KUBE 7 SPEED SERIES

TEMPERATURE | SPEED CONTROL

CONTROLLERS | PROGRAMMERS

CONSTANT SPEED

DESPITE LOAD CHANGES AND SUPPLY VARIATIONS

- Direct output with 24 VDC motor control;
- Speed detection without sensor;
- Setting the cooking time or a speed;
- Automatic calibration;
- Smart start / stop (only with oven in temperature).

TEMPERATURE CONTROL

- Outputs for electric heating elements or gas;
- Universal input;
- Up to 3 outputs + speed output.

CHOOSE YOUR SET UP

- 4 cooking times + 4 independent temperatures, or
- 4 recipes (temperature and time).
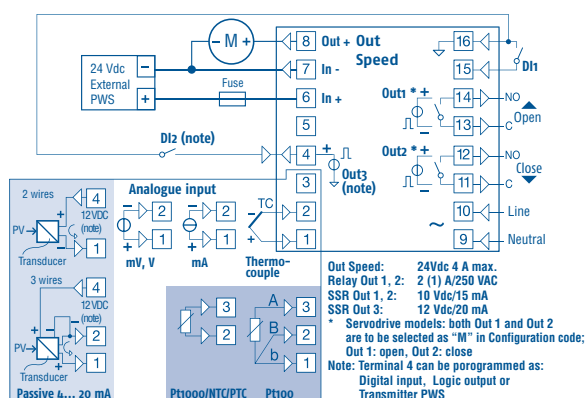
APPLICATION FIELDS

- **TUNNEL OVENS:** FOR PIZZA, FOR PASTRY, ETC .;
- **MACHINES FOR FOOD TREATMENT:** SHAPING MACHINES FOR MOZZARELLAS, CHOCOLATE TEMPERING MACHINES, GRINDERS, ETC .;
- **COOLING TUNNEL**
- **CHEMICAL LABORATORIES:** THERMO SHAKERS, REFRIGERATED CENTRIFUGES, BAIN-MARIE STIRRER CONTROLS, BELT TOASTERS, ETC .;
- **WIPERS, DIE WASHING MACHINES;**
- **PACKAGING:** ADHESIVIZERS, CONTINUOUS THERMO-SEALERS, SMALL SHRINKING TUNNELS, SMALL THERMAL PACKERS, ETC .;
- **CONTROL OF SMALL PUMPS.**

MOTOR SPEED CONTROL OUTPUT

It simplifies the use permitting to set temperature and "cooking time"; the controller will automatically convert the time in the corresponding speed.

It simplifies the machine: controller, power supply and motor are all you need.

It defines your "Standard"

Out Speed:	24Vdc 4 A max.
Relay Out 1, 2:	2 (1) A/250 VAC
SSR Out 1, 2:	10 Vdc/15 mA
SSR Out 3:	12 Vdc/20 mA

* Servodrive models: both Out 1 and Out 2 are to be selected as "M" in Configuration code; Out 1: open, Out 2: close

Note: Terminal 4 can be porogrammed as: Digital input, Logic output or Transmitter PWS

Using the recipes (temperature + time) it is possible to switch from one "cooking" recipe to another one with maximum speed, maintaining the optimal standard for the specific processing.

It guarantees speed (time) regardless of load

The control module continuously detects the speed of motor and compensates for any unwanted changes.

