MULTISCAN++S1

ATEX and SIL 1 certified

INSTALLATION AND USE MANUAL

GAS DETECTION

CONTROL UNIT

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Warning

THIS MANUAL MUST BE CAREFULLY READ BY ALL PERSONS WHO HAVE OR WILL HAVE THE RESPONSIBILITY FOR INSTALLING, USING OR SERVICING THIS PRODUCT.

Like any equipment, this product will perform as designed only if installed, used and serviced in accordance with the manufacturer's instructions. OTHERWISE, IT COULD FAIL TO PERFORM AS DESIGNED AND PERSONS WHO RELY ON THIS PRODUCT FOR THEIR SAFETY COULD SUFFER SEVERE PERSONAL INJURY OR DEATH.

The warranties made by Sensitron s.r.l. with respect to this product are voided if the product is not installed, used and serviced in accordance with the instructions in this user guide. Please protect yourself and others by following them.

We recommend our customers to write or call regarding this equipment prior to use or for any additional information relative to use or repair.

INDEX

1) INTRODUCTION

This manual details the procedures required to install, program, operate, test and maintain the **MULTISCAN++S1** gas detection unit.

1.1) Unit features

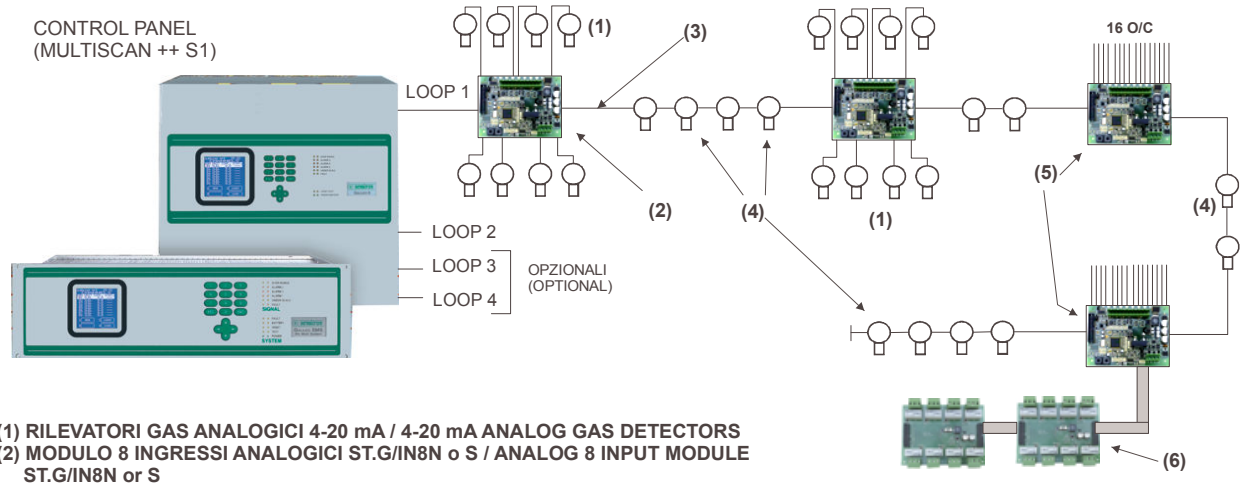
The **MULTISCAN++S1** is a gas detection control unit designed to meet the widest range of flexibility required by the market.
The control panel is based on a powerful microprocessor which provides a wide range of self-diagnostic procedures to detect and locate possible faults.
Extremely flexible and reliable, it can manage up to 256 gas detectors simultaneously. These can be either of addressable type, directly connected on buses, or 4-20mA analogical types connected via 8-input STG/IN8-N or STG/IN8-S remote modules.
System architecture includes up to 256 Open Collector outputs, fully programmable, equipped with STG/OUT16-S or STG/OUT16-N modules connected on RS485 buses. Up to 4 serial buses can be connected to the unit.

Other **MULTISCAN++S1** panel features:

- Event log can be displayed on the screen or downloaded to a PC.
- RS232 serial port for PC connection for programming and control via specific software.
- Parallel port for printer connection.

The control panels are sold in 2 different versions: *housed in Metal cabinet or in a 19" 3 units rack (for the 19" rack version, the power supply has to be ordered separately).*

1.2) Panel configuration



(1) RILEVATORI GAS ANALOGICI 4-20 mA / 4-20 mA ANALOG GAS DETECTORS
(2) MODULO 8 INGRESSI ANALOGICI ST.G/IN8N o S / ANALOG 8 INPUT MODULE ST.G/IN8N or S
(3) CAVO 2 FILI TWISTATI PER Rs485 + 2 FILI PER ALIMENTAZIONE (12-24 Vdc) / 2 TWISTED WIRES FOR THE Rs485 BUS + 2 WIRES FOR THE POWER SUPPLY (12-24 Vdc)
(4) RILEVATORI GAS CON USCITA SERIALE Rs485 / GAS DETECTORS WITH Rs485 OUTPUTS
(5) MODULO 16 USCITE O/C ST.G/OUT16N o S / 16 O/C OUTPUTS MODULE ST.G/OUT16N or S
(6) MODULO 8 RELE' ST.G/8REL / 8 RELE' ST.G/8REL MODULE

Fig. 1.2 System block diagram

1.3) Technical Specifications

Housing:	rack 19" 3U (HE) dim. L.483, H.133, D.220 mm or metallic box dim. L.430, H.405, D.140 mm.
Inputs:	Max. 256 detectors (either addressed on RS485 bus lines or via remote 8-input modules)
Outputs:	8 output relays on board the panel 256 Open Collector outputs via STG/OUT16-S or STG/OUT16-N modules (relay board STG/8REL optional for STG/OUT16-S modules)
Relay contact rating (control panel and optional relay card)	16A at 250 Vac
Serial ports:	2 expandable to 4 RS485 1 RS232 (PC connection)
Network connection	TCP/IP optional module
Power supply:	from 11 Vdc to 30 Vdc 19" rack version 100-120 Vac or 200-240 Vac box version (selectable on the power supply by a switch)
Consumption:	Max 10 VA
Display:	Graphic Liquid crystal display (LCD)
Optical indications:	9 LED double raw
Operating temperature:	0-55°C
Storage temperature	-20 ÷ +60° C
Operating RH:	15-85%

2) INSTALLATION

2.1) Unit

The following instructions are for the MULTISCAN++S1 BOX version.
Mechanical assembly for the RACK version is different. Furthermore, the RACK version does not include the power supply.

For the box version, mount the panel using the four fastening holes on the back of the box.

Fig. 2.1 a) Panel (box and rack 19" versions)

Connect the three-pole mains cable to the power supply board (minimum 1.5mm^2 for each pole) and secure using the wire clamps.

Power the system and then connect the power supply wires with red and black faston crimps to the 2 x 12V 7Ah back up batteries, housing them in the panel near the power supply.

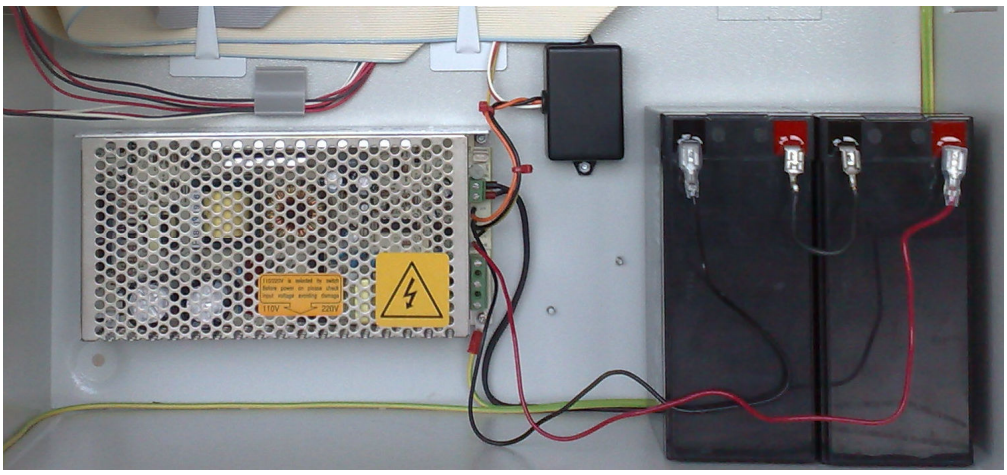
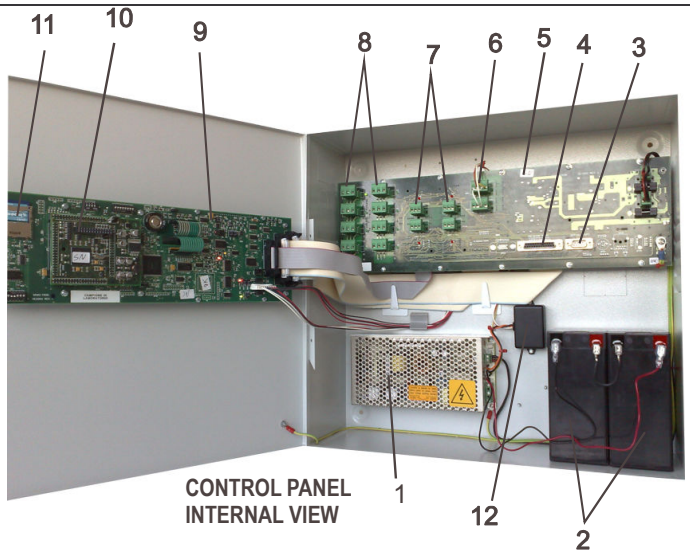


Fig. 2.1 b) Power supply and batteries

2.1.1) Diagram and part identification

Box version

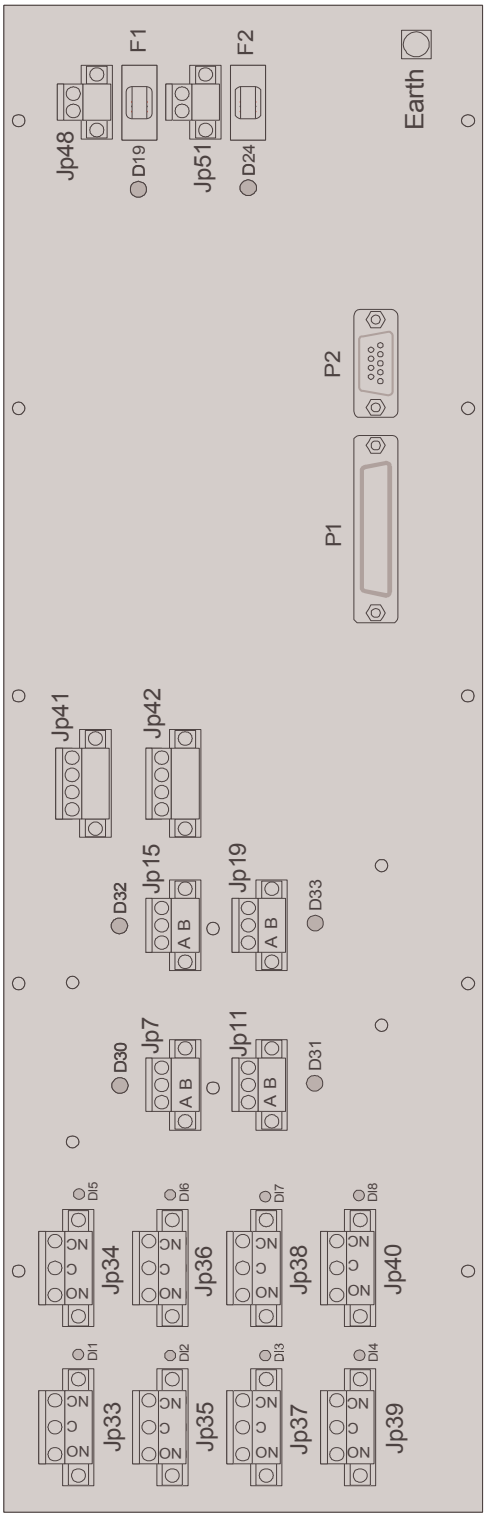


1- Power supply (27 Vdc 4A)	7- RS485 bus connections
2- 2 x 12V 7Ah batteries (not included)	8- Relay output connections
3- RS232 serial port (PC connection)	9- Main board
4- Parallel port (printer connection)	10- Microprocessor
5- Back panel	11- SD card
6- Digital input connections	12- Power supply and battery control circuit

Fig. 2.1.1 Unit diagram and part identification

2.1.2) Back panel and connections

Back panel



	Legenda
JP33	Relè 1 per Fault di sistema / Relay 1 System Fault
JP35	Relè 2 per mancanza rete Relay 2 AC Fail
JP37	Relè 3 di Batteria Bassa Relay 3 Low Battery
JP39	Relè 4 di ripetizione buzzer Relay 4 Buzzer Repeater
JP34	Relè 5 per Allarme 1 Relay 5 Alarm level 1
JP36	Relè 6 per Allarme 2 Relay 6 Alarm level 2
JP38	Relè 7 per Allarme 3 Relay 7 Alarm level 3
JP40	Relè 8 Fault di sensore o modulo / Sensor or Module Fault
JP7	Bus RS485 connection 1
JP11	Bus RS485 connection 2
JP15	Bus RS485 connection 3
JP19	Bus RS485 connection 4
JP41	Ingressi digitali / Digital Inputs
JP42	Ingressi digitali / Digital Inputs
P1	Porta parallela stampante Printer parallel port
P2	Porta seriale RS232 per PC RS232 PC serial port
JP48	Connessione alimentazione (24Vcc) Power supply connection (24 Vdc)
F1	Fusibile alimentazione 1 (3,15A F) Fuse first power supply (3,15A F)
JP51	Connessione alimentazione (24Vcc) ausiliaria Power supply auxiliary connection (24 Vdc)
F2	Fusibile alimentazione aux. (3,15A F) Fuse for aux. power supply (3,15A F)
Earth	Connessione di terra Earth connection
DL 1-8	Led indicazione attivazione relè Led indicating relay activation
D30-33	Led lampeggianti indicazione comunicazione bus RS485 Flashing Led indicating the RS485 bus communication
D19	Led indicazione alimentazione a JP48 Led indicating the power supply at JP48
D24	Led indicazione alimentazione a JP51 Led indicating the power supply at JP51

2.1.3) Power connections

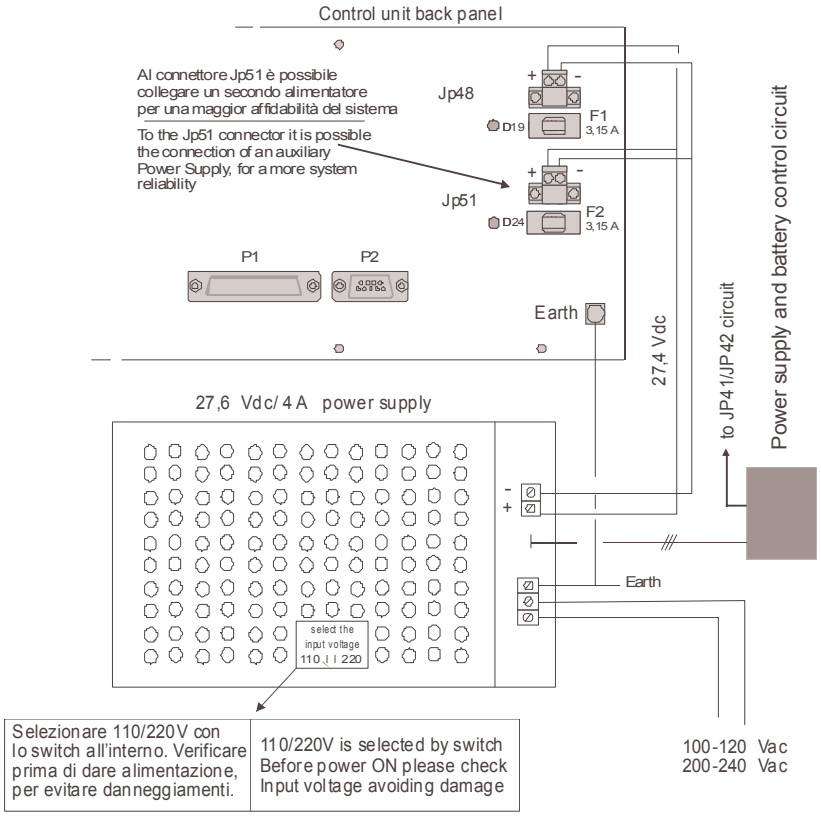


Fig. 2.1.3 Power supply connections

2.1.4) Opto-isolated auxiliary input connections

4 opto-isolated digital inputs are available on the back panel to be used as indicated in the diagram below.

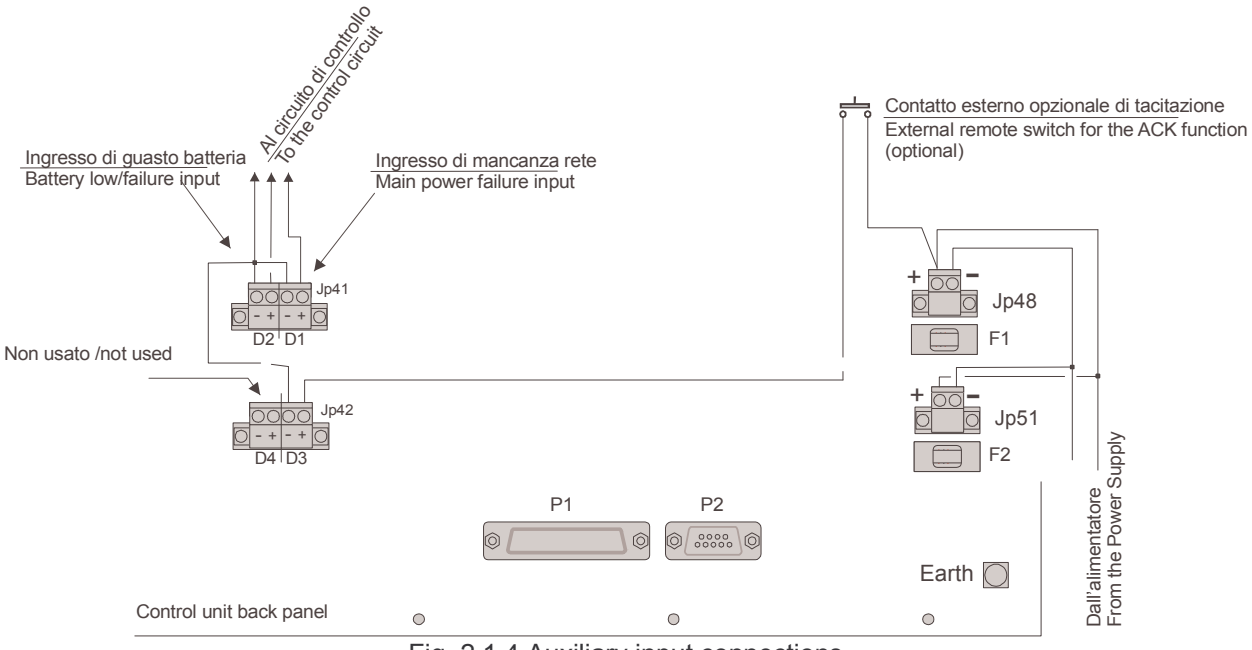


Fig. 2.1.4 Auxiliary input connections

2.1.5) DIP-Switch setting for the communication bus, PC serial port and control panel language

The series of D2 dip-switches must be set for:

- Communication (baud rate and protocol) for unit compatibility with various gas detector versions and IN / OUT modules.
- Communication (baud rate) of the RS232 serial port for the communication with the PC

The D3 dip switch serie is for set the language text of the control panel display.

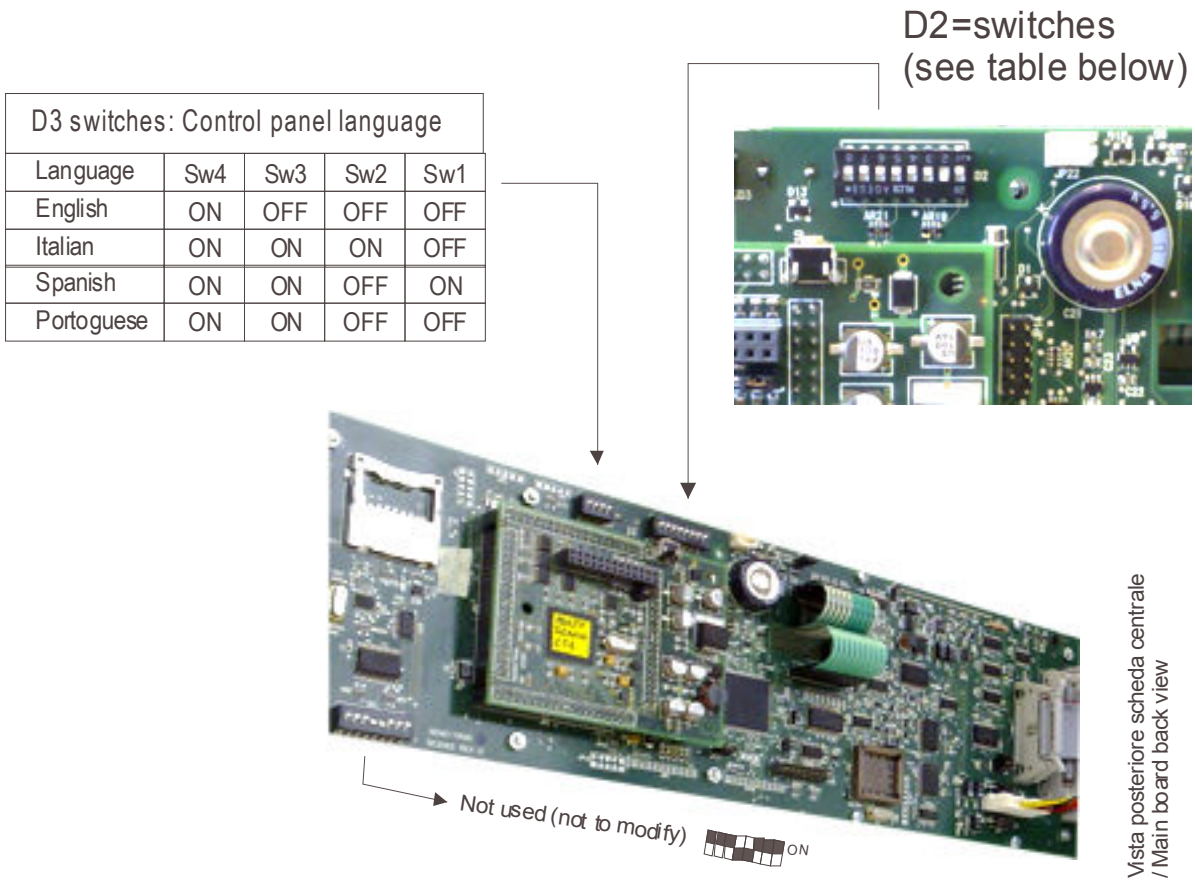


Fig. 2.1.5 Dip switch D2 and D3 setting

Dip-switch 1: Baud Rate Bus RS485

Position	Bus communications speed	Detector and Module compatibility
ON	115.200	SMART “S” gas detectors; STG/IN8-S and STG/OUT16-S modules
OFF	9.600	SMART3G and SMART3CC/CD gas detectors; STG/IN8-S and STG/OUT16-S modules; STG/IN8-N and STG/OUT16-N modules.

Dip-switches 2 and 3: RS485 bus communications protocol

Sw 2	Sw 3	Protocol	Detector and Module compatibility	Notes
ON	ON	Galileo	SMART "S" gas detectors; STG/IN8-S and STG/OUT16-S modules	Baud Rate 115.200
OFF	ON	IDI	Old SMART IDI, SMART3 CC and CD detectors. Old STG/IN8 and STG/OUT16 modules. STG/IN8-N and STG/OUT-16 modules	Baud rate 9600
ON	OFF	Modbus	SMART3G gas detectors; STG/IN8-S and STG/OUT16-S modules	Baud rate 9600 (if SMART3G detectors are not connected to the bus, 115.200 Bps can be set (switch 1))
OFF	OFF	Setting not used		

Dip-switch 4 e 5: Communication (baud rate) of the RS232 serial port for the communication with the PC

Sw 4	Sw 5	Baud Rate
ON	ON	9600 Bit/sec.
OFF	ON	19200 Bit/sec.
ON	OFF	38400 Bit/sec.
OFF	OFF	115200 Bit/sec. (default)

Dip-switches 6 and 7: not used

Dip-switch 8: restore default settings

Position	Function
ON	When turned on, restores unit default settings
OFF	Normal position

2.2) Field device connections

The unit comes complete with 2 RS485 bus lines (upgradeable up to 4) to which gas detectors are connected. Serial buses are all open types.

Gas detectors having a 4-20mA output are connected via remote 8-input cards type STG/IN8-N or STG/IN8-S, while addressable gas detectors (complete with RS485 communication interface) can be directly connected on the serial bus lines.

On the same bus lines, it is possible to connect also remote output modules type STG/OUT16N and STG/OUT16-S.

The length of each serial bus line should not exceed 1,000 mt.

4 conductors are required for device connection (meaning both detectors and IN and OUT modules): 2 for the RS485 serial bus and 2 for device power. For this reason we suggest you use two different wires or a single wire with suitable features as described below.

-) The RS485 serial bus must be connected with an EIA RS 485 connection wire: No. 2 conductors with 0.22/0.35 mm^2 section + shield (TWISTED PAIR). Nominal capacity between conductors < 50 pF/m, nominal impedance 120 ohm. Total line length with this type of connection must not exceed 1.000 meters. An example of a recommended wire is a BELDEN 9841 or similar wire (EIA RS485 data transmission wire). Only connect detectors (and IN and OUT modules) in cascade. Avoid tree or delta connection since they reduce interference immunity.

-) Detector power supply (and IN and OUT modules on the bus) must be connected with a 2-core wire with adequate section based on the number of connected devices, their distance from the power supply and each device's consumption (please see the technical manual enclosed with gas detectors for this purpose).

MULTISCAN++S1 can support a maximum of 256 gas detectors. Gas detectors can be divided on the bus lines provided that the maximum number of 128 detectors is not exceeded on each bus line (max 96 gas detectors if connected to STG/IN8-N modules).

Each device connected to the RS485 buses must have a univocal address. See the table on page 20 for STG/IN8N/S and STG/OUT16N/S module address setting. For gas detectors, see the technical manuals for address setting.

The table below lists the possible addresses for the various modules and detectors connected to RS485 buses.

Module type	*Available addresses*				Notes
	Bus 1	Bus 2	Bus 3 (optional)	Bus 4 (optional)	
STG/IN8-N	Addresses 4-15	Addresses 4-15	Addresses 4-15	Addresses 4-15	Up to a maximum of 12 modules in the system.
STG/IN8-S	Addresses 1-255 (247)	Addresses 1-255 (247)	Addresses 1-255 (247)	Addresses 1-255 (247)	Up to a maximum of 16 modules per line and up to 32 maximum in the system.
STG/OUT16-N	Addresses 1-3	Addresses 1-3	Addresses 1-3	Addresses 1-3	Up to a maximum of 3 modules in the system.
STG/OUT16-S	Addresses 1-255 (247)	Addresses 1-255 (247)	Addresses 1-255 (247)	Addresses 1-255 (247)	Up to a maximum of 8 modules per line and up to 16 maximum in the system.
SMART3G detector (directly connected on RS485 bus)	Addresses 1-256	Addresses 1-256	Addresses 1-256	Addresses 1-256	Up to a maximum of 128 detectors per line and up to 256 maximum in the system.

