B.T. 04.07.97E

Configurable indicator with 2 or 4 alarms 1/8 DIN - 96 x 48 mm Universal JM line JT line for transducers

This new family of microprocessor-based indicators, with total configurability from keyboard, is available in 2 versions: the JM line, for the most common industrial sensors and trasmitters, and JT line suitable for transducers. They can also be used as transmitters thanks to measurement retransmission and serial communications port.

- **Accuracy class**: 0.2.
- **Measurement input:** from Pt100, J, L, K, N, S,R, T, W for mA, mV and Volt transmiters (with or without) $\sqrt[2]{}$ **and also transducers (JT series)**.
- **Auxiliary inputs:** 3 of logic type.
- **Fast sampling time:** 62 msec.
- **Display:** 4 digit green LED's of 14 mm.
- **Hold:** peak, valley or actual value.
- **Access to Set points:** 3

different levels.
- **Parameters protection:** with password
- **Power supply for transmitter:** 24 Vdc, 25 mA
- **Excitation Voltage for transducer:** 5 or 10 Vdc, 30 mA, stabilized.
- **Front protection:** IP54 std, IP65 kit on request.
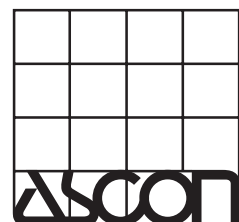- **Dimensions:** 96x48DIN, depth 150 mm.

Opzions

- **Alarms:** 2 or 4 configurable with relay output also with ISA sequence.
- **Retransmission output:** 4..20 mA or 0..10 V. isolated
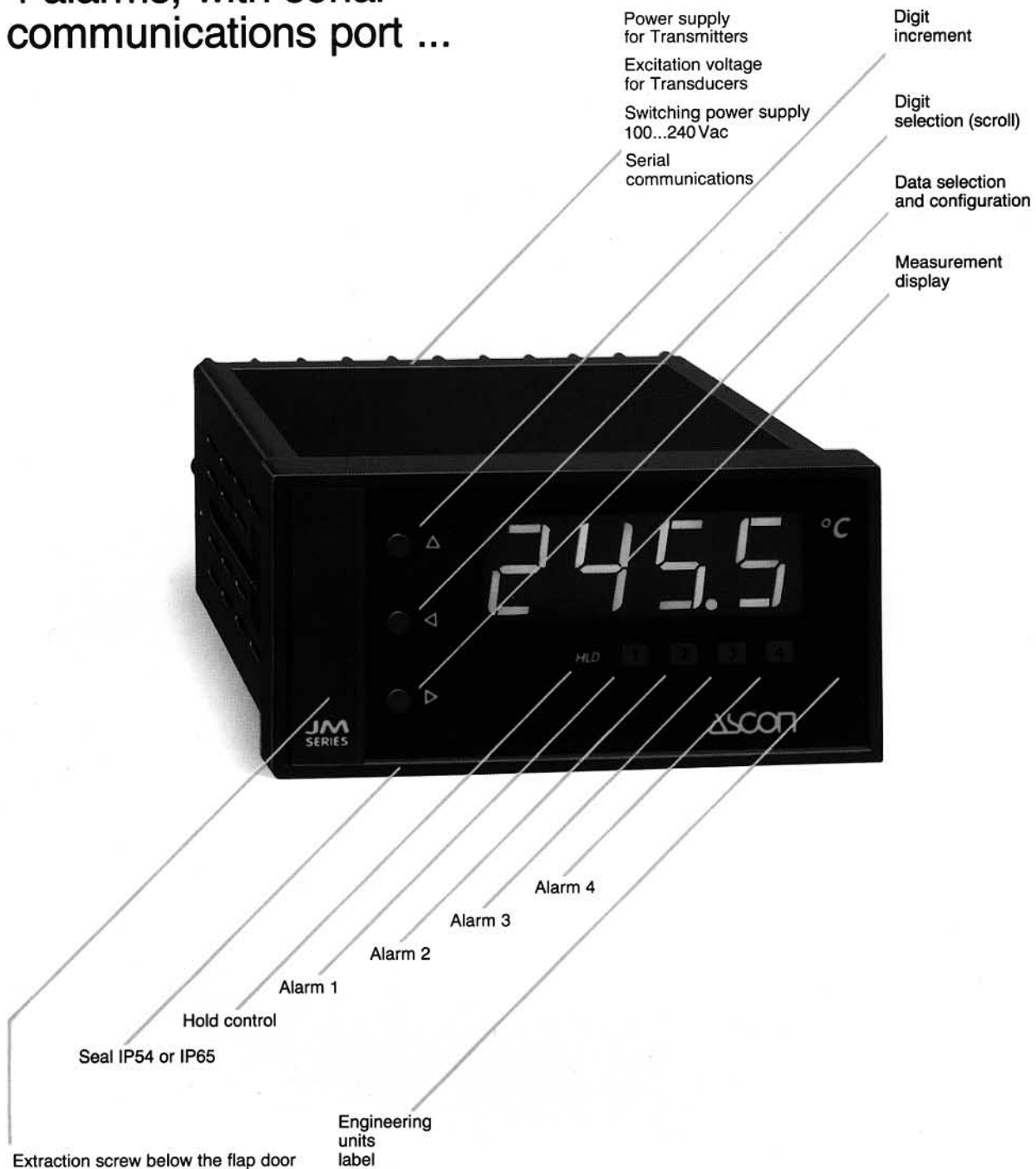- **Serial communication port.**

