

Certus Configurable Safety Module

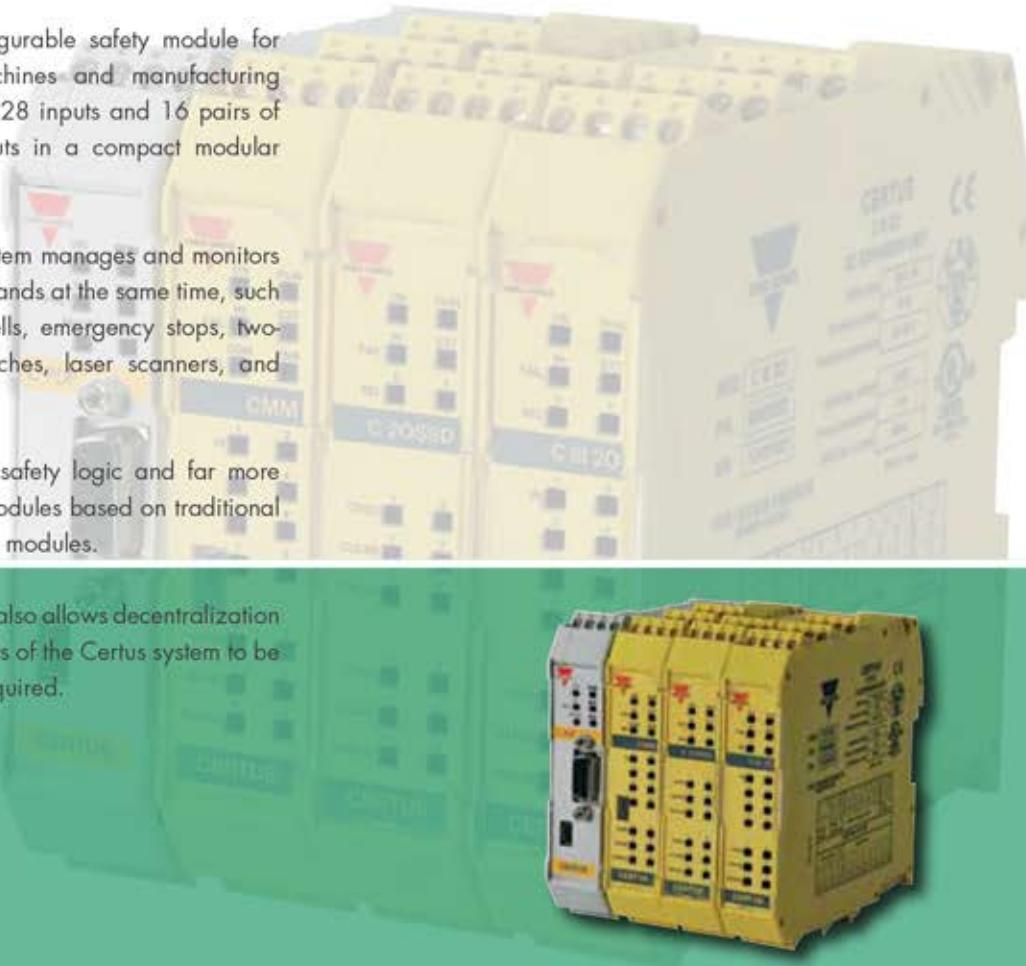
Controls

Certus is a new modular configurable safety module for the protection of people, machines and manufacturing plants, offering a maximum of 128 inputs and 16 pairs of programmable solid state outputs in a compact modular system.

The new Certus configurable system manages and monitors several safety sensors and commands at the same time, such as safety light curtains, photocells, emergency stops, two-hand controls, mechanical switches, laser scanners, and safety mats.

Certus offers a robust versatile safety logic and far more flexibility than standard safety modules based on traditional components, such as relay safety modules.

The flexible Certus safety module also allows decentralization via its CBT module, allowing parts of the Certus system to be mounted in remote cabinets if required.



