

TERMOREGOLATORE PROGRAMMABILE PROGRAMMABLE TEMP. CONTROLLER

TM9x52-62

- TM9x52 :48x48mm (1/16 DIN) TM9x62 :48x96mm (1/8DIN)
- DOPPIO DISPLAY 4 CIFRE. 4 TASTI. 4 o 8 LEDS. DOPPIA CHIAVE
- MULTIINGRESSO. MULTIFUNZIONE. COMPLETAMENTE CONFIGURABILE A TASTIERA.
- SET 1 / SET 2 - SET POINT REMOTO. SELEZ. LOC / REM
- SELF TUNING , AUTO TUNING , MAN/AUTO , ECONOMY , RAMP , ...
- TRE USCITE : MAIN , LIMIT I , LIMIT II .
- RITRASMISSIONE SEGNALE - COMUNICAZIONE SERIALE RS232 o RS485
- DISPONIBILE VERSIONE PROGRAMMATTORE 10 PROGRAMMI 100 SPEZZATE TOT.

- ♦ TM9x52 :48x48mm (1/16 DIN) TM9x62 :48x96mm (1/8DIN)
- ♦ DOUBLE DISPLAY 4 DIGITS. 4 KEY BOARD. 4/8 LEDS. DOUBLE KEY.
- ♦ UNIVERSAL INPUT. MULTIFUNCTION. PUSH-BUTTON SET-UP.
- ♦ SET 1 / SET 2 - REMOTE SET POINT LOC / REM SEL.
- ♦ SELF TUNING , AUTO TUNING , MAN/AUTO , ECONOMY , RAMP , ...
- ♦ THREE OUTPUTS : MAIN , LIMIT I , LIMIT II .
- ♦ RETRANSMITTED SIGNAL - SERIAL COMMUNICATION RS232 OR RS485
- ♦ PROGRAMMER VERSION AVAILABLE 10 PROGRAMS 100 STEPS TOT.



GENERALITA'

TM9x52-62 è un regolatore completamente configurabile da tastiera. E' possibile selezionare tipo ingresso (termocoppia / termoresistenza / segnali da campo), scala, offset, parametri di regolazione, ecc.... Il display è ben visibile anche a distanza grazie ad un apposito filtro ottico ed a cifre alte 10mm per il display principale (orange alta efficienza) e 7 mm per il display secondario (verde alta efficienza). Sviluppato per svolgere funzioni di regolazione e controllo in applicazioni di riscaldamento , refrigerazione e generiche , è in grado di soddisfare le più disparate esigenze sia per la completezza delle funzioni offerte , sia per il numero di uscite e ingressi disponibili. Disponibile uscita analogica ausiliaria indirizzabile su variabile scelta o comunicazione seriale (RS232 o RS485) protocollo Modbus RTU . Possibili fino a due (2) ingressi digitali con azione programmabile. Esiste versione programmatore di spezzate (relazione tempo-temp.) con possibilità di 10 programmi per un totale massimo di 100 passi. In tal caso gli allarmi possono essere impiegati come relè di passo. Con uscita continua può essere impiegato come generatore di Set.

