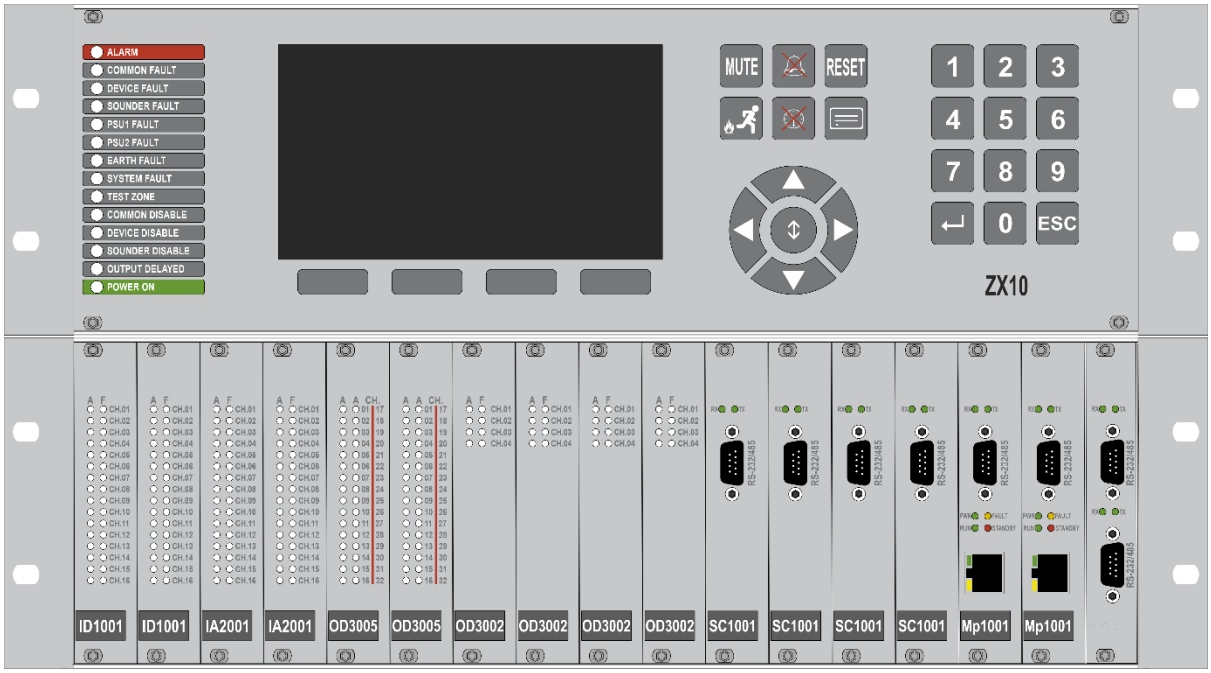
ZX10 F&G CONTROL PANEL

DATASHEET

Adress: 4071 St. John Street, Debden, Saskatchewan, Zip code S4P 3Y2, Canada
Email: info@incontrol-co.com
WEB: www.incontrol-co.com

- **F&G CONTROL PANEL SYSTEM – ZX10**



ZX10 is the designer and manufacturer of automated safety solutions. Everything we do, think, and create is designed to help you achieve safety. The result of this philosophy: solutions that provide maximum safety and uninterrupted plant operations.
ZX10 models are designed for medium to large applications. The modular unit to install up to eleven 19" 3-unit high anodized aluminum racks. The racks are installed a steel cabinet with revolving rack and acrylic glass door. The first rack includes the operator interface display, and the keyboard Additional racks are composed by one or two CPUs and 15 slots for installation of I/O cards.
The configuration is arranged by type and number according to the requirements of the system to be protected. Each card in the rack is connected to field devices by prewired connectors connected to electromechanical terminal blocks.

ZX10 solutions increase your efficiency through

- Avoiding over- and under-dimensioning
- Maximum plant uptime
- Reduced investment and lifecycle costs
- Future-proof, lifetime flexibility
- Superior ease of use

Full integration with DCS & ESD operating and monitoring functions

The advantages of a ZX10 solution, can be combined with all leading distributed control systems (DCS) & emergency shutdown (ESD) via industrial protocol.

Self- diagnostic

Automatically updated If the system diagnoses an internal fault, the module involved can be replaced quickly during operation. Only a few moves are required. If a processor module is swapped, the new module is automatically brought up to date with the currently operative modules. The parameter setting and the user program are imported from the functional processor module and then loaded. "Self- diagnostic" has other

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benefits for the user:
- Your inventory of spare parts will be smaller
- You do not have to search for correct software versions
- When replacing a processor module, you do not have to connect a computer.