CE

E

Certified **ISO 9001**

ascon

Indicator-transmitter

Multi-input, total configurability from keyboard, with 2 or 4 alarms, with serial communications port ...

Power supply
for Transmitters

Excitation voltage
for Transducers

Switching power supply
100...240 Vac

Serial
communications

Digit
increment

Digit
selection (scroll)

Data selection
and configuration

Measurement
display

Alarm 4

Alarm 3

Alarm 2

Alarm 1

Hold control

Seal IP54 or IP65

Engineering
units
label

Extraction screw below the flap door

... also for pressure transducers and load cells.

Technical Data

INPUT

Common features

- A/D converter: 50,000 points.
- Measurement sampling time: 62 msec.
- Input shift: from −50 to + 50 steps.
- Filter time constant: from 0 to 30 sec.
- Safety: range measurement or failure on the input line (interruption or short-circuit) is signaled on the display, and the alarms go into the safety state selected in the configuration phase.
- For mains voltage variations from 100 to 240 Vac, the error of measurement is irrelevant.

For thermocouples

- Cold junction incorporated
- Line resistance: 150 Ω max
- Measurement accuracy: 0.2% ± 1°C at 25°C ambient temperature
- Measurement drift:
  $< 20 \mu V/10°C$ ambient temperature
  $< 0.5° \mu V/10 \Omega$ line resistance

For RTD Pt100

- 2 or 3-wire connection
- Line resistance:
  20Ω max. for 3-wire connection

- Measurement accuracy:
  0.2% at 25°C ambient temperature
- Measurement drift:
  $< 0.1°C/10°C$ ambient temperature
  $< 0.5°C/10 \Omega$ line resistance (3 wire)

DC current and voltage:

- Input resistance:
  in current: 30Ω
  in voltage: 10kΩ
  10MΩ for range $\leqslant$ 300 mV
- Measurement accuracy:
  0.1% at 25°C ambient temperature
- Measurement drift:
  $< 0.1\%/20°C$ ambient temperature
- $\sqrt[2]{\ }$ enclosed or excluded

For transducer (JT model)

- Selectable measurement ranges:
  0...60mV or 0...300mV
- Scale range: zero and end of scale calibration
- Zero calibration:
  within ± 10% of span
- Full scale calibration:
  80% of scale span
- Accuracy and drift: as DC input.

AUXILIARY POWER SUPPLY

For transmitter

- For a 2-wire, 4...20mA or a 3-wire transmitter:
  24 Vdc ± 10%, 25mA max

For transducer bridge

- Excitation voltage:
  5 or 10Vdc ± 5%, selectable
- Stability ± 0.1%/ 20°C ambient temp.
- Max. output: 30mA

ALARMS Y1, Y2 AND Y3, Y4 (OPTIONS)

For every alarm:

- Output: 1 contact, 5A, 250Vac max
- Signalisation: red LED, flashing in alarm, steady after acknowledgment (if configured as ISA-A)
- Set point: settable within the scale
- Hysteresis: from 0.1 to 10.0% scale span
- Delay in relay operating time:
  0 to 100 sec.