NB.: STG/IN8 N or S modules and SMART3G detectors can be simultaneously connected on buses but the total number of points must not exceed 256.

2.2.1) Gas detector positioning

Detectors must be placed near any potential gas leaks or where potential stagnation may occur following gas leaks from different points.

To detect explosive gas with specific weight heavier than air's, detectors must be placed about 30 cm from the floor. Vice versa, to detect gas with specific weight lighter than air's, detectors must be placed about 30 cm from the ceiling.

To detect toxic gas or oxygen, we suggest you place detectors about 150 cm from the floor in areas were individuals to be protected frequently sojourn.

For correct positioning, also keep in mind that any dispersed gas clouds move according to air currents (doors, windows, air conditioning, etc.).

The detector must be protected against direct contact and immersion in water.

Furthermore, it is best to install detectors in easily accessible positions for periodic maintenance purposes.

In any case, please refer to gas detector manuals for correct positioning.

2.2.2) Detector connections

Gas detectors can be connected to the MULTISCAN++S1 control panel in two different ways, based on the detector output signal.

1) 4-20mA analog proportional output
2) RS485 digital proportional output

Detectors with 4-20mA output

Detectors with 4-20mA analog output are connected to the unit via remote 8-input modules STG/IN8-N and STG/IN8-S. STG/IN8 modules are connected on the panel's loops to be field mounted far from the control panel (as indicated in paragraph 2.2).
A 4-20mA transmitter requires a 3-core wire for connections: 2 wires for power supply (usually 12 to 28 Vdc but refer to the gas detector technical manual) and one wire for the 4-20mA signal. A 3x0.75mm^2 shielded wire is recommended since it can cover a 100 m distance between the gas detector and STG/IN8 input module.

The following diagram illustrates connections between a 4-20mA gas detector and a STG/IN8 input module. When starting the system, make sure minimum 12Vdc voltage reaches each gas detector.

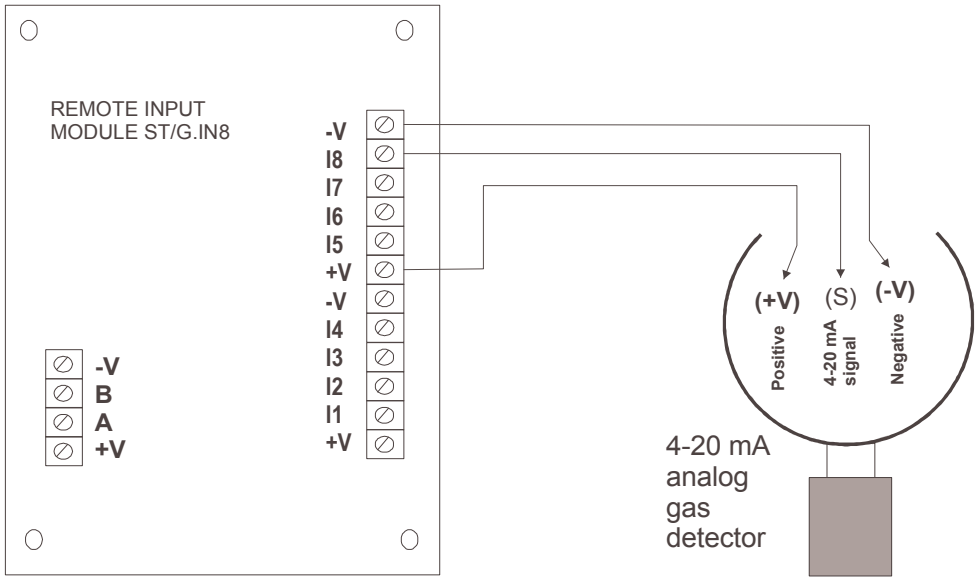


Fig. 2.2.2 a 4-20mA detector connection to STG/IN8-N module

Detectors with RS485 output

Detectors with RS485 digital outputs are directly connected to the RS485 bus.

4 wires are required in this type of connection: 2 for the RS485 serial bus and 2 for device power supply. For this reason we suggest you use two different wires or a single wire with suitable features as described below.

-) The RS485 serial bus must be connected with an EIA RS 485 connection wire: No. 2 wires with 0.22/0.35 mm^2 section with shield (TWISTED PAIR). Nominal capacity between conductors < 50 pF/m, nominal impedance 120 ohm. Total line length with this type of connection must not exceed 1,000 metres. An example of a recommended cable is a BELDEN 9841 or similar wire (EIA RS485 data transmission wire). Only connect detectors (and IN and OUT modules) in cascade. Avoid tree or star connections since they reduce interference immunity.

-) The power supply to the detectors (and IN and OUT modules on the bus) must be connected with a 2-core wire **with adequate section based on the number of connected devices**, their distance from the power supply and each device's consumption (please see the technical manual enclosed with gas detectors for this purpose).

Note: each detector connected on the RS485 line must have its own univocal address between 1 and 247. Please see the gas detector technical manual for address settings.

The following diagram illustrates the connection on the loop of gas detectors and remote IN/8 or OUT/16 modules to the control panel.

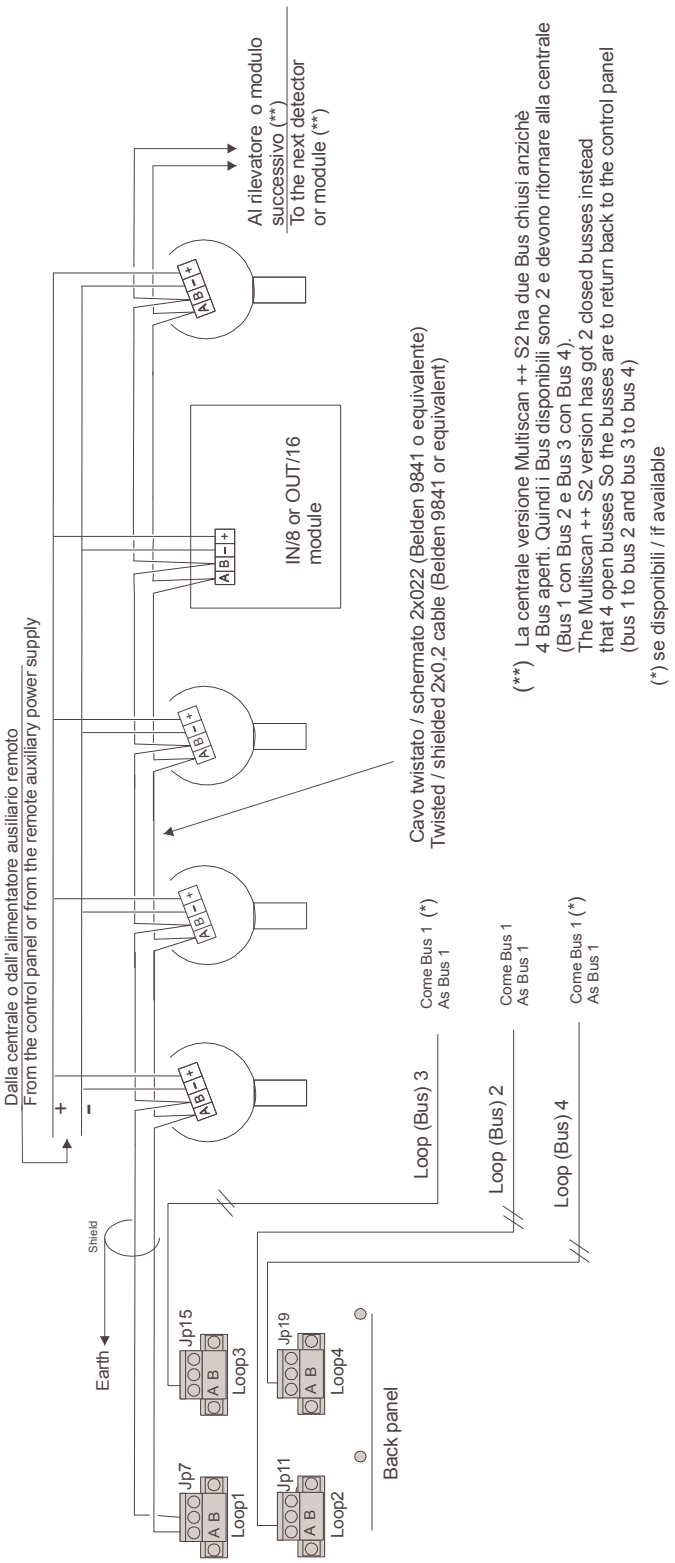


Fig. 2.2.2 b Device connections on RS485 bus

2.3) STG/IN8-N remote input modules

STG/IN8-N remote modules are field mounted and connected to the panel via RS485 buses. They are used to connect 8 x 4-20mA analog gas detectors. Use the module's jumpers to set the address. Possible addresses for STG/IN8-N modules (which must be univocal) are between 04 and 15. Up to 12 STG/IN8-N modules can be connected in the system.

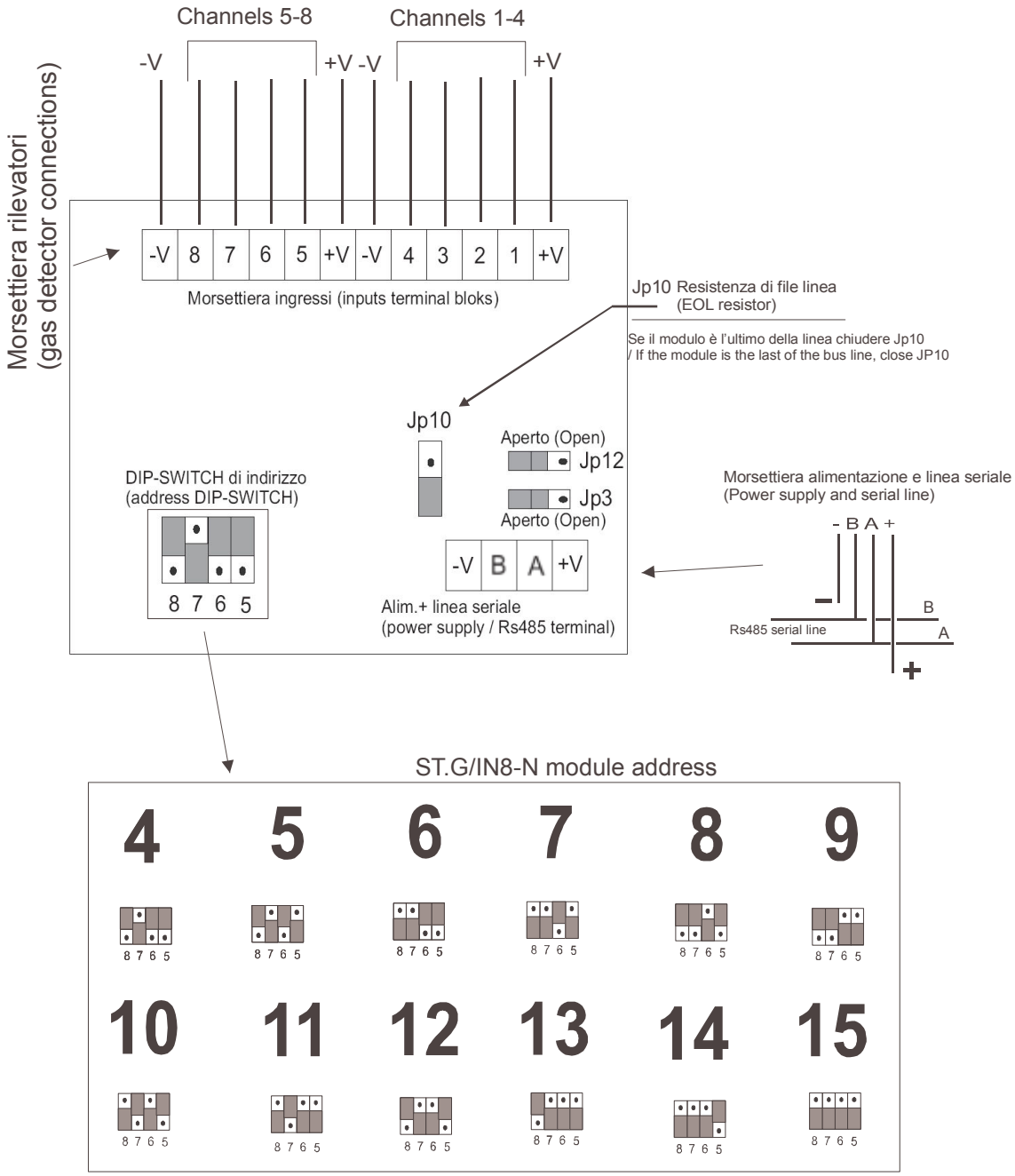


Fig. 2.3 STG/IN8-N module

2.4) STG/OUT16-N remote output modules

STG/OUT16-N remote modules are field mounted and connected to the panel via RS485 buses. They provide 16 Open Collector outputs (negative switch) with programmable functions to remotely trigger Sirens, Solenoid valves, Relays, etc.

Each module must be addressed using the jumpers on the PCB. Possible addresses for STG/OUT16-N modules (which must be univocal) are between 01 and 03.

Up to 3 STG/OUT16-N modules can be connected in the system.

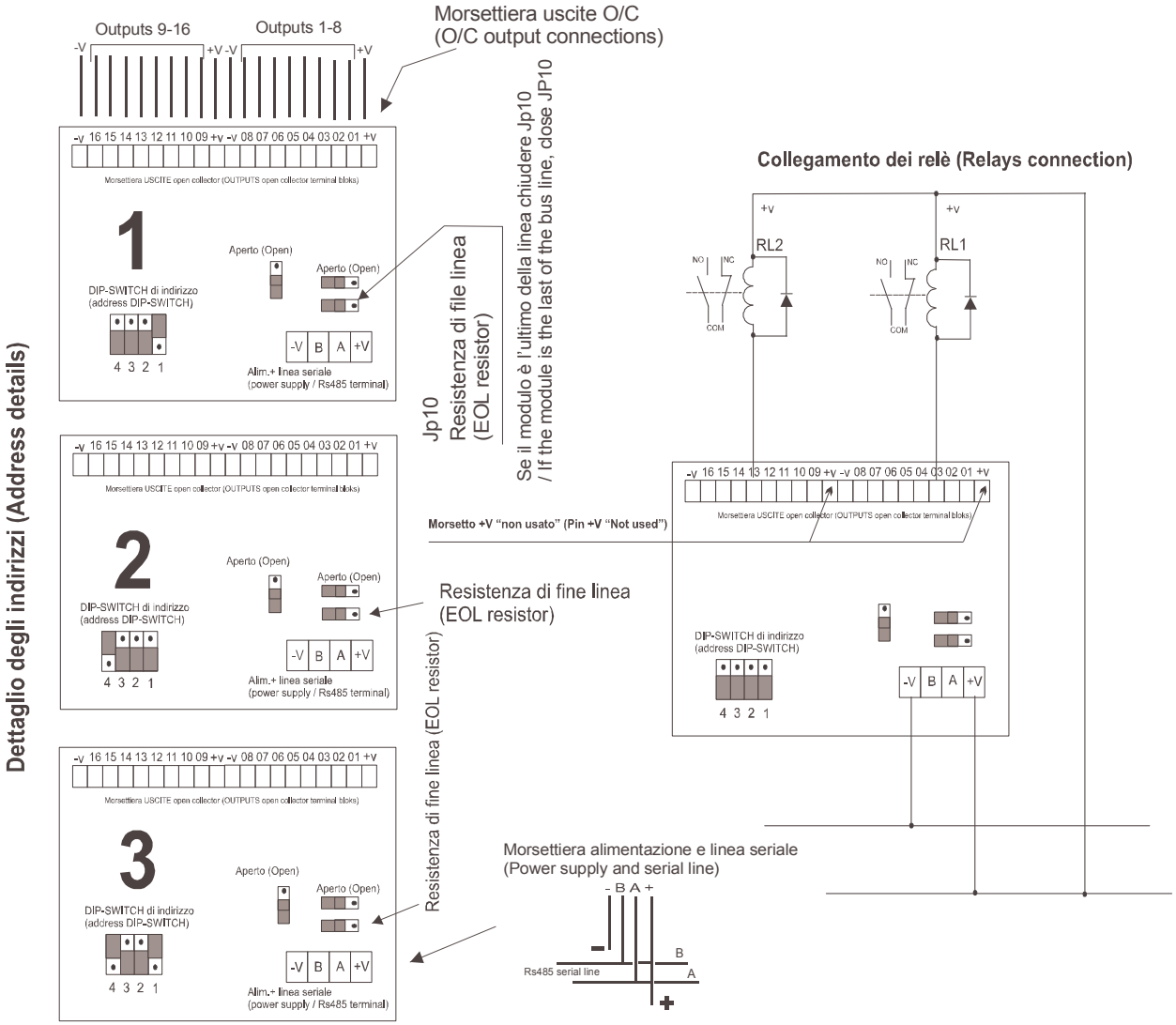


Fig. 2.4 STG/OUT16-N module

2.5) STG/IN8-S remote input modules

STG/IN8-S remote modules are field mounted and are connected to the panel via RS485 buses. They are used to connect 8 x 4-20mA analog gas detectors. Each module must be addressed using the rotary switches on the PCB. The address must be univocal and between 1 and 255. Up to 16 STG/IN8-S modules can be connected to each RS485 bus and a maximum number of 32 modules on the system.

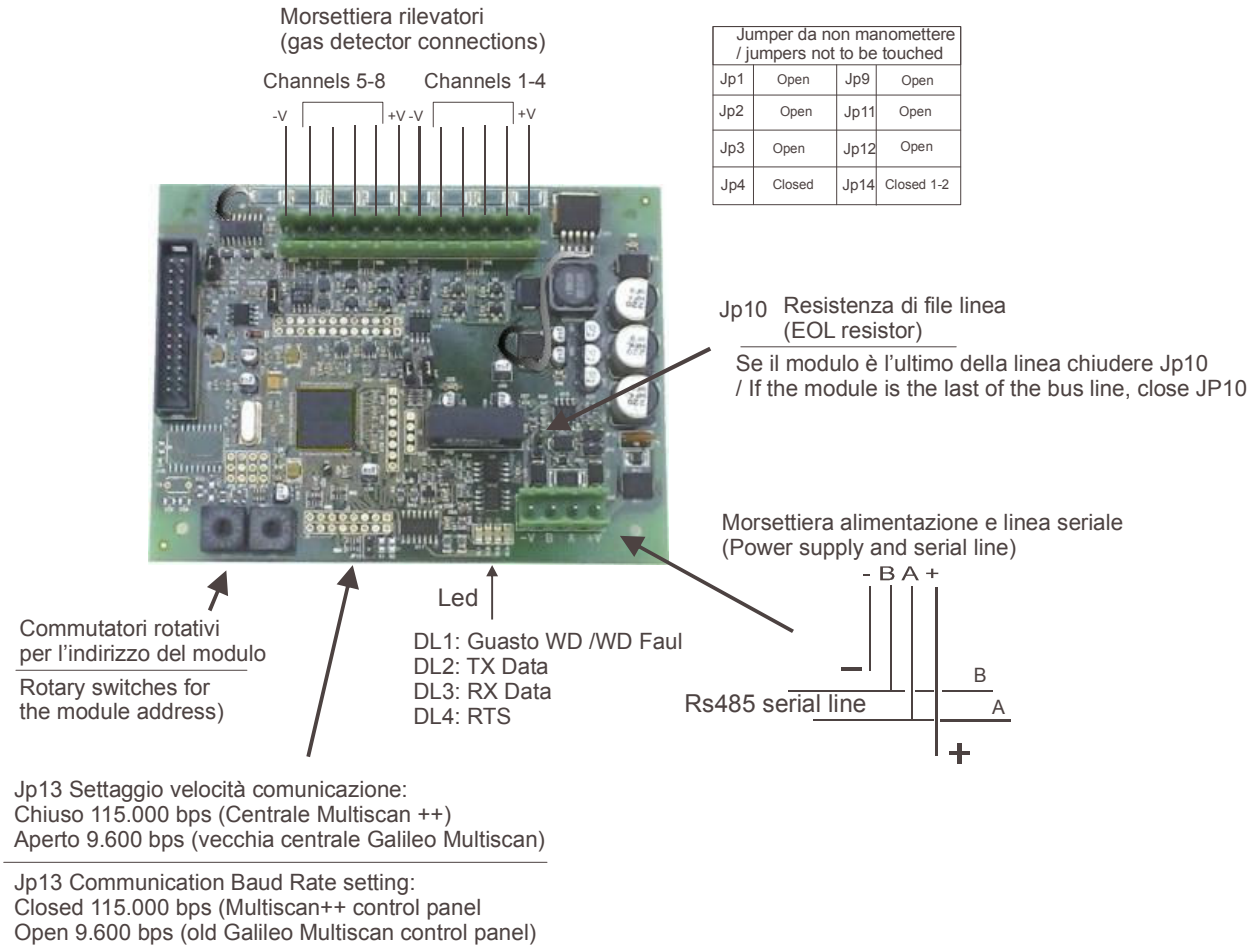
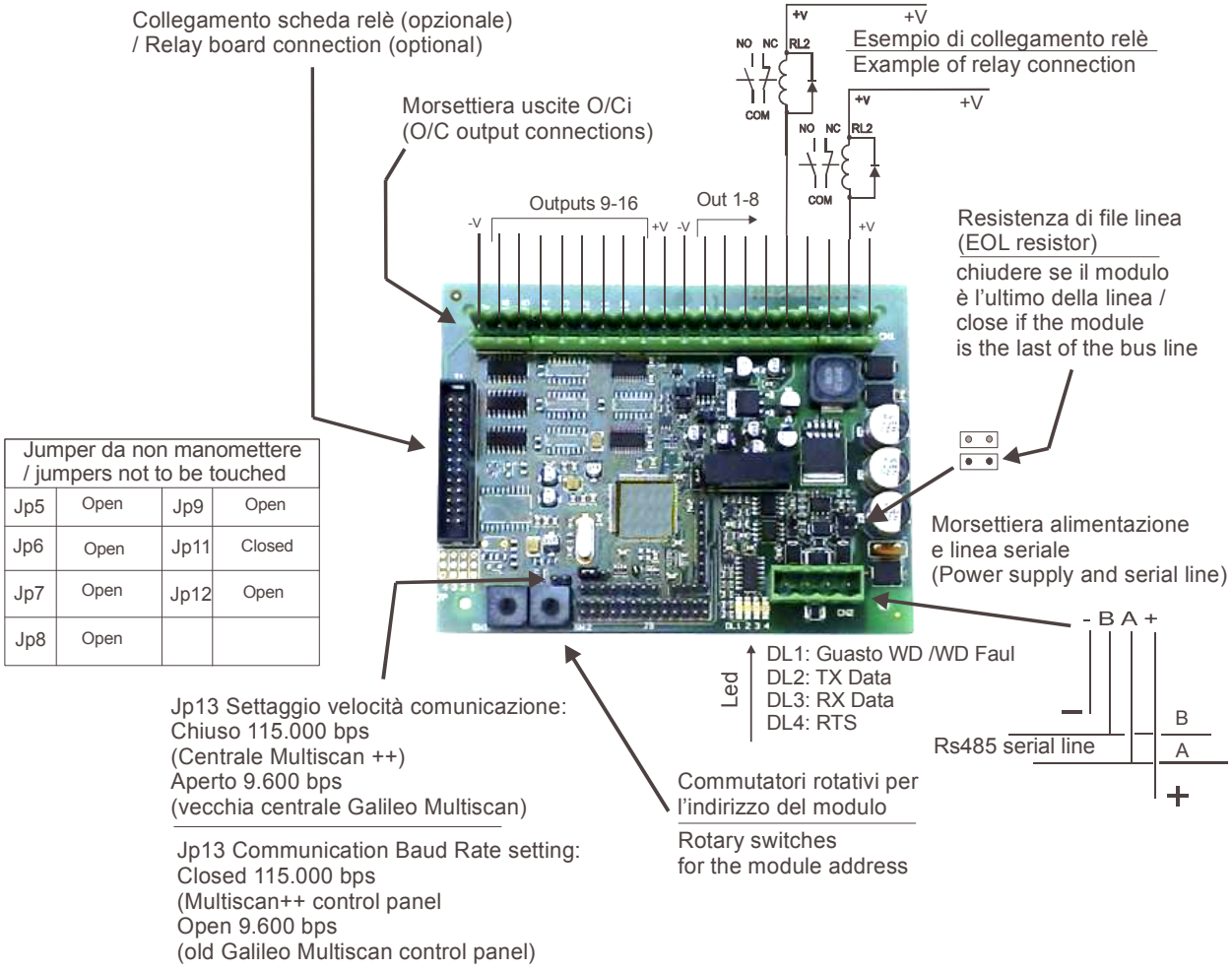


Fig. 2.5 STG/IN8-S module

2.6) STG/OUT16-S remote output modules

STG/OUT16-S remote modules are field mounted and connected to the panel via RS485 buses. They provide 16 Open Collector outputs (negative switch) with programmable functions to remotely trigger Sirens, Solenoid valves, Relays, etc. Each STG/OUT16-S module can be connected to up to 2 boards and 8 relays that convert the Open Collector output to a powerless exchange contact.

Each module must be addressed using the rotary switches placed on the PCB. The address must be univocal and between 1 and 255. Up to 8 x STG/OUT16-S modules can be connected to each RS485 bus and a maximum number of 16 modules on the system.

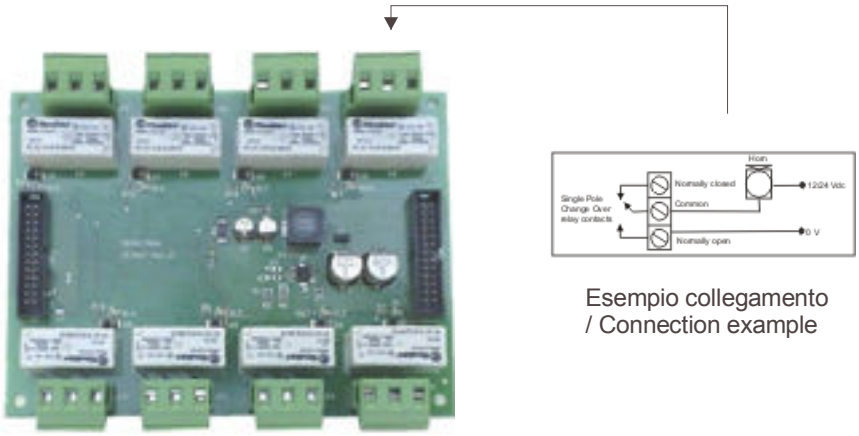


Jumper da non manomettere / jumpers not to be touched			
Jp5	Open	Jp9	Open
Jp6	Open	Jp11	Closed
Jp7	Open	Jp12	Open
Jp8	Open		

Fig. 2.6 STG/OUT16-S module

2.6.1) STG/8REL relay expansion board

The STG/8REL 8-relay expansion board converts STG/OUT16 O/C outputs into voltage free changeover contact. Up to two relay boards can be connected to each output module. A relay board is directly connected to the output module (J1 connector) and a second relay board is connected to the first.