CARATTERISTICHE PRINCIPALI

Operatività ed interfaccia uomo/macchina sono basate su menù. La struttura dei menù è relazionata alle funzioni ed alle impostazioni. Nel gruppo 'SetP' sono possibili le impostazioni di **Set-Point Main** , **Set2** (secondario) , **Set Limit I** (allarme 1) , **Set Limit II** (allarme II) , **Set-Point Remoto** e relativi parametri di inizio e fondo scala. Nel gruppo 'Out' sono accessibili tutti i parametri inerenti il **regolatore principale** ed oltre ai parametri classici quali PB, dt, it, ct è possibile impostare il funzionamento Manuale/Automatice, la potenza in uscita, l'ArS (Anti Reset Window), il modello di autosintonizzazione (SelfTuning o Autotuning), la limitazione di potenza (MPo-->Economy), il comportamento in presenza di overrange (P.ovr) od underrange (P.und), la funzione dell'allarme I scegliendo tra ben 37 diverse possibilità. Tra queste è possibile sceglierne l'impiego come **raffreddamento**, con azione ON/OFF oppure PID ed anche qui oltre ai parametri PB, dT, It, ct è possibile determinarne il comportamento con la banda di sovrapposizione, il mezzo (aria, olio, acqua), il guadagno del loop ed infine la funzione dell'allarme II scegliendo tra altre 36 diverse possibilità. Nel gruppo 'A.Out' (Auxiliary Output) sono disponibili le impostazioni relative alla **comunicazione seriale** (protocollo, indirizzo, baud rate, selezione LOC/REM e ritardo) ed all'**uscita analogica ritrasmessa** (sorgente, relazioni ingresso/visualizzazione, comportamento in corrispondenza di min.,max, O.ovr e o.und). Da sottolineare la possibilità scegliere di ritrasmettere la variabile di ingresso oppure uno dei Set-Point o la potenza od il display. Nel gruppo 'A.InP' è possibile determinare il comportamento degli **ingressi digitali 1 e 2** (blocco tastiera, hold misura, Set/Set1/SetRem, Loc/Rem, Start/Stop/Reset per programmatore) e dell'**HbM (Heather break Monitor)** con relativi parametri. Nel gruppo 'dISP' si può impostare il comportamento del display ed in generale dell'interfaccia uomo/macchina coi parametri offset, **chiave di protezione a tre livelli**, timeout, memorizzazione parametro, selezione °C/°F, posizione punto decimale. Nel gruppo 'Conf' deve essere scelto l'ingresso con inerenti relazioni, il **filtro letture**, la **chiave di protezione numerica**. Infine nel menù 'ProG' si trovano i numerosi parametri riguardanti la versione **PROGRAMMATTORE** (vedi manuale corrispondente).

