DIGITAL PANEL METERS

programmable ± 10000 points
and - 10 000 / + 100 000 points
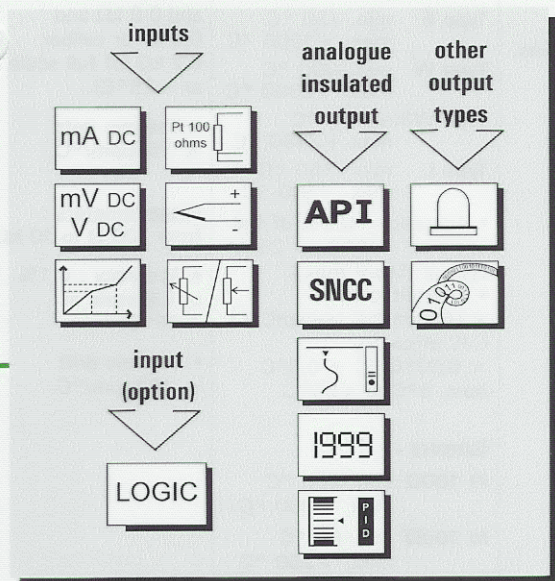
DGN 75
DGN 85M

CE
IP 65

FUNCTIONS

inputs

analogue insulated output

other output types

mA DC | Pt 100 ohms

mV DC V DC

API

SNCC

1999

input (option)

LOGIC
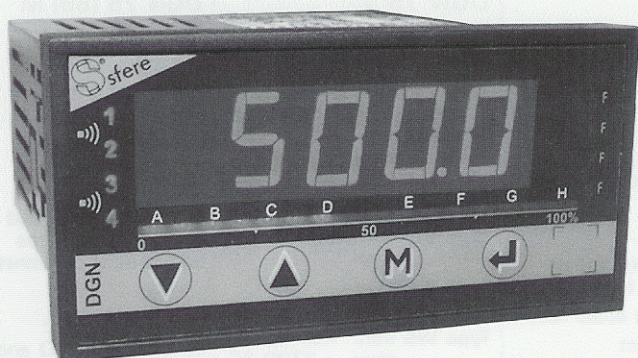
3 input versions :

- **Process input**
  One bidirectionnal DC current or voltage input ± 100mV, ± 1V, ± 10V, ± 300V, ± 20mA.

- **Temperature inputs**
  -Either one thermocouple input :
  (J, K, N, S, B, W5, T, R, E, W, W3, L)
  -Or one sensor input :
  Pt 100 Ω 3 wires, DPt 100 Ω 2 wires,
  Ni 100 Ω 3 wires

- **Inputs Process, Temperature + Potentiometer and resistance**
  Potentiometer : up to 10 KΩ
  Resistance : caliber 0-400 Ω, 0-2 KΩ
  (0-8 KΩ, as option)

The series DGN 75 and DGN 85M offer a whole range of very accurate digital panel meters.
Each instrument is fitted on its front face with a five 14mm high red 4 or 5 digits display, whose brightness suits applications in industrial control rooms perfectly
They enable display, control and transmission of data from any measurable magnitude.

3 input types are available, and can be combined with various options : *(to be specified on order)*

Analogue insulated output :
Active or passive current output, or voltage output.
Programmable scale ratio, with enlarging effect.
Return value in case of sensor rupture and/or error self-diagnosis.

Relay output : 2 or 4 relays : mode setpoint or window.
Recording of alarms.
Temporisation and hysteresis adjustable on each setpoint.
Alarm messages.

Insulated digital output :
RS 485 2 wires, protocole MODBUS-JBUS.

LOGIC input
2 insulated LOGIC inputs with programmable functions
Display blocking, coma moving, tare function, min. max. zero reset.

Bargraph : (display 16 leds)
Enables fast evaluation of measured value variations.
Programmable scale factor.

## EXTERNAL VIEW

Easy programming from front face via a 4-key keyboard.

- **Display** : Electroluminescent red, 4 alarm messages.
DGN 75 : ± 10 000 points (14 mm)
DGN 85M : -10 000 / + 100 000 points (14 mm)
-2 000 / + 10 000 points (20 mm) (consult with sfere)

- **Casing** : Case in self-extinguishing black UL 94 V0 ABS.

- **Connectors** plug-off connectors on rear side for screwed connections (2,5mm², flexible or rigid).
- **Protection** : Front face : IP 65   Case/terminals : IP20

- **Standards** : Complies with standards EN 50081-2 on emission and EN 50082-2; on immunity in industr. environment
    EN 61000-4-2 level 3, EN 61000-4-3 level 3,
    EN 61000-4-4 level 4, EN 61000-4-6 level 3
    Marked CE according to directive CEM 89-336.