Esempio collegamento
/ Connection example

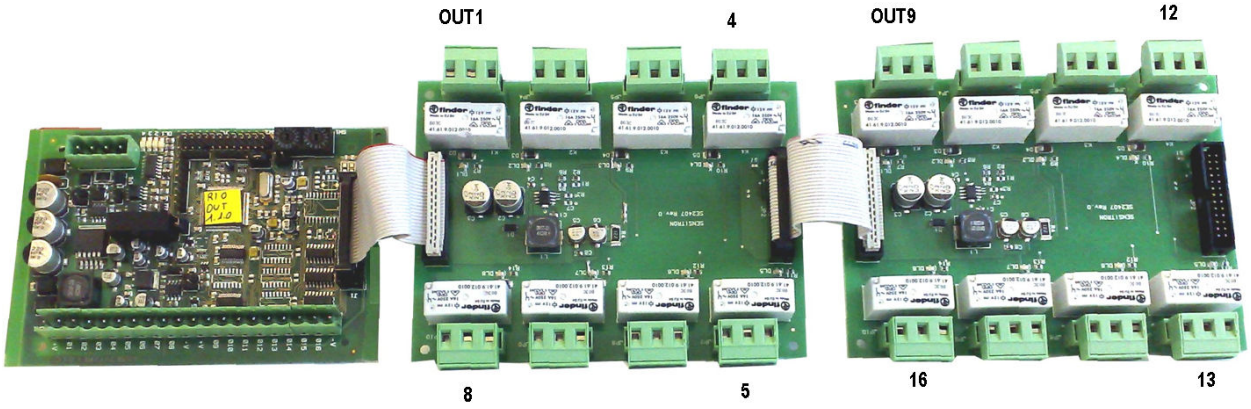


Fig. 2.4.1 Relay board connection to the output module

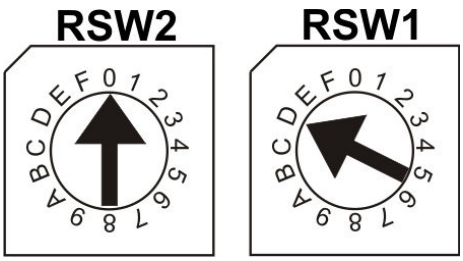
2.6.2) STG/IN8-S and STG/OUT16-S module addressing

STG/IN8-S and STG/OUT16-S modules are addressed using the two rotary switches in RSW 1 and 2 hexadecimals (fig. 2.5). Rotary switches permit hexadecimal settings (base 16). Each switch as 16 positions (0-F) and the pointer is positioned on the number chosen using a screwdriver to create a decimal value between 1 and 255 (see table 1). The maximum number of modules that can be connected to the unit is:

- STG/IN8-S modules, max. 32
- STG/OUT16-S modules, max. 16

Each module must have univocal address in the system. Dual addresses are not permitted even if modules are on different serial buses.

Example:



Se i due commutatori sono posizionati come sopra, RSW2 su 0 ed RSW1 su D, l'indirizzo corrispondente in decimale è 13 (vedi tabella 1)

If the address switches are set in this manner, RSW2 at 0 and RSW1 at D, the corresponding address in decimal number would be 13 (see table 1).

Tabella1: Conversione da decimale ad esadecimale
Table 1: Conversion from decimal to hexadecimal numbers

DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX	DEC	HEX
1	01	38	26	75	4B	112	70	149	95	186	BA	223	DF
2	02	39	27	76	4C	113	71	150	96	187	BB	224	E0
3	03	40	28	77	4D	114	72	151	97	188	BC	225	E1
4	04	41	29	78	4E	115	73	152	98	189	BD	226	E2
5	05	42	2A	79	4F	116	74	153	99	190	BE	227	E3
6	06	43	2B	80	50	117	75	154	9A	191	BF	228	E4
7	07	44	2C	81	51	118	76	155	9B	192	C0	229	E5
8	08	45	2D	82	52	119	77	156	9C	193	C1	230	E6
9	09	46	2E	83	53	120	78	157	9D	194	C2	231	E7
10	0A	47	2F	84	54	121	79	158	9E	195	C3	232	E8
11	0B	48	30	85	55	122	7A	159	9F	196	C4	233	E9
12	0C	49	31	86	56	123	7B	160	A0	197	C5	234	EA
13	0D	50	32	87	57	124	7C	161	A1	198	C6	235	EB
14	0E	51	33	88	58	125	7D	162	A2	199	C7	236	EC
15	0F	52	34	89	59	126	7E	163	A3	200	C8	237	ED
16	10	53	35	90	5A	127	7F	164	A4	201	C9	238	EE
17	11	54	36	91	5B	128	80	165	A5	202	CA	239	EF
18	12	55	37	92	5C	129	81	166	A6	203	CB	240	F0
19	13	56	38	93	5D	130	82	167	A7	204	CC	241	F1
20	14	57	39	94	5E	131	83	168	A8	205	CD	242	F2
21	15	58	3A	95	5F	132	84	169	A9	206	CE	243	F3
22	16	59	3B	96	60	133	85	170	AA	207	CF	244	F4
23	17	60	3C	97	61	134	86	171	AB	208	D0	245	F5
24	18	61	3D	98	62	135	87	172	AC	209	D1	246	F6
25	19	62	3E	99	63	136	88	173	AD	210	D2	247	F7
26	1A	63	3F	100	64	137	89	174	AE	211	D3	248 (*)	F8
27	1B	64	40	101	65	138	8A	175	AF	212	D4	249 (*)	F9
28	1C	65	41	102	66	139	8B	176	B0	213	D5	250 (*)	FA
29	1D	66	42	103	67	140	8C	177	B1	214	D6	251 (*)	FB
30	1E	67	43	104	68	141	8D	178	B2	215	D7	252 (*)	FC
31	1F	68	44	105	69	142	8E	179	B3	216	D8	253 (*)	FD
32	20	69	45	106	6A	143	8F	180	B4	217	D9	254 (*)	FE
33	21	70	46	107	6B	144	90	181	B5	218	DA	255 (**)	FF
34	22	71	47	108	6C	145	91	182	B6	219	DB		
35	23	72	48	109	6D	146	92	183	B7	220	DC		
36	24	73	49	110	6E	147	93	184	B8	221	DD		
37	25	74	4A	111	6F	148	94	185	B9	222	DE		

(*) Indirizzi non disponibili con protocollo Modbus / addresses not available for the Modbus protocol
(**)Indirizzo non disponibile con protocollo Galileo / address not available for the Galileo protocol

2.6.3) Detector identification

Every detector connected to the control panel is identified by a code which allows its configuration and contains all the principle data required to physically identify it.

For example:

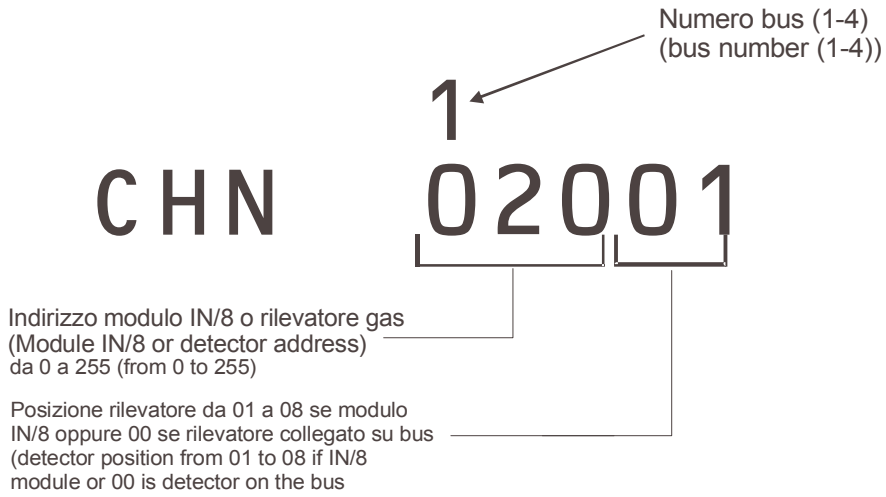


Fig. 2.6.3) Detector number indication

2.7) Programming by PC

The MULTISCAN++S1 control panel is fully programmable by a personal computer with a dedicated configuration software (to be ordered separately). The software has been designed to make the control panel programming simpler and faster.

The control panel can be connected to a Personal Computer using the RS232C serial port available on the back panel.

The correct serial connecting cable is necessary to connect the control panel to the computer. (The connector pin layout is shown below)

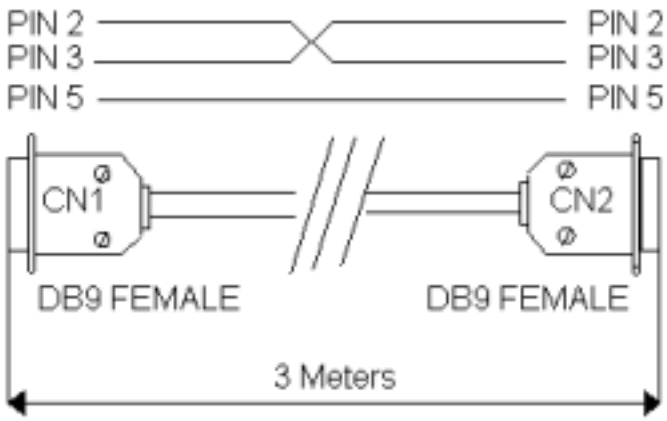


Fig. 2.7) PC Connection cable

2.8) TCP/IP optional module

Via an optional interface, to be connected to the RS232 port, it is possible to connect the panel on a LAN/WAN network with TCP/IP protocol. By this type of connection, the following features are possible:

- Remote modification of the control panel settings, by the configuration software (chapter 4 of the manual)
- Remote management of the control panel, via third parties supervising software, by using the Modbus protocol
- Remote management of the control panel, via a supervising software made by Sensitron (future availability)

For technical features and use of TCP/IP module, please consult the product documentation.

3) SYSTEM POWER UP AND OPERATION

The chapter explains the procedures for the operation, the commissioning and the maintenance of the control unit MULTISCAN++S1
For the programming of the MULTISCAN++S1 control panel the PC software is required.

3.1) Power ON

After ensuring correct installation of the MULTISCAN++S1, the unit can be switched on.

When first switched on, after the “Warm Up” time (3 minutes by default), the display will show an empty picture without any indication because, at the first switch ON, the control panel needs programming.

Fig. 3.1 a) Warm Up screen.

The control panel programming must be performed just by the Personal Computer with the dedicate configuration software (see the previous paragraph for the connection of the control panel to the PC). Refer to the next chapter No. 4 for the configuration software instructions.

For an already configured control panel, the normal screen will show eight channels (detectors) with their status:

Fig. 3.1 b) Typical NORMAL state screen.

3.2) System states and operation

The LCD display provides the user with details about the various system states.
A few general rules apply at any level as follows:

- Should there be a list displayed, the page scrolling can be done using the UP/DOWN arrow keys. Once a selection is made by pressing the ENTER key the display will show a more detailed view of that particular selection.
- All the arrow keys, UP/DOWN, LEFT/RIGHT are being used also to move through the parameter under change fields.
- At any display level, the ESC key will switch back to the previous view. Pressing twice the ESC key, you will go back to the main screen.
- The same, at any display level, should no keys be pressed for more that 3 minutes, the view will automatically switch back to the main window of the Normal mode.

3.2.1) System states

The system is designed to be in one of the following operative states:

NORMAL
ALARM
FAULT
TEST/MAINTENANCE
UNSET
EMERGENCY

NORMAL

This is the system state when everything works properly and there is no Alarm and no Fault notification. Under this condition it is possible to visualise the current status of the inputs.
On the LCD display, in the main frame, up to 8 channels information is shown, with the actual gas concentration measured, as configured in the related channel.

Fig. 3.2.1 a) Typical NORMAL state screen.

ALARM

The alarm condition will be activated according to the settings for each and every input: The activation conditions can be user programmable, although for each detector type (in effect each gas detected) a standard configuration is defined and loaded, when making the settings of a stated input through the PC software.

In the alarm window the following info is available:

Fig. 3.2.1.b) Typical ALARM state of the ACTIVE EVENTS screen.

Alarmed channels reading.

When more than one input channel enters in alarm state simultaneously, alarms are displayed according to the following rules:

1. The events are ordered by severity, as follows: Over-range, Alarm 3, Alarm 2, Alarm 1;
2. Over-range is seen as an Alarm event with the highest severity.
3. In case there are present also other events than alarms, like faults, the alarm events will be in the upper side and the others in the bottom side of the display;

Pressing Enter key, with an alarm event selected, a window is opening showing the details of the related channel as in the next image:

Fig. 3.2.1.c) ALARM details screen.

At any access level, by selecting in the main window the 1—Menu and than ACTIVE EVENTS sub menu, it is possible to see the gas detectors in alarm state, or not yet reset.

FAULT

The fault condition will be activated in the following situations:

1. Short circuit or open circuit in a detecting circuit
2. Removal of a remote gas detector or IN and OUT modules
3. Under-scale detection
4. Over scale detection

Fig. 3.2.1.d) Typical FAULT state of the ACTIVE EVENTS screen.

Pressing Enter key, with a fault event selected, a window is opening showing the details of the related channel as in the next image:

Fig. 3.2.1.e) FAULT details screen.

TEST/MAINTENANCE

This state is meant for testing and maintenance purpose. This testing function requires an operation sequence and can be activated for each detector being connected.

An user with the OPERATOR or MAINTENANCE level cannot put under TEST/MAINTENANCE more than 50% of the system's channels and outputs.

The signals from channels under TEST will be displayed but will not be considered, in the way that no alarm will be triggered even though the alarm thresholds are being exceeded.

In the same way, the relays under TEST will not be activated, even if an alarm event associated is taking place while the relay is in TEST/MAINTENANCE mode.

EXCEPTION: In case the system just includes one channel only, it will be possible to put that channel under test.
The same principle applies in the case when just one single output is defined. That output can be put under test.

UNSET

The state is useful for virtually excluding single detectors or parts of the system, without physically interrupting the connection.

The UNSET condition may be activated for each channel or part of the system.

In the same way as for TEST/MAINTENANCE mode, a user with OPERATOR or MAINTENANCE level cannot UNSET more than 50% of the system's channels and relays.

The only exception is the ENGINEER level, which may UNSET the whole system if necessary.

EMERGENCY MODE

This is a special defined state into which the systems switches for the following two situations:

1.malfunctioning of the control panel power supply
2. AC Fail (230 Vac or 110 Vac missed)

3.3) User levels

The system offers three user levels and, depending on these, various options are available. The three levels are as follows:

1. OPERATOR level (O)
2. MAINTENANCE level (M)
3. ENGINEER level (E)

Once logged in with a certain level, a letter in the top right side of the screen will inform about the level chosen, as follows: "O" for Operator. "M" for Maintenance and "E" for Engineer.

If the user is not logged in, the allowed operations are as per Operator level, without permitting to do the "ACK" of the events.

The user passwords can be created and/modified just by the PC configuration software.

3.3.1) OPERATOR level

It is the lowest user level.
The “Operator” user may only see the system’s configuration. He may browse the system through channels and relays.
The “Operator” cannot put under Test or get out of Test mode any detector or parts of the system, nor he can Unset parts of the system, or Set parts of the system previously unset.
In normal operating mode, the display will show the SYSTEM STATE and will offer the possibility to scroll through the system channels,
The main screen for all user levels is as in the following picture:

Fig. 3.3.1) Typical NORMAL state screen

In the bottom of the screen, the “Operator” level offers the following options:

1	MENU	gets the user into a sub menu (just for the Event Log, the printer options and the System info)
2	LOGOUT	logs out the active user
4	LOGIN	opens the login dialogue window
5	SYSTEM	gets the user into a sub menu (just for a general viewing of the system through the Zone, the Module and Detectors).

See next chapters for details.

In case of Alarm and/or Fault, and/or Emergency, the system will switch automatically to ALARM or FAULT or EMERGENCY mode.
The “Operator” user may only ACKNOWLEDGE (ACK) the event, without being allowed to RESET it.
In effect the only situation when the “Operator” should login is when acknowledging an event. The login is requested for record purposes, thus in the event log a trace is being kept about the user that acknowledged a particular event.

3.3.2) MAINTENANCE level

The “Maintenance” level is the middle user level.
Like the “Operator” user, the “Maintenance” user may see the system’s configuration. He may also browse the system through channels and relays.
Unlike the “Operator” the “Maintenance” user may also put under Test or take out of Test mode any systems part, and he can Unset parts of the system, or Set parts of the system previously unset.
For more details see the next chapter 3.4 - MENU DETAILS

The operations allowed in the Maintenance level main screen are the same as for the Operator level plus the option 3 – SYSTEM available for the TEST, SET and UNSET operation of the channels and the relay.
In case of Alarm and/or Fault, the system will switch automatically to ALARM or FAULT mode.
For more details see the next chapter 3.4 - MENU DETAILS

3.3.3) ENGINEER level

The “Engineer” level is the highest user level.
The operations allowed in the Engineer level main screen are the same as for the Maintenance level.
In case of Alarm and/or Fault, the system will switch automatically to ALARM or FAULT mode.
In effect the only situation when the “ENGINEER” should login is to modify the Alarm levels set-point and when is required to put in Test or in Unset more than 50% of the channels (detectors) or Outputs.
For more details see the next chapter 3.4 - MENU DETAILS

3.4) MENU DETAILS

In the following chapter, the various submenus of the main screen will be detailed.

1	MENU	gets the user into a sub menu (see the next chapter)
2	LOGOUT	logs out the active user
4	LOGIN	opens the login dialogue window
5	SYSTEM	gets the user into a sub menu (the available operations depend on the User level).

3.5) 1- MENU

In the main window in normal mode (without any user login), one may view the system’s configuration details, pressing the key 1 (MENU).

ACTIVE EVENTS (available just if some active event is present)
EVENT LOG
SYSTEM INFO

Other sub-menus may be available, depending on the user login level, see the table below

Operator level (O)	Maintenance level (M)	Engineer level (E)
ACTIVE EVENT (*)	ACTIVE EVENT (*)	ACTIVE EVENT (*)
EVENT LOG	EVENT LOG	EVENT LOG
PRINT	SET PRINTER MODE	SET PRINTER MODE
ABORT PRINT	PRINT	PRINT
SYSTEM INFO	ABORT PRINT	ABORT PRINT
	SYSTEM INFO	SYSTEM INFO

(*) available just if some active event is present

3.5.1) ACTIVE EVENTS

Pressing ENT on ACTIVE EVENT, the list shows the actually active events. If there are active Alarms and active Faults or Emergency situations, these will be shown by splitting the window in two as below. In the upper side the Alarms and in the lower side the Faults and Emergency situations. Using the LEFT/RIGHT arrow, the screen will switch between the two sides of the window.

Fig. 3.5.1 a) Active Events screen with Alarm and fault

Should there be just Alarms or just Faults/Emergency situations, these will be shown in the upper side of the window, respectively.
Below an example of alarm situation only:

Fig. 3.5.1 b) Active Events screen with alarm only

Or in case just fault situation is present:

Fig. 3.5.1 c) Active events screen with fault only

In case of a new event, the screen will automatically switch to the Active Events list and the buzzer will sound.
Until the event is acknowledged, the user cannot go back to the main screen. In the upper figures 3.5.1.a, b and c the shown events are not yet acknowledged.
When acknowledged there is a “X” under the column “A”, for the related event.

In this screen there are three available options:

1 ACK
2 RESET
3 PRINT

ACK

By pressing 1 ACK with the cursor on the active event, this will get acknowledged. There are two situations:

1. the user is already logged in.

In this case by pressing 1 ACK the screen image will simply refresh and an “X” mark will appear on the “A” column (the “Acknowledged” column)

2. the user is not yet logged in.

In this case the LOGIN dialogue window pops up and the user should key in the password. After which the “X” mark will be shown under the “A” column of the related active event.

Practically this is the only situation when the login of an “Operator” level user is required so that a trace is being kept about the person who acknowledged the active event.

RESET

Pressing 2 RESET with the cursor on the active event previously acknowledged (the one marked with "X"), this will get reset and the event will disappear from the active events list. As described above, there are two situations:

1. the user is already logged in for a previous operation that requires login.

In this case pressing 2 RESET the screen image will simply refresh and delete the event line from the list

2. the user is not yet logged in.

In this case the LOGIN dialogue window pops up and the user should key in the password. After which the screen will be refreshed and the event deleted.

NOTE: A user with “Operator” level is NOT allowed to reset active events. He can only acknowledge them so that the display image may be switched back to the main screen. The reset may only be done by “Maintenance” or “Engineer” level users.

PRINT

Pressing 4 PRINT, if a Printer is connected to the system (and if the Printer Mode is not “Real Time”, see chapter 3.5.5) the event details will be printed out.

3.5.2) EVENT LOG

Una delle opzioni del menu principale (disponibile a qualsiasi livello utente) è LOG EVENTI. Posizionarsi su LOG EVENTI tramite i tasti freccia SU/GIU’ e premere ENT.

La videata che si apre mostra l’evento in ordine cronologico più recente

Fig. 3.5.2 a) Event detail screen

- Using the up/down arrow keys one may scroll through the list.
- Using the keys 2 and 4, one may refine the search
- Pressing the ESCAPE key instead will switch back to the main window.

Should 3 minutes pass without any key pressed, the view switches to the Operator main window.

Select Period

This opens a query asking to select the period to be observed by entering the start and the end date.

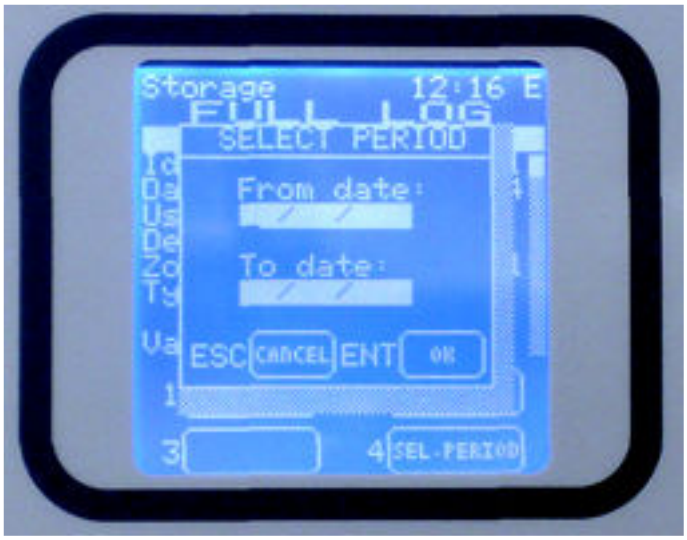


Fig. 3.5.2 b) Select period dialogue window

The date should be introduced in a 2 digit format for day, month and year: “DD/MM/YY”. As the dialogue window opens, the cursor is already in the “DD” field waiting for the day to be introduced. Keying in the day, the cursor will automatically move to the “MM” field waiting for the month to be keyed in. The same for the year after which the cursor moves to the end date “DD” field and the procedure repeats for the introduction of the complete end date. In the end, pressing ENTER, the window will next show only the selected period events.

Using the up/down arrow keys one may scroll through the new list.

To exit this view and go back to the main window press ESCAPE key.

Filter

In any of the events screens, by pressing the key 2 **Filter**, it is possible to enter in a sub-menu of the Event Log. Using the up/down arrow keys one may scroll through the list options.

Fig. 3.5.2 c) FILTER options screen

ALARMS
Choosing the Alarms LOG option enters the Alarm events list.
Using the up/down arrow keys one may search in the Alarm event log

FLT & SYSTEM
Choosing the Fault & System LOG option enters the faults and system events list.
Using the up/down arrow keys one may search in the Flt & fault event log

SETTINGS
Choosing the Settings LOG option enters the Settings events list.
Using the up/down arrow keys one may search in the Settings event log

FULL LOG
The FULL LOG option shows all the events, in chronological order, starting with the most recent.
Using the up/down arrow keys one may search in the event log

3.5.3) PRINT

If a Printer is connected to the control panel and in the Set Printer Mode the On Request parameter is selected (see next chapter 3.5.5), by selecting PRINT and pressing ENT one starts the printout of the system detector list with all the programming data (Zone, detector description, Alarm levels etc.).

3.5.4) ABORT PRINT

To stop and cancel the printout

3.5.5) SET PRINTER MODE (Users level “M” and “E”)

This parameter is used to select the print mode.

ON REQUEST

In this case, the control panel only prints specific details (Event Log, detector list etc.) at the user's request, in the different menu. The printer can be connected and disconnected at any time as required.

REAL TIME
This option switches the printer to on-line mode and requires that a printer be continuously connected to the system. Events are printed as and when they occur.

NOTE: If Real Time is enabled, the event log and other options will not be printed at the user's request. The Real Time parameter must be disabled to permit all other print option to operate.

Fig. 3.5.5) Set Printer Mode option

3.5.6) SYSTEM INFO

At any user level, selecting SYSTEM INFO a window will show the information about the hardware and the software versions:

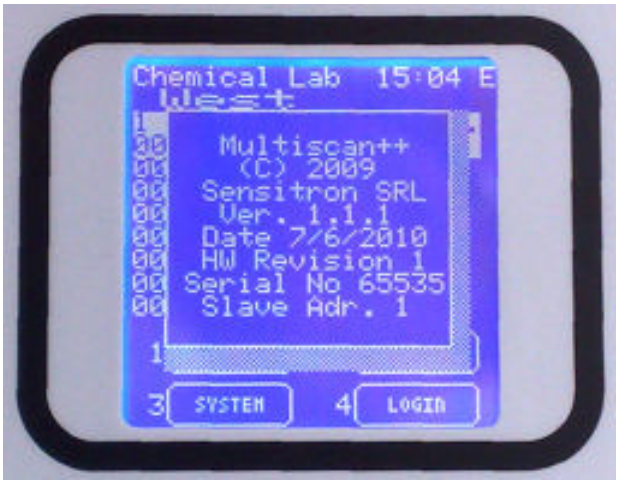


Fig. 3.5.6) System Info window

3.6) 2-LOGOUT

From the normal mode screen, pressing 2-LOGOUT key, the actual user will logout.

3.7) 4-LOGIN

Pressing 4-LOGIN key a login window will ask for the user password, to allow entering one of the three user levels: OPERATOR, MAINTENANCE or ENGINEER level (see the related chapter 3.3 User levels).

Fig. 3.7 a) Login dialogue window

For the OPERATOR level, login is only required for acknowledging active events, as described in the previous chapter.

After logging in, according to the user level the next window will be in OPERATOR, MAINTENANCE or ENGINEER level. In the right and upper corner of the screen, it will be displayed what user level is it: “O” for Operator, “M” for Maintenance and “E” for Engineer.

Fig. 3.7 b) NORMAL state screen with the “E” in the right and upper corner

3.8) 3-SYSTEM

In the main window in Normal mode, at any user level, one may view the system's configuration details, by pressing 3-System. The Zones screen will appear. The Zones screen shows the list of the defined zones. One may move the cursor up and down by using the up/down arrow keys. In the bottom side, the available function buttons depend on the user level.

3.8.1) Zones

In the zones screen, moving up and down with the arrow keys through the zones list and pressing ENTER one gets into the modules screen.

In the modules screen, moving up and down with the arrow keys through the modules list and pressing ENTER one gets into the detectors or outputs screens

In the bottom side, the available function buttons depend on the user level.

In the Maintenance or the Engineer level it is possible to Set or Unset and put in TEST/Maintenance parts of the system.

In the "Operator" level, the SET/Unset and Test/Maintenance options are not active. The user should be in "Maintenance" or "Engineer" level to use the options.