For every alarm, it is possible to select: (see figure).

In configuration (G-H-I-L indexes):

- Type of alarm:
  - disabled
  - normal
  - with ISA A sequence and acknowledgment
- Alarm operating mode:
  - activated above the threshold
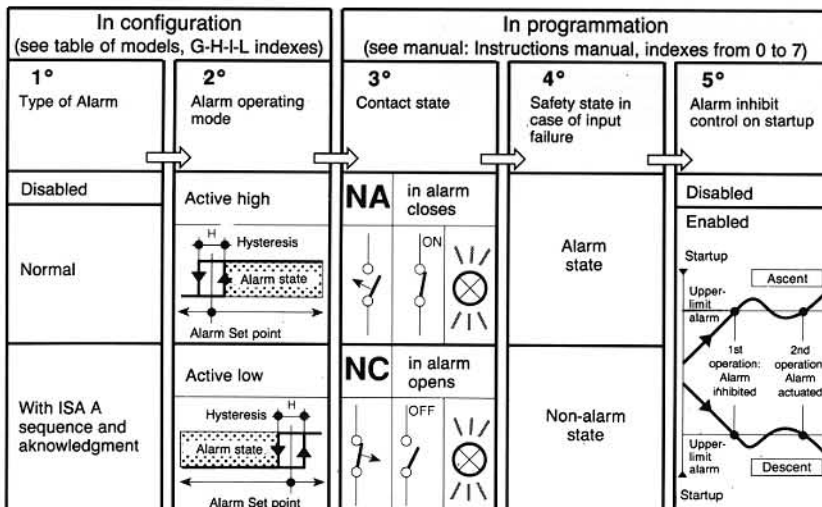 - activated below the threshold

In programming:

- Contact state:
  - NO closes in case of alarm
  - NC opens in case of alarm
- Safety state in case of input failure
  - Alarm state
  - Non-alarm state
- Alarm inhibit control on startup:
  - disabled
  - enabled

ANALOGIC OUTPUT Y5 (OPTION)

- Signal: 4...20mA, 10V. max. or 0...10V., 20 mA max., isolated
- Accuracy: 0.1% at 25°C ambient temperature
- Resolution: 12 Bits (0,025%)

ALARMS: selection of the type and mode of operation

In configuration (see table of models, G-H-I-L indexes)		In programming (see manual: Instructions manual, indexes from 0 to 7)		
1° Type of Alarm	2° Alarm operating mode	3° Contact state	4° Safety state in case of input failure	5° Alarm inhibit control on startup
Disabled	Active high	NA in alarm closes		Disabled
Normal			Alarm state	Enabled
With ISA A sequence and aknowledgment	Active low	NC in alarm opens	Non-alarm state	

3

# Connections and overall dimensions

SERIAL COMMUNICATIONS

- Passive 20 mA C.L. isolated interface
- ASCII code or Modbus/Jbus protocol
- Baud rate configurable between: 600, 1200, 2400, 4800 or 9600 (only for Modbus/Jbus) Bit/s
- Interface with RS232C, RS422A, RS485 port via traffic concentrator ALS type (it's possible to connect up to 64 ASCON instruments, also of different type)
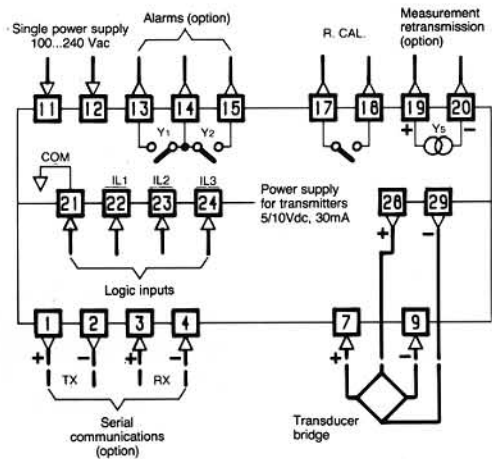
GENERAL DATA

