Gold City®
Elettronica
Migliorare la qualità del Lavoro, per migliorare la qualità della Vita

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SXXXX1
QXXXX1

SWITCHING RECTIFIER COMPLETE OF AMPERE/MINUTE METER, ABLE TO WORK BY TIMER OR AMPERE/MINUTES

(rel.5 12/12/07)

SIZE Q

SIZE S

HARDWARE FEATURES:

- Power supply:	230Vac 50/60 Hz mono-phase +15% -25% at nominal voltage
- Size:	S= 38cmx35cm h.25cm Q= 40cmx23cm h.23cm
- Weight:	12 Kg. c.a.
- Switching	Switch over frequency 25KHz
- Display:	Programmable keyboard by digital display 7 segments.
- Power:	230 Vac. ; +/- 20% of nominal voltage. Consumed power max.2400 Watt
- Insulation:	Opto-insulation at 2500V between output voltage and power supply
- Controls:	Nr. 2 programmable buttons
- Timer:	Programmable standard built
- Alarm:	Acoustic signal at end of cycle and warning
- Cooling:	Forced air
- Protection:	Ip20, Short-circuit, overheating
- Temperature:	Max. 40^0C
- Humidity:	Max. 80%
- CE normative:	Conformity 2004/108/EC IEC61000-4(2e6) e 3(2e3) 2006/96/EC

OPTIONALS

- Interface:	Serial port 485
- Controls:	Remote switchboard by Optically-insulated inputs
- Dosing:	dosing pump control
- 2 tanks	Set up of the two tanks and separate command
- Multi-tanks	Remote control for N number of tanks by just one rectifier.

GENERAL FEATURES:

The rectifier is manufactured and assembled inside a metal box painted RAL 7016. The keyboard gives the way to control and manage all the operation necessary. By the power section is possible to set up more 5 inputs for complementary functions. The rectifier shows two Ampere minute counter and one total counter .

Remote switch board

Remote keyboard for Q series

Application Notes

Where to place the instrument.

-Group, when possible in a place far from electrical power and relays.

-Avoid to put in the same switchboard : contactors, relays of high power, …power groups at tiristors , especially phasing motors…etc

- good habit avoid dust, humidity, corrosive gases and heating sources, knowing that the range of working temperature of the instrument is 0-40 °C.

Power supply:

La applied power should be:

-stable and possible presence of transistors shouldn't exceed +/-15% of nominal tension value for a period of time not over 0,5 seconds.

- coming from a device of section having protection by fuses for the instruments.

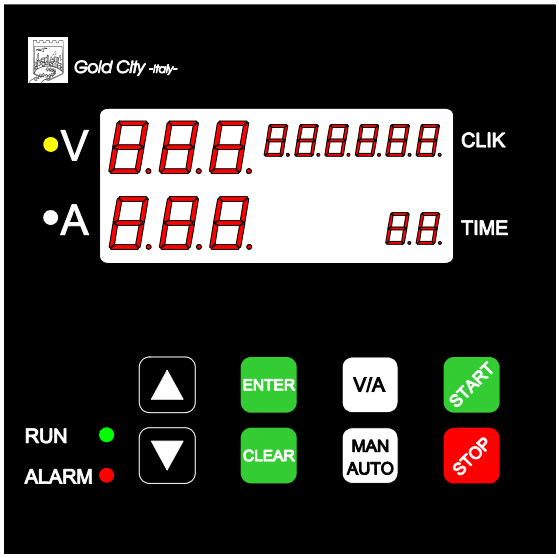
-The feed to the instruments should be as straight as possible starting from the sectioning device, and more:

in cases of strong noises is recommended to install a transformer of insulation connecting the shield cable dedicate only for the instrument. Therefore is really important a good ground connection, the tension between neutral phase and ground not over 1 volt and the ohm resistance not less than 6.

- If the tension is highly variable feed the instrument by a power stabilizer. Near to high frequency generators apply suitable filters..

-In general the feeding line should be separated from the output and input of the instrument.