Versatile and flexible configurable modules

The Certus modular system is comprised of:

- A Configurable Master Module (CMM), which can be used in stand-alone mode, featuring 8 safety inputs and 2 separate programmable dual channel solid state outputs.
- A maximum of 14 expansion modules connectable to the Master Module via the Safety Communication Connector (SCC) proprietary bus to deliver up to 128 inputs and 16 OSSD pairs.

The Certus system is configurable via the Certus Configuration Software (CSS) graphic interface, which is provided with each Master Module at no extra cost. The Master Module and the expansion modules communicate via the 5 way Safety Communication Connector (SCC) proprietary bus, located in the back of each module. Through the Certus Bus Transfer (CBT) it is possible to remote the I/O expansion modules.

The Certus Configuration Software (CCS), installable in a standard PC, can be used to create complex logical conditions using logical operators and safety functions, such as: muting, timer, counters, memories, etc. via an intuitive graphic interface. Configuration data is transferred to the Master Module via a USB link.

A specific configuration held on the Master Module can be saved to the optional Configuration Memory Card (CMC), allowing its transference to another Master Module in a few easy steps. Welcome to simplified plant installation and machine maintenance!

Key features, advantages and benefits.

- Reduces the number of components (less footprint and wiring).
- Faster electrical cabinet construction.
- Flexible, intuitive and quick logical configuration software.
- Ideal for machine designers.
- Easy to set up tamper-proof safety systems.
- Simplifies machine maintenance through the Configuration Memory Card, which can be used to transfer the configuration program to a new Certus in just a few simple steps.
- Certified to the highest safety levels: SIL +, SILCL 3, PL e, Cat.4.

Safety management of a machining centre with alternated load / unload

The operator is required to position the workpiece with the forklift.

The area is protected by two horizontal safety light curtains. In this case, each light curtain must be equipped with the muting function to allow personnel access to the hazardous area when there is no danger. One of the two light curtains (the one facing the tool working area) is active, while the other is muted to allow load/unload by the

Total safety devices:

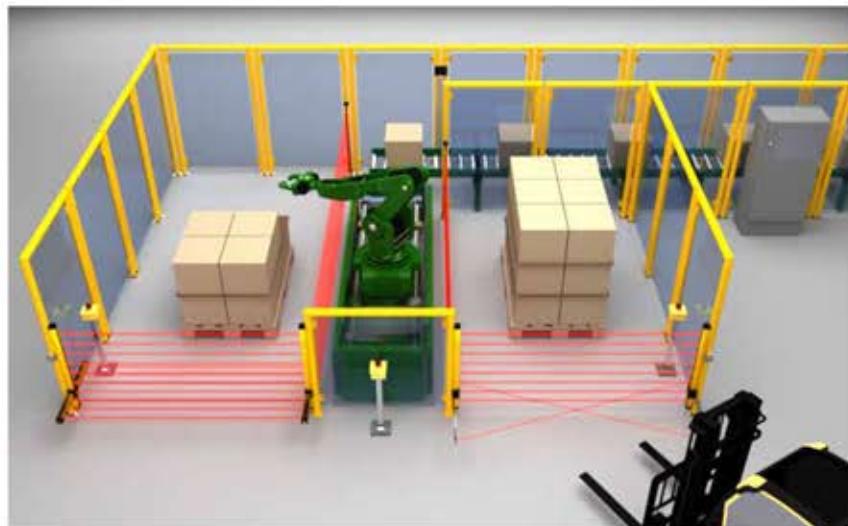
- 2 Safety light curtains
- 2 Restart buttons for the safety light curtains
- 1 Safe gate switches
- 1 Emergency push buttons

Our Solution:

- One CERTUS Master Module (CMM)
- One input expansion unit with eight digital inputs (C 8I)

operator. The muting condition of the two safety light curtains will be inverted when the tool is required to operate on the opposite side of the machine. The machine is completely protected by a fence with an acces gate equipped with a safety switch.

When the gate is opened, the system stops. The related manual restart control is located close to each safety light curtain. The system is equipped with three emergency push buttons which, if activated, stop the machine.