Fig. 3.8 1 a) Zones screen and options available pressing 3-Zone

SET / UNSET

Pressing 3-Zone in the Maintenance or the Engineer level it is possible to Set or Unset parts of the system.

The number of channels that may be Unset will never exceed 50% of the total channels/relays number or 32 channels/relays, whatever happens first.

NOTE:

The Engineer level is allowed to Unset the WHOLE system, for the complete system maintenance period. Trying to Unset the zone, a message will come out warning the exact number of channels and relays that are about to be unset. If confirmed by pressing Enter key (OK), then the zones window will show the unset status of the zone:

TEST / EXIT TEST

This will put to TEST mode or take out of the TEST mode the selected zone. It is possible to put in TEST mode just parts of the system at user level “Maintenance” or “Engineer”.

If more than half of the system selected, a warning screen as below will pop-up. A screen message came out trying to put in Test/Maintenance mode the only zone defined.

Until the number of zones to put in Test/Maintenance mode does not exceed the defined limits (50%), the selected items will change the status into TEST.

Only the ENGINEER user is authorized to set under Test Mode the whole system. By pressing ENT on the Test command, a new window will appear showing the number of channels (detectors or output) that you are going to set under Test mode. To confirm press ENT (OK). A new window will appear to show the list of system’s zone marked with TST.

NOTE: The Zone TEST function is aimed at helping the Engineer during the Start Up. Indeed, after the system has been switched on and the Control panel programmed, some communication faults may arise from the remote Input modules or detectors connected on the RS485 buses. This situation would generate a large amount of Faults (FLT) that could hardly be managed and would require all Faults to be acknowledged before starting an adequate troubleshooting routine.

The Zone TEST mode allows to overcome this situation the following way: select the Test Mode, the system zones and automatically all detectors belonging to these zone are set in test mode.
In the main window, close to each channel (detector) its status will appear: TST (under TEST) or FLT (fault). Now it will be easy to verify, directly in field, which modules or detectors are not communicating on the RS485 bus and so fix the issues.
When these fault are fixed, the channels status in the main window will change from FLT to TEST.

3.8.2) Modules

In the zones screen, moving up and down with the arrow keys through the zones list and pressing ENTER one gets into the modules screen

Fig. 3.8 2) Module screen and options available pressing 3-Module

Press 3-Module for the ***SET / UNSET*** and ***TEST / EXIT TEST*** operation, see 3.8.1 and 3.8.2 chapters.

3.8.3) Relays

In the modules screen, moving up and down with the arrow keys through the modules list, choosing RIO OUTP and pressing ENTER one gets into the Relays screens.

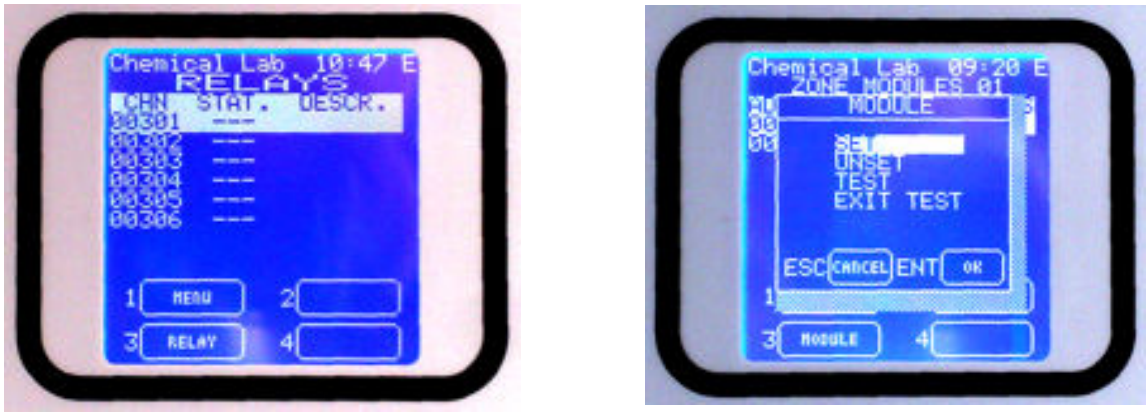


Fig. 3.8 3) Outputs screen and options available pressing 3-Relay

Using the up/down arrow keys one may scroll through the list choosing one of the channel and press 3-Relay for the ***SET / UNSET*** and ***TEST / EXIT TEST*** operations.

By the options of the relative screen, unlike the Operator level, the “Maintenance” level and the “Engineer” level may:

- Put in Set or Unset the selected relay
- Put in Test/Maintenance and take out of Test/Maintenance the selected relay

SET / UNSET

Pressing 3-Relay in the Maintenance or the Engineer level it is possible to Set or Unset parts of the system.

An user with the MAINTENANCE level cannot UNSET more than 50% of the system’s channels and relays.
The only exception is the ENGINEER level, which may UNSET the whole system if necessary. It is required to do so for maintenance operations in the installation where the gas detection system is installed.

TEST / EXIT TEST

Will put to TEST mode or take out of the TEST (EXIT TEST) mode the selected relay. It is possible to put in TEST mode just parts of the system at user level “Maintenance” or “Engineer”. If more than half of the system selected, a warning screen will pop-up.

Until the number of relays to put in Test/Maintenance mode does not exceed the defined limits, the selected items will change the status into TEST.

The relay remains in TEST until the Channel Maintenance Time set for the control panel by the Configuration software (10-60 minutes) is expired.

Fig. 3.8.3 a) Output details screen in “Engineer“ level

The relays in TEST status can be activated and deactivated by the options 2-ACTIVATE and 4-DEACTIVATE.

The EXIT TEST option takes out of the Test/Maintenance mode the selected relay.

From the Relay list (Fig. 3.8.3), using the up/down arrow keys one may scroll through the list choosing one of the relay and press ENTER to get into a submenu.

This screen is the same for “Operator” and “Maintenance” level, allowing only to view the relay configuration details.

Fig. 3.8.3 b) Output details screen in “Engineer“ level

Unlike the above, this screen seen as “Engineer” level, allows changing the relay’s timings. See the chapter 4, Configuration for more details.

3.8.4) Detectors (Channels)

In the modules screen, moving up and down with the arrow keys through the modules list and pressing ENTER one gets into the detectors screen

Fig. 3.8 4) Detectors screen and options available pressing 3-Channel

Using the up/down arrow keys one may scroll through the list choosing one of the channel and press 3-Channel for the ***SET / UNSET*** and ***TEST / EXIT TEST*** operations.

In the “Operator” level, the options 3-CHANNEL, is not present. The user should be in “Maintenance” or “Engineer” level to see and to use these options.

By the options of this screen, unlike the Operator level, the “Maintenance” level and the “Engineer” level may:

- Put in Set or Unset the selected channel
- Put in Test/Maintenance and take out of Test/Maintenance the selected channel

SET / UNSET

Pressing 3-Channel in the Maintenance or the Engineer level it is possible to Set or Unset parts of the system.

An user with the MAINTENANCE level cannot UNSET more than 50% of the system’s channels and relays.
The only exception is the ENGINEER level, which may UNSET the whole system if necessary. It is required to do so for maintenance operations in the installation where the gas detection systems is installed.

TEST / EXIT TEST

This will put to TEST mode or take out of the TEST (EXIT TEST) mode the selected channel. It is possible to put in TEST mode just parts of the system when user level is “Maintenance” or “Engineer”. If more than half of the system is selected, a warning screen will pop-up.

As far as the number of channels to put in Test/Maintenance mode does not exceed the defined limits, the selected items will change the status into TEST, as in the screen below:

Fig. 3.8.4 a) Screen with channel in “Test”

The channels remain in TEST mode until the Channel Maintenance Time set by the Configuration software (10-60 minutes) is expired.

The EXIT TEST option takes out of the Test/Maintenance mode the selected channel

In the Channel list (fig. 3.8.4) screen, moving up and down with the arrow keys through the Detectors list, choose 1 and press ENTER to get into the detector’s details screen.

This screen is the same for “Operator” and “Maintenance” level, allowing only viewing the relay configuration details.

Fig. 3.8.3 a) Detector details screen in “Engineer“ level

Unlike the above, this screen seen as “Engineer” level, allows changing the relays timings. See chapter 4-PC Configuration Software for more details.

4) PC CONFIGURATION SOFTWARE

4.1) Introduction

The Configuration Software is an easy to handle user interface for each kind of communication with the MULTISCAN++S1 . The software is designed

to upload the actual configuration data of the system or the events log

to simplify each type of parameter change (e.g. alarm levels)

to download modifications to the MULTISCAN++S1

for maintenance

for the initial configuration of the MULTISCAN++S1 at Sensitron or by the installer

4.1.1) MINIMUN PC HARDWARE REQUIREMENTS

Operating System: Windows XP, Windows Vista or Windows 7

CPU: Pentium 3, 500Mhz

System Memory (RAM): 256MB

Hard Disk: 400MB free space

Note: The MULTISCAN++S1 Configuration Software is designed for Windows /XP/Vista/7 environments. Menus and context-menus are similar to other Windows software.

4.2) Installation

Insert the CD-Rom and follow the instruction

One serial cable is necessary to connect the PC to the Control Panel (see chapter 2.7), either through the standard COM1 or through an USB converter, using any of the USB ports on PC.

4.3) Launching the program

Launch the program from the Windows program bar by clicking on MULTISCAN++S1

Fig. 4.3 a) Program name in the Windows list

The login window will appear. Each user must be authorised to use the program. See chapter “Application User Management” in this manual to create users with relevant permissions.

The first time the program is used after installation, the only user set is Sensitron with a default password. The Sensitron user is the Administrator which is the highest level user with permissions to access all program functions.

Thus, in the window shown in fig. 4.3 b enter

User name: **sensitron**
Password: **543210**

Fig. 4.3 b Program Login screen.

After logging in, the user name is displayed at the top left corner of the screen. Visible options depend on the level of the user who logged in (see chapter "Application User Management"). Figure 4.3.c shows the options enabled for the Sensitron user in the program homepage.

4.3.1) Program homepage

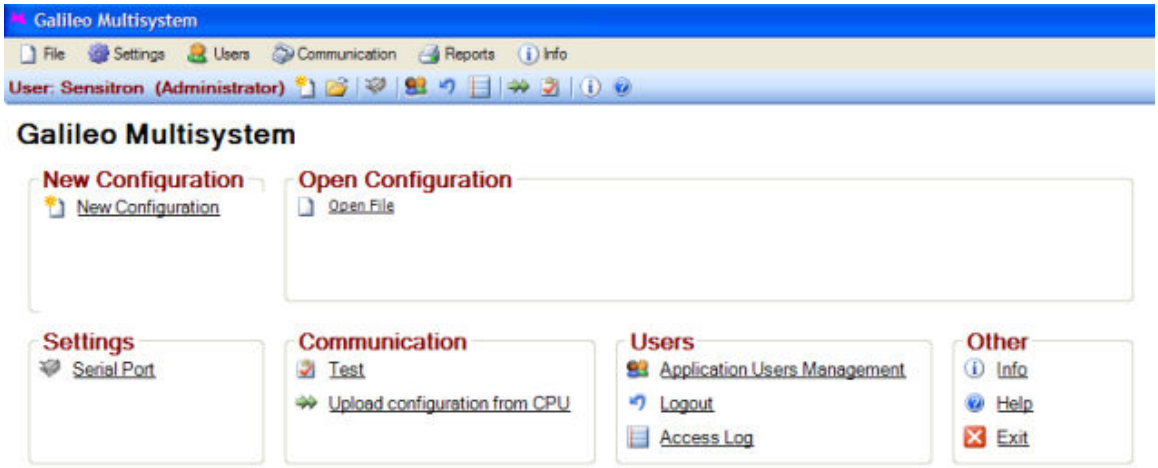


Fig. 4.3.c) Program homepage (Administrator level user)

New configuration to create a new system configuration

Open file to open an existent configuration

Serial port to set a PC serial port for data transfers to and from the connected CPU

Test to test PC serial > CPU connections

Upload configuration from CPU to upload a configuration from the CPU

Application Users Management user and permission settings

Logout To logout the user

Access Log Displays the login and logout log

Info Displays the program version

Help Help online (to be implemented in the future)

Exit To exit the program

4.4) Program menu

The various program functions are only visible if the user who logged in has the permissions to use them.

Configuration software includes plausibility checks on edited and new parameters.

The following chapters list program menus and describe their functions.

4.4.1) File

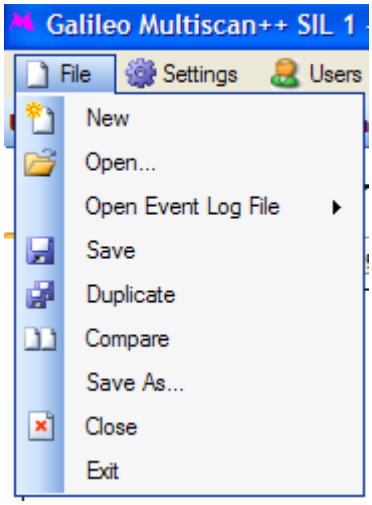


Fig. 4.4.1 a) Open an existent system file

New to create a new system configuration

Open to open an existent configuration

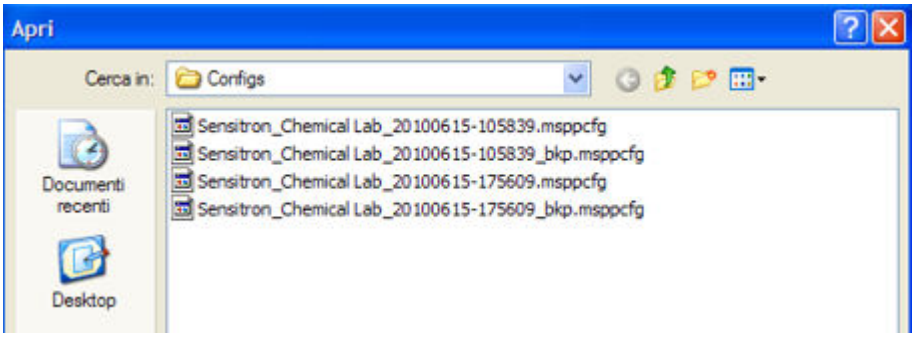


Fig. 4.4.1 b) Open an existent system file

The default folder where configuration files are saved is: c:\Documents and settings\user\Documents\MULTISCAN++S1\Configs

Open Event Log File to display event log files previously loaded from the CPU (Menu: ***Communication*** submenu: ***Upload Event Log from CPU***).

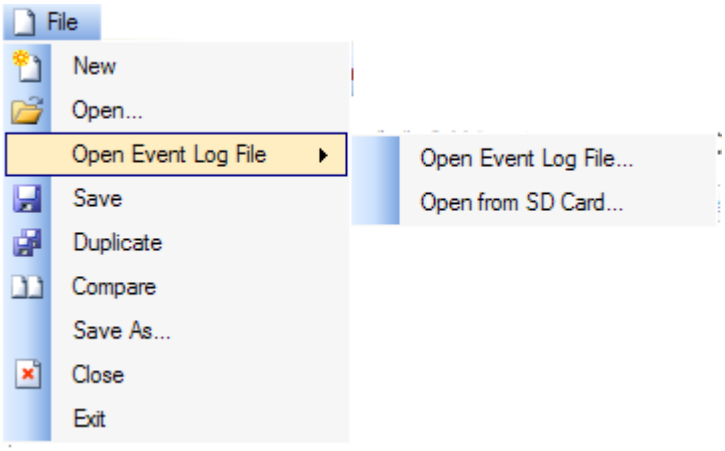


Fig. 4.4.1 c) Open an event log file

An event log file previously loaded and saved in the specific folder can be opened from "**Open Event Log File**".

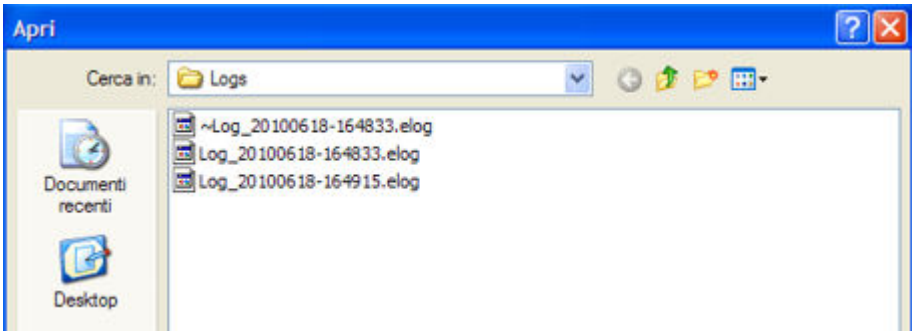


Fig. 4.4.1 d) *.elog event log file folder

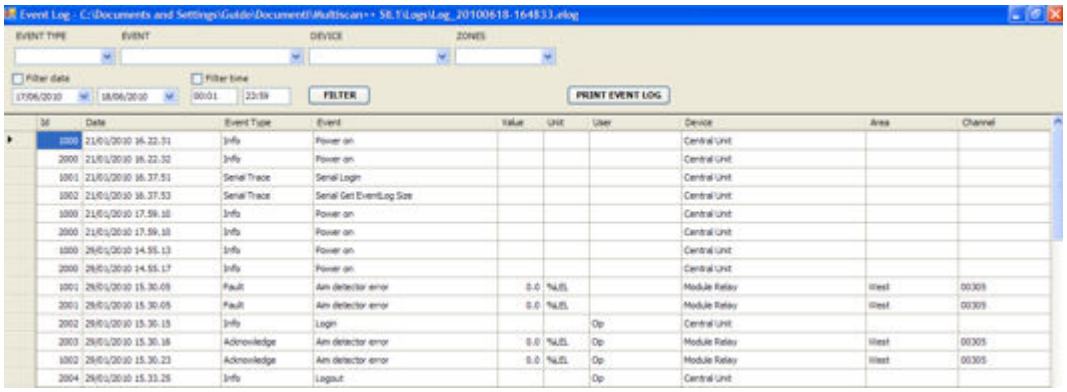


Fig. 4.4.1 e) Event log

For information on reading the event log, see: Menu: ***Communication*** submenu: ***Upload Event Log from CPU.***

Event logs directly saved in the CPU SD card can be loaded and displayed from ***"Open From SD Card".*** This is useful when no connections are available with the CPU or in the event of CPU fault. Remove the SD card from the CPU and insert it in the PC slot. Select ***"Open From SD Card".***

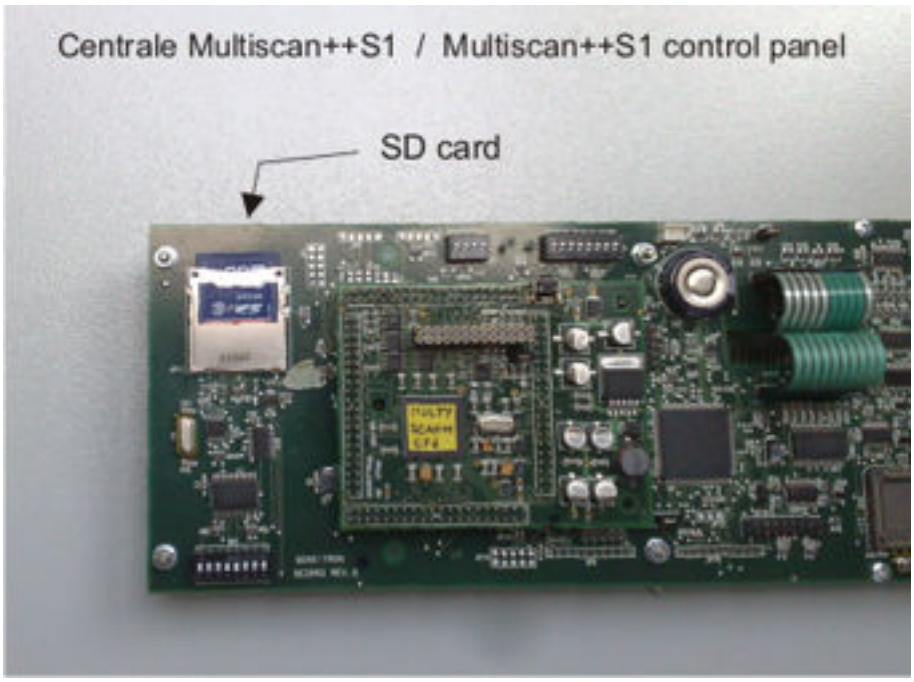


Fig 4.4.1 f) SD card position on CPU

The event log displayed from the SD card is not formatted like the previous one, downloaded from the CPU to the PC.

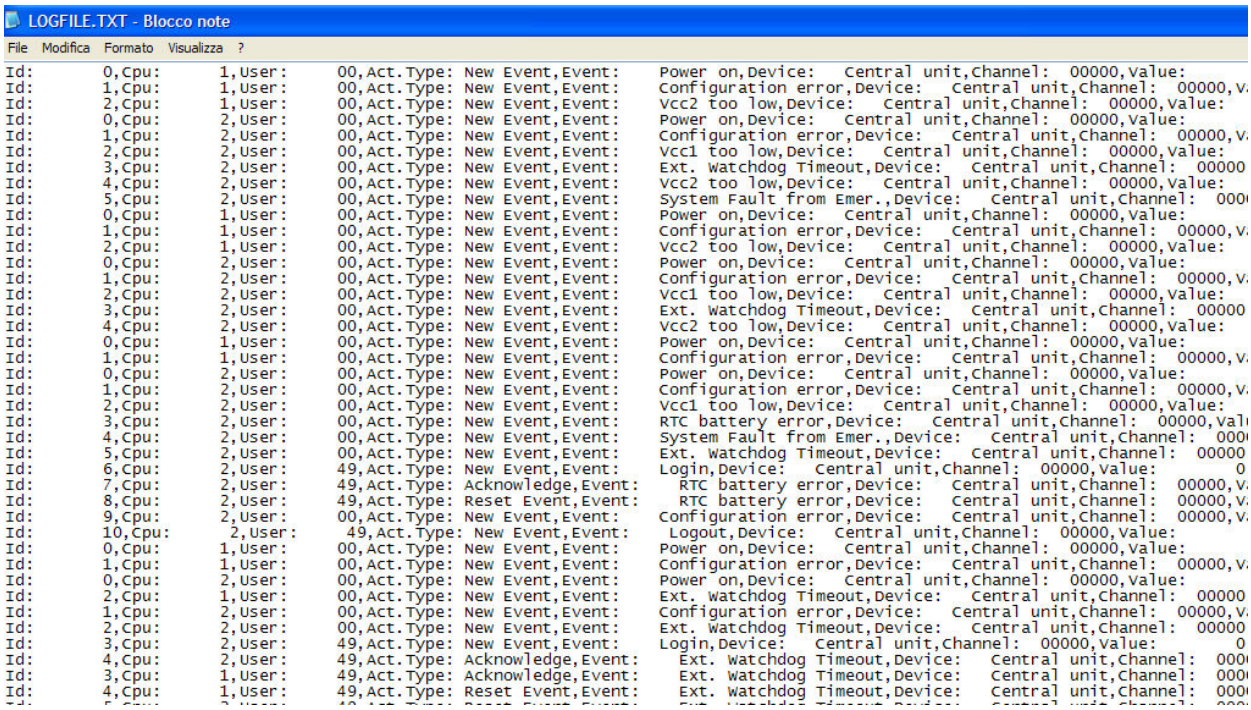


Fig. 4.4.1 f) Event list in the SD card

Click “***Save***” to save changes to the system.

Click “***Duplicate***” to create a new system file like the open one.

Click “***Compare***” to compare the system file in the current session with another previous created one. When you click “Compare", a window appears where you can select the folder of the file to be compared.

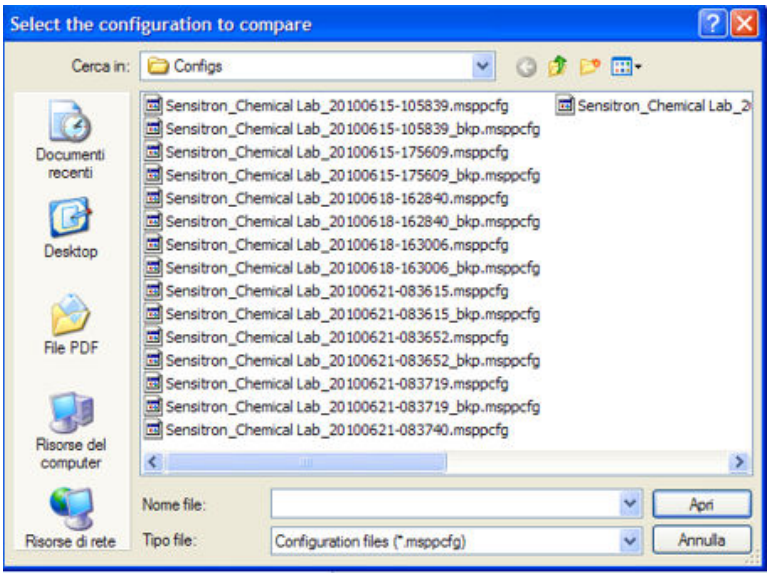


Fig. 4.4.1 g) Folder of the system file to be compared

Fig. 4.4.1 h) System file comparison window

Click "***Save As***" to save the system file with a new name

Click "***Close***" to close the open system file

Click "***Exit***" to exit the MULTISCAN++S1 program

4.4.2) Settings

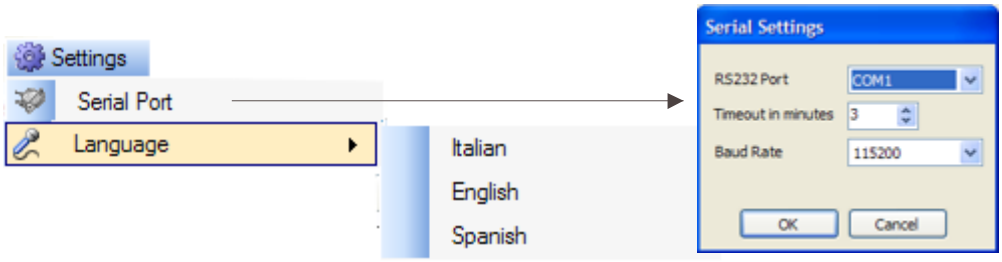


Fig. 4.4.2 h) Menu Settings

Click ***"Serial Port"*** to select the serial port and the Baud Rate for the upload and download data with the PC.

Click ***"Language"*** to select the MULTISCAN++S1 software language. When creating or editing a system configuration, remember to click ***"Save"*** before changing the program language or all changes will be lost.

4.4.3) Users

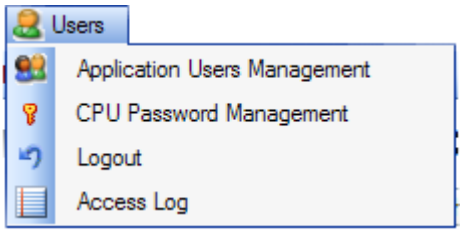


Fig. 4.4.3 a) Menu utenti

"Application Users Management" lets you set users authorised to work with MULTISCAN++S1 software and set their permissions.