KEYBOARD


Gold City -Italy-
V
A
CLIK
TIME
ENTER
V/A
START
CLEAR
MAN
AUTO
STOP
RUN
ALARM

Keyboard Description

Keys	Description of their working
START	Switch on the rectifier Pressed when on, it display in the Ampere minute meter counter 2 and the total
STOP	Switch off the rectifier . Pressed for 3 seconds allows to program the Ampere minute counter 1- 2.
V/A	To select, when the rectifier is off, in voltage or current If selected the option time allow to choice if to work in minutes or seconds.
MAN AUTO	To select, when the rectifier is off, the option manual control or automatic.
ENTER	To select the kind of operation Enter to confirm the value of the parameters input.
CLEAR	Keeping pushed turn to zero the counter 1. During input of data erase to zero of the selected parameter.
▲	To input, pushing impulsively or continuously, rises the set-point (V o A) of the rectifier Pressed for 5 seconds with the key arrow DOWN gives access to set-up In input data, pushing impulsively or continuously, rises the programmable values.
▼	To input, pushing impulsively or continuously, reduces the set-point (V o A) of the rectifier Pressed for 5 seconds with the key arrow UP gives access to set-up In input data, pushing impulsively or continuously, lowers the programmable values.
RUN ●	The led on signals the rectifier running.
ALARM ●	The led on signals the rectifier in alarm
● V	The led on signals the rectifier working in voltage stabilized.
● A	The led on signals the rectifier working in ampere stabilized
8.8.8.8.8.8. CLIK	Displays the Ampere minute counter
8.8. TIME	If set up in time displays the value of minutes or seconds (see above V/A key) With jerky processing appears the letter **S**. By working free see the letter **L**.

SET-UP

To access set-up press the keys for 5 seconds. Than the display show:

P A S 3 0

By keys and input the value 30 and press the key

the display will show in sequence:

Parameter	Display	Description	Limits
Digits numbers after the point Volt	**C d u 1**	0= 99 Vmax. 1= 99,9Vmax 2=9,99 Vmax..	0-2
Volt rectifier	**U r 1 0.0**	The maximum voltage supplied from the rectifier	0-99,9
Digits numbers after the point Ampere	**C d A 1**	0=999 Amax. 1=99,9 Amax. 2=9,99 Amax.	0-2
Ampere rectifier	**A r 1**	The maximum current supplied from the rectifier	0-
Speed at the start	**A C S 1 0**	Time in seconds to reach the maximum voltage and current at the start.	0-99
Acceleration /deceleration of work	**A C L 5**	Time in seconds to reach the maximum voltage and current at the start when operating in set point. N.B. The deceleration ramp at is zero.	0-99
Operation I1-5	**C d u 1**	See paragraph " operation inputs"	0-56
Set up from Potentiometer	**P 0 t 1**	0= The rectifier works without Set up from Potentiometer 1= The rectifier works with Set up from Potentiometer on a switching board 2= The rectifier works without Set up from Potentiometer on keyboard board	0-1
Impulse Division	**d i U 1**	Allow to calibrate the A.min. meter counter of the desired unit: A/min or A/h (see paragraph "Calculation impulse division")	
Retention RAMP function "**P r O G r**"	**F C F 0**	This parameter appears only when running on ramps (**P r O G r**). 0= At the end of the exit ramp cycle goes to zero 1= At the end of the exit ramp loop keeps the last value set	0-1

Operation inputs (set-up):

0= Impulsive start. Pressed impulsively give the start at the rectifier

1= Impulsive stop. Pressed impulsively give the start at the rectifier

2= Activate the rectifier. The close connection activate the rectifier to work.

3=Continuous start. The close connection activate the start. The open connection activate the stop of the rectifier

4=Volt/Ampere. The open connection activate of the rectifier to operate in volt. The close connection activate of the rectifier to operate in ampere. The change of that set it could be only in stop position.

5= Reset counter. Turn to zero the partial counter 1.

6= Rise. Allow impulsively or continuously to rise the preset value of the rectifier.

7= Reduce. Allow impulsively or continuously to reduce the preset value of the rectifier.

8=Volt/Ampere without cut off the running.