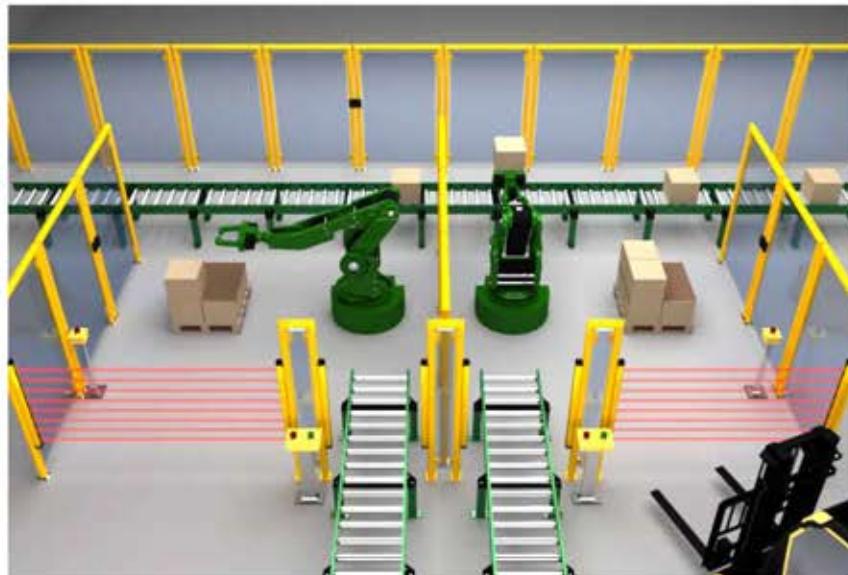
Safety management of a palletising system with two robotic cells

The system is formed by a conveyor that transports boxes to two robotic palletisation cells.

The area is protected by a fence with three access gates (one for each robotic cell and one for the conveyor area) equipped with a safety switch. When the conveyor area gate is opened the entire area stops.

The muting condition of the two safety light curtains will be inverted when the tool is required to operate on the opposite side of the machine. The machine is completely protected by a fence with an acces gate equipped with a safety switch.

When the gate is opened, the system stops. The related manual restart control is located close to each safety light curtain. The system is equipped with three emergency push buttons which, if activated, stop the machine.



Total safety devices:

- 2 Safety light curtains
- 2 Restart buttons for the safety light curtains
- 3 Safe gate switches
- 4 Emergency push buttons

Our Solution:

- One CERTUS Master Module (CMM)
- One input expansion unit with eight digital inputs (C 8I)

CERTUS

Certus Configurable Safety Module



E-STOP checks the status of the inputs connected to an emergency stop device.
Test outputs may be used.
Configurable inputs for contacts: 1 NC or 2 NC.



ENABLE checks the status of the inputs connected to a key type manual control device.
Test outputs may be used.
Configurable inputs for contacts: 1 NO or 2 NO.



FOOTSWITCH checks the status of the inputs connected to a safety footswitch.
Test output may be used.
Configurable inputs for contacts: 1 NC or 1 NO or 2NC or 1 NO + 1NC



SAFETY PHOTOCELL checks the status of the inputs connected to one or to a series of two non selfmonitored safety photocells.
Test outputs may be used.



E-GATE - DEVICE FOR MOVABLE GUARDS checks the status of the inputs connected to a device for movable guards, such as doors and gates.
Test outputs may be used.
Configurable inputs for contacts: 2 NC or 1NC + 1 NO.



ESPE - OPTO ELECTRONIC SAFETY BARRIER OR SAFETY LASER SCANNER checks the status of the inputs of a safety light curtain or a safety laser scanner with two self-monitored static outputs.
Any device with OSSD is accepted.



MOD-SEL - SAFETY SELECTOR checks the status of the inputs connected to a functioning mode selector (up to 4 inputs). Configurable inputs for two, three or four position selectors.