Proof test

According to IEC 61508 and IEC 61511, every safety system must be subjected to a proof test at regular intervals. A proof test is designed to reveal any faults, so the system can be restored and fulfil its intended function.
The proof test interval for ZX10 semiconductor modules is 1 years. In the relay modules, the current and number of switching cycles are measured to test the status of the relay. This means that, depending on the load of the relay, the relay module can continue to be operated after the proof test and does not have to be replaced.
ZX10 controller can be subjected to a proof test by testing the entire safety circuit. In practice, a shorter testing interval (6-12 months) is required for the field unit's inputs and outputs than for the ZX10 controller.

Transparent, fast diagnosis

Detailed information via LEDs tests its own functionality regularly, using self-diagnosis. This diagnostic information can be observed on the modules themselves via colored LEDs that show the full range of operating statuses. You can see at a glance whether redundant parts are available, whether the system bus is working properly, whether an internal fault has been recognized in the system and whether a fault exists in the field. Because more than 90 % of all faults originate on the field side, it is important to detect faults such as short circuits and wiring breakages quickly. ZX10 indicates the faulty channel, saving you the time it would take to find the fault. Internal diagnostic, the fully integrated engineering tool, can be used to obtain more detailed information via its online diagnostic features, which display operating statuses over time. You can connect a computer running software at any point in the network, further speeding up the search for faults.

The system components

Faster, more powerful, more efficient
ZX10 defines a completely new performance category. Its power is based on high-performance system components and intelligent system architectures, including:

- High-performance RISK processors for fast calculations
- Processing of all field signals in the I/O modules, which means that analog values are processed at the same time as digital values.
- Implementation of a system bus with a 100 MBit/s transmission speed.
- All this produces impressive performance specifications:
- Up to 896 I/Os per cabinet
- For example, the cycle time for 896 I/Os (half analog, half digital I/Os) is just 800 ms.

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The following tables provide an overview of the modules currently available. They should offer you a comparative guideline for the first planning steps.

Central module	Part No.	Description
Processor module & rack control module	Mp1001	For high performance requirements and critical control applications

I/O module	Part No.	Description
Digital input module	ID1001	Line monitoring 16 channel 24Vdc
Analog input module	IA2001	16 channels, 4…20 mA
Digital output card	OD3001	16 channels, 24 VDC, 0.5 A, line monitoring (open-circuits OC/ short-circuits SC), individual channel shut-off
Digital output card	OD3002	4 channels, 24 VDC, 2.5 A, line monitoring (open-circuits OC/ short-circuits SC), individual channel shut-off
Digital output card	OD3005	32 channels, 24 VDC, 0.25 A, open collector

Communication module	Part No.	Description
RS 485 module	SC1001	Modbus RS485 RTU

- Module dimension: 3U
- Rack dimension: 3U / 19”

The system bus module organizes the communication of all modules. The ring communication structure has the advantage that the individual modules cannot interact. The system bus module can be installed individually or redundantly. The “UP” and “DOWN” Ethernet ports are only used for networking.

Specification, Dimension & Weight

Supply voltage	24Vdc (18~30Vdc)
Input current	Up to 6A for full rack
Housing material	Aluminum
Operation temperature	-5 °C to +60 °C
Storage temperature	from –40 °C to +85 °C
Humidity	max. 95% relative humidity, non-condensing
Type of protection	IP20
Altitude	< 1800 m
Dimensions	482 x 135 x 200 (H x W x D) in mm
Weight approx.	Full rack 4.3 kg

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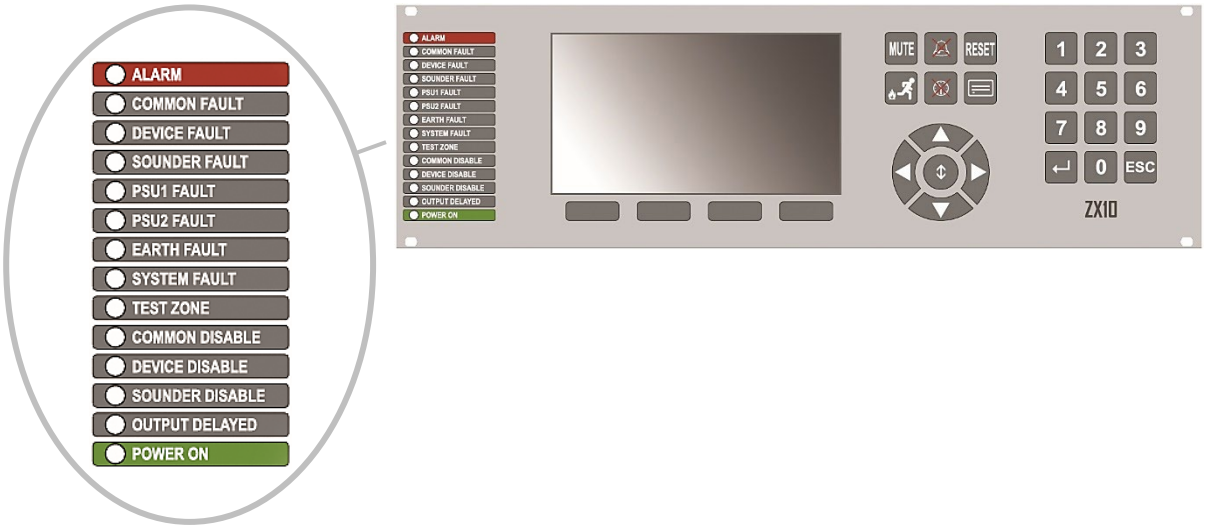
- **Main Rack – ZX-MR10**