9=Selection working time/free. OFF=free ON=Time

10= Selection working time-count/free (keyboard2). OFF=free ON=Time/count

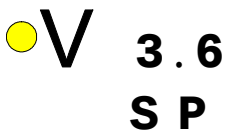
11= Impulsive start. Pressed impulsively allows the start of the rectifier having the data of keyboard 2

12= Reset counter. Turn zero the count of partial counter 1 of the keyboard 2

SET-POINT

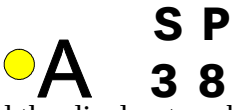
Pushing keys is possible to modify in every momente the set- point of work.

If is running in Volt the display will show:



After 1 second if these keys aren't pressed the display turn back to the main menu.

If running in Ampere the display will show:



After 1 second if these keys aren't pressed the display turn back to the main menu.

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SET-UP OF WORK

Is possible to link the switch on of the rectifier to a time or a pre-selection of the counter 1.

To get it push the key

. the display will show:

By the key is possible to check the king of operations.

L i b E r o = The rectifier switch on at the start and switch off only at stop.
t E M P O = The rectifier switch on at the start and switch off when expired the set time.
S C A t t I = The rectifier switch on at the start and switch off at the end of the ampere minutes counted.

L i b E r o - Confirming by enter this operation the display turn back to the main menu.

t E M P O - Confirming by enter this operation the display shows in the second line:

The operator by the key

could set the option time in minutes (**M I n**) or seconds (**S E C**) and by the arrows keys the numeric value . Confirming by

il display turn back to the main menu.

S C A t t I - Confirming by enter this operation the display shows in the second line:

S C A 1 2 3 4 5 6

The operator by the two arrows keys could set the value of needed ampere-minutes ,

Than confirming by ENTER the display shows:

t 1 1 2 3 4

The operator by the two arrows keys could set the activation time of output U1 wanted, so

confirming by ENTER il display turn back to the main menu.

N.B. The counter 1 can independently work from the type of working if the entry of reset counter (set - up) is opportunely programmed.

SET UP COUNTER 1 and 2

To set up the counter2 press the key STOP for 2 seconds. The display shows:

S C 1 1 2 3 4 5 6

The operator by the two arrows keys could set the value of needed ampere-minutes,

confirming by ENTER the display shows.

T 1 2 3 4

The operator by the two arrows keys could set the activation time of output U2 wanted, so

confirming by ENTER the display shows:

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S C 2 4 5 6

The operator by the two arrows keys could set the value of needed ampere-minutes,

confirming by ENTER the display shows.

t 2 1 2 3 4

The operator by the two arrows keys could set the activation time of output U2 wanted, so

confirming by ENTER the display turn back to the main menu.

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ALARMS

Turning light the led ALARM warms a danger state. The below table is listing the probable vents:

Kind of signal	Display	Cause	Solution
Led blinking	**S E r I A L**	The serial communication between keyboard and power board is disconnected	Check the electrical connections
Led lighted	**A L I M E n**	Absent the power supply	
Led lighted	**A M P E r E**	During the running the current exceeded the allowed threshold	Check the presence of short-circuits in the plating solution and restart.
Led lighted	**M . t E M P**	The rectifier is in alarm temperature	To attend the cooling of the rectifier

P.I. CALIBRATION OF THE RECTIFIER

P A S 1 2

Parameter	Description	Range
A C 1	0= The control ampere/tension is not available 1= The control is available	0-1
F F A 2 5 0	And' the quantity of current moved to proportional exit to the set-point of ampere	0-250
F F U 4 , 5	And' the quantity of tension moved to proportional exit to the set-point of volt	0-4,5
G A I 0.1 0	And' the proportional gain with an unitary error	0-1,00
t i 0.1 0	And' the integral gain of PID regulation	0-9,99
b M 9 9	And' the express error range in bit within which is stopped the integral time	0-10
O F A 1 2	And' a value of setting analog out	0-100
O F U 2 0	And' a value of setting analog out	0-100

Password:
1 CLEAR TOTAL COUNTER

SET UP PULSING WAVE

P A S 1 0

Parameter	Description	Range
F r E 2 0 0	Low work frequency	50-600
d u t 2	duty-cycle frequency	0-50

SET-UP OF WORK only with software management ramps

Is possible to link the switch on of the rectifier to a time or a pre-selection of the counter 1.

To get it push the key ENTER. the display will show:

L i b E r o

By the key is possible to check the king of operations.