3 COLOUR DISPLAY

The colour of the main display changes depending on process value. Colour change thresholds are programmable.
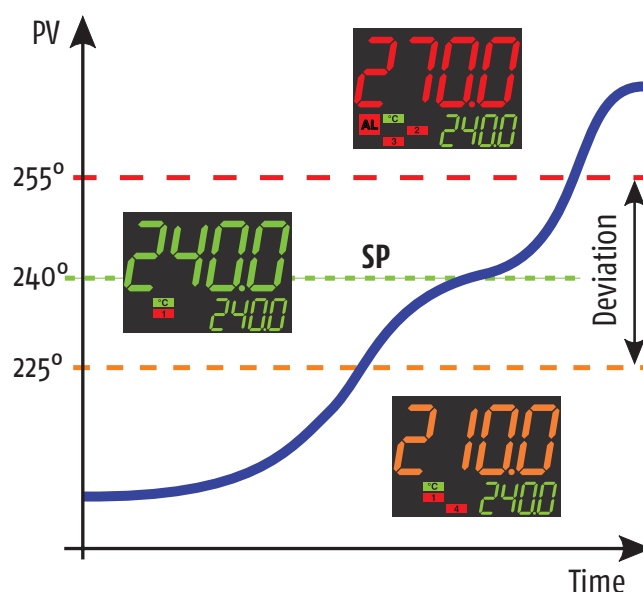
Immediate and intuitive process status acknowledgement, even at great distance.
This function can be disabled by the user.

evoTUNE

evoTune is a technological evolution of the "classic" auto-tuning method. Performs auto-tuning in all operating conditions.

At evoTune start-up the instrument evaluates the current situation (set point, current process measurements etc.) and establishes the best tuning solution.

Set point change made during auto-tuning, restarts process according to the new conditions.

INDEPENDENT TIMER

Timer function with 5 different operating modes.
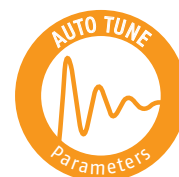Time base programmable as h/min, min/s, s/s·10⁻¹.
Start/Hold/Reset commands programmable from digital input and/or from "↻"key.
The Timer function works in parallel, but independently of the adjustment.

CUSTOMIZED PARAMETER SEQUENCE

Providing a user-defined operator interface has been, until now, a privilege of "custom" solutions.
The KUBE Line allows to customize operator parameters making safe and easy the instrument use.

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KUBE 7 SPEED SERIES

CE

ASCON TECNOLOGIC

EVERYTHING UNDER CONTROL

| KR7 | KM7 | KX7 | KRD7 |

SPECIFICATIONS

DISPLAY		KM7/ KR7/ KX7/ KRD7	
Dual LED	Main display:	4 digit h 10.9 mm (KR) or 15.5 (KM and KX) dynamic 3 colours: red, green and amber or 1 fixed selectable colour (KM)	
	Secondary display:	4 digit h 6 mm (KR), 7.6 mm (KM) or 10 mm (KX) green colour	
	Bargraph:	–	21 segments Bargraph (KX)
INPUTS			
Universal input	Thermocouples:	J (-50... +1000°C/-58... +1832°F), K (-50... +1370°C/-58... +2498°F); S/R (-50... +1760°C/-58... +3200°F), T (-70... +400°C/-94... +752°F);	
	Infrared sensors	J or K;	
	RTD:	Pt100 3 wires and Pt1000 2 wires (-200... +850°C/-328... +1562°F);	
	Thermistors:	PTC KTY81-121 (-50... +150°C/-58... +302°F), NTC 103-AT2 (-50... +110°C/-58... +230°F);	
	Linear signals:	0/12... 60 mV, 0/4... 20 mA, 0/1... 5 V, 0/2... 10 V.	
Measurement accuracy		±0.5% span ±1 digit, (±1% span ±1 digit for T/c type S)	
Digital inputs		1 free voltage contact + 1 (available when I/O 4 = DI2) programmable as voltage (24 VDC) or free voltage contact	
OUTPUTS			
Up to four	Speed OUT:	PWM with feedback control for motor speed. 24 VDC max 4 A.	
	OUT 1 and Out 2 (*):	Relay SPST-NO 2 A/240 VAC; voltage output for SSR driving SSR 13 V max. @ 1 mA, 10.5 V min. @ 15 mA ±10% or relay SPST-NO 2 A/ 240 VAC (for servomotor control)	
	OUT 3 programmable:	Voltage output for SSR driving SSR 13 V max. @ 1 mA, 10.5 V min. @ 22 mA ±10% or transmitter power supply or 2nd Digital Input	
FUNCTIONAL			
Control		PID single or double action, On/Off, On/Off with Neutral Zone. Autotune, Selftune and evoTune. Overshoot control	
Alarms		3 alarms configurable as absolute, deviation, band	
Set Point		4 Set Points selectable + 4 speed selectable individually or as a recipe	
Serial Communication		TTL (standard) + RS485 (optional), protocol: MODBUS RTU	
Baud rate		1200... 38400 baud selectable (8 bit + 1 stop bit no parity)	
Worked hours/days counter		With 2 simultaneous functions: cumulative non-erasable and resettable with alarm	
Evogreen		Time based Display switch-off, selectable	
Programmer (optional)		Up to 8 segments with "guaranteed soak"	
Timer (optional)		Independent with 5 operating modes	
GENERAL			
Power supply		24 VAC/DC ±10%, 100... 240 VAC/DC (-15... +10%), 50/60 Hz, power consumption 7 VA max.	
Temperature		**Operating:** 0... 50°C (32... 122°F); **Storage:** -20... +70°C (-4... +158°F)	
Relative humidity		20... 95 RH% without condensation	
Conformity		EN 61010-1, EN 61326	