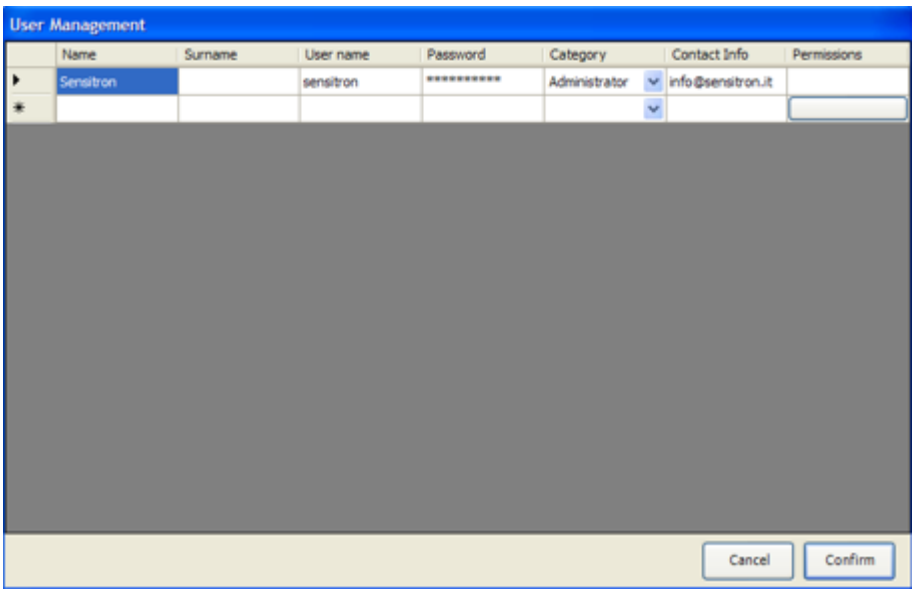


Fig. 4.4.3 aa) User settings window

The first time the program is used after installation, the only user installed is **Sensitron** with default password **543210**. Sensitron is an administrator level user which is the highest level and permits access to all program functions. The Name, password and Contact Info can be changed for the Sensitron user but not the username (sensitron) and level (Administrator).

An unlimited number of users can be created, each with his own name and surname, password, category, contact info and permissions.

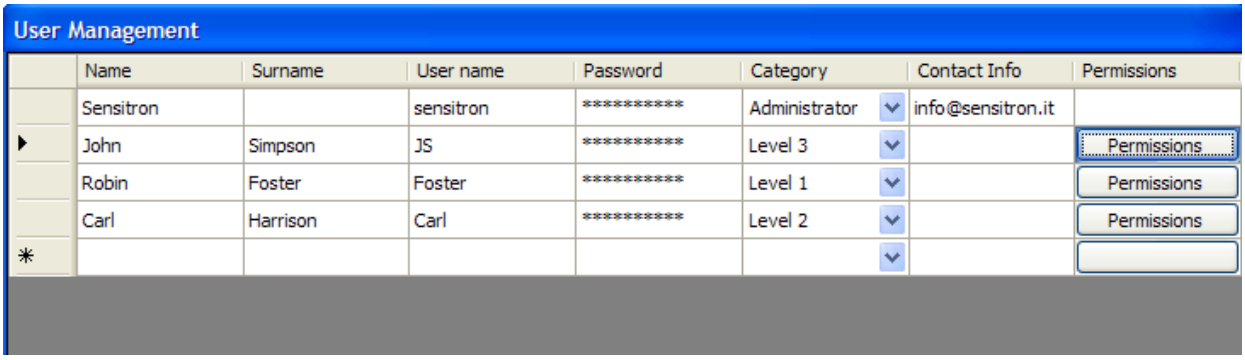


Fig. 4.4.3 b) User settings window

Name and Surname	User identification
Password	Alphanumeric code for each user
Category	User permission level for the various program functions. There can be 4 levels. “Administrator” has access to all program functions. Level 1, Level 2 and Level 3 (highest level after Administrator)
Contact Info	User contact info (i.e.: e-mail, tel. num, etc.)
Permissions	this enables users to run the various program functions. Click “Permissions” to open the window with the list of MULTISCAN++S1 program functions.

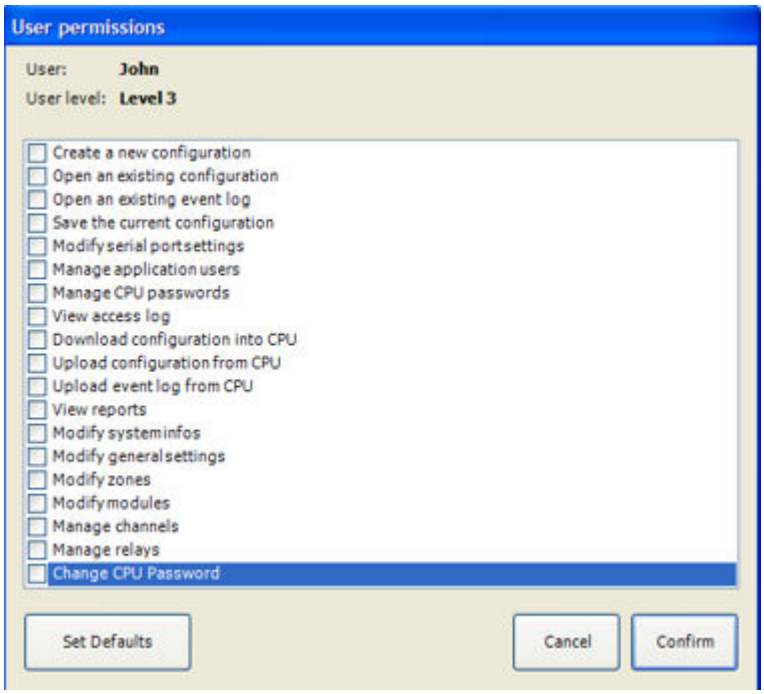


Fig. 4.4.3 c) User Permissions settings window

Flag the various boxes to enable the relevant function for the user. Click “Set Default”, according to the user level being set (Level 1, 2 or 3), a preset selection of enabled functions are automatically assigned to the user (which can always be edited).

Click “***CPU Password Management”*** to set MULTISCAN++S1 control panel users and relevant operating levels (Operator, Maintenance and Engineer).

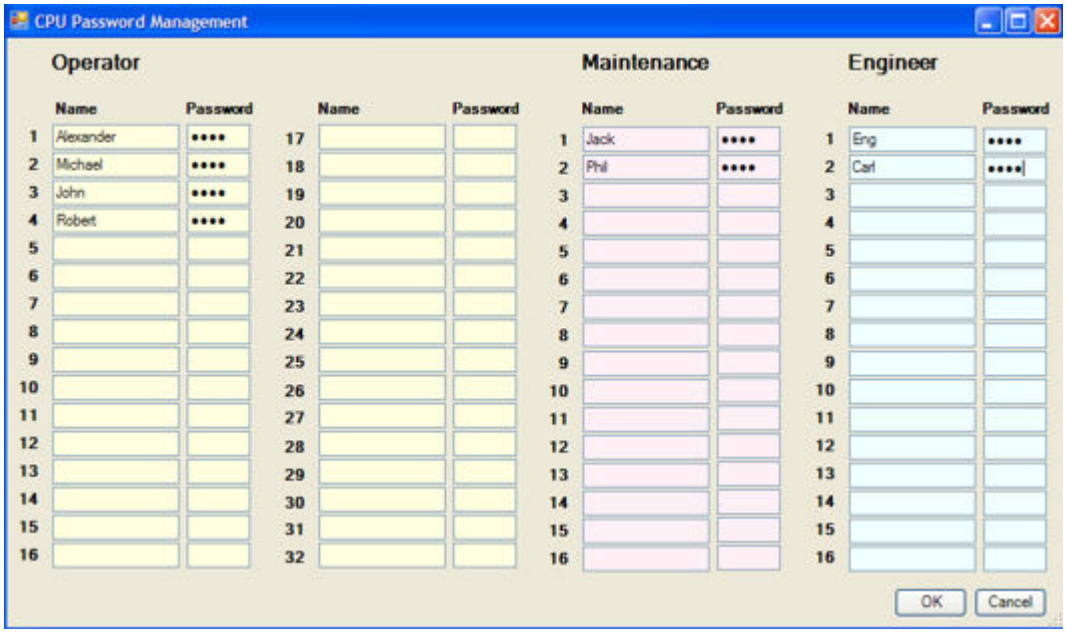


Fig. 4.4.3 d) MULTISCAN++S1 user settings window

Up to 64 users can be set for the MULTISCAN++S1 control panel, 32 on the Operator level, 16 on the Maintenance level and 16 on the Engineer level. For user level functions, see chapter 3.3, User Levels.

Passwords must be 4 numeric digits long.

Click ***"Logout"*** to log the user out of the program. The Login window reappears where a new user can login. See chapter 4.3 and Fig. 4.3.b.

"Access Log" displays the program Login and Logout log as well as operations conducted.

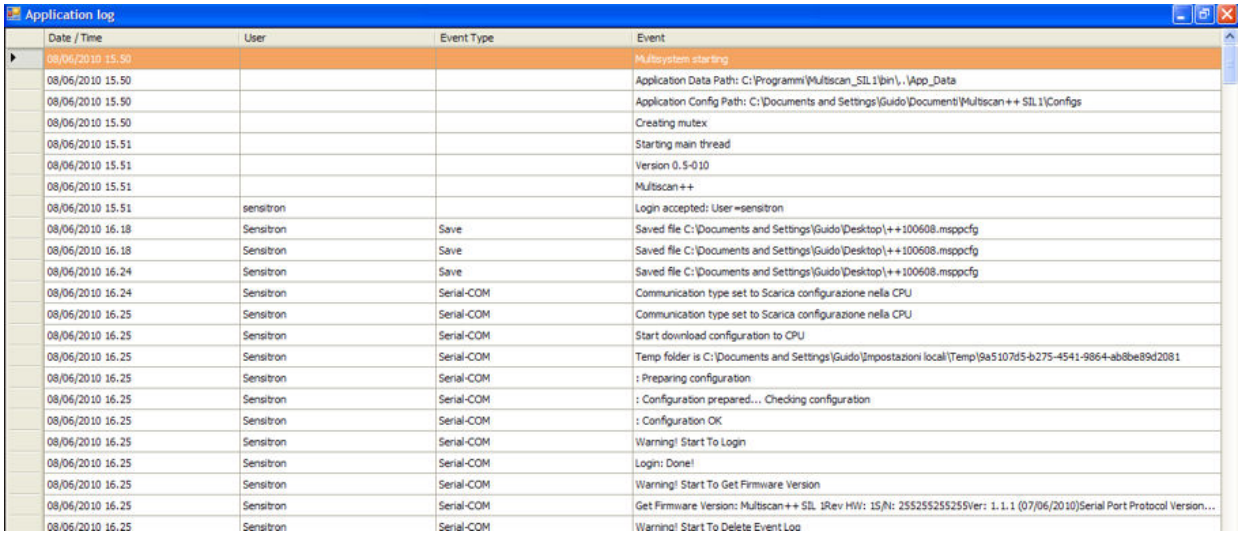


Fig. 4.4.3 e) Access log window

4.4.4) Communication

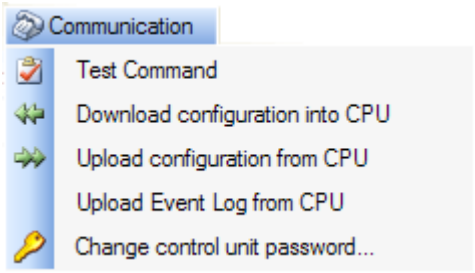


Fig. 4.4.4 a) Communication Menu

The "***Communication***" menu includes options for data transfers between the PC software and the MULTISCAN++S1 control panel

Note. The two devices must be connected in order to transfer data between the PC and MULTISCAN++S1 control panel.

Connect the PC to the control panel using the serial port on the back panel. See fig. 4.4.4 b

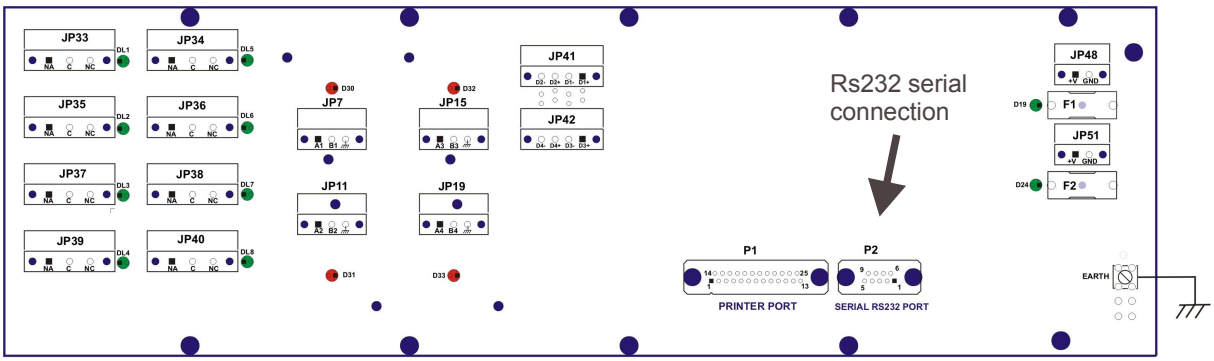


Fig. 4.4.4 b) Serial port on control panel back panel

Serial cable connections are illustrated below.

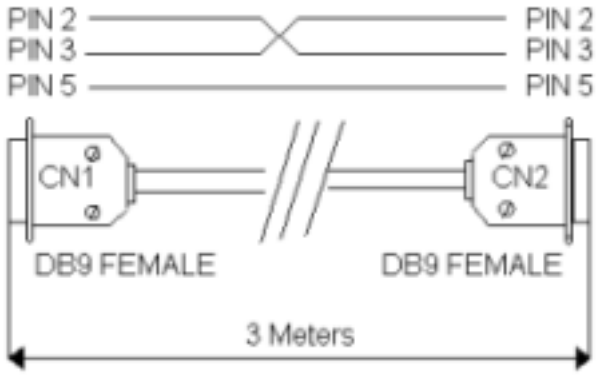


Fig. 4.4.4 c) serial cord connections

"Test Command" lets you check whether the control panel and PC are correctly connected. Whenever data is exchanged between the control panel and PC, a password must be entered to establish the connection (Serial Password). The entered password is compared with the one that resides on the control panel and the connection is established.

Fig. 4.4.4 b) Serial password entry window

The default password is **000000** but can be changed by clicking **"Change Control Unit Password".**

Warning. The control panel cannot be accessed if the new password is lost

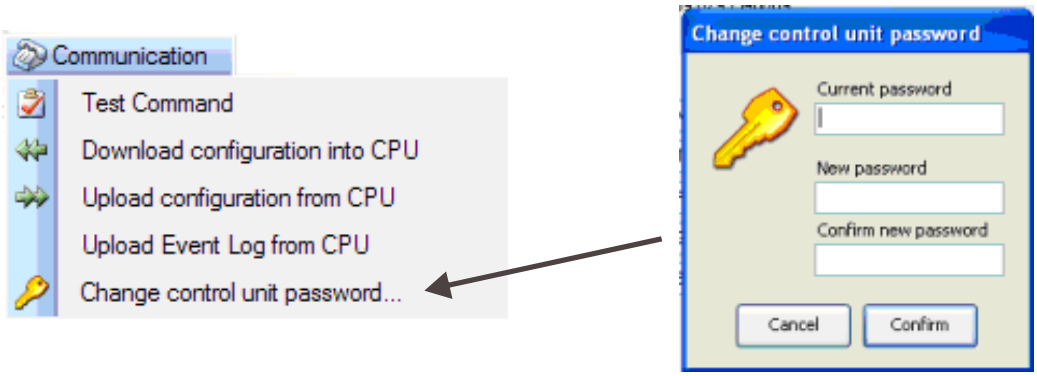


Fig. 4.4.4 c) serial password change

"Download Configuration into CPU" lets you download the system file created in the MULTISCAN++S1 control panel.

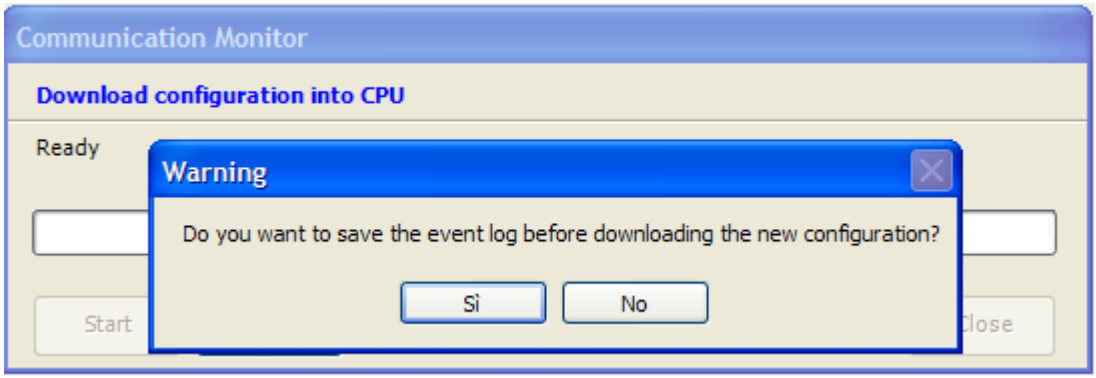
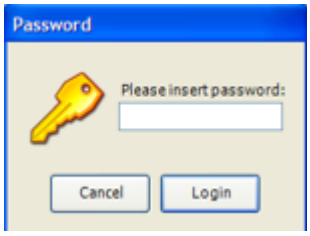


Fig. 4.4.4 d) Save control panel event log request message

Before starting the data upload and download procedure, a warning message appears asking if you want to save the control panel event log. When a new configuration is downloaded with different data (new gas detectors, zones and system modules, new users, etc.) the control panel event log may no longer be real. Thus, we suggest you save the control panel event log on the PC by clicking Yes.

The control panel serial password is required. Next click Login.

If the password is correct, data download starts and a progress bar appears.



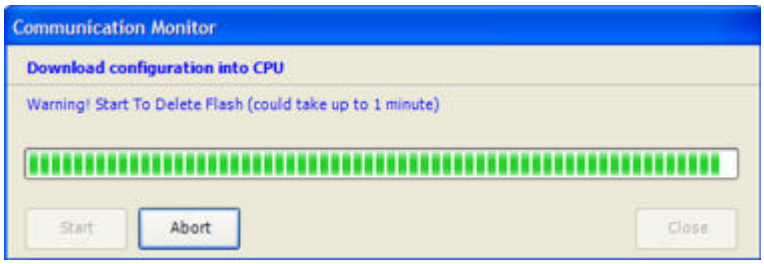


Fig. 4.4.4 e) Data download to the CPU

"Upload Configuration from CPU" is the opposite procedure of data download. This lets you upload the system file to the CPU (programming resident in the CPU). The operating sequence is the same as the one for data download. See above.

When data is uploaded, the system file is automatically saved in the specific PC folder.

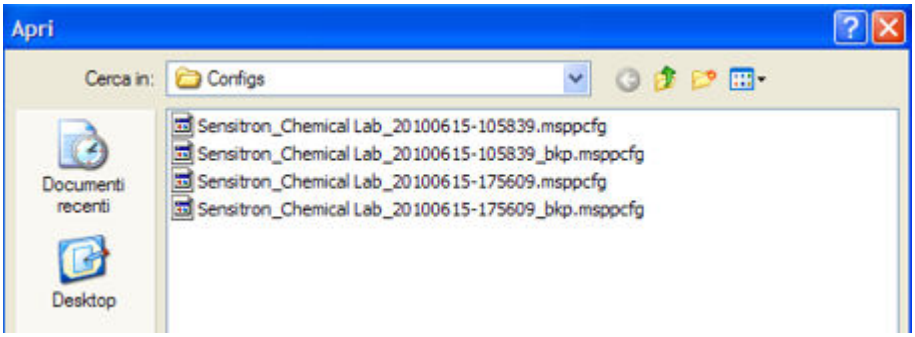


Fig. 4.4.5 f) Open an existent system file

The default folder is: c:\Documents and settings \ user \ Documents \ MULTISCAN++S1 \ Configs

"Up Load Event Log from CPU" lets you upload the event log file from the CPU.

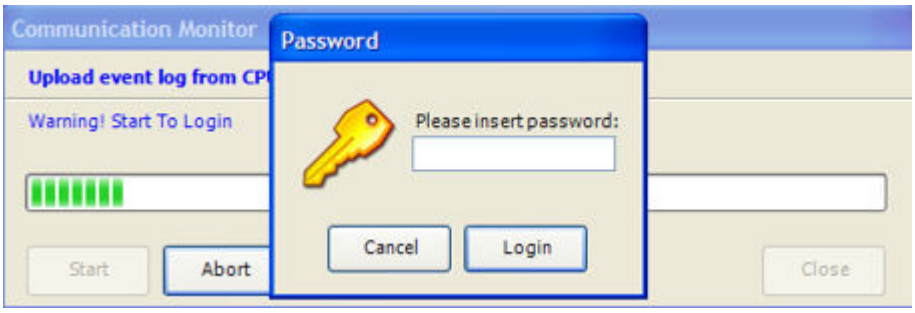
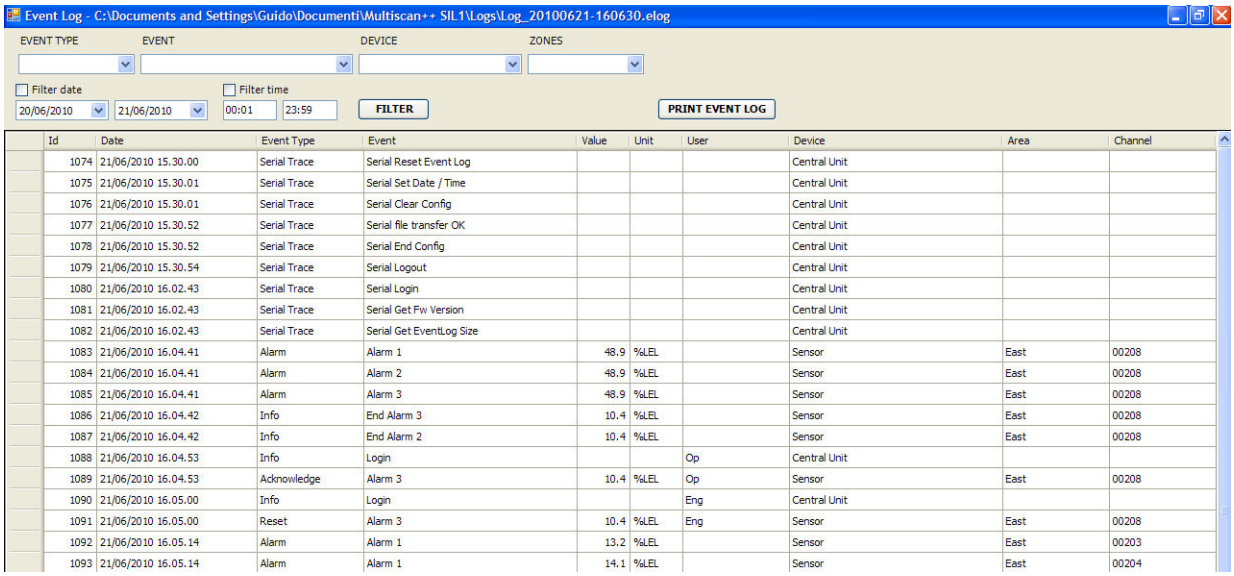


Fig. 4.4.5 g) Upload event log file

After entering the password, the event log file starts uploading and this operation may take up to one minute. When uploaded, in addition to being automatically saved in the PC default folder: c:\Documents and settings \ user \ Documents \ MULTISCAN++S1 \ Logs, events are also displayed in the specific window.



Id	Date	Event Type	Event	Value	Unit	User	Device	Area	Channel
1074	21/06/2010 15.30.00	Serial Trace	Serial Reset Event Log				Central Unit		
1075	21/06/2010 15.30.01	Serial Trace	Serial Set Date / Time				Central Unit		
1076	21/06/2010 15.30.01	Serial Trace	Serial Clear Config				Central Unit		
1077	21/06/2010 15.30.52	Serial Trace	Serial file transfer OK				Central Unit		
1078	21/06/2010 15.30.52	Serial Trace	Serial End Config				Central Unit		
1079	21/06/2010 15.30.54	Serial Trace	Serial Logout				Central Unit		
1080	21/06/2010 16.02.43	Serial Trace	Serial Login				Central Unit		
1081	21/06/2010 16.02.43	Serial Trace	Serial Get Fw Version				Central Unit		
1082	21/06/2010 16.02.43	Serial Trace	Serial Get EventLog Size				Central Unit		
1083	21/06/2010 16.04.41	Alarm	Alarm 1	48.9	%LEL		Sensor	East	00208
1084	21/06/2010 16.04.41	Alarm	Alarm 2	48.9	%LEL		Sensor	East	00208
1085	21/06/2010 16.04.41	Alarm	Alarm 3	48.9	%LEL		Sensor	East	00208
1086	21/06/2010 16.04.42	Info	End Alarm 3	10.4	%LEL		Sensor	East	00208
1087	21/06/2010 16.04.42	Info	End Alarm 2	10.4	%LEL		Sensor	East	00208
1088	21/06/2010 16.04.53	Info	Login			Op	Central Unit		
1089	21/06/2010 16.04.53	Acknowledge	Alarm 3	10.4	%LEL	Op	Sensor	East	00208
1090	21/06/2010 16.05.00	Info	Login			Eng	Central Unit		
1091	21/06/2010 16.05.00	Reset	Alarm 3	10.4	%LEL	Eng	Sensor	East	00208
1092	21/06/2010 16.05.14	Alarm	Alarm 1	13.2	%LEL		Sensor	East	00203
1093	21/06/2010 16.05.14	Alarm	Alarm 1	14.1	%LEL		Sensor	East	00204

Fig. 4.4.1 d) Event log window

The various columns are explained below

Id Event ID number. This can be used to compare an event with one in the MULTISCAN++S1 control panel

Date Event date and time

Event Type Event type. Events can be of the following types:

Event Type	Description
Acknowledge	Acknowledge/mute an event
Reset	Reset an event
Info	Events such as user login and logout, alarm reset, etc.
Config	Control panel configuration error
Settings	Control panel settings were changes (i.e. reader alarm threshold)
Alarm	Alarm event
Fault	Fault event
Emergency	Emergency event (typically a power fault)
Serial Trace	Event concerning data transfer on the serial port (data upload and download from PC)

Event More detailed description of the event type

Value Gas concentration value (for an alarm event)

Unit Gas detector unit of measure

User User ID for user events (Ack, Reset,Login etc.)

Device Hardware device that generated the event (input module, Gas detector, Output module, etc.).

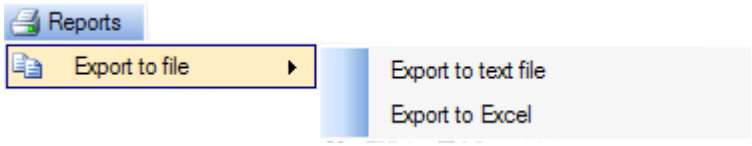
Area System area

Channel Channel ID (reader) that generated the event

Search criteria can also be entered in the window to optimize the underlying event list display. Criteria can be by event type and/or date and time. If a printer is connected to the PC, click ***Print Event Log*** to print the event list.