S E L L i b E r o = The rectifier switch on at the start and switch off only at stop.
S E L t E M P O = The rectifier switch on at the start and switch off when expired the set time.
S E L S C A t t I = The rectifier switch on at the start and switch off at the end of the ampere minutes counted.
S E L P r O G = The rectifier works with programs related to ramp time

S E L P r O G To get it push the key ENTER the display will show:

The display shows in sequence with

P r G L A U

P r G E d I t

P r G C O P Y

There are 20 programs in memory for processing in Volt and 20 for processing in amperes

CHOICE PROGRAM TO PUT IN WORK.

With the arrow buttons to scroll the display to your written:

P r G L A U

To get it push the key ENTER : the display will show:

P r G n. 2

The operator by the two arrows keys could set the value of number program (max.20) and push the key ENTER.

The program is loaded into work and the display returns to show the main view

To modify or control the program to choose the procedure " **MODIFICATION PROGRAM EXECUTION**".

INTRODUCTION OF WORK PROGRAMS

With the arrow buttons to scroll the display to your written:

P r G E d I t

To get it push the key ENTER : the display will show:

E d t n. 5

The operator by the two arrows keys could set the value of number program (max.20) and push the key ENTER.

The display shows the first step of the program. At this point the operator can set the various data with the same methods described in " **MODIFICATION PROGRAM EXECUTION"**. At the end the display turn back to the main menu.

SAVE THE PROGRAM OF WORK

You can store the program of work that has been modified with the key MAN AUTO
(see " **MODIFICATION PROGRAM EXECUTION**".

With the arrow buttons to scroll the display to your written:

PrG COPY

The work program can be saved in program memory by pressing ENTER . the display show:

CPY n. 1

The operator by the two arrows keys could set the value of number program (max.20) and push the key ENTER. The display turn back to the main menu.

MODIFCATION PROGRAM EXECUTION

Access to this programming is allowed only if you set a processing program

To get it push the key MAN AUTO : the display show:

SEC 234

StEP 1

The operator by the two arrows keys could set the value of time (max.9999 min.0) and push the key ENTER
The display changes to the programming of the analog output (in volts or amperes) that you want to reach the end of the ramp time T1 (max.9999 - min.0).

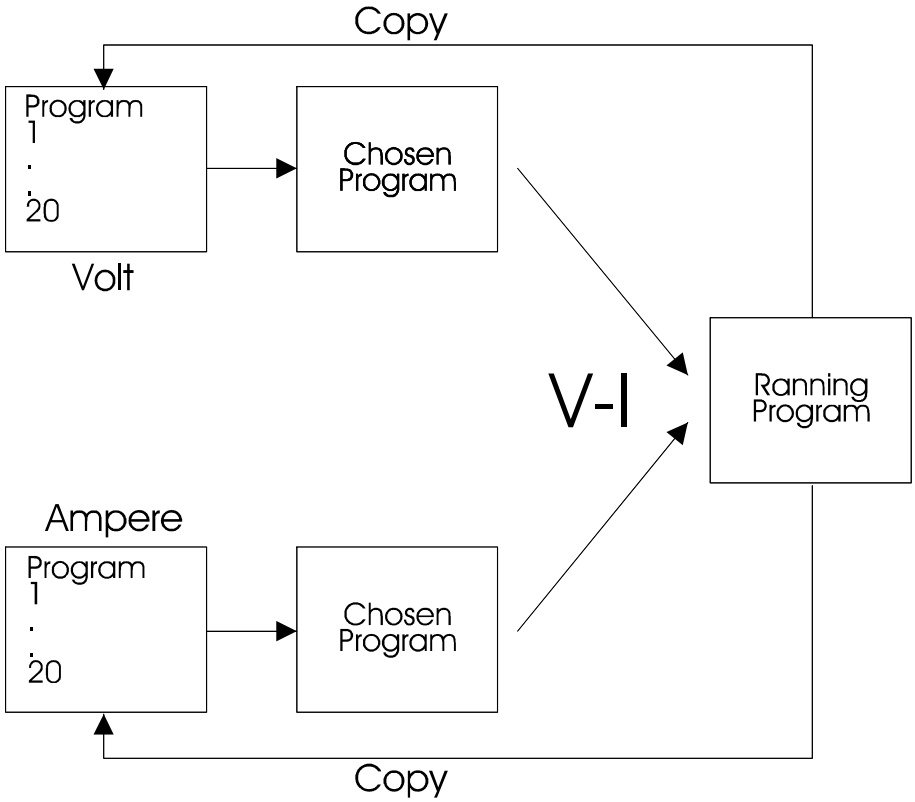
oUt 564

StEP 1

The introduction continues until the ninth timer (T9) and the ninth analog output (U9). Setting the timer to 0 by the introduction of data you exit or exit automatically after the introduction of the latest analog output (U9)