- Power supply:
  100...240 Vac or
  16...28 Vac, 20...30 Vdc
  Power consumption: 4 VA max.
- Isolation group:
  C according to VDE 0110.
- Climatic group:
  KWF according to DIN 40040.
- Ambient operating temperature: from 0 to 50°C
- Protection according to DIN 40050
  front: IP54
  case: IP30
  terminal board: IP20
  self-extinguishing material: UL94 V1
- Weight: about 0.6 kg.
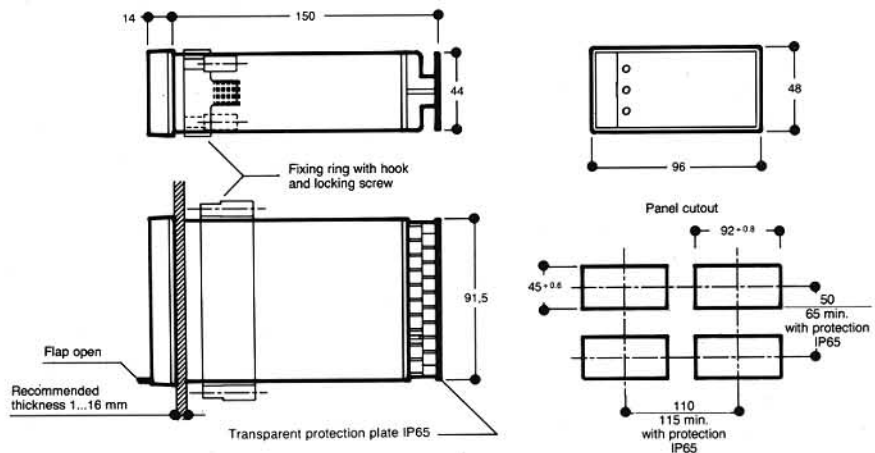- Dimensions: 96x48, depth 150 mm.

CONNECTIONS

JM models with universal input
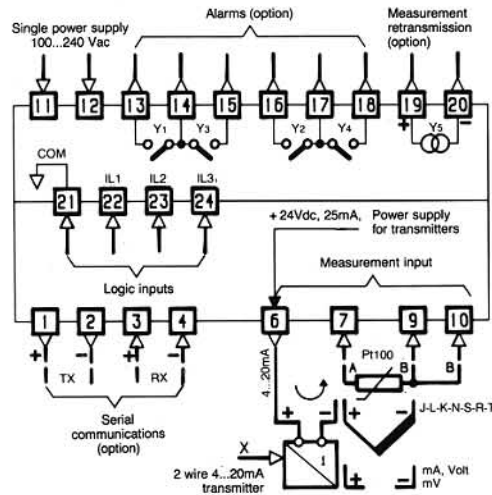
JT models with input for transducer bridge

DIMENSIONS

General description

MEASUREMENT INPUT

The JM series provides an input for the more common industrial temperature sensors: thermocouples (J, L, K, N, S, R, T, W), RTD, and also normalized signals in mA, Volts, or mV with or without $\sqrt{}$. The input type, scale range and the beginning and end of scale values for inputs in current or voltage, are configurable from keyboard.

The JT series provides an input for transducers of the "strain gauge" or similar type; in this case, a stabilized excitation voltage programmable from keyboard (5 or 10 Vdc, 30 mA max.) is incorporated and a very simple automatic procedure is provided for field calibration of the zero and full scale.

LOGIC INPUTS

It is possible, by means of external contacts applied to the 3 available logic inputs, to:
- freeze the measurement
- store a peak or a valley
- acknowledge the alarm state.

FILTER

A digital filter, with time constant settable from keyboard, permits measurements of noisy signals.

INPUT SHIFT

An "Input shift" function allows to shift the scale to compensate measurement offset.