"Change Control Unit Password" see explanation at the beginning of chapter ***"Communication".***

4.4.5) Reports

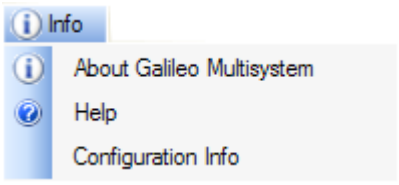


The Reports menu lets you export the current configuration file to be used with other programs. There are two export formats: ***"Export to text file"*** and ***"Export to Excel"***

If exported as a text file, configuration parameters can be consulted using any text editor program (Notepad, Word, etc.).

Configuration parameters are best viewed when exported as an Excel file. Naturally, Excel must be installed on the PC.

4.4.6) Info



Click ***"Info"*** for information on the program version (***About Galileo MULTISCAN++S1***) and on the current session configuration file (***Configuration File***). The ***Help*** menu is currently disabled

4.5) Modification or creation of a new configuration file

Via the ***"Open"*** command in the ***"File"*** menu existing configuration files will be indicated and may be chosen and opened. If some parameters at the MULTISCAN++S1 shall be modified, this has to be carried out as described in the following chapters.

Attention Be careful to load the latest version of the configuration file.

If you are not sure then upload the actual file from the control panel, by the ***"Upload Configuration from CPU"*** of the ***"Communication"*** menu.

Otherwise, create a new configuration file via the ***"New"*** command in the ***"File"*** menu.

4.5.1) System information

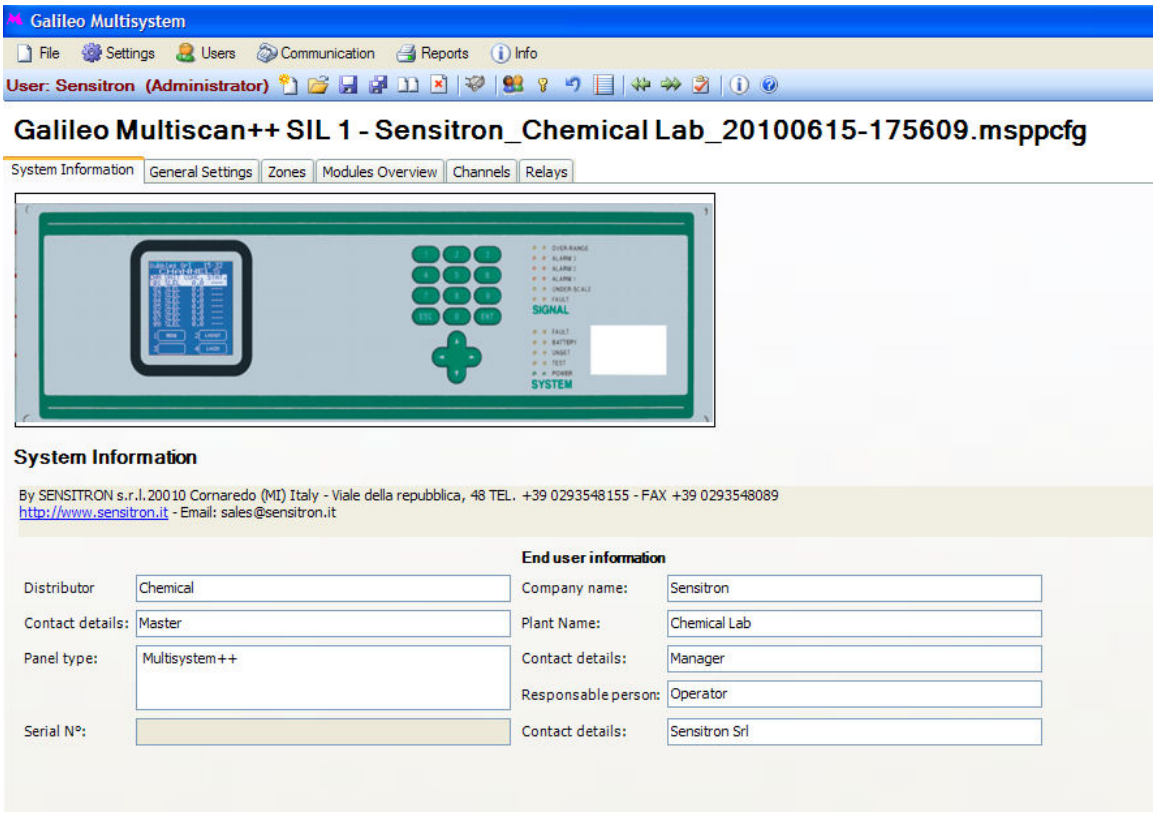


Fig. 4.5.1 a) System Information screen

On the left column details are indicated

- according the system e.g. the serial number
- according Sensitron and the responsible distributor

The right column may be completed with contact details of persons responsible for operation of the system at the end user as useful information for service people.

For carrying out any kind of service, e.g. calibration, the service people will be supplied with the configuration file of the last servicing and will compare this file with the actual version uploaded from the MULTISCAN++S1 .

4.5.2) General Settings

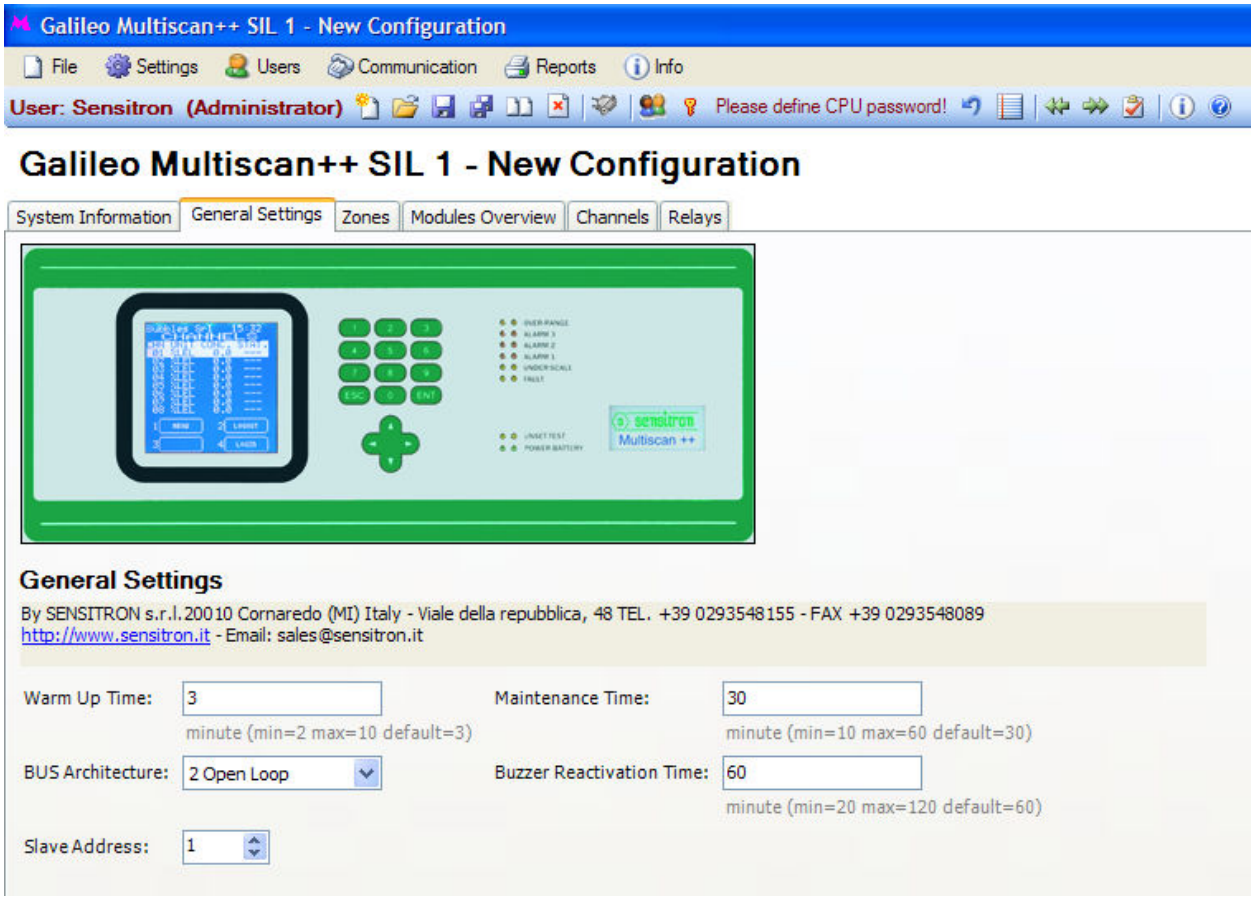


Fig. 4.5.2) General Settings screen details

In the **"General Settings"** it is indicated:

"Warm Up Time"	the warm-up time for the system after which it passes over to measuring mode (from 2 to 10 minutes; default 3 minutes)
"BUS Architecture"	which type of the BUS-architecture for the modules was implemented by the installer: ***2 Open Loops*** ***4 Open Loops***
"Slave Address"	Control panel address. If the control panel is connected to a remote Scada system
"Maintenance Time"	channel Test/Maintenance time after which a channel automatically switches back to measuring mode (from 10 to 60 minutes; default 30 minutes)
"Buzzer Reactivation Time"	reactivation time for buzzer after which the acoustic alarm is reactivated if the alarm conditions are still valid (from 20 to 120 minutes; default 60 minutes)

4.5.3) Zones

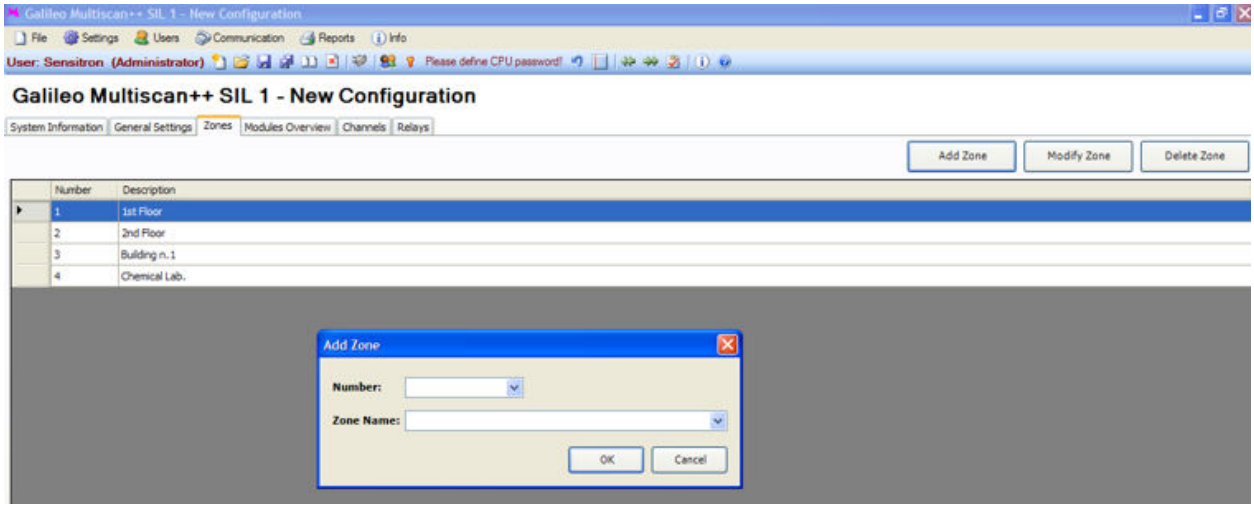


Fig. 4.5.3) Zones definition screen

The creation of zones is not mandatory for the reliable function of the gas detection system. It is an aid for the user to indicate useful additional information in the case of alarms.

The definition of ***"Zones"*** allows a logical dividing of the gas detection system according the needs of the user. ***"Zones"*** may be defined in relation to

- the physical position of modules or detectors
- measurement tasks like "LEL-monitoring" or "toxic" for workplace safety
- different gases like CH_4 or CO or O_2

A maximum number of 16 zones may be specified.

4.5.4) Modules Overview

IN/OUT modules and system detectors are set in **"Modules Overview".** The system layout must be known to correctly set the various field devices. What you need to know:

- Detectors and IN and OUT modules (relays) installed in the system.
- The Zones they are in
- The Loops (RS485 bus) they are connected to and their addresses

For information on Multisystem++S1 installation, please see chapter **2–Installing** in this manual.

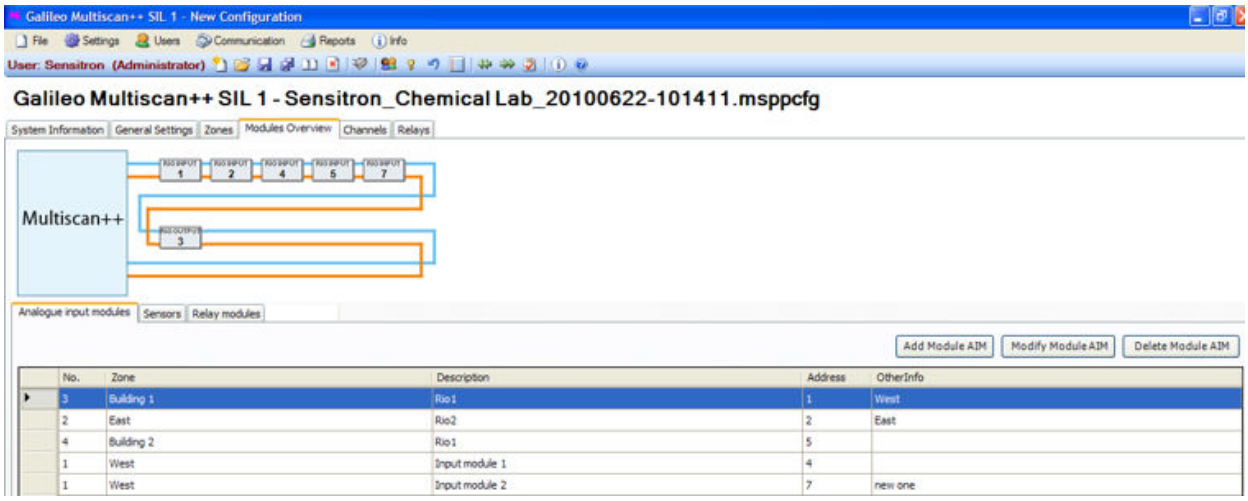


Fig. 4.5.4 a) Module Overview screen

- ***RIO Input Modules***

STG/IN8 analog input modules installed in the system are set in ***RIO Input Modules.*** Click ***Add RIO Input Module*** to open the window shown in Fig. 4.5.4 b.

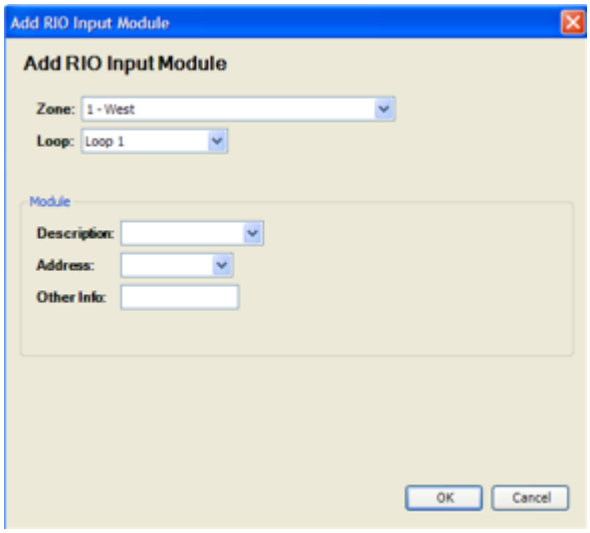


Fig. 4.5.4 b) Module configuration screen

Zone Zone where the module is installed
Loop Loop Number (RS485 bus) where the module is physically connected. 1 or 2 (3 and 4 optional)
Description Module description
Address Module address. From 1 to 256 (See chapter 2 – Installation, for further information).
Other Info Additional description

Modify RIO Input Module to edit module settings.

Delete RIO Input Module to delete the module

- ***Sensors***

Gas Detectors installed in the system and **directly connected on the CPU loop (RS485 bus)** are set in ***"Sensors".*** Refer to chapter **2-Installation** for further information.
Click ***Sensors*** to open the window shown in Fig. 4.5.4 c.

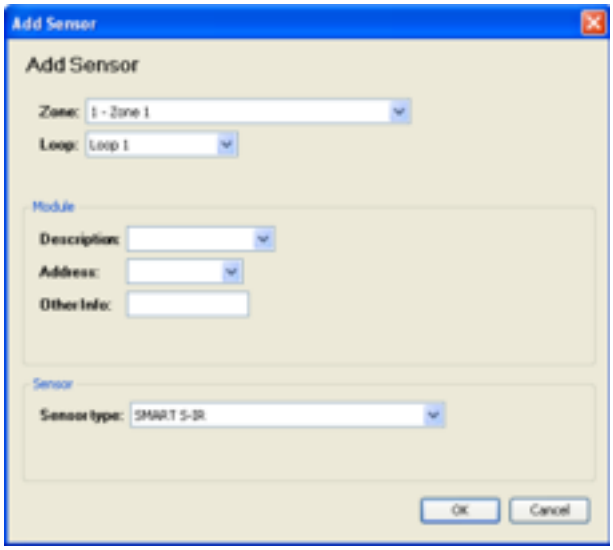


Fig. 4.5.4 c) Detectors configuration screen

Zone Zone where the Detector is installed
Loop Loop Number (RS485 bus) where the module is physically connected. 1 or 2 (3 and 4 optional)
Description Detector description
Address Detector address. From 1 to 256 (See chapter **2 – Installation**, for details)
Other Info Additional description

Modify Sensor to edit Detector settings.

Delete Sensor to delete the Detector

- ***RIO Output Module***

STG/OUT16 output modules installed in the system are set in ***RIO Output Module.***
Click ***Add RIO Output Module*** to open the window shown in Fig. 4.5.4 b.

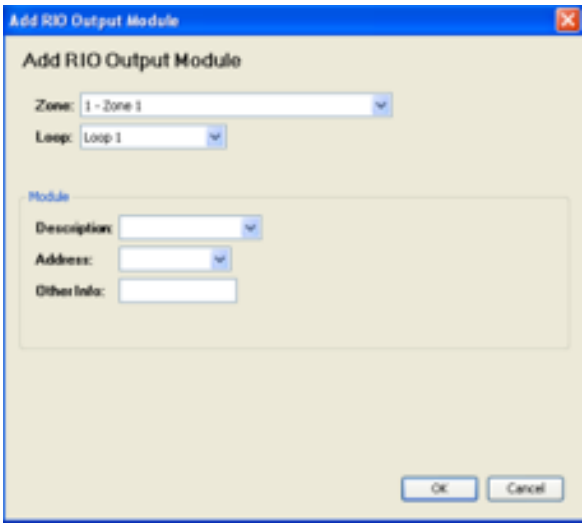


Fig. 4.5.4 c) Module configuration screen

Zone Zone where the module is installed
Loop Loop Number (RS485 bus) where the module is physically connected. 1 or 2 (3 and 4 optional)
Description Module description
Address Module address. From 1 to 256 (See chapter **2 – Installation**, for further information).
Other Info Additional description

Modify RIO Output Module to edit module settings.

Delete RIO Output Module to delete the module

4.5.5) Input Modules

Use the “Input Modules” menu to enable and program single gas Detector settings in the system.

- ***Channel Map***

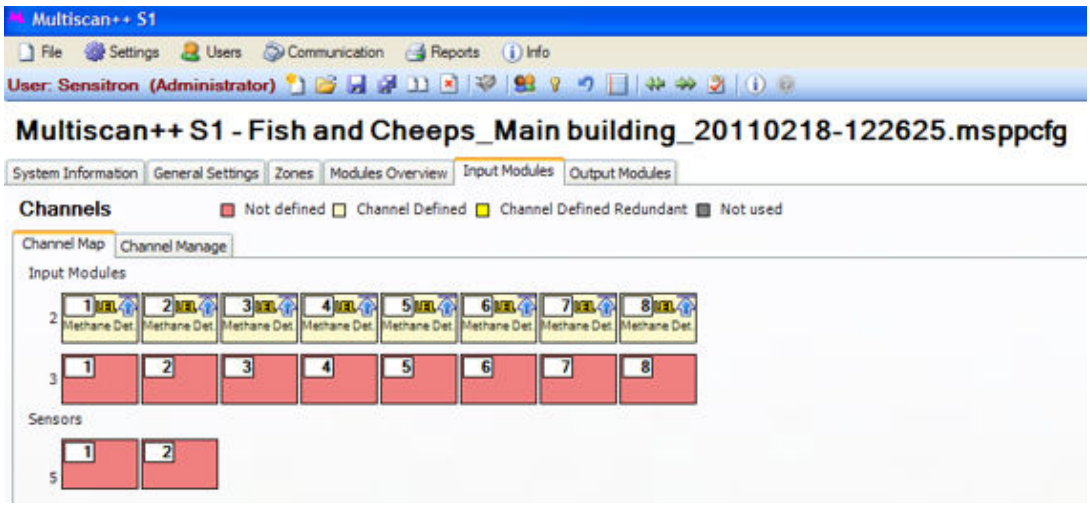


Fig. 4.5.5 a) Channels map screen

The **Channel Map** gives a quick overview of how many Input modules and detectors are programmed in the MULTISCAN++S1 configuration and these are defined. Different colours represent different characteristics like Not defined, Channel Defined, Channel Redundant etc.

To choose a channel to view its data, simply pass the mouse over the channel and the data for this channel will be shown by a popup window. Otherwise, for the modification of the channel parameters: with a mouse click on the channel and the data will be shown in the **"Channel Manage"** window.

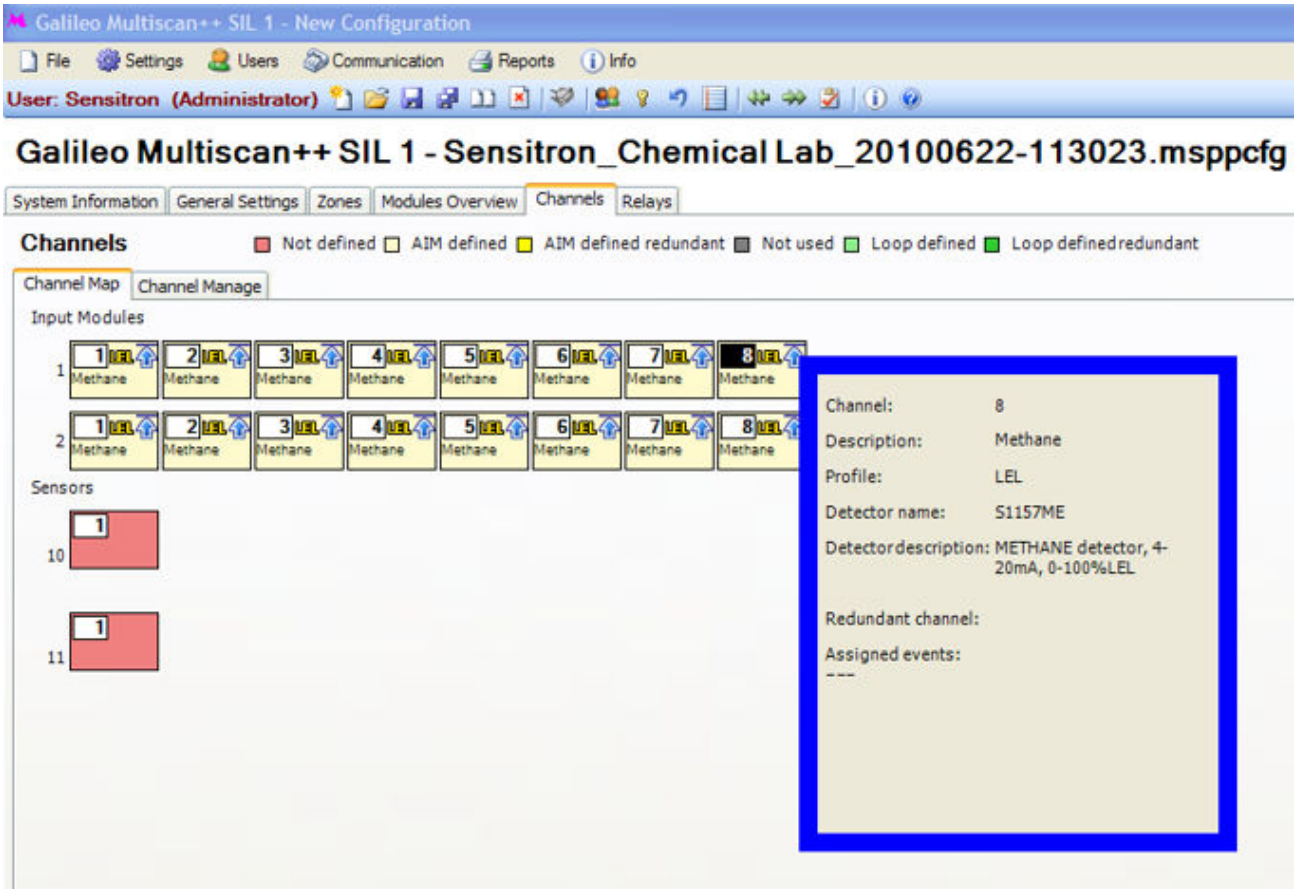


Fig. 4.5.5 b) Channel popup window with the parameters

- ***Channel Manage***

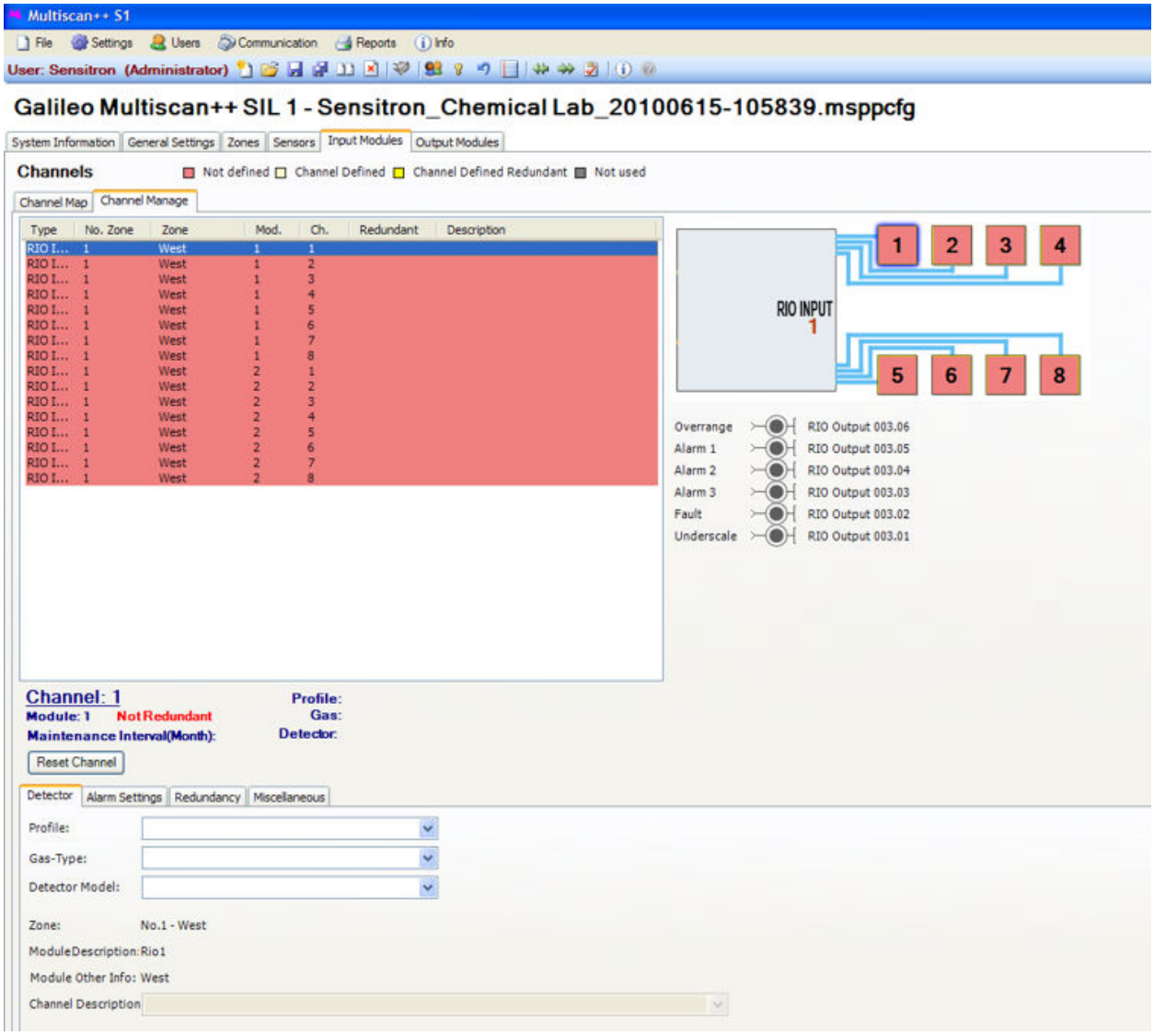


Fig. 4.5.5 c) Channel details screen

Specifying a new input-channel

An input channel is specified by the combination of three different drop down lists.