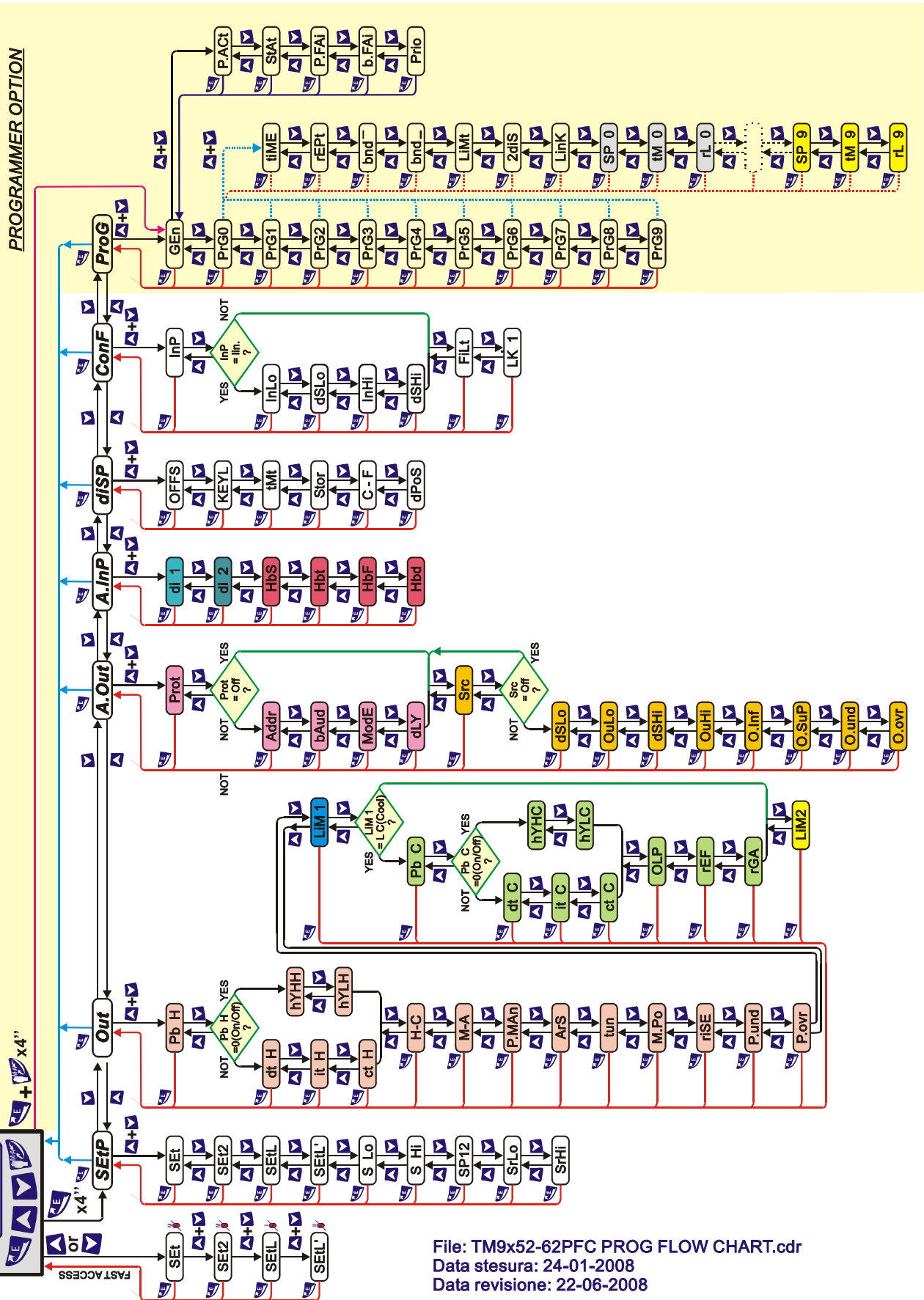
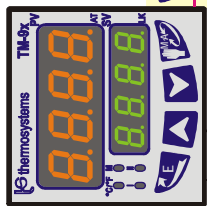
GENERAL DETAILS

TM9x52-62 is a keyboard fully configurable controller. It's possible to select input type (thermocouple / thermoresistance / signals from the field), scale, offset, control parameters, etc. The display is clearly visible from distance thanks to the optical filter and the size of the digits; 10mm for the main display (high efficiency orange) and 7mm for the secondary display (high-efficiency green). Developed to perform regulation and control in heating, refrigeration and generic applications, it is able to satisfy the various requirements by the completeness of the offered features and thanks to the available number of outputs and inputs. It can be with auxiliary analog out addressable on selected variable or serial communication (RS232 or RS485) Modbus RTU protocol. Up two (2) digital inputs with programmable action. It's obtainable in 'step-programmer' version (time-temperature relationship) with 1 to 10 programs for a maximum of 100 steps. In that case, the alarms can be used as step relay. With continuous output can be employed as a master Set.