KLAY-INSTRUMENTS

CA
IN/15

Coding	OPTION TYPES	INPUT TYPES		

option A1, A2 or A3

Analogue output : 3 types available for choice

A1 : Active current output 0/4-20mA
A2 : Passive current output 0/4-20mA (Vmax. = 30Vdc)
A3 : Voltage output 0-10V

- Accuracy 0,1 % in relation to display (at +25°C).
- Residual drift ≤ 0,2%.
- Admissible load $0\Omega < Rc < 500\ \Omega$ (current)
                     $Rc > 2\ k\Omega$ (voltage)
- Programmable scale ratio with enlarging effect.
- Response time : 40 ms.

option R4 or R

Relay output : 2 types available for choice

R : 2 setpoint relays, independently programmable
R4 : 4 setpoint relays, independently programmable

- Hysteresis independently programmable from 0 to 100% of setpoint in the display unit.
- Temporisation independently programmable from 0 to 25 s. in 0,1s. increasases.
- NO-NC contact 8 A - 250 V on resistive load.

option N

Digital output

N : Data link RS485 (2 wires)

- Protocoles MODBUS-JBUS data format : integer / double integer.
- Slave number programmable from 1 to 255 with a rate from 1200 to 19200 Bauds.

option LOGIC input

LOGIC inputs

LOGIC : 2 insulated LOGIC inputs

- Display blocking,
- Coma moving,
- Tare function,
- min. and max. zero reset

option B

Bargraph display

B : display 16 leds

- Enables fast evaluation of measured value variations.

DGN 75 U
DC current or voltage

Bidirectionnal ±100mV, ±1V, ±10V, ±300V, 20mA.

- Accuracy 0,05 % of full scale at +25 °C
- Thermic drift < 150 ppm/°C.
- Scale overlaping mesurable from -5% to +5%.
- Programmable scale factor
- Enlarging effect Square root extraction
- Special linearisation 20 points.
- Supply for 2 or 3 wire sensor 26 VDC (±15%) -25 mA protected from short-circuits.

DGN 75 T
Temperature
Thermocouples :

Type J	min. -160 °C max. +1200 °C
Type K	min. -270 °C max. +1370 °C
Type N	min. +0 °C max. +1300 °C
Type S	min. -50 °C max. +1770 °C
Type B	min. +200 °C max. +1820 °C
Type W5	min. +0 °C max. +2300 °C
Type T	min. -270 °C max. +410 °C
Type R	min. -50 °C max. +1770 °C
Type E	min.-120 °C max. +1000 °C
Type W	min.1000 °C max. +2300 °C
Type W3	min. 0 °C max.+2480 °C
Type L	min. -150 °C max. +910 °C

- Accuracy : 0,1% of full scale at +25°C, or 25µV typical (50µV max.).
- Thermic drift : <150ppm/°C (exceptCJC) CJC efficiency : < 0,03°C/°C ± 0,5°C from -5°C to +55°C.

Sensors :

Pt 100Ω min -200 °C max. +850 °C
Ni 100Ω min -60 °C max. +260 °C

- Influence of line resistance in 3-wire measure included in the class for $0 < RI < 25\Omega$.
- Measure of Δ Pt100 2 wires from -200°C to +270°C $(0 < RI < 10\Omega)$ (Max. resistance 400Ω).
- Max. measure current: 250 µA.
- Accuracy : 0,1% of full scale at +25°C.
- Thermic drift <150ppm/°C.

DGN 75 (85) M
DC current or voltage, temperature, potentiometer and resistance

(See DGN 75 U and DGN 75 T features on left-hand columns)

Resistive sensor : calibers 0-400 Ω and 0-2 kΩ (0-8 kΩ optional)

- Accuracy : 0,1% for calibers 0-400 Ω and 0-8 kΩ and 0,5% for caliber 0-2 kΩ (of full scale at +25°C).
- Thermic drift < 150ppm/°C.

Potentiometers : from 100 Ω to 10 kΩ

- Accuracy : 0,1% of full scale at +25°C.
- Thermic drift < 150ppm/°C.

Locations of options and combinations

Any options can be combined, except one case :
options : LOGIC, 4 relays, and the analogue output.

```
 B    C        D  E
A - inputs
1 2 3 4 5 6 7 8 9
```
Location of terminals
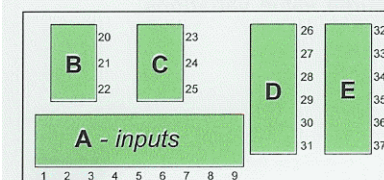
Locations
B : option N (digital output)
C : option A1, A2, A3 (analogue output) or option LOGIC input
D : option R (2 relays only)
E : option LOGIC or E+D : option R4 (2+2 relays)

Power supply

2 Versions : High Voltage or Low Voltage
(to be specified on order)

High Voltage :   90...270 VAC   50/60/400 Hz
and   88 ...350 VDC

Low Voltage :   20...53 VAC   50/60/400 H.
and   20...75 VDC

Power draw : 5 W max. 8 VA max.

KLAY-INSTRUMENTS

Features

- Sampling time : 100ms.
- Input impedance $\geq$ 1 MΩ for voltage inputs.
  Drop 0,9 V max. for current input.
- Rejection rate :
  Common mode : 130 dB   Mode series : 70 dB 50/60 Hz
- Zero drift compensation and self-calibration.
- Insulation : Inputs / Power Supply : 2,5 kV eff. 50Hz-1min
  Input / Output : 2,5 kV eff. 50Hz-1min.