HOLD

Two functions are available: peak or valley capture, and hold of the last measurement carried out.
The peak remains displayed for the time preset in programmation or for the entire closing time of an external contact. This function does not inhibit measurement acquisition, the alarms and retransmission therefore remaining operative. On the other hand the hold, obtainable through the closing of an external contact, inhibits further measurement acquisitions and freezes all instrument functions.

ALARMS

The optional alarms may be 2 or 4. They are totally programmable from keyboard.
For every alarm, it is possible to configure:
- the type of action: disabled, normal, or with ISA A sequence.
- the operating mode: active high or active low.
- the contact state: closed, or open in case of alarm.
- the safety state: alarm or non-alarm, in case of input failure.
If selected, the alarm startup inhibit control permits unwanted interventions to be avoided in the parameter setting phase. It is also possible to set a delayed time for relay intervention.

ANALOGUE RETRANSMISSION

Provided in option for measurement retransmission. The measurement values corresponding with zero and full scale of the retransmitted signal can be configured freely. Galvanically isolated.

SERIAL COMMUNICATIONS

This is an option: it permits the indicator to be used as an "smart" transmitter, therefore easily introduced into a distributed control system.
A traffic concentrator can connects up to 64 instruments to a single serial line, whether these are JM, JT indicators or other ASCON instruments with serial communications port.

CONFIGURATION

Configuration may be carried out via serial line using a personal computer or simply from the front panel keyboard. The configuration code is viewed on the display.
If the instrument is not configured, the digits 9999 appear. If the instrument is already configured, the configuration indexes are shown on the display and the secret code must be introduced in order to modify them.
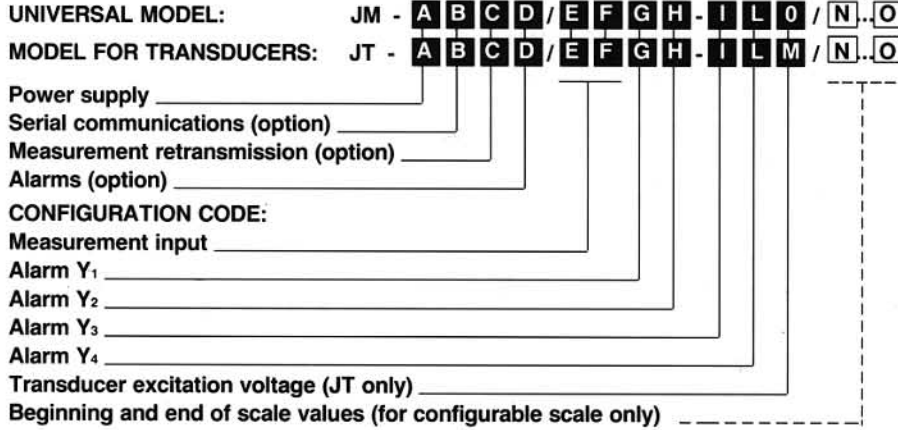
PROTECTION

All parameters and configuration values are stored in a non-volatile memory for an unlimited period of time.
Introduction of the relative secret codes is necessary for access to the parameters and configuration. Only the alarm Set points are directly accessible to the operator; however, in order to avoid tampering or inadvertent alterations of alarm thresholds, their "accessibility level" may be configured:
1st level: Visible and modifiable Set point
2nd level: Visible but non alterable Set point
3rd level: "Non visible" Set point, therefore non alterable.

Models and configuratons

UNIVERSAL MODEL: JM - A B C D / E F G H - I L 0 / N .. O

MODEL FOR TRANSDUCERS: JT - A B C D / E F G H - I L M / N .. O

Power supply
Serial communications (option)
Measurement retransmission (option)
Alarms (option)
CONFIGURATION CODE:
Measurement input
Alarm Y₁
Alarm Y₂
Alarm Y₃
Alarm Y₄
Transducer excitation voltage (JT only)
Beginning and end of scale values (for configurable scale only)

MODEL CODE:

Power supply	A
100...240V 50/60 Hz	3
16...28V 50/60 Hz and 20...30 Vdc	5

Serial communications	B
Not fitted	0
20 mA C.L. Ascon std. protocol	1
20 mA C.L. Modbus/Jbus protocol	2

