



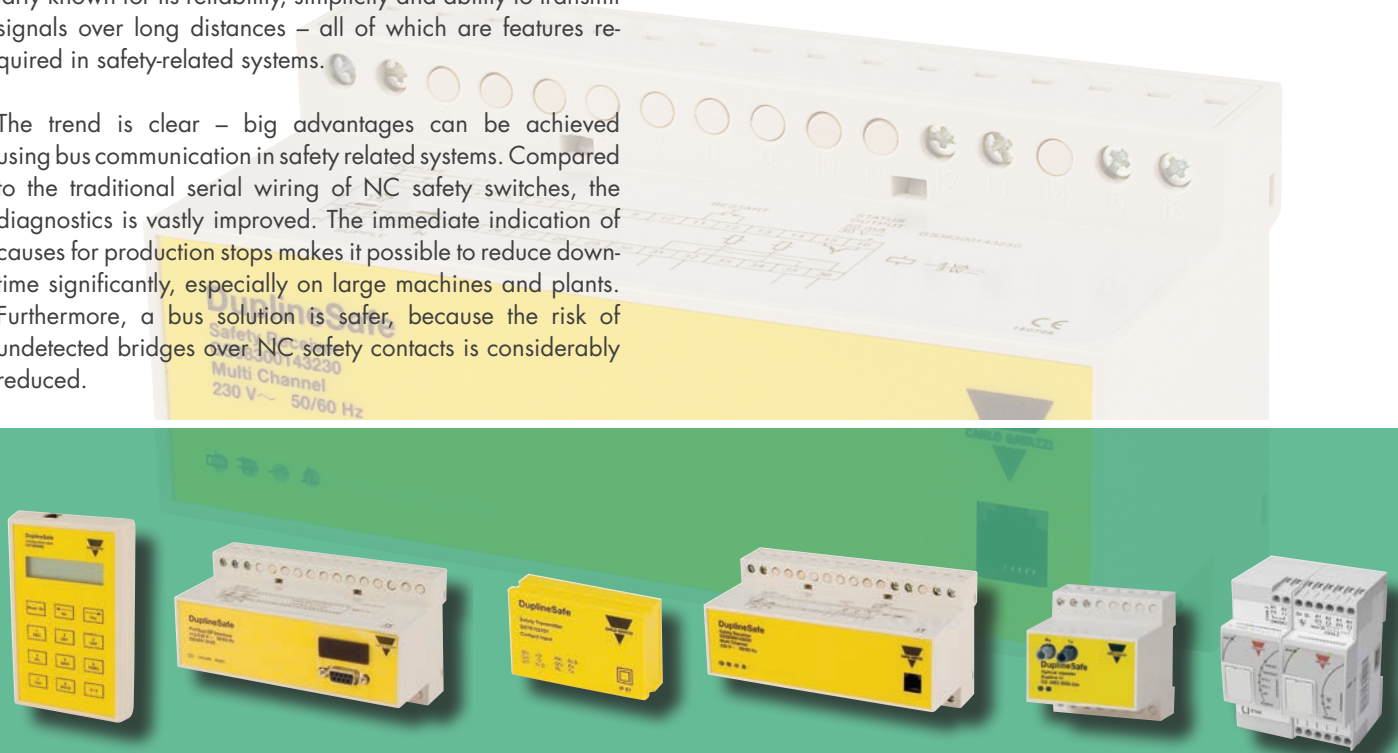
DuplineSafe

Controls

Fieldbus DuplineSafe

DuplineSafe is based on the Dupline® fieldbus, a system that has been used in more than 120,000 installations worldwide in the harshest industrial environments. Dupline® is particularly known for its reliability, simplicity and ability to transmit signals over long distances – all of which are features required in safety-related systems.

The trend is clear – big advantages can be achieved using bus communication in safety related systems. Compared to the traditional serial wiring of NC safety switches, the diagnostics is vastly improved. The immediate indication of causes for production stops makes it possible to reduce downtime significantly, especially on large machines and plants. Furthermore, a bus solution is safer, because the risk of undetected bridges over NC safety contacts is considerably reduced.



Keep up production and make your plant safer

Immediate and precise diagnostics

The status of the safety switches can be monitored from e.g. a HMI or LED mimic panel, providing fast and precise diagnostics. The signals can also be monitored from a PLC or PC, for example by using the Profinet gateway or the Modbus interface. Machine stops can be fixed faster leading to increased production efficiency.

