stores with the main international brands.

However, traditional shops with Portuguese products can be found particularly in the streets of the older neighborhoods of towns and cities.



More at: www.visitportugal.com

How to get to Critical Manufacturing



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contact@criticalmanufacturing.com
www.criticalmanufacturing.com
gps: 41°15'32.87"N, 8°38'28.46"W [Google Maps](#)
National Emergency Number: 112

By taxi

Critical Manufacturing recommends taxi services from António Lourenço.
Phone number: +351 919 285 832



Email: taxilourenco@gmail.com

By car

Car rentals

There are car rental services at airports, international rail terminuses and in the main towns and cities.

Drivers with mobility difficulties, or anyone who prefers to, can rent automatic or adapted vehicles.

To rent a car you must:

- be at least between 21 and 25 years old, depending on the company's rental policy
- show identification (identity card for EU citizens or a valid passport for other nationalities)
- have had a driving licence for more than one year

See you soon!



Critical
manufacturing