MAIN CHARACTERISTICS

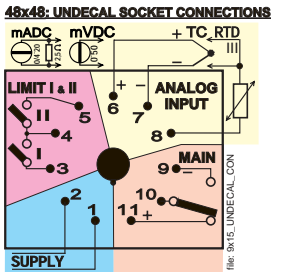
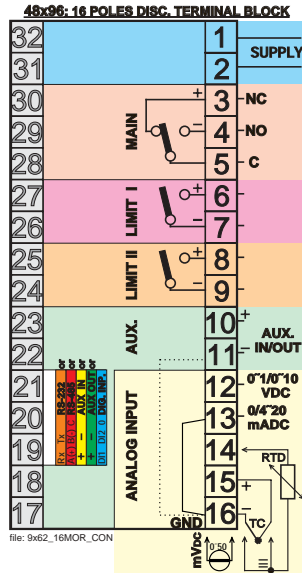
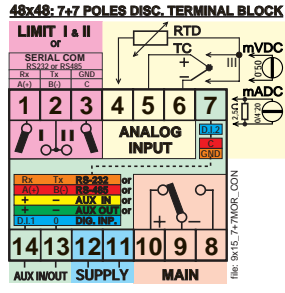
Operativity and man / machine interface is based on the menu. The menu's structure is related to the functions and settings. In group 'SetP' are possible settings of **Set-Point Main** , **Set 2** (secondary) , **Set Limit I** (alarm 1) , **Set Limit II** (alarm II) , **Remote Set-Point** and its related parameters (i.e. start and full scale). In group 'Out' are available all the parameters relating to the **main controller** and in addition to classical parameters such as PB, dt, it, ct can be set Manual / Automatic action, Output Power, the ArS (Anti Reset Window), the tuning model (SelfTuning or Autotuning), the power limitation (MPo -> Economy), the behavior in case of overrange (P.ovr) or underrange (P.und), the function of the alarm I choose between no less than 37 lots of possibilities. Among these you can choose the job as a **cooling action** with ON/OFF or PID parameters and even here in addition to PB, dT, It, ct can determine the behavior with the overlap band, the medium (air, oil, water), the gain of the loop and finally the alarm function II, choosing from 36 different other possibilities. In group 'A. Out' (Auxiliary Output) is available settings for **serial communication** (protocol, address, baud rate, selection LOC / REM and delay) and **analog retransmitted output** (source, input/display relationship, behavior for min., max, O.ovr and O.und correspondence). Significant the possibility to choose to retransmit the variable input or one of the Set Point or the output power or the display. In group 'A InP' you can determine the behavior of **digital inputs 1** and **digital inputs 2** (keylock, measure hold, Set/Set1/SetRem, Loc/Rem, Start/Stop/Reset for programmer) and **HbM (Heather break Monitor)** function with related parameters. In group 'dISP' you can set the display behavior in general and of man/machine interface with the parameters offset, **three level security key**, timeout, storage, °C / °F selection, the decimal point position. In group 'Conf' must be chosen the input with related reports, the **reading filter**, the **security numeric key**. Finally, in the 'ProG' menu you can find the great number of parameters for the **PROGRAMMER** version (see its manual).

TM9XX PROGRAMMING FLOW CHART

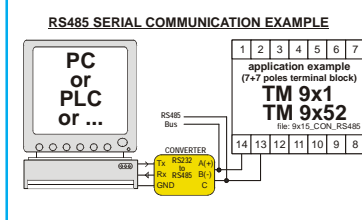
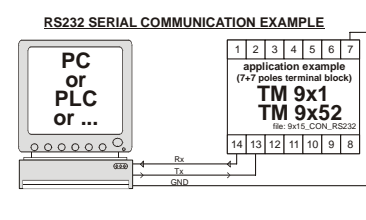
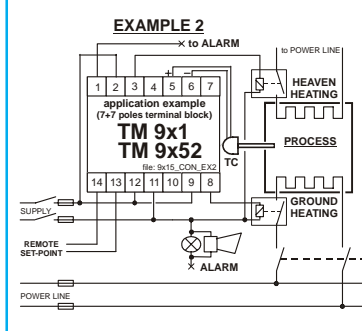
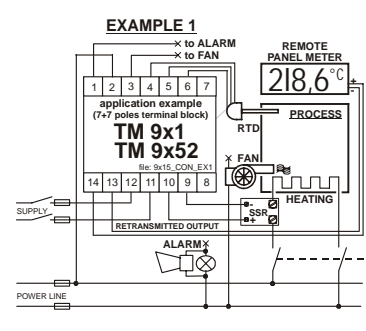


