CARLO GAVAZZI
Automation Components

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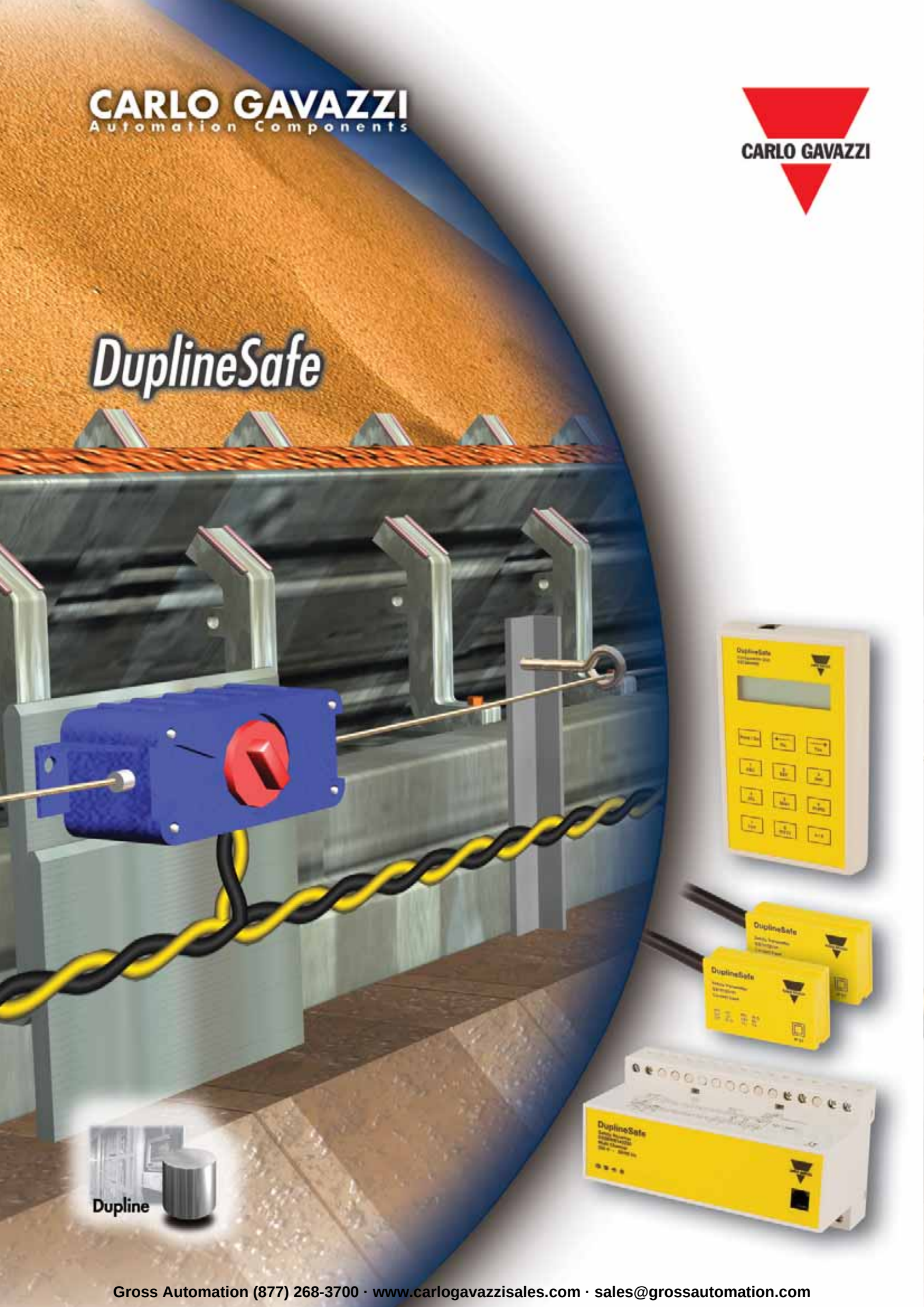
DuplineSafe



DuplineSafe

– The TÜV-approved Safety bus with unique features

Keep up production and make your plant safer

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 reduced considerably.

A unique set of features

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 demanded in safety related systems.

Approved by TÜV according to EN61508-SIL3 and EN954-1 Cat. 4

The development of the DuplineSafe products has been carried out in close cooperation with TÜV Rheinland Group.

Bus-powered input modules

Bus-powered input modules provide the interface to the safety switches, which may be emergency stop palm buttons, pull-cord switches or another type with NC contact. The small-dimension IP67-rated housing makes it possible to install the input modules inside or near the safety switches, even in rough environments.

Configurable Safety Relay

By means of the handheld DuplineSafe configuration unit, the user can define the addresses of the input modules to be monitored by the safety relay. In operation mode, the safety relay will trip if one or more of these input modules do not send a valid “contact closed” signal or if any fault on the bus is detected. Several relay output modules can be connected to the same bus, and each of them can be configured to monitor any input module. Thereby it is possible to stop several machines at different locations upon activation of a single emergency stop switch.

Diagnostics via PLC, PC or Text Display

DuplineSafe Gateways for Profibus-DP and Modbus RTU make it possible to read out the DuplineSafe diagnostics information via a PLC, PC or Text Display.