Measurement retransmission, output Y₅	C
Not fitted	0
4...20 mA	1
0...10 Vdc	2

Alarms	D
Not fitted (indicator only)	0
2 Alarms	2
4 Alarms (JM models only)	4

CONFIGURATION CODE: (1)

Input type and scale range (2)			E	F
RTD IEC 751	Pt100	-200...600°C	0	0
	Pt100	-99,9...300,0°C	1	0
Termo-couples IEC 584	Type J	0...600°C	2	0
	Type W	0...2200°C	2	2
	Type L *	0...600°C	3	0
	Type K	0...1200°C	4	0
	Type N	0...1200°C	5	0
	Type S	0...1600°C	6	0
	Type R	0...1600°C	7	0
	Type T	-100...400°C	8	0
Lin. inp. (•) 4...20 mA	Conf. eng. units		9	0
Lin. inp. (•) 0...20 mA	Conf. eng. units		9	1
Lin. inp. (•) 0...60 mV	Conf. eng. units		9	2
Lin.inp.(•) 0...300 mV	Conf. eng. units		9	3
Lin. inp. (•) 0...1 V	Conf. eng. units		9	4
Lin. inp. (•) 0...10 V	Conf. eng. units		9	5
0...60 mV calibrable	Conf. eng. units		9	6
0...300 mV calibrable	Conf. eng. units		9	7

* Fe-Const DIN 43710
(•) With or without square root extraction

Type and operating mode - Alarm Y₁ (3)		G
Disabled		0
Normal	Active high (above SP)	1
	Active low (below SP)	2
With ISA A sequence	Active high	3
	Active low	4

Type and operating mode - Alarm Y₂ (3)		H
Disabled		0
Normal	Active high	1
	Active low	2
With ISA A sequence	Active high	3
	Active low	4

Type and operating mode - Alarm Y₃ (3)		I
Disabled		0
Normal	Active high	1
	Active low	2
With ISA A sequence	Active high	3
	Active low	4

Type and operating mode - Alarm Y₄ (3)		L
Disabled		0
Normal	Active high	1
	Active low	2
With ISA A sequence	Active high	3
	Active low	4

Excitation Voltage for transducers (JT models)	M
Not fitted (JM models)	0
5 Vdc ± 5% 30 mA max	1
10 Vdc ± 5% 30 mA max	2

Notes on configuration

1 - To receive a non-configured instrument, indicate code 9999-999.

2 - For inputs in mA and Volts, the beginning and end of scale values can be configured in engineering units between -999 and 9999. The minimum scale span is 100 steps.
The values can be expressed in units (xxxx), in tenths (xxx.x), hundredths (xx.xx) or thousands (x.xxx). Lacking the indication of beginning and end of scale values, the instrument will be supplied with 0.0...100.0 scale.
Codes 96 and 97 are reserved to transducer inputs (JT models only).

3 - The following can also be defined for every alarm in the programming phase:
- contact state in case of alarm
- safety state in case of input failure
- alarm inhibit startup control.

Ordering examples:

JM-3000/4000-000
JT-3000/9600-001
models without alarms (indicator only)

JM-3002/4012-000
JT-3002/9612-001
models with 2 alarms

JM-3004/4012-120
models with 4 alarms (JM only)

JM-3000/9999-999
JT-3000/9999-999
not configured

ACCESSORIES
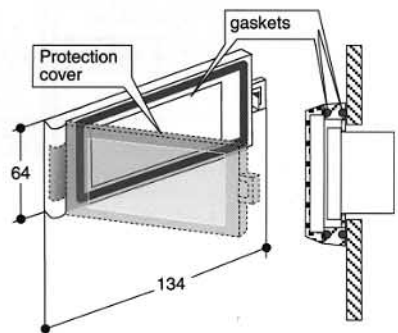
● SERIAL COMMUNICATIONS INTERFACE
for 64 ASCON controllers

Model: ALS / ☐ / ☐

Power supply	
100...240V, 50/60 Hz	3
16...28V, 50/60 Hz	5

Interface	
RS232	232
RS422	422
RS485	485

● FRONTAL PROTECTION KIT IP65:
mod. F10-170-2A101

6