1) The ***"Profile"*** specifies the measurement task, related to the gas. e.g. %LEL (Low Explosive Limit) monitoring , toxic, oxygen deficiency etc.
Related to the profile are rules for the setting options for the related channels. Therefore the menus and windows related to the management of input channels may look slightly different related to the chosen profile. Of course the chosen "Profile" must match the gas detector type connected to the input. e.g a Methane flammable gas detector is connected to the input, the right "Profile" will be LEL (Low Explosive Limit). Otherwise, if a CO (Carbon Monoxide) toxic concentration gas detector is connected to the input, the right "Profile" will be Toxic. And so on.

2) The ***"Gas Type"*** represents the list of gases belonging to the related ***"Profile".*** Choose the right gas as for the gas detector connected to the input. e.g. choose Methane if a Methane gas detector is connected to the input; choose CO (Carbon Monoxide) if a CO detector is connected to the input. And so on.

3) The "Detector Model" lists the available detectors for the chosen gas.
Choose the right part number as for the gas detector connected to the input. e.g. choose S2097ME if an S2097ME gas detector (see the labels stucked on the gas detector case) is connected to the input; choose an S2130CO (Carbon Monoxide) if an S2130CO detector model is connected to the input. And so on.

The ***"Channel Description"*** is not mandatory for the reliable function of the gas detection system. It is an aid for the user to indicate useful additional information in the case of alarms.
In the case of alarms all information related to the detector(s) in alarm condition will be indicated at the display on request.
The ***"Channel Description"*** may be additional to the "zone" description and may include data according redundancy to another channel or describe the measurement task in detail.

In the submenu ***"Alarm Settings"*** the threshold values for all three alarm levels can be modified within a specified range indicated by the red bar and a sliding control.

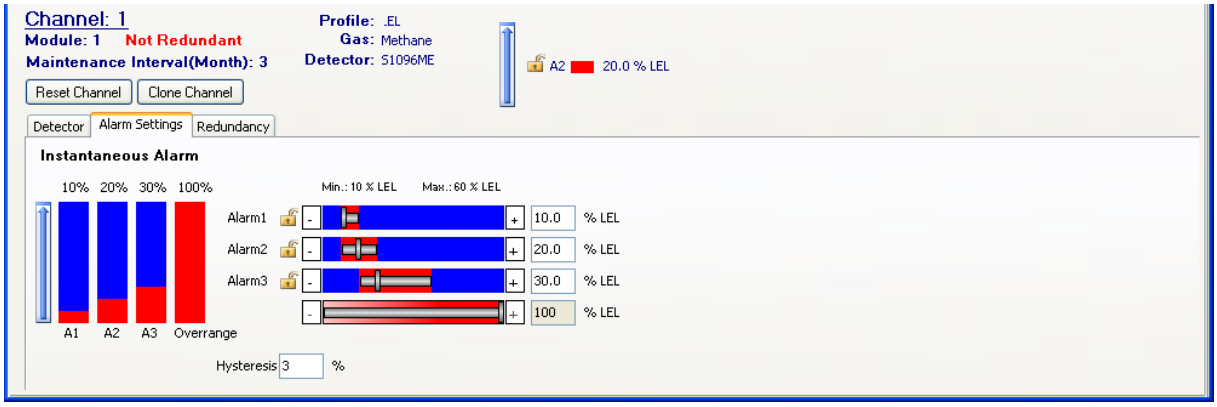


Fig. 4.5.5 d) Alarm levels settings details

The left arrow going upwards is indicating the "increasing alarms" of the LEL profile where the alarm levels from alarm 1 to alarm 3 correspond to increasing concentration.

The configuration software is checking the user input for plausibility. There are some general rules e.g. alarm level not below 5% of the measuring range, no higher alarm (alarm 2 or 3) is settable to a level lower than the lower alarm (alarm 1 or 2). Other restrictions are specified in the measurement tasks (profiles).

The horizontal red bars indicate for each alarm threshold the range within which alarms can be set or modified.

In the profile ***"Oxygen deficiency"*** the Oxygen concentration corresponding to alarm 1 will be higher than for alarm 2 and alarm 3. This will be indicated by the left arrow going downwards for "decreasing alarms".

"Overrange" typically is fixed at 100% of the measuring range. Only if in a profile a fourth alarm level is required "Overrange" will be used as this fourth alarm and the value is settable.

The ***"Hysteresis"*** value indicates how variations in the signal will be ignored when in close proximity to the alarm threshold.

An open or closed lock on the left side of the horizontal alarm bar is indicating the non latching or latching status of each alarm level. The profile specifies if the latching status may be modified or not, e.g. in the LEL profile the latching for alarm 3 and over-scale is mandatory.

Modification of alarm levels

The values can be modified in steps by touching the **–** on the left or the **+** on the right side of the horizontal alarm bar or by typing the numbers into the numeric indication on the right side. Due to the modification of one alarm set point also the range of the red bars for the alarms will be modified accordingly. If the typed value for an alarm level is outside of the accepted range the plausibility check will modify it automatically, e.g. when typing in the LEL profile for alarm 3 the value of "80" corresponding to 80 % of the LEL this value will be corrected to "60" which is the maximum value specified in this profile.

When leaving the screen after modification, the old and sets of parameters for the channel are indicated with the modified values in red, in a windows. The modification has to be confirmed with OK or may be cancelled.

Channels Redundancy

If the system requires a very high security level, two detectors are to be placed at each measuring point. ***"Profile"*** and ***"Gas Type"*** have to be identical. The two detectors may be of the same type or of two different types e.g. in the LEL profile a Pellistor and an infrared (IR) detector.

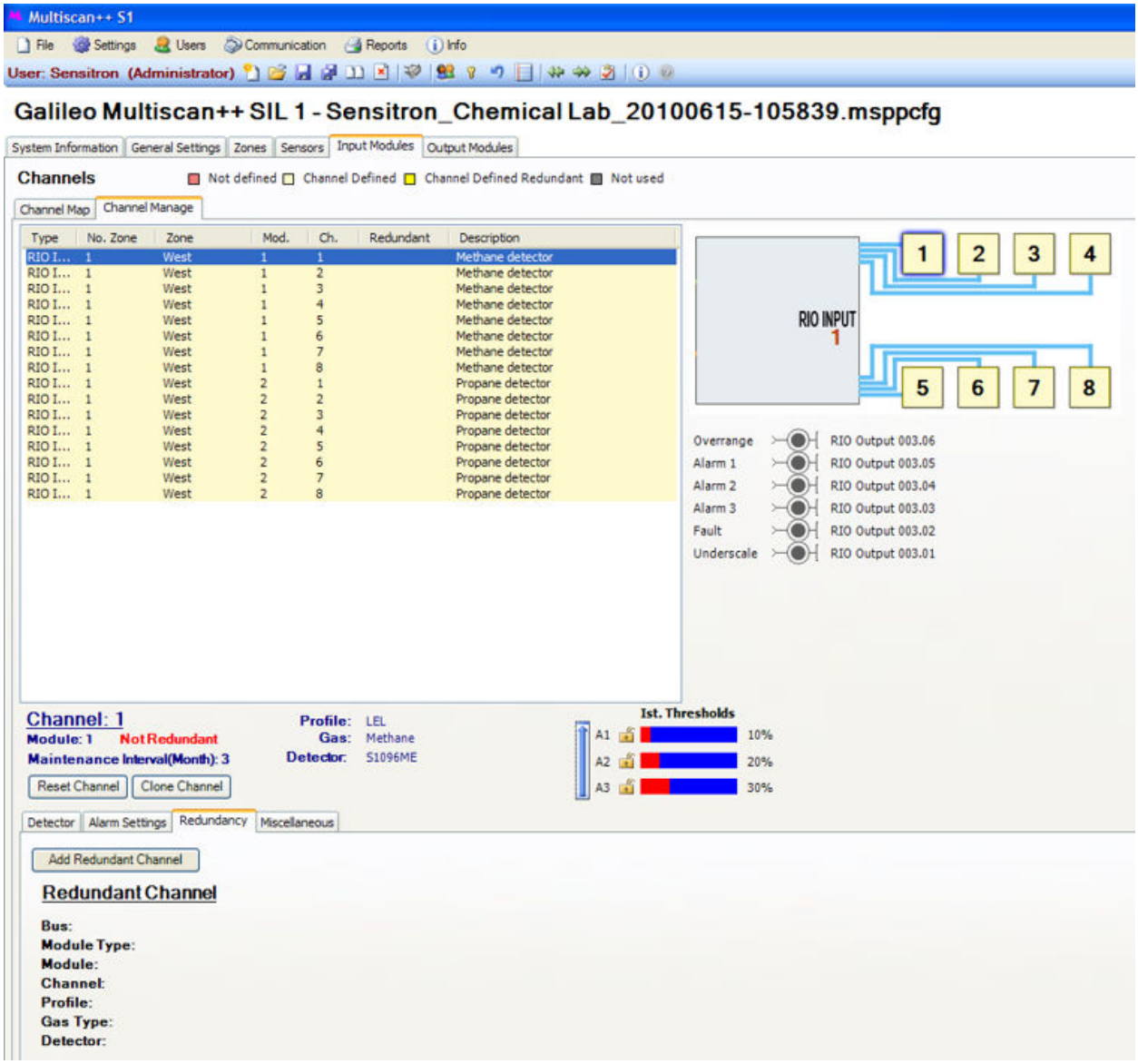


Fig. 4.5.5 e) Redundancy tab in the channel definition screen

Note: To use two different detection principles e.g. catalytic combustion (Pellistor) and IR reduces significantly the risk of "common failures" related to a measuring principle which would apply to both channels if they use the same principle.

The following items have to be identical in both channels:

a) Profile
b) Gas Type

c) Measuring range
d) Alarm set point for each alarm level

Specifying a new redundant channel

The channel 1 of RIO 2 has been defined. After finishing the configuration of the channel the TAB “Redundancy” is chosen. Because actually no redundant channel is specified the information within the TAB is empty (see left bottom corner of the Fig. 4.5.5 e above).

After touching the button “Add Redundant Channel” the right screen occurs.

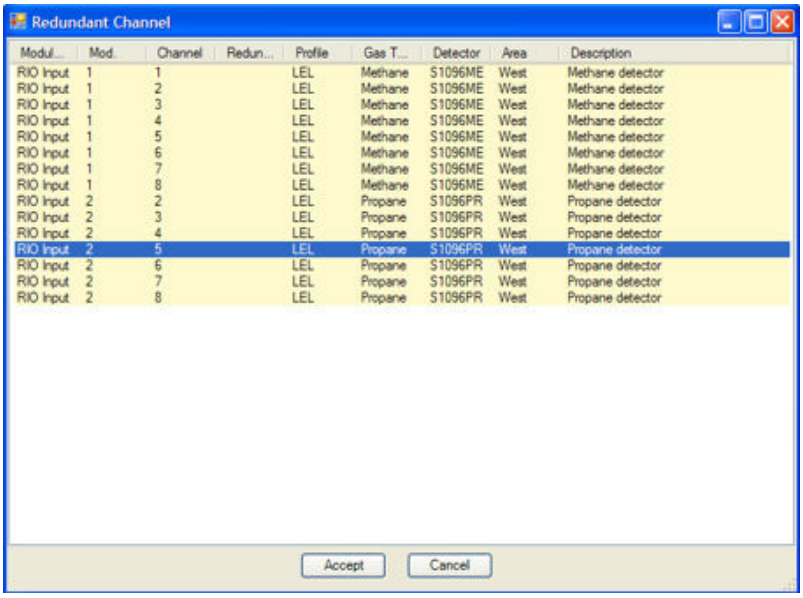


Fig. 4.5.5 f) List for choosing the redundant channel

If the chosen redundant channel is already programmed and differs from the first one (example: current channel is number 5 from RIO 2 and the redundant channel is number 1 from RIO 2), a warning (4.5.5 g) will be indicated.
In this case, by pressing OK, the alarm settings of the first channel shall be taken over for both channels.

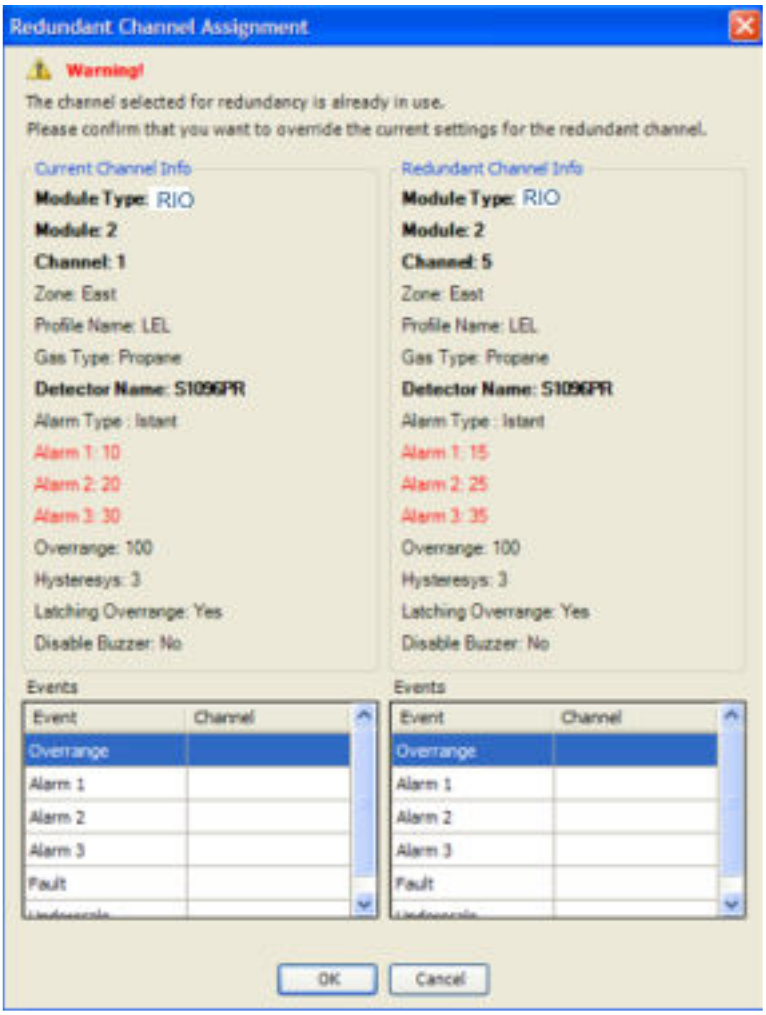


Fig. 4.5.5 g) Typical warning when choosing as redundant an already defined channel, with different parameters

Redundant channels with different detector models

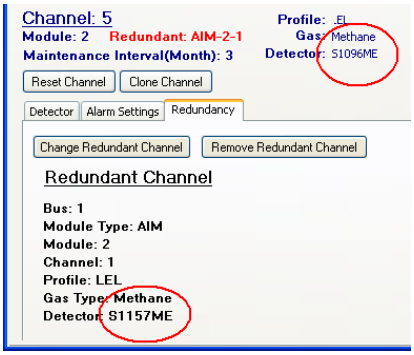


Fig. 4.5.5 h) Redundancy defined for two different detector models

For the same area to be covered, when redundancy is being applied, one may set as redundant two channels having installed different models of detectors, if these are both for the same gas and have the same the thresholds settings.
The Fig. 4.5.5 h above shows redundant channels with two different detectors for Methane.

Modification of redundant channels

If one out of two redundant gas detectors is modified, the same modifications are to be updated to the other redundant detector.

If the ***"Gas Type"*** shall be modified, both redundant detectors have to be modified.

Regarding the "Alarm Settings", two redundant detectors of one measuring point shall have identical alarm settings.

After modification of one of the redundant channels, the old and new sets of parameters for the channel are indicated with the modified values in red like for single channels. If the modification is confirmed, all modifications of alarm values which are carried out for one detector will automatically be taken over for the second one.

4.5.6) Output Modules

Via the menu ***"Output Modules",*** the characteristics of the outputs on the remote output modules STG/OUT16 S being part of the system are enabled and programmed.

- ***RIO Output Map***

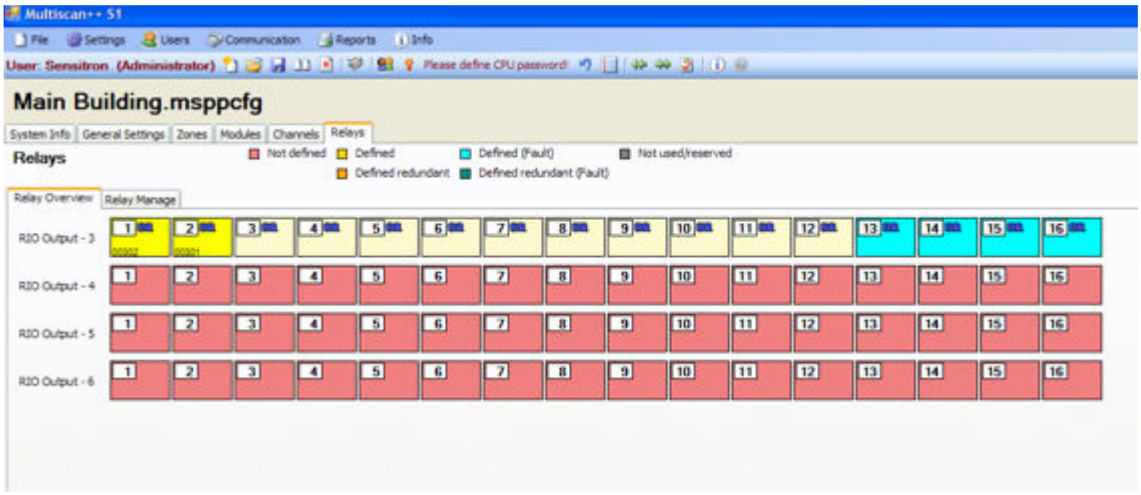


Fig. 4.5.6 a) RIO Output Map screen

The RIO Output Map gives a quick overview of how many output modules (RIO Out STG/OUT16 modules with or without extension relay board) are presently used in the MULTISCAN++S1 and how many Outputs are defined. Different colours represent different characteristics like redundant or non redundant, defined or not defined Outputs.

To choose an Output to view its data, simply pass the mouse over the Output block and the data for this Output will be shown by a popup window. Otherwise, for the modification of the Output parameters with a mouse click on the channel and the data will be shown in the **"RIO Output Manage"** window.

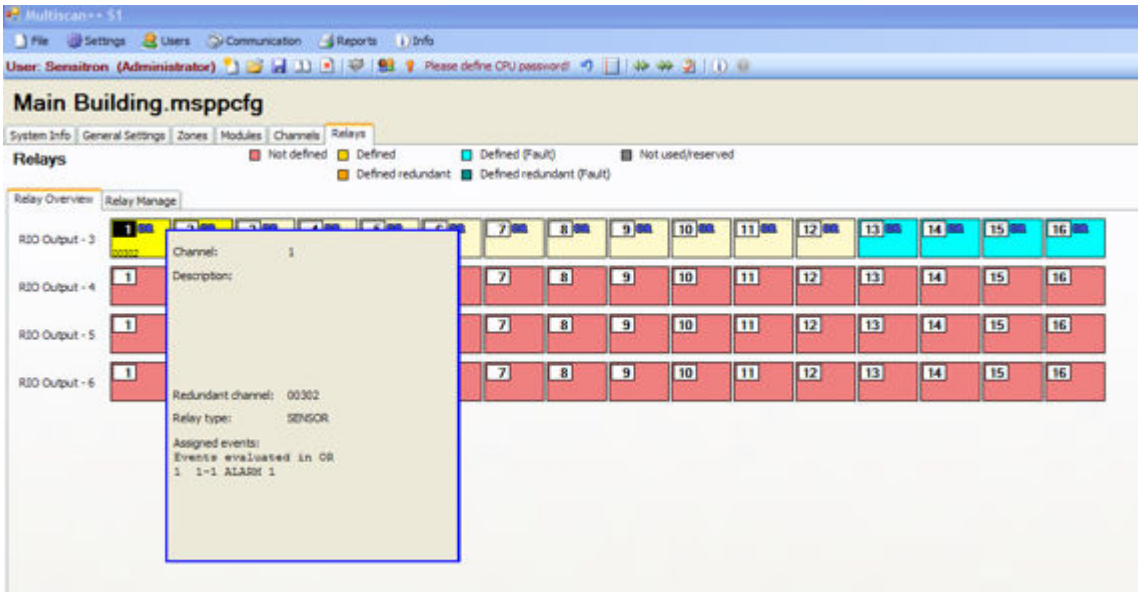


Fig. 4.5.6 b) Output popup window with the parameters

- ***RIO Output Manage***

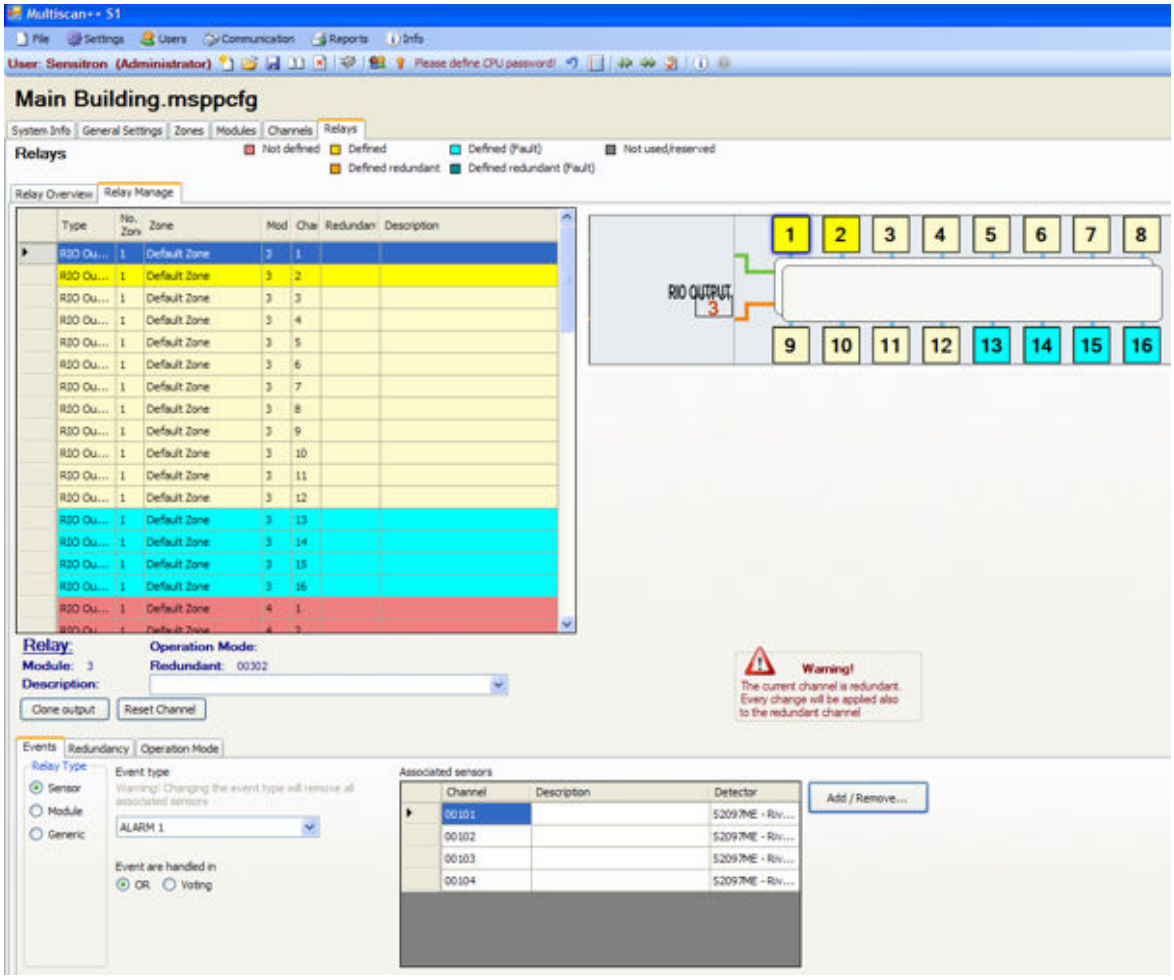


Fig. 4.5.6 c) Outputs details screen

The RIO Output Manage screen allows programming the event(s) that activate the outputs. Available options are as follows:

Events	to program the event and the output to activate
Redundancy	in systems where a higher safety level is requested, 2 outputs can be used for the same activation.
Operation Mode	it sets the output operative mode (steady, pulsed and timed)
Relay Type	Select if the output is to be activated by a *Sensor event* (alarm, fault, under scale etc.) or a *Module event* (Input or Output modules) or a *Generic event* (generic fault, power supply failure, Test etc.)
Event Type	It depends on the setting of the *Relay Type option*. E.g.: in case of *Sensor event,* the event type can be: Fault, Alarm 1, Alarm 2 etc.
OR	OR Mode. The output gets activated whenever one of the events associated to this output enters an alarm or failure condition.
Voting	A settable quantity of events would happen at the same time to activate the output.
Associated Sensors /Modules	it is the window where the events associated to the output can be chosen (with the Add/Remove key) and shown.
Add / Remove	To add or remove the events from the *Associated Sensors Modules* window.

Programming of a new Output

Selecting the new output, by the Relay Type mode select if it is a Sensor event, a Module event or a Generic event.

Sensor event: select *Sensor* in *Relay Type.* Then go to the *Event Type* and select the type of the activation between: *Underscale*, *Alarm1*, *Alarm2*, *Alarm3*, *Overange*, *Overscale* and *Fault*.

Fig. 4.5.6 d) Sensor event

By pushing *Add / Remove*, the screen will allow you choose the channel address or the input channels (to be associated to an output).