Up to 5 km transmission distance without repeater

No need for special network modules or special handling when long distances are involved. This is one of the main reasons for DuplineSafe being the leading Safety Bus system worldwide for long conveyors in mines, tunnels, cement factories, power plants, harbours, stone mills etc.

Bus-powered input modules

The DuplineSafe input modules are bus-powered - hence no power supply is required at the E-stops.

Easy to design, install and expand

The DuplineSafe system is easy to design, install and commission. The wiring of the twisted pair cable is uncomplicated and flexible with the possibility to use existing cables. If a conveyor belt needs to be extended, it is easy to install additional input modules.

Multiple safety relays can read the same inputs

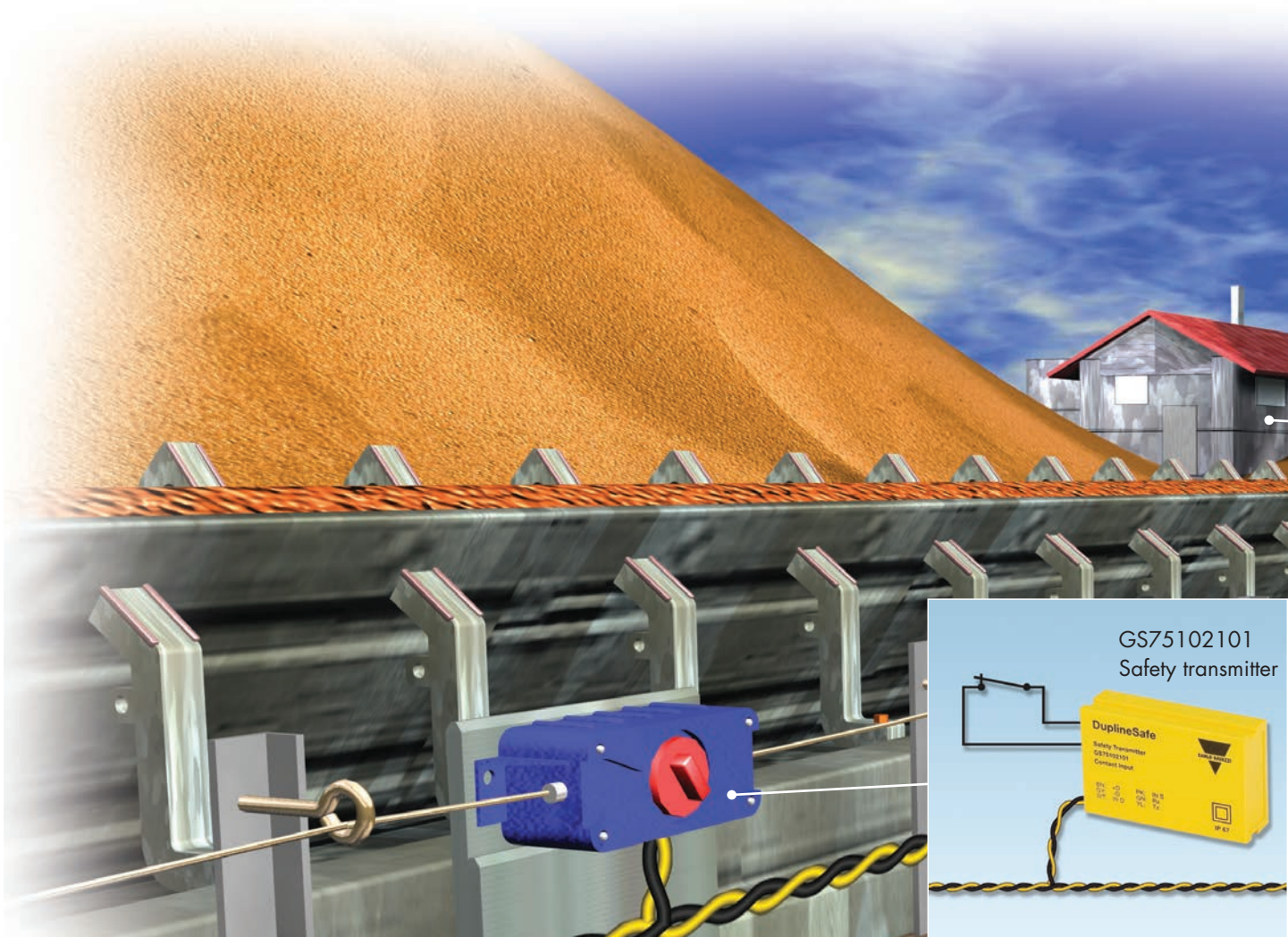
Easy to interlink safety switches from different machines so that any E-stop will activate multiple safety relays.