CERTUS C 8I 2O

- I/O expansion unit
- 8 digital inputs
- 2 OSSD pairs with 400mA output current
- 4 test outputs for sensor monitoring
- 2 Programmable digital signal outputs
- 2 Inputs for Start/Restart interlock and external device monitoring (EDM)
- 24 terminal points in 22.5mm
- Connectable to CMM via SCC proprietary bus

CERTUS C 8I - C 16I

- Input expansion unit:
 - C 8I: 8 digital inputs
 - C 16I: 16 digital inputs
- 4 test outputs for sensor monitoring
- 16/24 terminal points in 22.5 mm
- Connectable to CMM via SCC proprietary bus

CERTUS C 12I 8TO

- Input expansion unit: 12 digital inputs
- 8 test outputs for sensor monitoring: can control up to four 4-wire safety mats
- 24 terminal points in 22.5mm
- Connectable to CMM via SSC proprietary bus



CERTUS C 2OSSD - C 4OSSD

- Output expansion units:
 - C 2OSSD: 2 OSSD pairs
 - C 4OSSD: 4 OSSD pairs
- Output current - 400mA
- 2/4 programmable digital signal outputs
- 2/4 inputs for Start/Restart interlock and external device monitoring (EDM)
- 16/24 terminal points in 22.5mm
- Connectable to CMM via SSC proprietary bus

CERTUS C 2R - C 4R

- Safety relay modules:
 - C 2R: 2 relays - 2 NO + 1 NC connectable to 1 OSSD pair
 - C 4R: 4 relays - 4 NO + 2 NC connectable to 2 independent OSSD pairs
- 2/4 safety relays with 6A 250VAC guided contacts
- 1/2 NC contacts for External Device Monitoring (EDM)
- 16/24 terminal points in 22.5mm

CERTUS C DDC

- Expansion unit for the connection to the most common industrial Fieldbus systems for diagnostics and data communication:
- C PDP - **Profibus DP**
 - C DNET - **DeviceNET**
 - C CAN - **CANOpen**
 - C EIP - **Ethernet IP**
 - C ECAT - **EtherCAT**
 - C PFNET - **PROFINET**
 - C OMMS - **Universal Serial Bus**

Description of the Certus Master Module (CMM)

- Main unit, also usable as a stand-alone device, able to control any other expansion unit
- Configurable from PC via USB interface using CCS software
- 8 digital inputs
- 2 OSSD pairs with 400mA output current
- 4 test outputs for sensor monitoring
- 2 programmable digital signal outputs
- 2 inputs for Start/Restart interlock and external device monitoring (EDM)
- CMC configuration memory card slot
- LOG file containing the last 5 configuration modifications in chronological order, with date of modification
- 24 connectors in 22.5mm
- Possible connection with Carlo Gavazzi SCC rear bus for connection with other expansion units

The Certus master module is equipped with a USB 2.0 serial Bus for configuration connection to a PC with installed CSS (Certus Configuration Software).



Configuration Memory Card - CMC

The Configuration Memory Card (CMC) is a proprietary removable card (optional) that can be used to save Certus configuration data for subsequent transfer to a new device/machine without using a PC.

The configuration in the CMC overwrites any other configuration present the Certus Master Module (CMM), replacing it with the configuration contained in the CMC. This configuration replacement function can be disabled on the CMM via the CCS (Certus Configuration Software).

Overwrite operations are recorded in chronological order in the CMM LOG file.



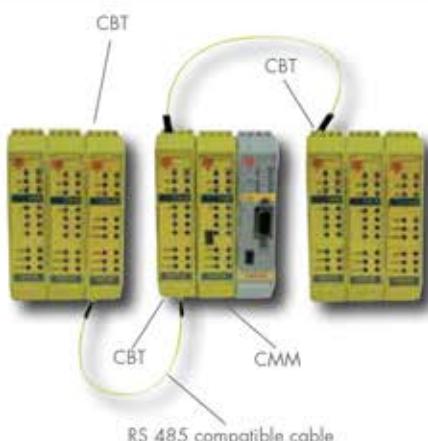
Certus CBT Bus transfer (CBT)

Certus CBT is an expansion module which allows the connection of CMM with other slave modules placed at great distances (up to 100m).

Through the use of a shielded cable (compatible with RS485 standard) two CBT modules placed at the desired distance can be linked together.

Each CBT has two independent connection channels; the connection of two CBTs can be performed by wiring a channel of your choice.

CBT has only one channel and must be connected as the first or last module.