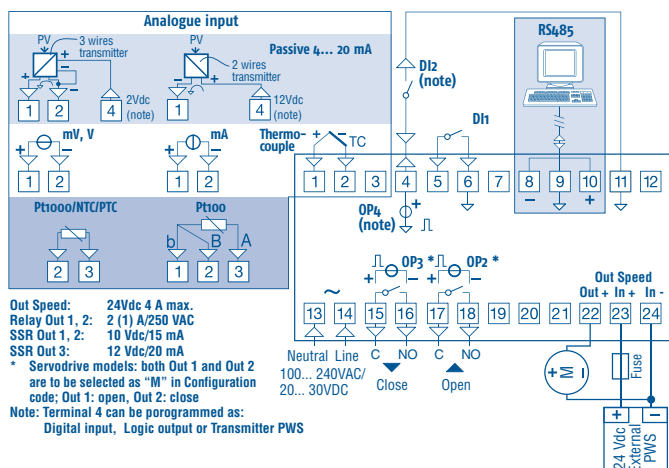*****: For servomotor drive, both **Out 1** and **Out2** are relay putput (see " How to order": Out 1 and Out 2 = code "**M**").

CE

KR7

How to order

Model	
KR7	= Controller with feedback control of the belt speed
KR7T	= Controller with belt speed control+ timer
KR7P	= Controller with belt speed control+ timer + programmammer

Power supply
H = 100... 240 VAC
L = 24 VAC/DC

Analoue input + Digital Input DI1 (standard)
C = J, K, R, S, T, PT100, PT 1000 (2 wires), mA, mV, V
E = J, K, R, S, T, NTC, PTC, mA, mV, V

SPEED Output
S = PWM output for 24 Vdc 4A motor control

Output 1 (Out 1)
M = Relay SPST–NO 2 A (note)
O = VDC for SSR
R = Relay SPST–NO 2 A (resistive load)

Output 2 (Out 2)
− = Not available
M = Relay SPST–NO 2 A (note)
O = VDC for SSR
R = Relay SPST–NO 2 A (resistive load)

Input/Output 3 (Out 3)
D = Output 3 (VDC for SSR)/Pow. Supply/Dig. Input DI2

Serial Communications
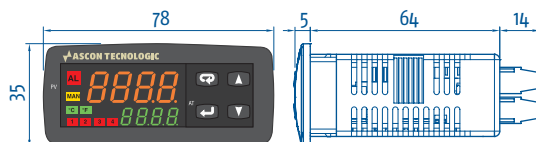− = TTL Modbus
S = RS485 Modbus + TTL Modbus

Connection type
− = Standard (screw terminals not removable)
E = Removable screw terminals
M = Removable spring terminals
N = Removable terminals (the fixed part only)

*: For servomotor drive, both **OUT 1** and **OUT 2** codes must be selected as "**M**".