This rack is the main rack contains Base Rack, including display, buzzer, keypad and other functional keys. All control panel status are shown in this rack as power and alarm and also input/output faults. This rack is the interface between the panel and the operator. It is composed of a color LCD, LED back-lit, graphic type, with many lines, keys, and a buzzer.
All status are shown as picture:



Keys Functions

Icon	Meaning	Icon	Meaning
MUTE	Acknowledge		Delay Over Ride
	Sounder Alarm Silencing		Menu
RESET	Panel Reset		Directions within menus
	Evacuation command		Scroll

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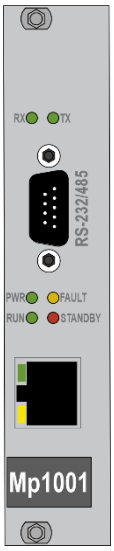
- **CPU Card – ZX-CP10**

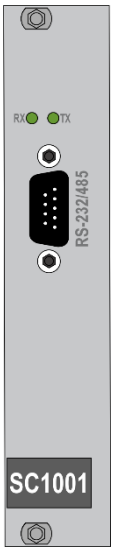
The CPU card is the system's central unit and contains the controller, flash memory, a buffered static RAM, a watchdog circuit and an Ethernet controller with an RJ 45 Ethernet output connector.
The CPU card can be used in either single or redundant configuration with two CPU's operating in parallel. Both CPU's process information, but only one is the primary. Once the primary CPU stops operating, the other immediately takes over without disrupting ongoing operations or losing captured events.
In addition to the micro-controller, the card has a flash memory, a buffered RAM, a watchdog circuit and an Ethernet controller with an RJ 45 Ethernet output connector.



Main Features

- Redundancy Ability
- Hot-Swap Ability
- Applicable for fault-tolerant
- After activating second CPU , automatically will be set.
- 256 Kbytes RAM
- 64 Mbit SDRAM
- 2 Mbyte expandable flash memory
- Ethernet 10/100 link via RJ 45
- Watchdog external to CPU, for software functional cycle monitoring
- Fault self-check on the hardware
- Built-in clock with lithium battery
- Operating system residing in internal flash memory
- On-line transfer of configuration program
- Front plug-in, with locking screws

- **Modbus Protocol Serial Communications Card (Communication Modbus RTU) - ZX-C10**



Communication Modbus RTU Card with Master/slave Modbus protocol. It manages the following Modbus variables: 512 Input variables, 512 Output variables, 1024 16-bit analogue variables. The values on to 4-20mA analogue cards can be transmitted to the DCS system.
Its Output supplies two independent connections, a RS485 Half Duplex and a RS232.
The analogue variables boast the engineered values relative to 4-20mA analogue cards.

Main Features

Supply voltage: 18-30 Vdc
Normal Current: 50mA
Redundancy: No
Operating modes: Master/Slave
Ports: RS232 + RS485
Operating Temperature: -5 to +60 °C
Maximum humidity: 95% W/C

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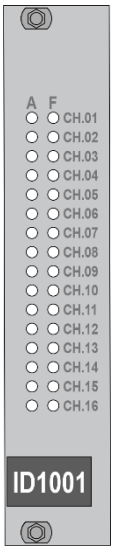
- **Monitoring Digital Input Card - ID1001**

16 Inputs for conventional sensors for safety related functions. All channels can be reset singularly and are reset during operation every 30 seconds. This card is suitable to manage detection systems with conventional devices; it is suitable for use in systems with already existing detection lines, to command automatic extinguishing systems with double consent logics or intrinsic safety systems. Additionally, it is used to control all typical devices of extinguishing systems (pressure gauges, discharge keys, etc).