Technical Features

Module	CMM	C 8I 2O	C 8I - C 16I	C 12I 8TO	C 200SD - C 400SD	C 2R - C 4R	CBT	C DDC
Description	Programmable Master unit	I/O Expansion Units	Input Expansion Units	Input Expansion Units	Output Expansion Units	Guided contact relay output Expansion units	Bus transfer Expansion units	Expansion units for Bus*
USB	Yes	-	-	-	-	-	-	Yes
Housing for CMC	Yes	-	-	-	-	-	-	-
Connection with SCC bus	Yes	Yes	Yes	Yes	Yes	-	Yes	Yes
SCC connector provided	No	Yes	Yes	Yes	Yes	-	Yes	Yes
Safety level	SIL 3 - SILCL 3 ACCORDING TO IEC 61508 - IEC 62061 PLC - Cat. 4 ACCORDING TO ISO 13849-1					-	-	-
Safety inputs	8	8	8 - 16	12	-	-	-	-
Safety outputs (OSSD)	2 PNP, 400mA	2 PNP, 400mA	-	-	2 PNP, 400mA	-	-	-
Programmable signal output	2 PNP, 400mA	2 PNP, 400mA	-	-	2 PNP, 400mA	-	-	-
Test output	4	4	4	8	-	-	-	-
Safety relay outputs	-	-	-	-	-	2 NO + 1 NC 6A 250 VAC 4 NO + 2 NC 6A 250 VAC	-	-
Start/Restart input and external device monitoring (EMD)	2	2	-	-	2 - 4	-	-	-
LED signalling	Input / Output status and fault diagnostic				Output status	Output status	Diagnostic	
Power supply (VDC)	24 ± 20%							
Electrical connection	Removable terminal blocks, screw contact							
Operating temperature (°C)	-10° to 55°C							
Protection rating	-20° to 85°C							
Fastening	Rail fastening according to EN 50022-35 standard							
Dimensions h x w x d (mm)	99 x 22.5 x 114							

* Non-safety I/Os are provided using the Bus Unit.

OUR SALES NETWORK IN EUROPE

AUSTRIA - Carlo Gavazzi GmbH
Ketzergasse 374, A-1230 Wien
Tel: +43 1 888 4112
Fax: +43 1 889 10 53
office@carlogavazzi.at

BELGIUM - Carlo Gavazzi NV/SA
Schaarbeeklei 213/3, B-1800 Vilvoorde
Tel: +32 2 257 4120
Fax: +32 2 257 41 25
sales@carlogavazzi.be

DENMARK - Carlo Gavazzi Handel A/S
Over Hadstenvej 40, DK-8370 Hadsten
Tel: +45 89 60 6100
Fax: +45 86 98 15 30
handel@gavazzi.dk

FINLAND - Carlo Gavazzi OY AB
Petaksentie 2-4, FI-00661 Helsinki
Tel: +358 9 756 2000
Fax: +358 9 756 2001
myynti@carlogavazzi.fi

FRANCE - Carlo Gavazzi Sarl
Zoc de Paris Nord II, 69, rue de la Belle
Etoile, F-95956 Roissy CDG Cedex
Tel: +33 1 49 38 98 60
Fax: +33 1 48 63 27 43
french.team@carlogavazzi.fr

GERMANY - Carlo Gavazzi GmbH
Pfnorstr. 10-14
D-64293 Darmstadt
Tel: +49 6151 81000
Fax: +49 6151 81 00 40
info@gavazzi.de

GREAT BRITAIN - Carlo Gavazzi UK Ltd
7 Springlakes Industrial Estate,
Deadbrook Lane, Hants GU12 4UH,
GB-Aldershot
Tel: +44 1 252 339600
Fax: +44 1 252 326 799
sales@carlogavazzi.co.uk

ITALY - Carlo Gavazzi SpA
Via Milano 13, I-20020 Lainate
Tel: +39 02 931 761
Fax: +39 02 931 763 01
info@gavazziacbu.it

NETHERLANDS - Carlo Gavazzi BV
Wijkemeerweg 23,
NL-1948 NT Beverwijk
Tel: +31 251 22 9345
Fax: +31 251 22 60 55
info@carlogavazzi.nl