PLC

GS38300143230
Safety Relay

Motor

GS38910125230
Profibus Gateway

Text Display

Emergency Stop

GS75102101
Safety Transmitter

GS75102101
Safety Transmitter

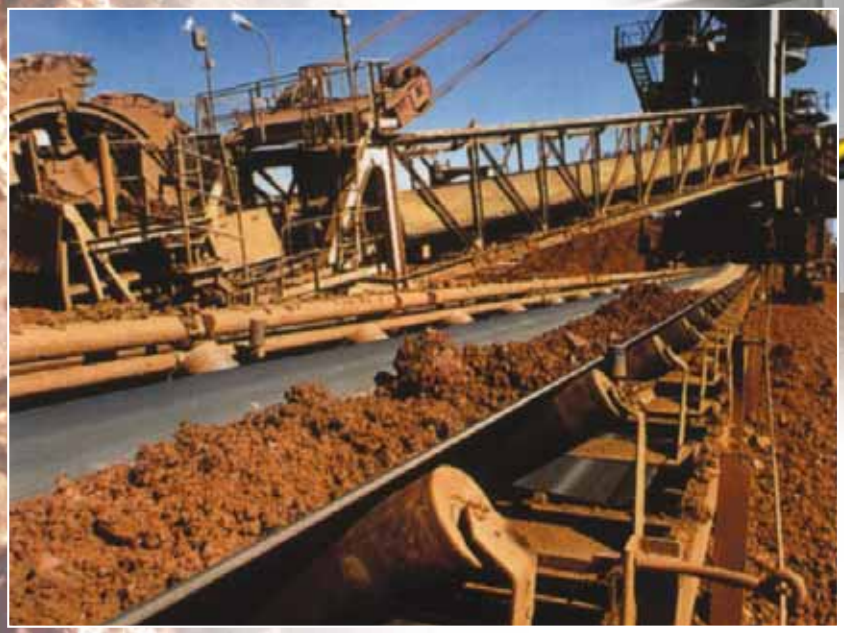
Pull-cord switch

Pull-cord switch

GS75102101
Safety Transmitter

DuplineSafe

- Immediate and precise diagnostics
- Safer than traditional emergency stop systems
- Up to 5 km transmission distance without Repeater
- High noise immunity – false trips avoided
- Easy to design, install and commission a system
- Several safety relays can read the same input modules



Emergency stops on conveyors

Along many conveyors, 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

Long Conveyors

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 a text-display 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 DuplineSafe Profibus-DP Gateway.

DuplineSafe

FEATURES	BENEFITS
Up to 63 safety signals on a single two-wire cable	Reduced wiring cost compared to parallel-wired system
Bus-powered Input Modules	No need for local power supplies
Immediate and precise safety diagnostics	Machine stops can be fixed faster leading to higher production efficiency
Detection of short-circuit on bus-wires	Safer solution than series wired safety switches, where a short-circuit can create an undetected loss of safety function
Up to 5 km transmission distance without Repeater	No need for special modules or special handling when long distances are involved
High noise immunity and reliability	High system uptime - false trips avoided
Approved by TÜV Rheinland Group according to EN61508-SIL3 and EN954-1 cat 4	Your guarantee of a safe and reliable solution
Easy to design, install and commission a system	Reduced risk of human error, steep learning curve, no dependence on specialists, time saving
Easy to expand or change a system step-by-step	No problem to expand the safety system as the plant is enhanced
Several safety relays can read the same input modules	Easy-to-make solution where one safety input can be used to stop several machines at different locations
Free topology and no requirement for special cable	Easy and flexible wiring with the possibility to use existing cables
Safety signals and standard digital/analogue I/O's allowed on the same bus	One bus can handle all signals, and safety functions can be added to existing Dupline® systems
Profibus-DP and Modbus Gateways available	Easy to use PLC's, PC's, Text Displays and Touchscreens for monitoring of safety system

DuplineSafe

GS38300143230

- DuplineSafe Safety Relay Output Module
- Approved by TÜV Rheinland Group according to EN61508-SIL3 and EN954-1 Cat 4
- 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

GS38910125230

- DuplineSafe - Profibus-DP Gateway
- Makes DuplineSafe diagnostics available on Profibus-DP
- Profibus-DP slave according to EN50170
- Useful for interfacing to PLC's and PC's
- Several gateways can be connected to the same bus
- For mounting on DIN-rail (EN50022)
- 230 VAC Power Supply

GS75102101

- DuplineSafe Input Module
- Approved by TÜV Rheinland Group according to EN61508-SIL3 and EN954-1 Cat 4
- Powered from 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 de-central installation at the actual location of the safety switch
- IP67 rating

GS73800080

- Handheld DuplineSafe 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

GSTI 50

- DuplineSafe – Modbus RS485 Gateway
- Enables monitoring of safety signals from Text Displays, Touchscreens, PLC's and PC's
- Small dimension housing for mounting directly at Text Display
- Several GSTI50's can be connected to the same bus
- Power supply from bus and Text Display

GTD 50

- Programmable Text Display
- 2 x 20 character LCD display with backlight
- Displaying of DuplineSafe alarm messages and signal status
- Customizable function keys
- Activation of Dupline® outputs by means of function keys
- 24 VDC Power Supply
- IP 65 rating