Mechanical characteristics

FEATURE	
Housing	Self–extinguishing plastic UL 94 v0
Mounting	Front panel
Dimensions	78 x 35 x 78 mm (W x H x D)
Panel cut-out	71 x 29 (−0... +0.6 mm)
Weight	140 g approx.
Terminals	24 terminals for cables from 2.5 mm² (AWG22... AWG14): – on fixed or removable terminal block with screw terminals; – on removable terminal block with spring–load terminals
Protection degree	IP 65 panel mounted with gasket (IP20 for screw terminals) In conformity with En 60070-1 (internal use only)

Electrical connections

Out Speed: 24Vdc 4 A max.
Relay Out 1, 2: 2 (1) A/250 VAC
SSR Out 1, 2:   10 Vdc/15 mA
SSR Out 3:   12 Vdc/20 mA
*   Servodrive models: both Out 1 and Out 2
    are to be selected as "M" in Configuration
    code; Out 1: open, Out 2: close
Note: Terminal 4 can be porogrammed as:
    Digital input, Logic output or Transmitter PWS

Dimensions (mm)

Instrument with non-removable terminals

Removable terminals

ASCON TECNOLOGIC
EVERYTHING UNDER CONTROL

KM7

Mechanical characteristics

FEATURE	
Housing	Self–extinguishing plastic UL 94 v0
Mounting	Front panel
Dimensions	48 x 48 x 62 mm (W x H x D)
Panel cut-out	45 x 45 (–0... +0.6 mm)
Weight	120 g approx.
Terminals	16 terminals for cables from 2.5 mm² (AWG22... AWG14): – on fixed or removable terminal block with screw terminals; – on removable terminal block with spring-load terminals
Protection degree	IP 65 panel mounted with gasket (IP20 for screw terminals) In conformity with En 60070-1 (internal use only)
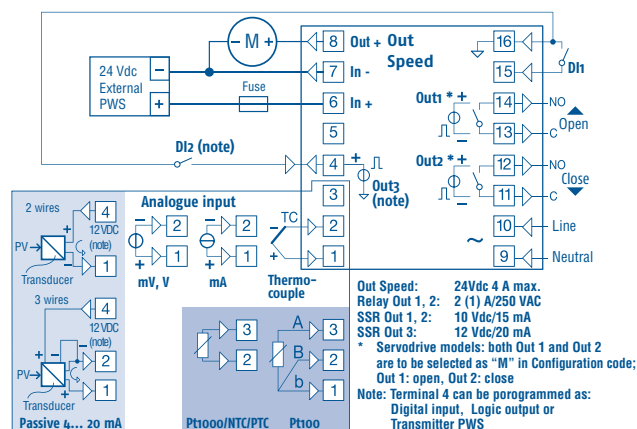
How to order

Model
KM7 = Controller with feedback control of the belt speed
KM7T = Controller with belt speed control+ timer
KM7P = Controller with belt speed control+ timer + programmammer

Power supply
H = 100... 240 VAC
L = 24 VAC/DC

Analoue input + Digital Input DI1 (standard)
C = J, K, R, S, T, PT100, PT 1000 (2 wires), mA, mV, V
E = J, K, R, S, T, NTC, PTC, mA, mV, V

SPEED Output
S = PWM output for 24 Vdc 4A motor control

Output 1 (Out 1)
M = Relay SPST-NO 2 A *
O = VDC for SSR
R = Relay SPST-NO 2 A (resistive load)

Output 2 (Out 2)
- = Not available
M = Relay SPST-NO 2 A *
O = VDC for SSR
R = Relay SPST-NO 2 A (resistive load)

Input/Output 3 (Out 3)
D = Output 3 (VDC for SSR)/Pow. Supply/Dig. Input DI2

Connection type
- = Standard (screw terminals not removable)
E = Removable screw terminals
M = Removable spring terminals
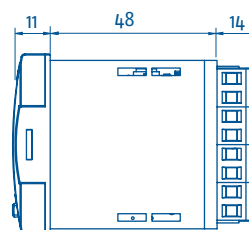N = Removable terminals (the fixed part only)

*: For servomotor drive, both **OUT 1** and **OUT 2** codes must be selected as "**M**".