NB This program will work, if modified, does not correct any programs in memory. To save and activate the necessary steps COPY

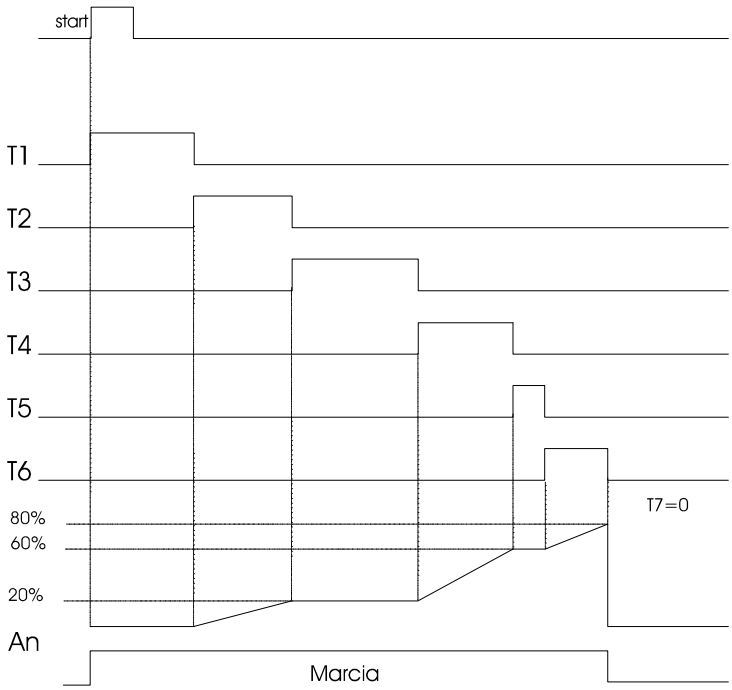
ORGANIZATION PROGRAM



There are 2 programs available to come running, one in volts and one in amperes.

They come running to second if the treatment is set in V or A. With the button MAN AUTO you can access the modification of the program chosen and possibly save the program memory with the copy procedure.

Graphic operation machining program ramps



Back view

RECTIFIERS SIZE

FORM	CARPENTRY	OPTIONS	SIZE AMP	OPTIONS	SOFTWARE
S=Carpentry with keyboard	1= STANDARD	0=No option		0=NO option	1
Q= Rack with remote keyboard	2 =TWO KEYBOARD	1= SERIAL 485	0=50 AMPERE	1=REMOTE KEYBOARD	
	3=REMOTE KEYBOARD WITH INPUT		1=100 AMPERE	2=with start two dosage pump	
	4 = 2 WITH REMOTE INPUTS		2= 200 AMPERE	3= with start two dosage pump NO SUPPLY	
			3=150 AMPERE		
			4=250 AMPERE 6V		
			7= 48V 30A with ramp		

WIRING CONNECTOR SIZE S

The rectifiers with options Sxxx11 and Sxxx21 have mounted a six-pin connector.

Remote keyboard: It 's possible to start command rectifier, rectifier and stop the operation manual / automatic with a remote keyboard. The manual allows the operation "open" rectifier. This allows automatic operation time or shots (set to keyboard) rectifier.