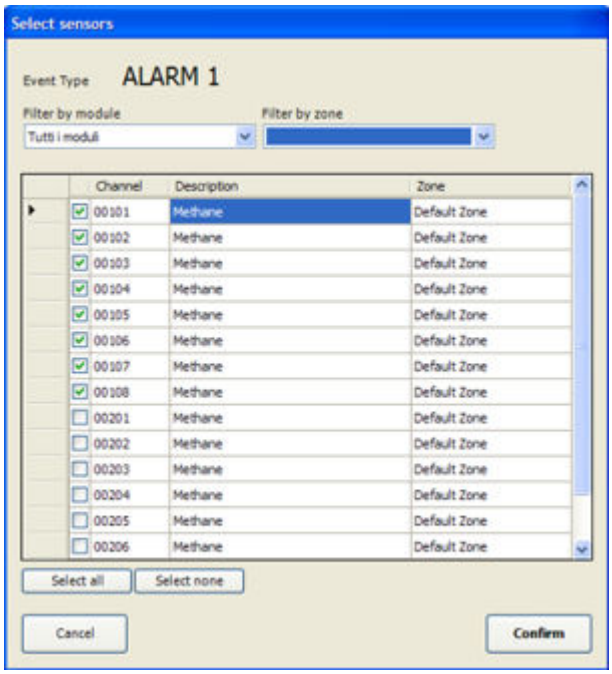


Fig. 4.5.6 e) Channel choice screen

After pushing the “Confirm” key, the output will be set with an event coming from one or more sensors.

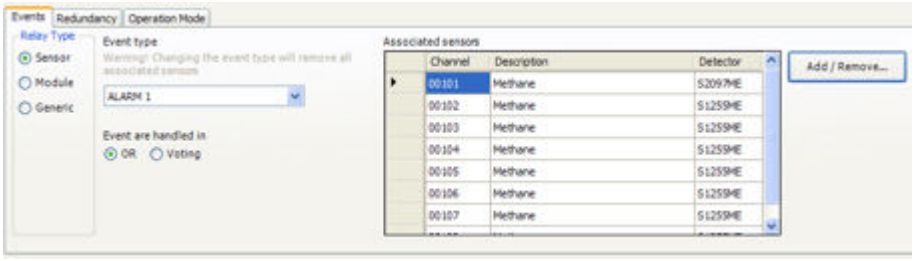


Fig. 4.5.6 f) Output setting summarizing screen

It is not possible to select different types of events associated to just one output. An output set for the Alarm 1 cannot be set for the Alarm 2 or 3 as well.

Module event: Select Event Module to associate an output to a Fault or an Off Line mode.

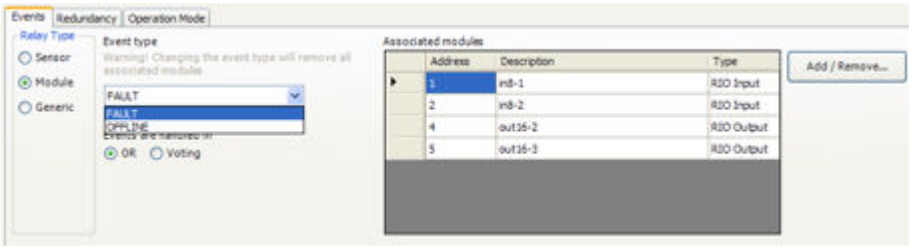


Fig. 4.5.6 g) Module output setting summarizing screen

Generic Event: select Generic Event to associate an output to the system events mentioned here below.

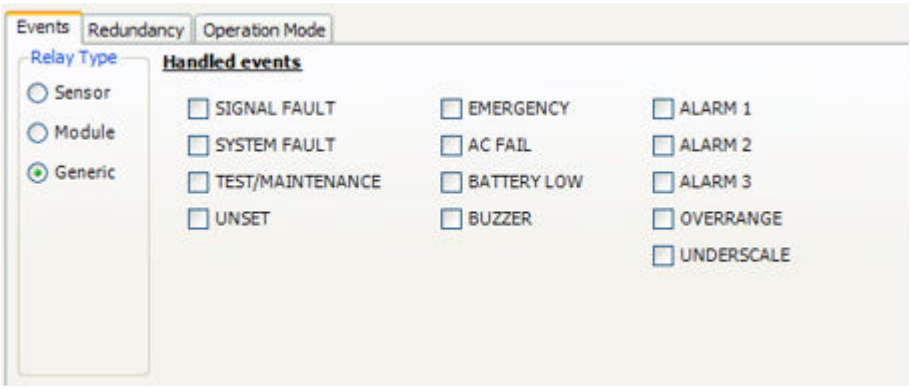


Fig. 4.5.6 h) System event output setting screen

OR and ***Voting function***

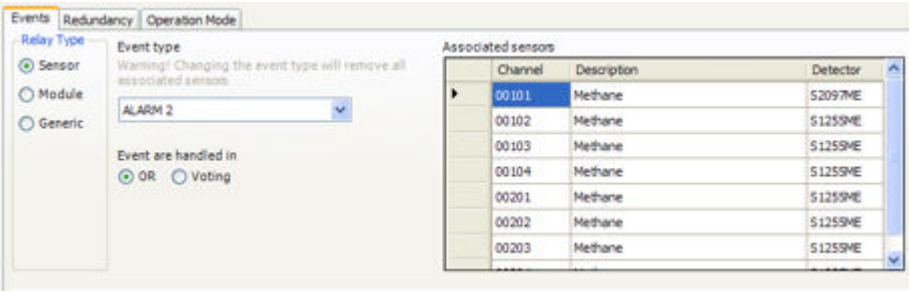


Fig. 4.5.6 i) ***OR*** and ***Voting function***

OR function

By selecting OR, a single event (between the events shown in the Associated Sensors summarizing screen) is enough to activate the output.

Voting Function

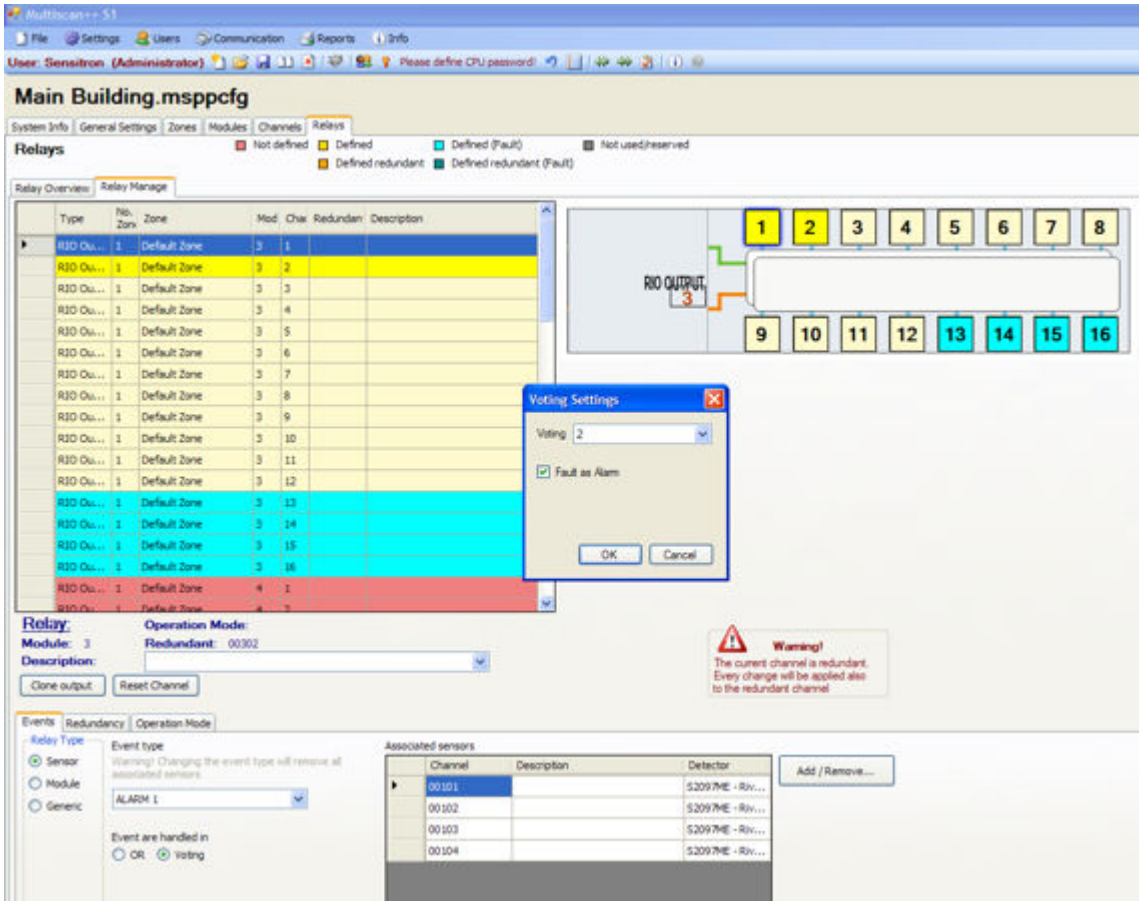


Fig. 4.5.6 l) Output events details screen: VOTING combination

After associating the output (sensors) to the respective channels choose the Voting (And) option. The “Voting Setting” window will appear in the middle of the monitor. Select the number (quantity) of the events that have to activate contemporaneously in order to activate the selected output.
E.g. By setting 2, at least 2 events associated to the output and present in the associated sensors window will be necessary to activate the output.
By selecting the “Fault as Alarm” tick, if one of the sensors associated to the output will be in Fault mode, it will be considered as Alarm and one event less will be enough to activate the output.

Outputs Redundancy

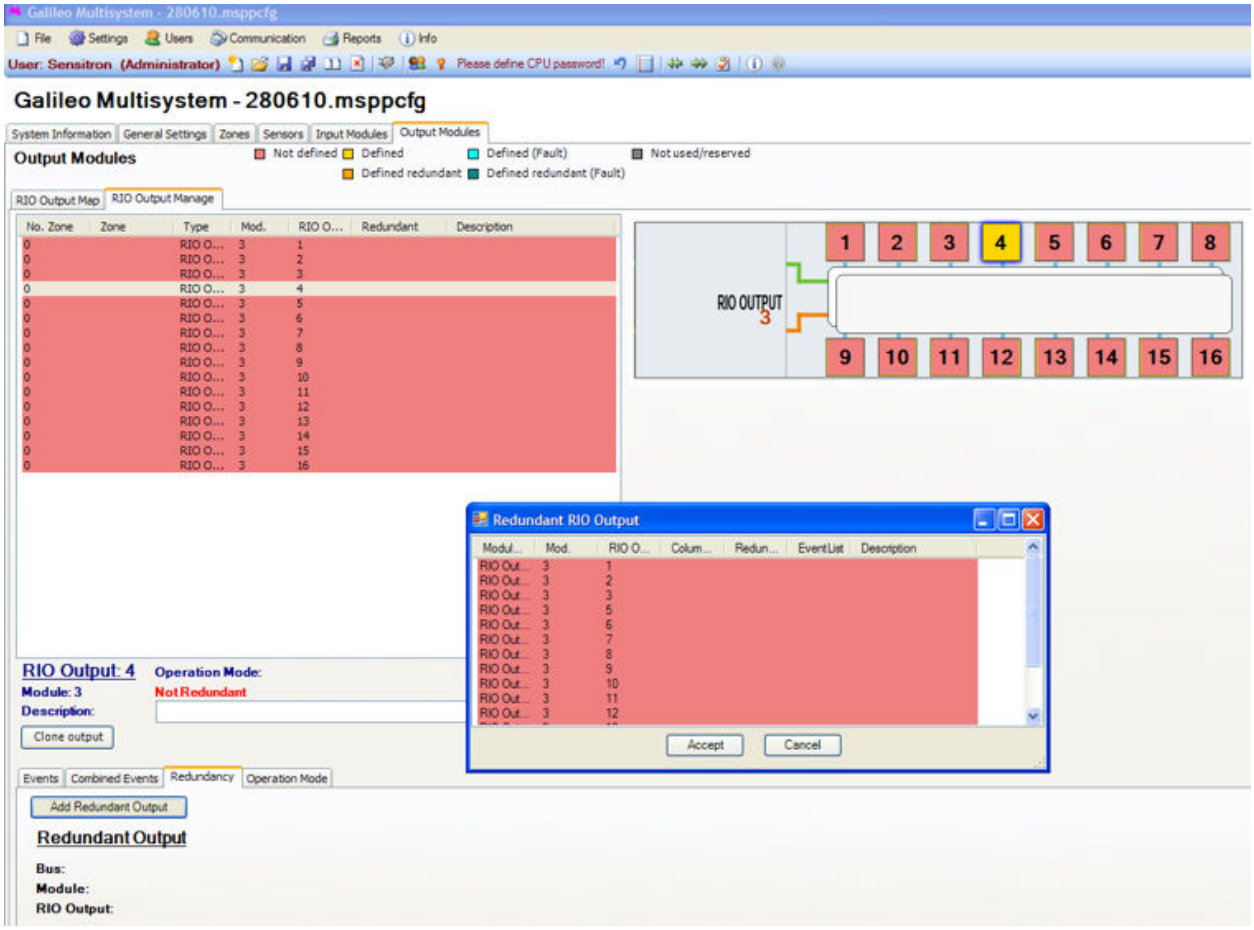


Fig. 4.5.6 m) Redundancy tab in the outputs definition screen

The relay 4 of module 3 has been defined. After finishing the configuration of the relay the TAB “Redundancy” is chosen. Because actually no redundant relay is specified, the information within the TAB is empty (bottom left of Fig. 4.5.6 e above).

After pressing the button “Add Redundant Relay” the right screen occurs.

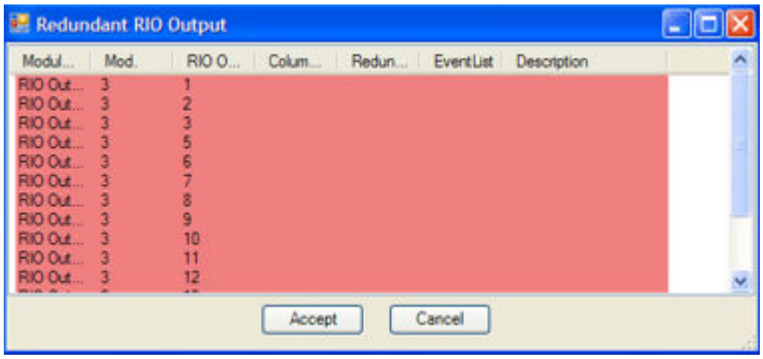


Fig. 4.5.6 n) List for choosing the redundant output

There will be chosen the not defined output 2 from module 3. After touching “Accept” the following warning (see Fig. 4.5.6 f below) will be indicated.

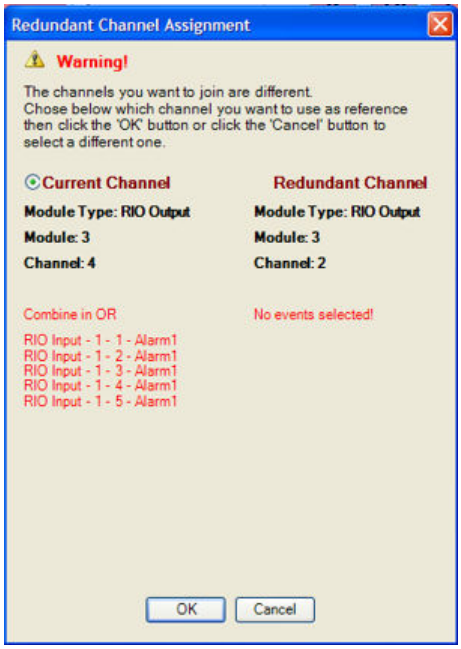


Fig. 4.5.6 o) Typical warning when choosing as redundant a non defined output

If the chosen redundant channel is already specified and differs from the first one (also channel 6 from module 3), a slightly different warning (Fig. 3-18.4) will be indicated. In this case it can be chosen which of the two events shall be taken over for both relays.

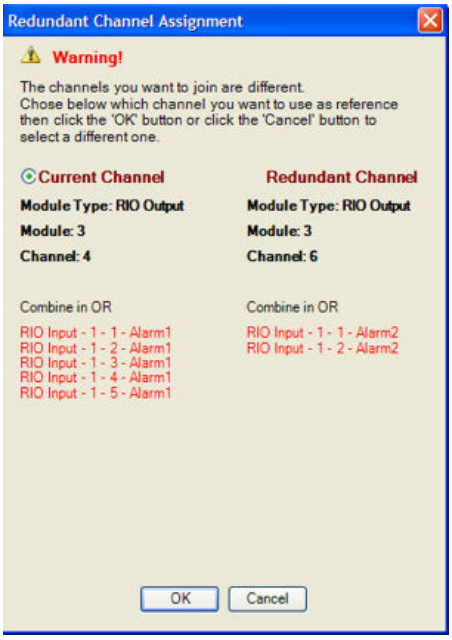


Fig. 4.5.6 p) Typical warning when choosing as redundant an already defined output

When pressing OK, the configuration for the “Current Relay” will be taken also for the redundant relay. In the figure below Output 4 of Module 3 is indicated as redundant to Output 6 of Module 3.

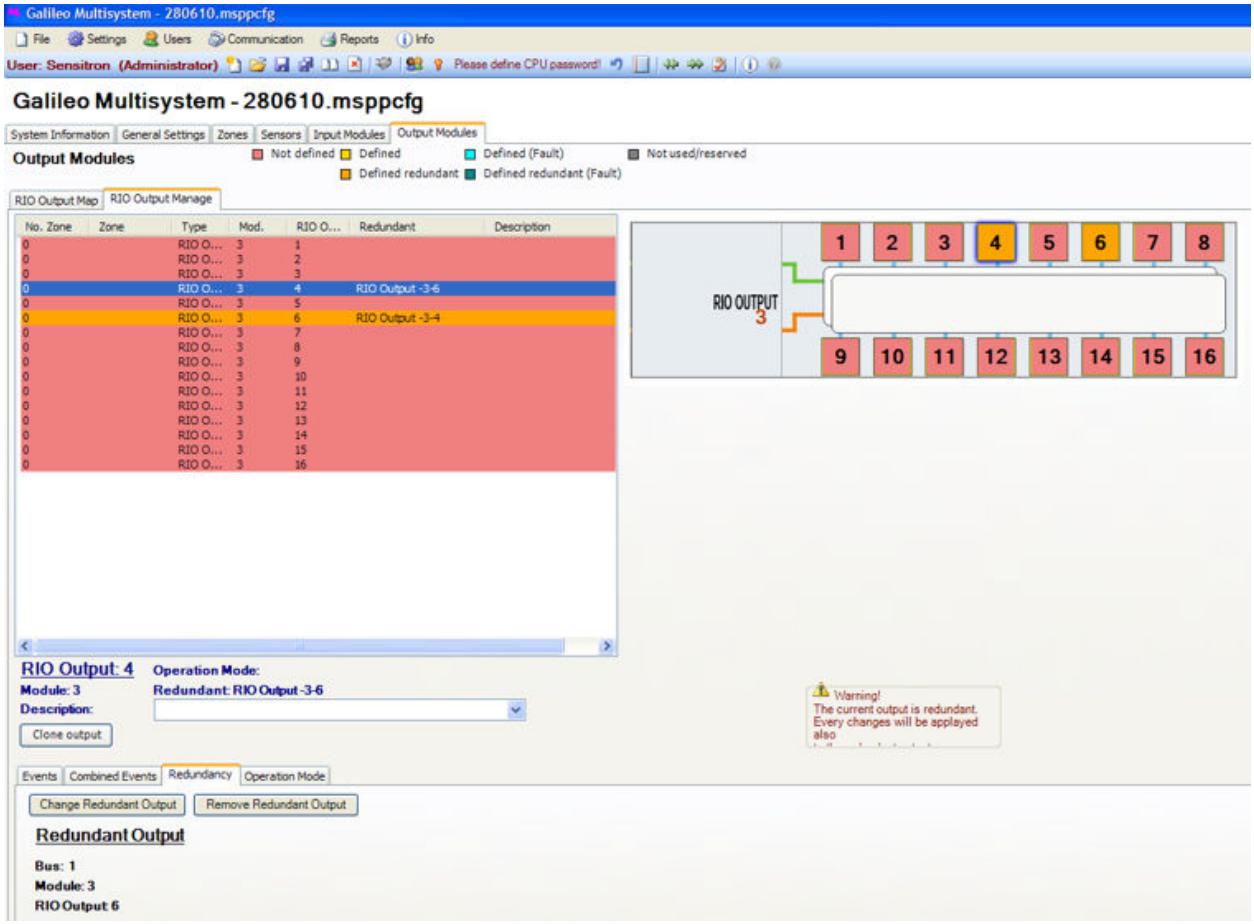
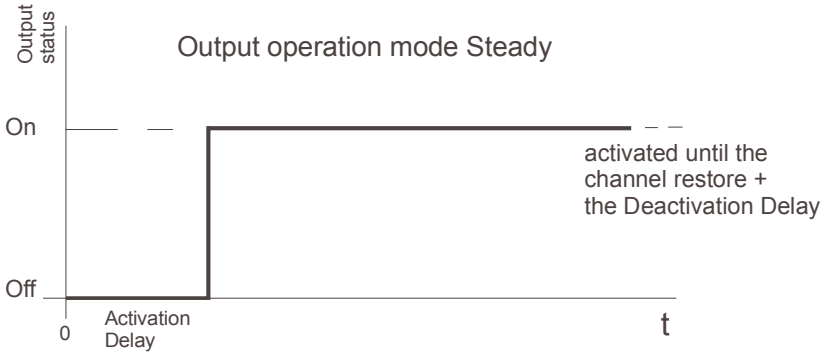


Fig. 4.5.6 q) Outputs details screen showing a defined relay with redundancy

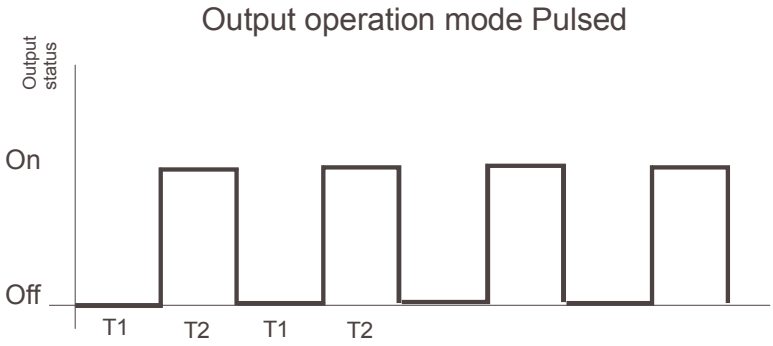
Outputs "Operation Mode"

There are three options for the output Operation Mode

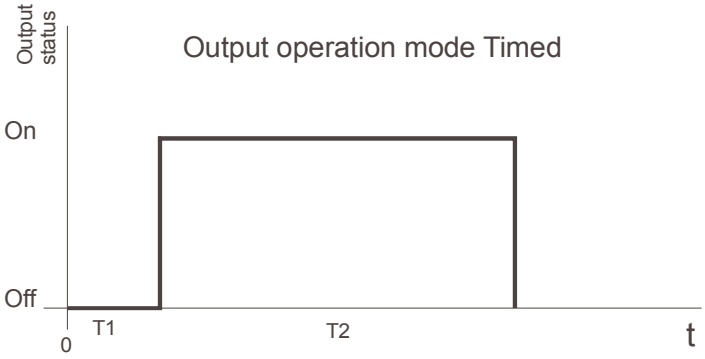
Steady follows the course of the alarm; alarm activated, output activated after a possible activation delay; alarm restored, output low after a possible de-activation delay.



Pulsed flashing mode with the ON and OFF times adjustable



Timed single pulse with an adjustable delay activation time and an adjustable duration time



The ***Normally Energized*** option defines if the output is normally activated or not, in normal operation.

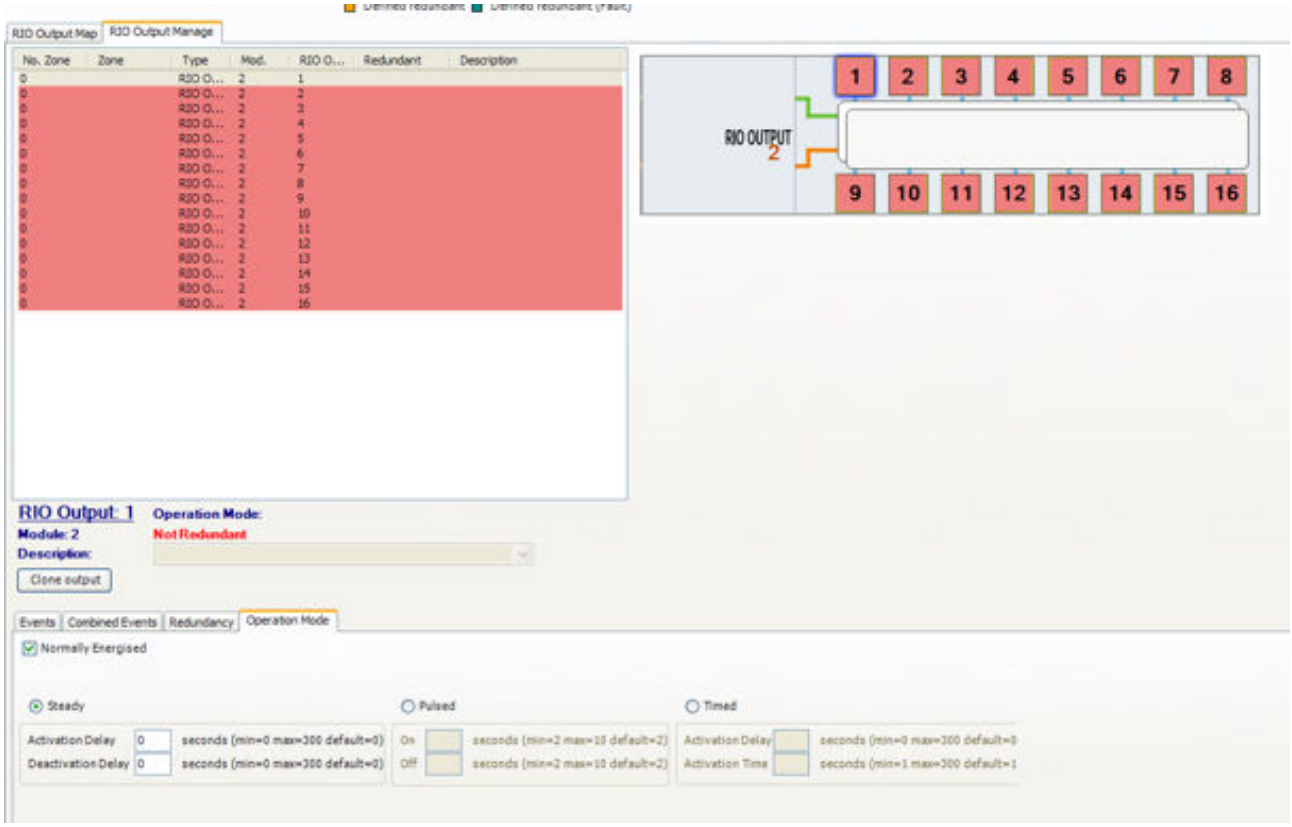


Fig. 4.5.6 r) Outputs “Operation Mode” windows

The above information does not make the manufacturer liable, and the manufacturer reserves the right to make any changes that it retains will be useful to improve the product.

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