Electrical connections

8	Out + Out Speed
7	In -
6	In +
5	
4	Out3 (note)
3	
2	
1	

16	DI1
15	
14	NO Open
13	
12	NO Close
11	C
10	Line
9	Neutral

Out1 * +
Out2 * +

Analogue input
2 wires
12 VDC (note)
PV
Transducer
mV, V   mA   Thermo-couple
3 wires
12 VDC (note)
PV
Transducer
Passive 4... 20 mA
Pt1000/NTC/PTC   Pt100

Out Speed: 24Vdc 4 A max.
Relay Out 1, 2: 2 (1) A/250 VAC
SSR Out 1, 2:   10 Vdc/15 mA
SSR Out 3:   12 Vdc/20 mA
* Servodrive models: both Out 1 and Out 2
  are to be selected as "M" in Configuration code;
  Out 1: open, Out 2: close
Note: Terminal 4 can be porogrammed as:
      Digital input, Logic output or
      Transmitter PWS

Dimensions (mm)

Instrument with non-removable terminals

48
48
11   48   14

Removable terminals

8
14.5
18
40

ASCON TECNOLOGIC
EVERYTHING UNDER CONTROL

KX7

How to order

Model
KX7 = Controller with feedback control of the belt speed
KX7T = Controller with belt speed control+ timer
KX7P = Controller with belt speed control+ timer + programmammer

Power supply
H = 100... 240 VAC
L = 24 VAC/DC

Analoue input + Digital Input DI1 (standard)
C = J, K, R, S, T, PT100, PT 1000 (2 wires), mA, mV, V
E = J, K, R, S, T, NTC, PTC, mA, mV, V

SPEED Output
S = PWM output for 24 Vdc 4A motor control

Output 1 (Out 1)
M = Relay SPST-NO 2 A (note)
O = VDC for SSR
R = Relay SPST-NO 2 A (resistive load)

Output 2 (Out 2)
– = Not available
M = Relay SPST-NO 2 A (note)
O = VDC for SSR
R = Relay SPST-NO 2 A (resistive load)

Input/Output 3 (Out 3)
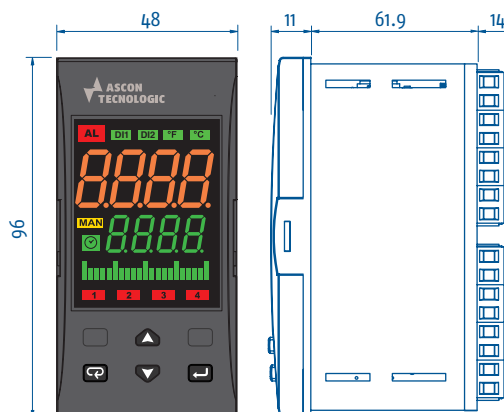**D** = Output 3 (VDC for SSR)/Pow. Supply/Dig. Input DI2

Connection type
– = Standard (screw terminals not removable)
E = Removable screw terminals
M = Removable spring terminals
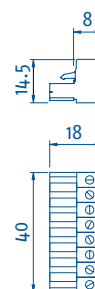**N** = Removable terminals (the fixed part only)

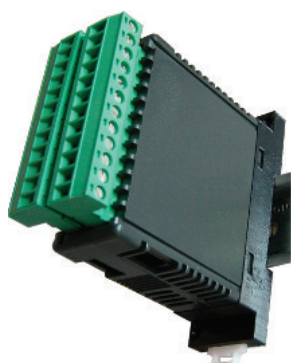***:** For servomotor drive, both **OUT 1** and **OUT 2** codes must be selected as "**M**".