Command with 2 pump: You can use the control relay 2 pumps for dosing of the bath

Clamp	With remote buttons		Command with 2 pumps 230VAC		Command with 2 pumps External power
1	Stop				
2	Start				
3	Man/Auto				Pump 1 - NA
4	Common		Pump 1		Pump 1 - NA
5	NA RUN (on specific)		Pump 2		Pump 2 - NA
6	NA RUN (on specific)		Common 230Vac		Pump 2 - NA

WIRING CONNECTOR SIZE Q

The rectifiers in this series have a remote keyboard loose or mounted on a box and this can be fitted in various programmable buttons for operation. Transmission between power unit and keyboard is on RS485

Clamp	Connector 1 F		Connector 2 F		Connector 2 for Q2 F
1	Alimentazione tastiera		Stop		Alimentazione tastiera 2
2	Alimentazione tastiera		Start		Alimentazione tastiera 2
3	RS485A		Man/Auto		RS485A-2
4	RS485B		Comune		RS485B-2

WIRING KEYBOARD CONNECTOR SIZE Q

Clamp	CONNECTOR 4 PIN		CONNECTOR 9 PIN
1		1	Keyboard power
2	RS485A	2	Keyboard power
3	RS485B	3	Common programmable inputs
4		4	+12V
		5	
		6	I1 Programmable
		7	I2 Programmable
		8	I3 Programmable
		9	I4 Programmable

The rectifiers in this series have a remote keyboard loose or mounted on a box and this can be fitted in various programmable buttons for operation. Transmission between power unit and keyboard is on RS485

SERIAL CONNECTIONS OPTION 485 S/Q

PIN	DSUB 9P female		CONNECTOR 15 PIN
2	RS485 (B) Yellow	13	RS485A-2
3	RS485 (A) blu	12	RS485B-2
5	SCHERMO		