TÜV-approved

DuplineSafe is approved by TÜV Rheinland Group according to the latest safety standards IEC/EN61508-SIL3, IEC/EN62061-SIL3 and ISO/EN 13849-1 PL e.

TÜV

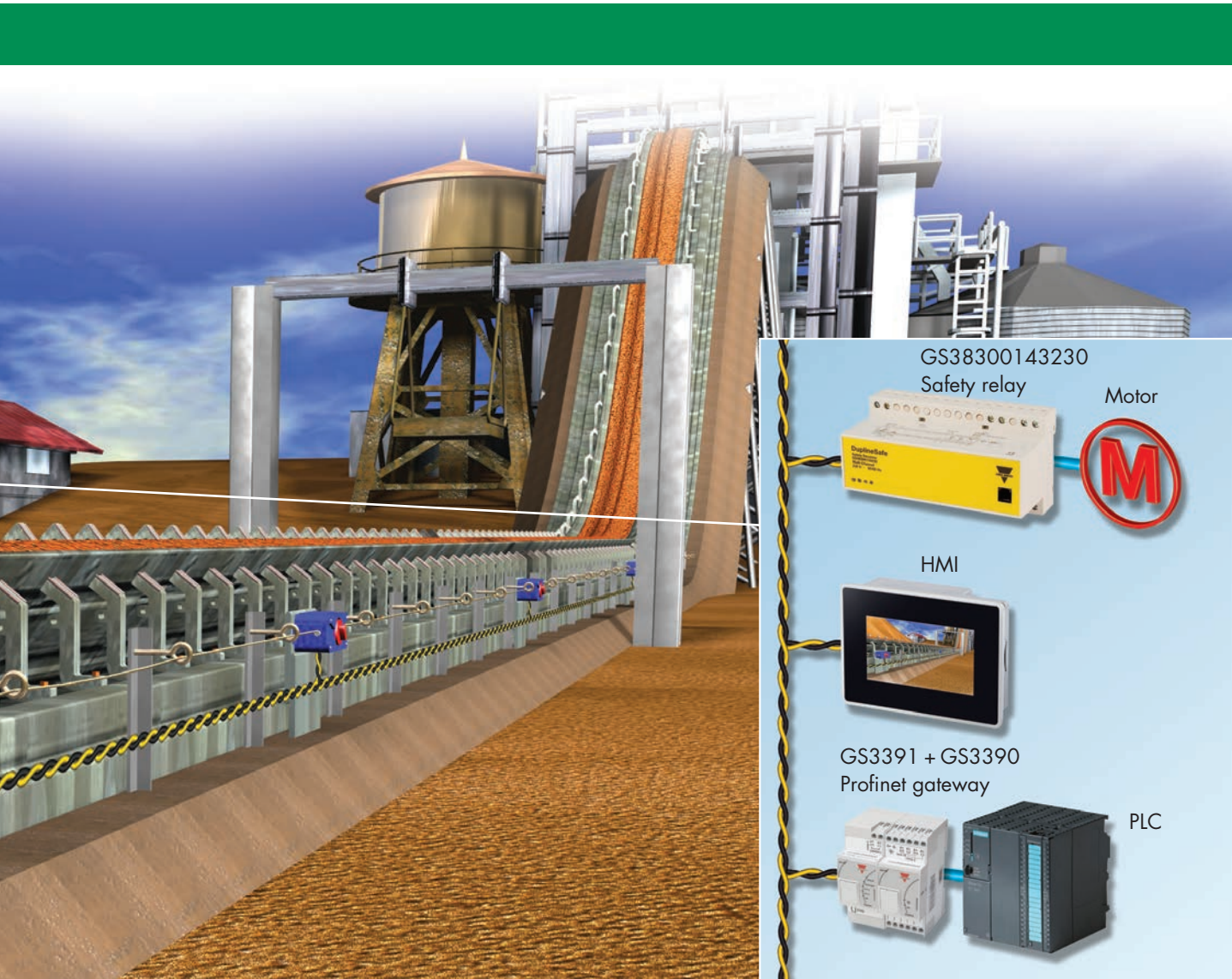
Emergency stops on conveyors



Along bulk material conveyors in mines, tunnels, cement factories etc. there are several emergency stop switches connected to a pull-wire, enabling the workers to stop the belt at any point in case of an emergency situation or a fault on the belt. In order to reduce costly downtime of the belt, it is important that the location and nature of the problem is identified as fast as possible. The traditional wiring solution with serial connection of all the safety switches does not provide this diagnostics, it merely stops the belt. Parallel wiring can provide the diagnostics, but it is a difficult and costly solution, since a 3-5 km conveyor may have more than 50 switches installed. With