NORWAY - Carlo Gavazzi AS
Melkeveien 13, N-3919 Porsgrunn
Tel: +47 35 93 0800
Fax: +47 35 93 08 01
gavazzi@carlogavazzi.no

PORTUGAL - Carlo Gavazzi Lda
Rua das Jerónimos 38-B,
P-1400-212 Lisboa
Tel: +351 21 361 7060
Fax: +351 21 362 13 73
carlogavazzi@carlogavazzi.pt

SPAIN - Carlo Gavazzi SA
Avda. Iparragirre, 80-82,
E-48940 Leioa [Bizkaia]
Tel: +34 94 480 4037
Fax: +34 94 480 10 61
gavazzi@gavazzi.es

SWEDEN - Carlo Gavazzi AB
V:a Kyrkogatan 1,
S-652 24 Karlstad
Tel: +46 54 85 1125
Fax: +46 54 85 11 77
info@carlogavazzi.se

SWITZERLAND - Carlo Gavazzi AG
Verkauf Schweiz/Vente Suisse
Sumpfstrasse 32,
CH-6312 Steinhausen
Tel: +41 41 747 4553
Fax: +41 41 740 45 40
info@carlogavazzi.ch

OUR SALES NETWORK IN NORD AMERICA

USA - Carlo Gavazzi Inc.
750 Hastings Lane,
USA-Buffalo Grove, IL 60089,
Tel: +1 847 465 6100
Fax: +1 847 465 7373
sales@carlogavazzi.com

CANADA - Carlo Gavazzi Inc.
2660 Meadowvale Boulevard,
CDN-Mississauga Ontario L5N 6M6,
Tel: +1 905 542 0979
Fax: +1 905 542 22 48
gavazzi@carlogavazzi.com

MEXICO - Carlo Gavazzi Mexico S.A.
de C.V.
Calle La Montaña no. 28, Fracc. Los
Pastores
Naucalpan de Juárez, EDOMEX CP 53340
Tel & Fax: +52.55.5373.7042
mexicosales@carlogavazzi.com

OUR SALES NETWORK IN ASIA AND PACIFIC

SINGAPORE - Carlo Gavazzi Automation
Singapore Pre. Ltd.
61 Tai Seng Avenue
#05-06 UE Print Media Hub
Singapore 534167
Tel: +65 67 466 990
Fax: +65 67 461 980

MALAYSIA - Carlo Gavazzi Automation
(M) SDN. BHD.
D12-06-G, Block D12,
Pusat Perdagangan Danga 1,
Jalan PJU 1A/46, 47301 Petaling Jaya,
Selangor, Malaysia.
Tel: +60 3 7842 7299
Fax: +60 3 7842 7399

CHINA - Carlo Gavazzi Automation
(China) Co. Ltd.
Unit 2308, 23/F.,
Newa Building, Block 1, 1002
Middle Shennan Zhong Road,
Shenzhen, China
Tel: +86 755 83699500
Fax: +86 755 83699300

HONG KONG - Carlo Gavazzi
Automation Hong Kong Ltd.
Unit 3 12/F Crown Industrial Bldg.,
106 How Ming St., Kwun Tong,
Kowloon, Hong Kong
Tel: +852 2304 1228
Fax: +852 23443689

OUR COMPETENCE CENTRES AND PRODUCTION SITES

Carlo Gavazzi Industri A/S
Hadsten - **DENMARK**

Carlo Gavazzi Automation
(Kunshan) Co., Ltd.
Kunshan - **CHINA**

Carlo Gavazzi Ltd
Zejtun - **MALTA**

Carlo Gavazzi Controls SpA
Belluno - **ITALY**

Uab Carlo Gavazzi Industri Kaunas
Kaunas - **LITHUANIA**

HEADQUARTERS

Carlo Gavazzi Automation SpA
Via Milano, 13 - I-20020
Lainate (MI) - **ITALY**
Tel: +39 02 931 761
info@gavazziautomation.com

CARLO GAVAZZI
Automation Components

Energy to Components!



www.gavazziautomation.com



Printed on 100% recycled paper
produced using
post consumer de-inked waste.