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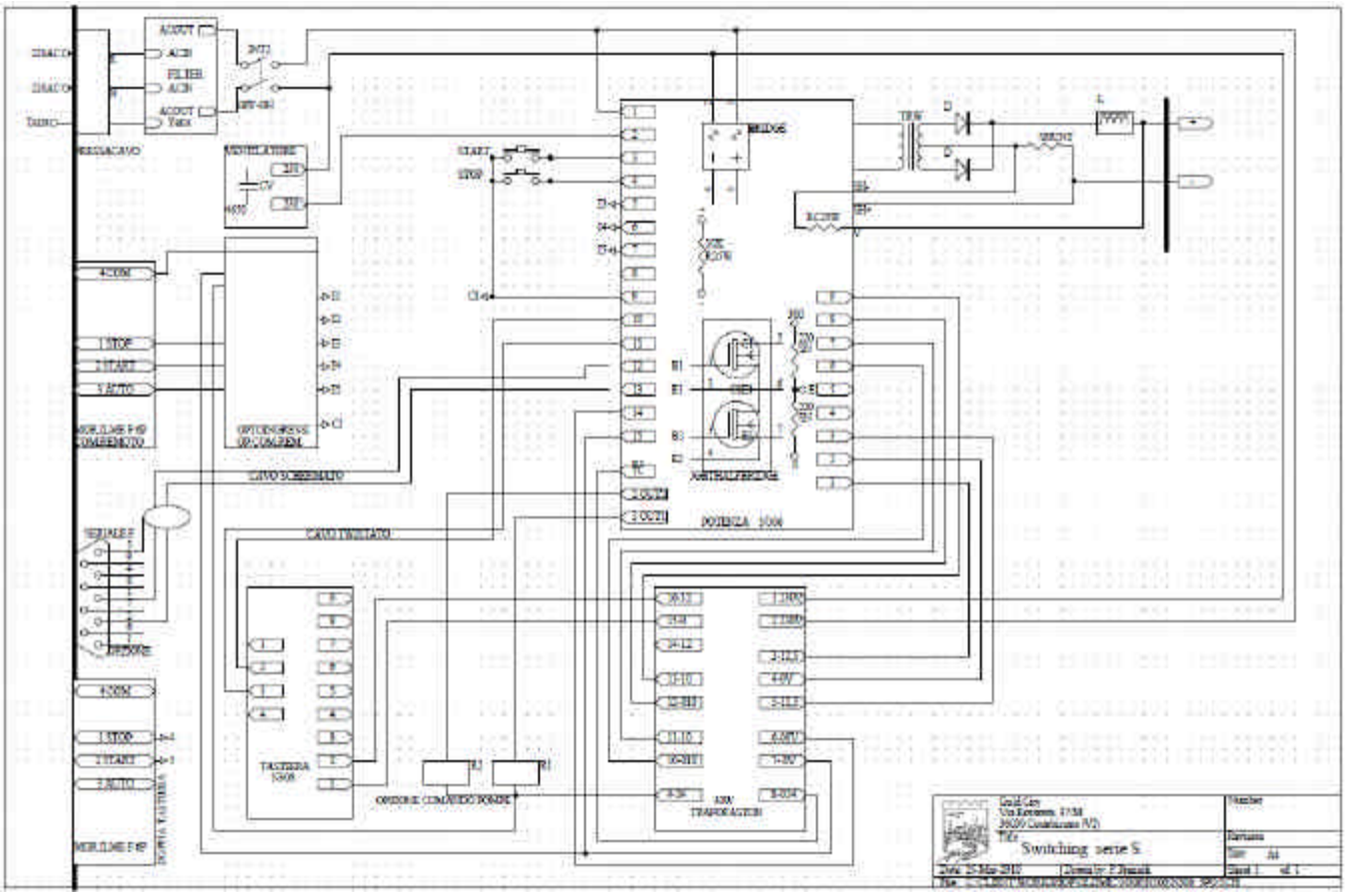
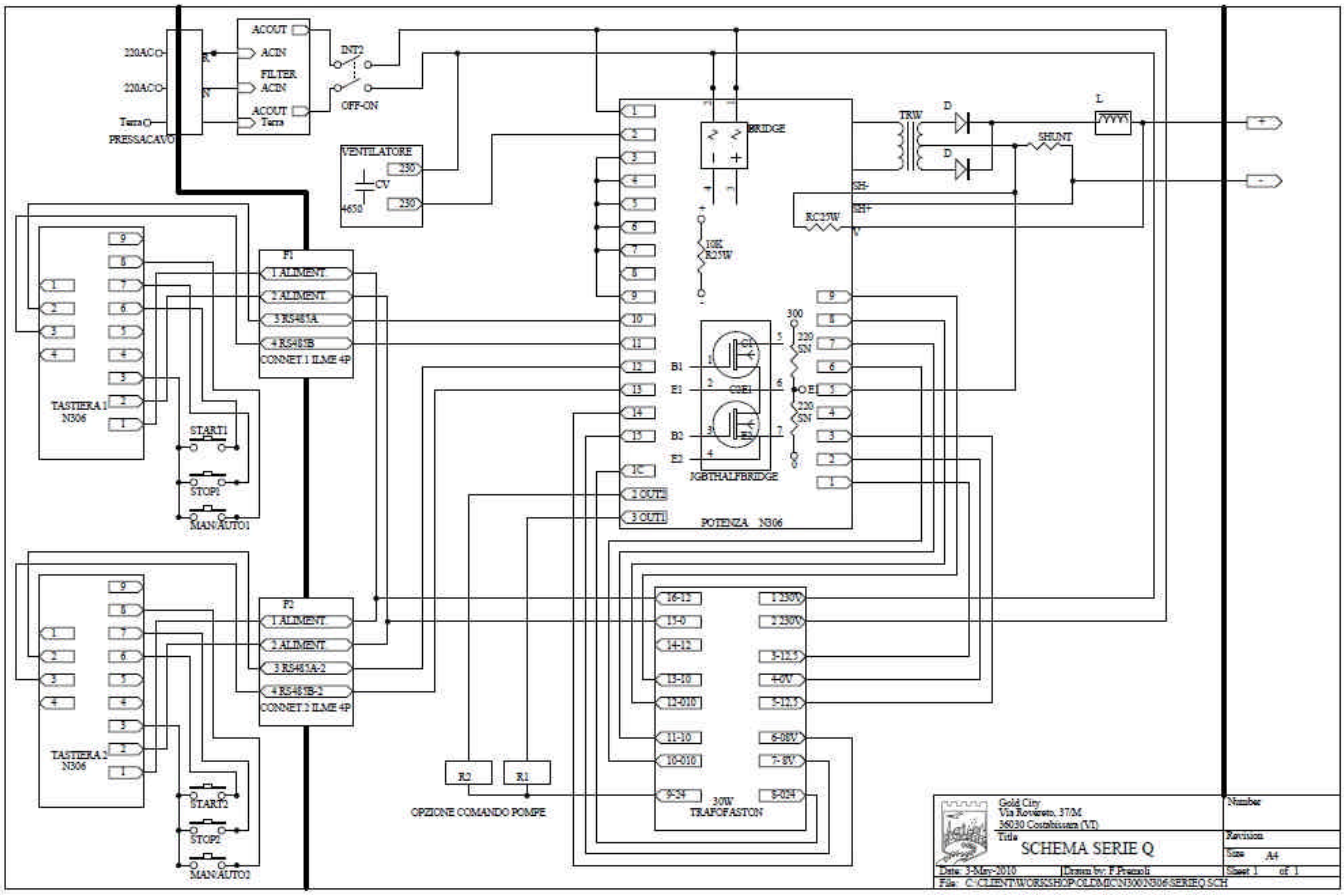
Gold City snc it declares that the contained information in this manual are congruent with the specific techniques and safety of the instrument to which the manual refers. The manufacturer some responsibility is not assumed for direct or indirect damages to people, things or consequent animals to the improper use of this manual or the instrument.