Mechanical characteristics

FEATURE	
Housing	Self-extinguishing plastic UL 94 v0
Mounting	Front panel
Dimensions	48 x 96 x 75.9 mm (W x H x D)
Panel cut-out	45 x 89 (-0... +0.6 mm)
Weight	160 g approx.
Terminals	16 terminals for cables from 2.5 mm² (AWG22... AWG14): – on fixed or removable terminal block with screw terminals; – on removable terminal block with spring-load terminals
Protection degree	IP 65 panel mounted with gasket (IP20 for screw terminals) In conformity with En 60070-1 (internal use only)

Electrical connections

Out Speed: 24Vdc 4 A max.
Relay Out 1, 2:   2 (1) A/250 VAC
SSR Out 1, 2:   10 Vdc/15 mA
SSR Out 3:   12 Vdc/20 mA
* Servodrive models: both Out 1 and Out 2 are to be selected as "M" in Configuration code; Out 1: open, Out 2: close
Note: Terminal 4 can be porogrammed as: Digital input, Logic output or Transmitter PWS

Dimensions (mm)

Instrument with non-removable terminals

Removable terminals

ASCON TECNOLOGIC
EVERYTHING UNDER CONTROL

KRD7

Mechanical characteristics
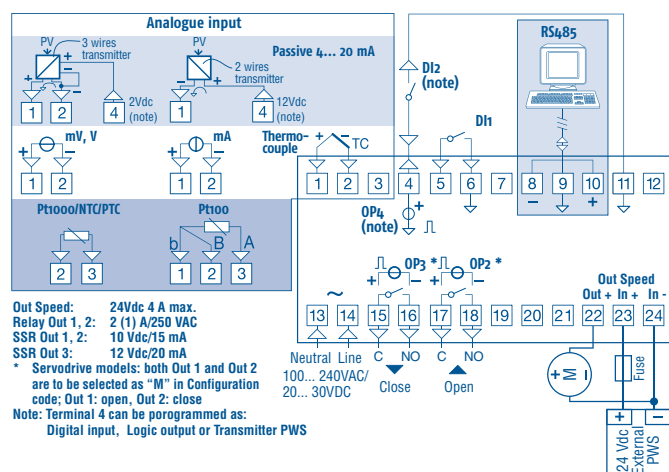
FEATURE	
Housing	Self–extinguishing plastic UL 94 v0
Mounting	On Omega DIN rail
Dimensions	78 x 35 x 78 mm (W x H x D)
Panel cut-out	71 x 29 (-0… +0.6 mm)
Weight	140 g approx.
Terminals	24 terminals for cables from 2.5 mm² (AWG22… AWG14): – on fixed or removable terminal block with screw terminals; – on removable terminal block with spring–load terminals
Protection degree	IP20 In conformity with En 60070-1 (internal use only)

How to order

Model
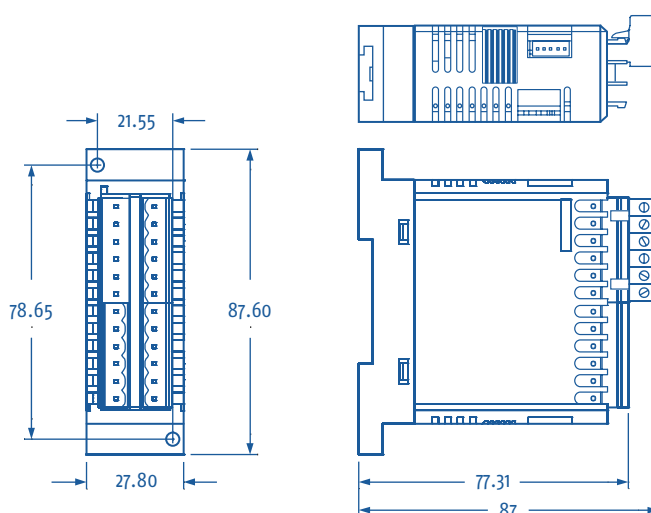**KRD7** = Controller with feedback control of the belt speed
KRD7T = Controller with belt speed control+ timer
KRD7P = Controller with belt speed control+ timer + programmammer

Power supply
H = 100… 240 VAC
L = 24 VAC/DC

Analoue input + Digital Input DI1 (standard)
C = J, K, R, S, T, PT100, PT 1000 (2 wires), mA, mV, V
E = J, K, R, S, T, NTC, PTC, mA, mV, V