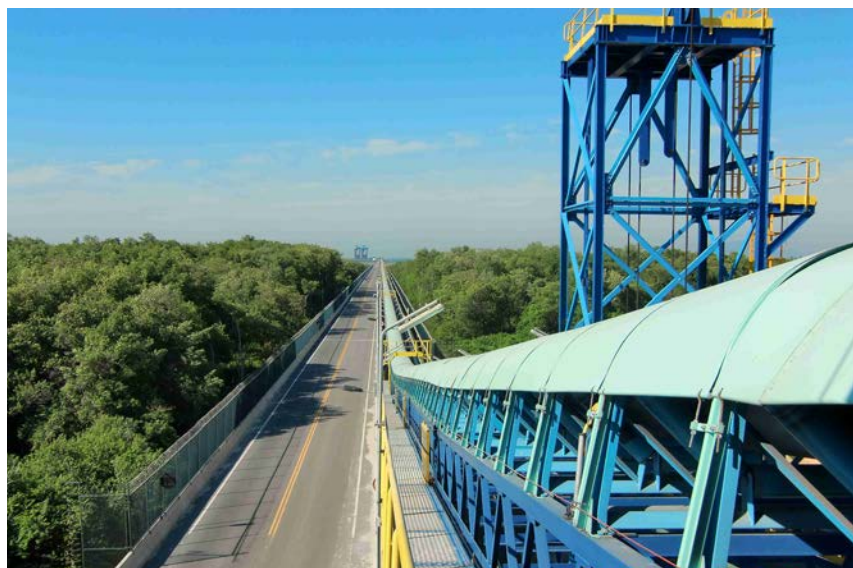
DuplineSafe, however, a simple, flexible and cost-effective solution can be implemented.

A single two-wire bus cable is pulled along the conveyor. At each pull-wire safety switch, a small DuplineSafe input module is connected to the two bus wires and to the NC contact set of the safety switch. The input module continuously transmits the status of the safety switch in a dynamic way using the DuplineSafe address assigned to the module. The power supply for the input module is derived from the two-wire bus, hence no local power supply is required. If the belt needs



to be extended, it is easy to install additional input modules.

In the machine room, a DuplineSafe relay output module is continuously monitoring the bus and the status of all the safety switches. If one of the safety switches is activated, or if a bus fault is detected, the output module will deactivate its safety relay and thereby stop the belt. The status of the safety switches can be monitored from an HMI or LED mimic panel, providing fast and precise diagnostics. The signals can also be monitored from a PLC or PC, for example by using the Profinet Gateway.



GS38300143230
DuplineSafe - Safety relay output module

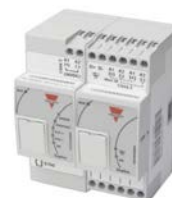

- Approved by TÜV Rheinland Group according to IEC/EN 61508-SIL3, IEC/EN 62061-SIL3 and ISO/EN 13849-1 PL e
- Monitors up to 63 safety input modules
- Automatic or manual restart
- Status output for external equipment
- Easy configuration and testing with handheld programming tool
- For mounting on DIN-rail (EN50022)
- 230 VAC power supply
- cULus approved

GS75102101
DuplineSafe - Input module


- Approved by TÜV Rheinland Group according to IEC/EN 61508-SIL3, IEC/EN 62061-SIL3 and ISO/EN 13849-1 PL e
- Powered by the bus
- Single input for potential free safety contacts (NC)
- Easy coding and testing with handheld programming tool
- Small dimensions (57,5 x 36,0 x 16,4 mm) for decentralized installation at the actual location of the safety switch
- IP67 rating
- cULus approved

GS38910125230
DuplineSafe - Profibus-DP gateway


- Makes DuplineSafe diagnostics available on Profibus-DP
- Profibus-DP slave according to EN50170
- Useful for interfacing to PLCs and PCs
- Several gateways can be connected to the same bus
- For mounting on DIN-rail (EN50022)
- 230 VAC power supply
- cULus approved