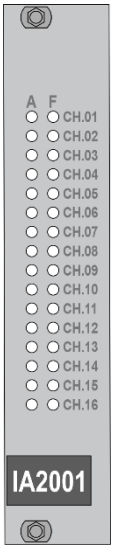


Main Features

Supply voltage: 18-30Vdc
Normal Current: 80mA
Possibility to activate alarm status verification
Double programmable alarm threshold for each line
Adaptable to various types and brands of detectors
Can monitor and control 16 monitored lines individually
Programmable safety or security operating mode
Line inclusion/exclusion through panel keyboard
Automatic testing of each line every thirty seconds
Internal logic management by micro-controller
Redundancy: No
Operating modes: configurable through software.
Short circuit status on the line: with current >23.5mA
Operating Temperature: -5 to +60 °C
Maximum humidity: 95% W/C

- **Monitoring Analogue Input Card - IA2001**

A Safety related 4-20mA analog input with 16 inputs, each having two threshold settings. The following transducer types can be connected: Explosive Sensors, Toxicity Sensors, Oxygen Sensors, Temperature Sensors, General 4-20mA sensors. The channel is tested during operation every 30 seconds. The card is equipped with a 4-20mA Output that supplies the current value measured at the Input. The analog value can be transferred to a DCS using a RTU Modbus module.



Main Features

Supply voltage: 18-30Vdc
Normal Current: 80mA
Measuring Range 0-24mA
Alarm thresholds: 2 that can be programmed
Test of channels: performed every 30 seconds
Redundancy: No
Operating modes: configurable through software.
Short circuit status on the line: with current >23.5mA
Operating Temperature: -5 to +60 °C
Maximum humidity: 95% W/C

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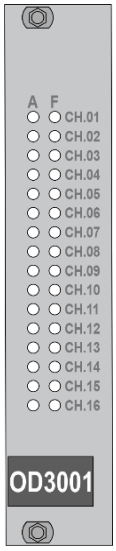
- **Monitoring Digital Output Card - OD3001**

Card with 16 controlled Output channels of 500mA for the command of solenoids with safety related functions. It performs testing every 2 seconds on the channels cyclically, in case of discrepancy between the set signal and the read signal, the unit promptly warns about the failure condition. The Output is tested for the following: line opening, short circuit towards positive pole, short circuit towards negative pole, failure of piloting DMOS device, over-temperature of piloting DMOS device, power voltage outside the limits allowed. To increase output current, channels can be connected in parallel.

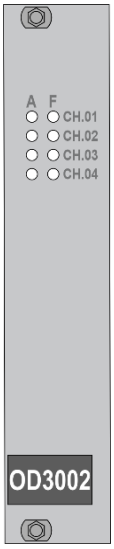


Main Features

Supply voltage: 18-30Vdc
Normal Current: 95mA
Automatic protection of Outputs: YES
Maximum current of Outputs: 500mA
Controlled Output channels: 16 ch
Redundancy: No
Test of channels: performed every 2 seconds
Operating modes: configurable through software.
Operating Temperature: -5 to +60 °C
Maximum humidity: 95% W/C

- **Monitoring Digital Output Card (OD3002)**

Card with 4 controlled Output channels of 2.5A for the command of solenoids with safety related functions. It performs testing every 2 seconds on the channels cyclically, in case of discrepancy between the set signal and the read signal, the unit promptly warns about the failure condition. The Output is tested for the following: line opening, short circuit towards positive pole, short circuit towards negative pole, failure of piloting DMOS device, over-temperature of piloting DMOS device, power voltage outside the limits allowed. To increase output current, channels can be connected in parallel.



Main Features

Supply voltage: 22-29Vdc
Normal Current: 60mA
Automatic protection of Outputs: YES
Maximum current of Outputs: 2.5A
Controlled Output channels: 4 ch
Redundancy: No
Test of channels: Performed every 2 seconds
Operating modes: configurable through software.
Operating Temperature: -5 to +60 °C
Maximum humidity: 95% W/C

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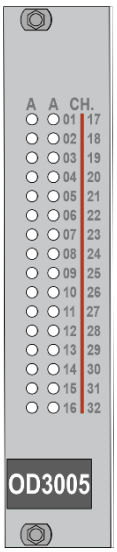
- **Output Card Open Collector - OD3005**

Card with 32 open collector, non-controlled Output channels of 250mA.
This card effects status and functionality checks, but does not monitor the control channels.



Main Features

Supply voltage: 18-30Vdc
Normal Current: 35mA
Automatic protection of Outputs: YES
Maximum current of Outputs: 250mA
Controlled Output channels: 32 ch
Redundancy: No
Test of channels: Performed every 2 seconds
Operating modes: configurable through software.
Operating Temperature: -5 to +60 °C
Maximum humidity: 95% W/C

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