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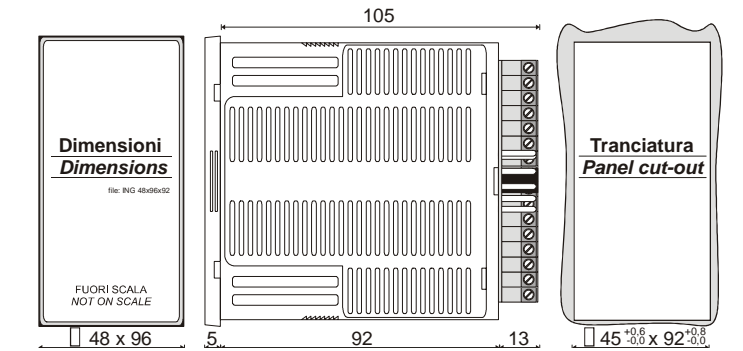
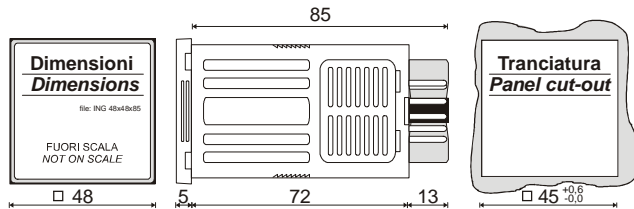
CONNESSIONI ELETTRICHE ELECTRICAL CONNECTIONS



ESEMPI APPLICATIVI APPLICATION EXAMPLES



DIMENSIONI D'INGOMBRO e SPACCO PANNELLO DIMENSIONAL DETAILS & PANEL CUT OUT



NOTE PROGRAMMATTORE PROGRAMMER NOTES

The 'PROGRAMMATTORE' is a special version of the series TM9xX2 that allows time / temperatures relations to obtain the practical realization of the desired thermal profiles. That is increasingly required in applications for heat treatment of metals, marble, wood and food, dynamic tests (prolonged or not), thermal profiles for cooking, sterilization, physical and chemical reactions, etc. etc..

Each desired temperature profile is associated with a program and each program is structured in a simple and straightforward. 10 programs are provided, numbered from 0 to 9. Each program consists of 10 steps numbered from 0 to 9. For each step must be defined:

- Value of the final set-point (the initial set-point corresponds to the final set-point of the previous step and in the case of step "0" corresponds to the local set-point of controller).
- Duration of step (time expressed in the units selected in the parameter 'time' of each program).
- State of step's relay(s) (if desired).
- The program selected (function P. ACT) will be performed by a minimum of 1 to a maximum of 99 times in agreement with the parameter 'REPT' (repetitions).

If the desired profile requires a number of steps over 10 traditional just set the parameter 'link' (Link) to 'YES' and the program will 'paste' to the next until you have the availability of the required steps. Repeating this approach for programs 10 steps basic you get involved the availability of required steps. The maximum obtainable is one big program to some 100 steps.

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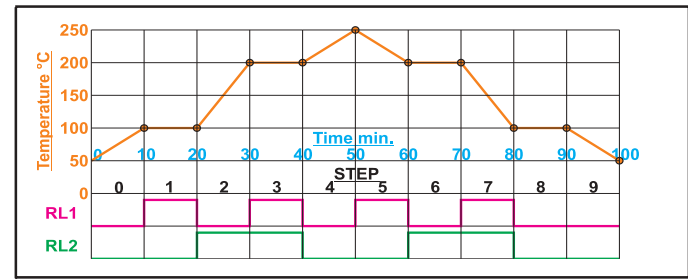
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PROGRAM 0 (example)

step	°C	h	min	sec	stepRL1	stepRL2
Set-Point 0	100	time 0	0	10	0	OFF
Set-Point 1	100	time 1	0	10	0	ON
Set-Point 2	200	time 2	0	10	0	OFF
Set-Point 3	200	time 3	0	10	0	ON
Set-Point 4	250	time 4	0	10	0	OFF
Set-Point 5	200	time 5	0	10	0	ON
Set-Point 6	200	time 6	0	10	0	OFF
Set-Point 7	100	time 7	0	10	0	ON
Set-Point 8	100	time 8	0	10	0	OFF
Set-Point 9	050	time 9	0	00	0	OFF