SPEED Output
S = PWM output for 24 Vdc 4A motor control

Output 1 (Out 1)
M = Relay SPST–NO 2 A (note)
O = VDC for SSR
R = Relay SPST–NO 2 A (resistive load)

Output 2 (Out 2)
– = Not available
M = Relay SPST–NO 2 A (note)
O = VDC for SSR
R = Relay SPST–NO 2 A (resistive load)

Input/Output 3 (Out 3)
D = Output 3 (VDC for SSR)/Pow. Supply/Dig. Input DI2

Serial Communications
– = TTL Modbus
S = RS485 Modbus + TTL Modbus

Connection type
– = Screw terminals
E = Screw terminals pitch 5.00
M = Removable spring terminals
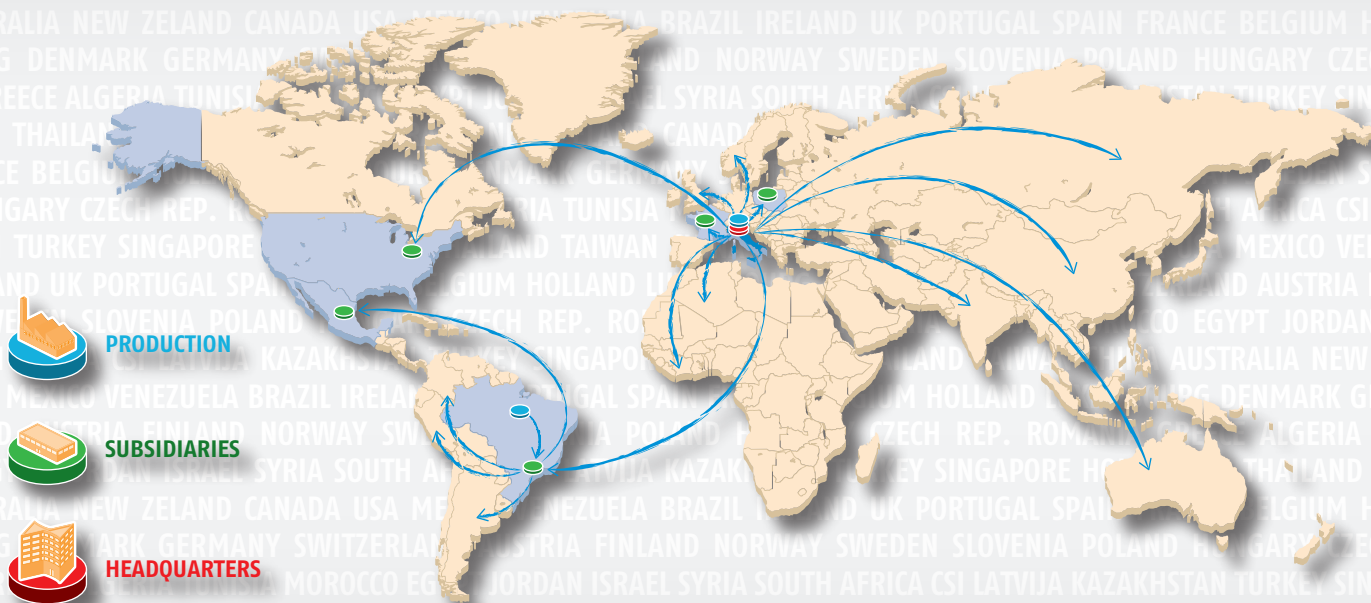N = Removable terminals pitch 5.00
(the fixed part only)

*: For servomotor drive, both **OUT 1** and **OUT 2** codes must be selected as "M".

Electrical connections

Out Speed: 24Vdc 4 A max.
Relay Out 1, 2: 2 (1) A/250 VAC
SSR Out 1, 2: 10 Vdc/15 mA
SSR Out 3: 12 Vdc/20 mA
* Servodrive models: both Out 1 and Out 2 are to be selected as "M" in Configuration code; Out 1: open, Out 2: close
Note: Terminal 4 can be porogrammed as: Digital input, Logic output or Transmitter PWS

Dimensions (mm)

21.55
78.65
87.60
27.80
77.31
87

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