GS3391 + GS3390
DuplineSafe - Profinet gateway


- Makes status of DuplineSafe signals available on Profinet
- Read/Write of all standard digital and analog Dupline signals
- Certified as Profinet slave according to IEC 61158
- Up to 7 Dupline networks can be managed with one gateway
- Useful for interfacing with PLC's and HMI's
- For mounting on DIN-rail (EN50022)
- 24 VDC Power Supply
- cULus approved

GSTI 50
DuplineSafe - Modbus RS485 gateway


- Enables monitoring of safety signals from text displays, touchscreens, PLCs and PCs
- Small dimension housing for mounting directly at text display
- Several GSTI50s can be connected to the same bus
- Power supply from bus and text display
- cULus approved

GS73800080
DuplineSafe - Handheld programming and test tool


- Used for address coding of GS75102101 and configuration of GS38300143230
- Can be connected at any point on the bus to read out status of all safety signals
- Easy-to-use
- Battery-powered

GS349x0000
DuplineSafe - Optical converter


- DuplineSafe - Optical converter
- Converts DuplineSafe for transmission on optical fibre
- Runs on optical multimode fibre pairs (50/125, 62.5/125)
- ST type connector
- Up to 5 km optical transmission distance with 62.5/125 fibre
- For mounting on DIN-rail (EN50022)
- AC power supply

GS38920000
DuplineSafe - Repeater


- Regenerates the Dupline carrier signal
- Extends transmission distance
- Power booster for bus-powered devices
- Cascading of repeaters allowed
- Galvanic isolation between primary and secondary side
- For mounting on DIN-rail
- 230/115/24 VAC power supply
- cULus approved

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

FRANCE

Carlo Gavazzi Sarl
Zac 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

ITALY

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

SPAIN

Carlo Gavazzi SA
Avda. Iparraguirre, 80-82,
E-48940 Leioa (Bizkaia)
Tel: +34 94 480 4037
Fax: +34 94 431 6081
gavazzi@gavazzi.es

BELGIUM

Carlo Gavazzi NV/SA
Mechelsesteenweg 311,
B-1800 Vilvoorde
Tel: +32 2 257 4120
Fax: +32 2 257 41 25
sales@carlogavazzi.be

GERMANY

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

NETHERLANDS

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

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

DENMARK

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

GREAT BRITAIN

Carlo Gavazzi UK Ltd
4.4 Frimley Business Park,
Frimley, Camberley, Surrey GU16 7SG
Tel: +44 1 276 854 110
Fax: +44 1 276 682 140
sales@carlogavazzi.co.uk

NORWAY

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

SWITZERLAND

Carlo Gavazzi AG
Verkauf Schweiz/Vente Suisse
Sumpfstrasse 3,
CH-6312 Steinhausen
Tel: +41 41 747 4535
Fax: +41 41 740 45 40
info@carlogavazzi.ch

FINLAND

Carlo Gavazzi OY AB
Ahventie 4 B
FI-2170 Espoo
Tel: +358 9 756 2000
myynti@gavazzi.fi

PORTUGAL

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

OUR SALES NETWORK IN THE AMERICAS

USA

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

CANADA

Carlo Gavazzi Inc.
2660 Meadowvale Boulevard,
Mississauga, ON L5N 6M6, Canada
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

BRAZIL

Carlo Gavazzi Automação Ltda. Av.
Francisco Matarazzo, 1752
Conj 2108 - Barra Funda - São Paulo/SP
Tel: +55 11 3052 0832
Fax: +55 11 3057 1753
info@carlogavazzi.com.br

OUR SALES NETWORK IN ASIA AND PACIFIC

SINGAPORE

Carlo Gavazzi Automation Singapore Pte. Ltd.
61 Tai Seng Avenue #05-06
Print Media Hub @ Paya Lebar iPark
Singapore 534167
Tel: +65 67 466 990
Fax: +65 67 461 980
info@carlogavazzi.com.sg

MALAYSIA

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

CHINA

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

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 23041228
Fax: +852 23443689

OUR COMPETENCE CENTRES AND PRODUCTION SITES

DENMARK

Carlo Gavazzi Industri A/S
Hadsten

MALTA

Carlo Gavazzi Ltd
Zejtun

ITALY

Carlo Gavazzi Controls SpA
Belluno

LITHUANIA

Uab Carlo Gavazzi Industri Kaunas
Kaunas

CHINA

Carlo Gavazzi Automation (Kunshan) Co., Ltd.
Kunshan

HEADQUARTERS

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



CARLO GAVAZZI
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