CARATTERISTICHE TECNICHE **GENERAL DETAILS**

ANALOG INPUT:

- RTD Pt100 according to DIN 43760
three wires connection for RTD Pt100 (line - 10 Ohm max).
 - Thermocouple L according DIN43710
 - Thermocouple J-K-N-T - R - S - B according IEC584-1
automatic compensation reference junction for thermocouples.
- Sensor breaking makes overrange situation.
- Linear mV and mA (option ...).

DIGITAL INPUTS:

- FUNCTION : 2 digital inputs for various selectable functions (Lock, Hold, Set1/Set2, Loc/Rem, Programmer Start/Stop/Reset, ...).
- ELECTRICAL CHARACTERISTICS :
Mechanical contact voltage-free, referenced to GND.
Maximum voltage : 30Vdc ref. to GND (pull-up 4k7 res. to +5Vdc)
Logic : LOW level < 1Vdc ;
HIGH level > -8Vdc ;

AUXILIARY INPUT:

- linear mV input 0÷50mV [Zin < 500Ω] or
- linear V input 0÷1V or 0÷5V or 0÷10V [Zin > 500Ω] or
- linear mA input 0÷20mA or 4÷20mA [Zin < 500Ω]

FRONT : Lexan with high physical-chemical performance.

KEYBOARD : 4 push button ~170g (ENTER, UP,DOWN, M/A)

SIGNALING :

- DISPLAY : 4 orange, high efficiency height 10 mm.
4 green , high efficiency height 7 mm.
- LED : 4 + 1 red, high efficiency for:
 - M : Main Output channel.
 - I : 'I' Output channel.
 - II : 'II' Output channel.
 - °C/°F : for °C or °F selection.
 - AT : for AutoTuning function.
- : 1 green, high efficiency for:
 - LK : for Lock (securing).

POWER SUPPLY:

- 15÷35Vac/dc -15%/+10%
- or 100÷240Vac -15%/+10% .
- Frequency: 50 - 60 Hz.
- Power: 4 Watt max.

MAIN OUTPUT:

- relay SPDT 3A @ 250Vac max; 30Vac/dc min (res. load)
or logic output 24Vdc ±20% Ri=560Ω
on req. continuous output 0÷20mA or 4÷20mA [Rmax 500Ω]
on req. continuous output 0÷1V or 0÷5V or 0÷10V [Rmin 500Ω].

ALARM OUTPUTS:

- LIMIT I : relay SPST 3A @ 250Vac max; 30Vac/dc min (res. load)
Note - 1 pole common to LIMIT II for TM9x52.
- LIMIT II: relay SPST 3A @ 250Vac max; 30Vac/dc min (res. load)
Note - 1 pole common to LIMIT I for TM9x52.

AUXILIARY OUTPUT:

- RETRANSMITTED ANALOG OUTPUT
continuous output 0÷20mA or 4÷20mA [Rmax 500Ω] or
continuous output 0÷1V or 0÷5V or 0÷10V [Rmin 500Ω].
Accuracy: ±0,5 %
Insulation: 500Vrms min.