Gold City snc the right reserves him to bring changes or improvements without warning to this manual and the instruments.

ELECTRICAL DIAGRAM SIZE S



ELECTRICAL DIAGRAM SIZE Q



GENERAL RULES

NOTICE

The **Gold City snc** reserves the right to modify the product described herein at any time without notice.

This manual has been prepared by the **Gold City snc** solely for use by its customers by ensuring that it is the date of publication, the latest documentation for the product.
Is understood that the use of the manual takes the user on its own responsibility.

No further warranty is therefore given by Gold City snc (especially for any imperfections, incompleteness and / or operational difficulties), it being expressly excluded its liability for any direct or indirect damages, however arising from the use of such evidence.

CABLES AND CONNECTORS USED

All cables used for wiring of the machine are flame resistant and conform to existing rules.

RISKS WITH EQUIPMENT IN TENSION

Before performing any maintenance or cleaning off the power of the electrical control via the main external power rectifier.
The equipment is not suitable to operate in environments with fire and explosion.
Before starting the machine should provide adequate grounding.

IMPORTANT NOTE

All tests and / or operations performed on the electrical parts of the rectifier must be done only by qualified personnel and after taking all necessary precautions in force.
The company assumes no liability for any tampering with safety devices or intervention in the rectifier by unqualified personnel.

GENERAL SAFETY

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CAUTION: The installation and use strictly forbids the rectifier in an explosive atmosphere.

Warning: The rectifier contains high voltage capacitors that are discharged slowly after removal of mains. Before acting be sure that the power supply is disconnected and wait 3 minutes.

INSTALLATION CONSIDERATIONS:
Mount the S-Series rectifier horizontally on a flat surface and flat
Do not obstruct the movement of air forced
Protect from moisture and direct sunlight exposure.

NB The rectifier is equipped with cable connecting the power line to 220Volt 50/60 Hz Connector 16Amp 3P (Phase, neutral, earth). A breaker is necessary to install adequate protection

BANS

Do not remove the devices and security guards.

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DISPOSAL

	The rectifier must be disposed of separately from household waste. Are provided in different countries separate collection systems for the disposal of electrical and electronic equipment. For more information contact locali. Don't follow current regulations provide penalties regulated by the state of belonging.

Degree of pollution.
In general, dry non-conductive pollution. It 'may experience a temporary and occasional conductivity due to condensation that occurs only when the product is not used.

DICHIARAZIONE DI CONFORMITÀ

2004/108/CE

CE

Costruttore	**:**	Gold City snc
Indirizzo	**:**	Via Rovereto 37/M
Prodotto	**:**	SXXXXX
Nr. di serie	**:**	XXXXXX
Optional	**:**	

Norme applicate:
IEC 61000-4-2 Immunità alle cariche elettrostatiche
IEC 61000-4-6 Immunità a disturbi condotti, indotti da campi RF
EN 61000-3-2 Emissioni di correnti armoniche
EN 61000-3-3 Variazioni di tensione, fluttuazione e picchi

Con la presente si dichiara che il prodotto specificato risulta conforme alla direttiva 2006/95/CE sulla bassa tensione

Legale rappresentante
Gold City snc
Francesco Premoli

Vicenza, 24/03/2010