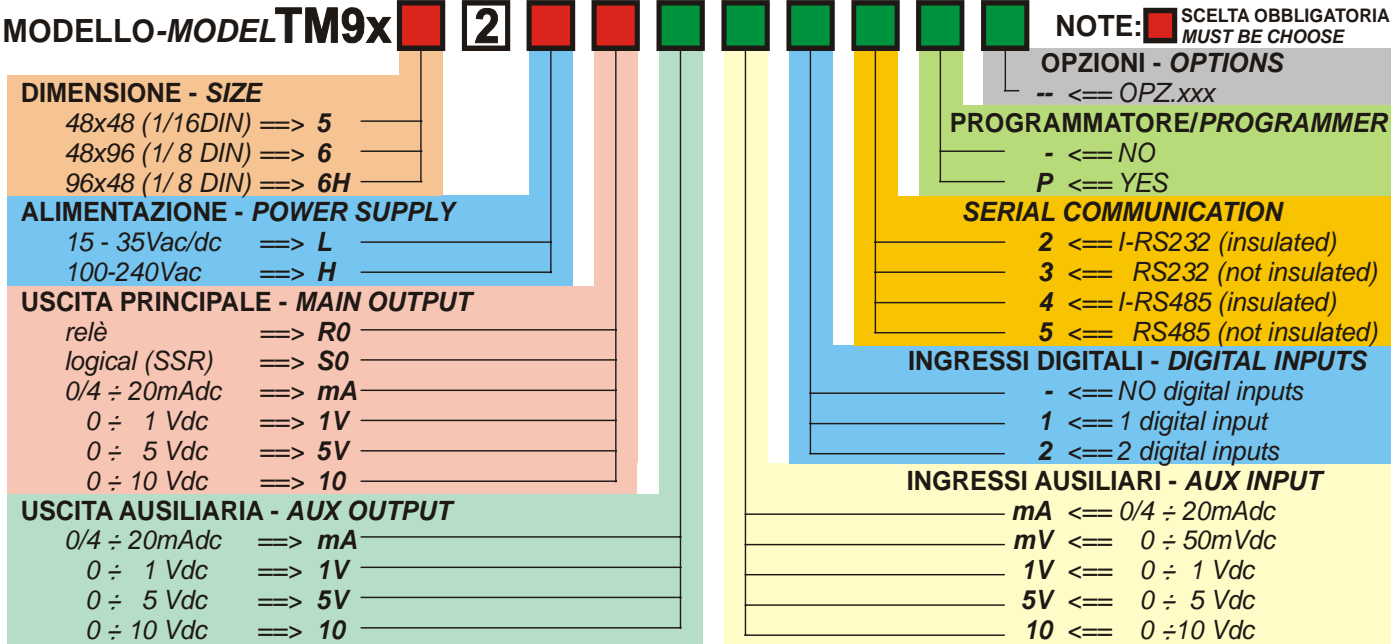
SERIAL OUTPUT

- RS232 V.24
Multidrop linking with single port.
Address units: 80 max.
Length between two points: 20 m max.
Insulation: 200Vrms min.
- RS485
Bus linking with two wires (termination 120Ω)
Address units: 24 max.
Length between two points: 1.000 m max.
Insulation: 200Vrms min.

GENERAL CHARACTERISTICS

- PRECISION: 0,75% f.s. ± 1 digit on standard condition.
- REPEATIBILITY: 0,15% on standard condition.
- ENVIRONMENTAL: Op. temp. : 0 - 50°C R.H.%:18 - 85% n.c.
- SECURITY: EN61010 - install cat. III -pollution degree 2.
- ELECTROMAGNETIC COMPATIBILITY:
Standard EN 50081-1 (emission)
and EN 50082-1 (immunity).
- CASE: Self-extinguishing polycarbonate UL94 V.0.
- DIMENSIONS: 1/16 DIN 43700 => 48x48x85 mm
1/8 DIN 43700 => 48x96x105 mm.
- FRONTAL PROTECTION: IP65.
- MOUNTING NOTES: panel mounting with lateral fixing brackets.
- CONNECTIONS:
1/16DIN "UNDECAL" socket with screw connections
or 7+7 poles disconnecting terminal block with screw.
1/8 DIN 16 poles disconnecting terminal block with screw.
material: Nylon 6.6 UL94 V-0 wire 0,5÷1,5mm².
- WEIGHT: ≤ 250g for 1/16DIN.
≤ 300g for 1/8 DIN.

SIGLA DI ORDINAZIONE **ORDERING CODE**



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