Programmable integration indice

Allows stabilising display in case of unsteady input.

Sensor or line rupture detection

- Can be detected on inputs mV, TC, Pt 100, Ni 100 ,
  ΔPt100, resistance (0-400 Ω) and current (4-20 mA).
- Return value programmable on the analogue output in case of
  sensor rupture.
- Sensor rupture detection programmable on the 4 relays.
- Possibility to disconnect sensor rupture.

Self diagnosis :

- Permanently watches any component drift that may surge.
  Serves to warn the user before they provoque false measures.
- Self diagnosis error detection programmable on the 4 relays.
- Return value programmable on the analogue output in case of
  error self-diagnosis.

Input scale overlapping

Visualised on the display by flashing measure.

Linearisations

- Linear input
- Square root extraction (current or voltage inputs)
- Special linearisation on 20 points (in X and in Y)
  (voltage or current input, or potentiometer, or resistance)

Shifted scale (inclination and offset)

Programmable on all inputs.

Brightness

Independent setting of digits and bargraph leds brightness.
Programmable : 4 levels.
According to instrument location (outside, control room…).

Fast reading on the display

- Of setpoint values.
- Of input signal electrical value.
- Of min. and max. values

Simulation function

- Possible simulation of analogue output (mode generator).
- Possible simulation of measure : enables validating the
  analogue output and relay outputs configuration in the
  system.

Access code

An access code settable from 0000 to 9999 prevents
unauthorised programming of indicator, setpoints and
locks access to some functions. The factory code is
0000.

x x x x		
	0 to 5	Access to shifted scales
	6 to 9	No access
	0 to 5	Access to measure and output simulations
	6 to 9	No access
	0 to 5	Access to fucntion "tare" (except t° inputs)
	6 to 9	No access
	0 to 5	Access to fast entering of alarm setpoints
	6 to 9	No access

Environment

- Front face protection IP 65.
- Operating temperature : -5 to 55°C.
- Storage temperature : -30°C to +80°C.
- Relative dampness : 80% annual average.
- Connection with screwed plug-off connectors
  (for 2,5 mm² cable, flexible or rigid).
- Case in self-extinguishing black UL 94 VO ABS.
- Weight with / wihout output board : 250g / 150g.

CODING ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪ ▪

Input type : DGN 75 / 85M

- **U** : Process input (current or voltage DC)
- **T** : Temperature input (TC or sensor Pt100)
- **M** : Process input, T°, resistance, potentiometer

Output options :

- **A** : Analogue (A1, A2 or A3 : to specify)
- **R** : 2 relays
- **R4** : 4 relays
- **N** : Digital link (RS 485 2 wires)
- **tor** : 2 TOR inputs
- **B** : Bargraph display

Simultaneously combinable options :
A / R / N / B / tor
A / R4 / N / B
R4 / N / B / tor

Type of power supply :

- **2** : High Voltage
- **3** : Low Voltage

Ordering example :

For a10 000 point panel meter with temperature input
(DGN 75T) with 1 analogue output and 2 relays, in 230
V$_{AC}$ power supply, request reference :
DGN 75T A2R 2 (passive current output)

For a100 000 point panel meter with potentiometer
input (DGN 85M) with 1 analogue output and 4 relays,
in 230 V$_{AC}$ power supply, request reference :
DGN 85M A2R4 2 (passive current output)

This instrument is designed for industrial applications.
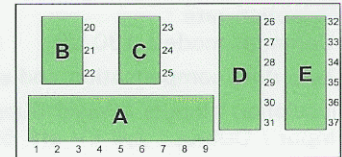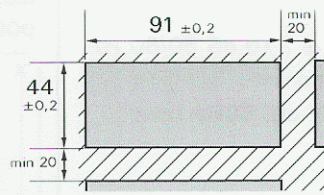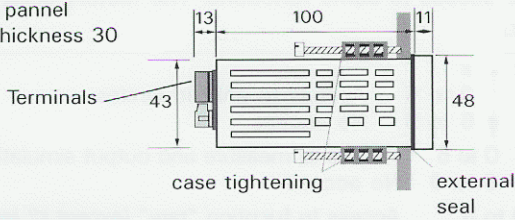*It has to be mounted in an electrical switchbox, or similar.*

⊫K KLAY-INSTRUMENTS

Case : 96 x 48 x 124 mm (including terminals)

Fitting pannel max. thickness 30

Terminals

13   100   11

43   48

case tightening

external seal

Mounting : on pannel; cut out 44 x 91 mm

91 ±0,2   min 20

44 ±0,2

min 20

Location of terminals (view of case rear side)

B   C   D   E
A

INPUTS

DGN 75M / DGN 85M

DGN 75U — PROCESS   (A)

4	5	6	7	8	9

+ 300V -   NC

+ 1V -

10V

+ mA -

+ mV -

-   +

2 wire transmitter

Vout   Gnd   Vcc   3 wire transmitter

DGN 75T — TEMPERATURE   (A)

6	7	8

+ Tc -

Pt100 3 wires
Ni 100 3 wires

1   2   Δ Pt100 2 wires (T°2-T°1)
T°1 : cold sensor
T°2 : hot sensor
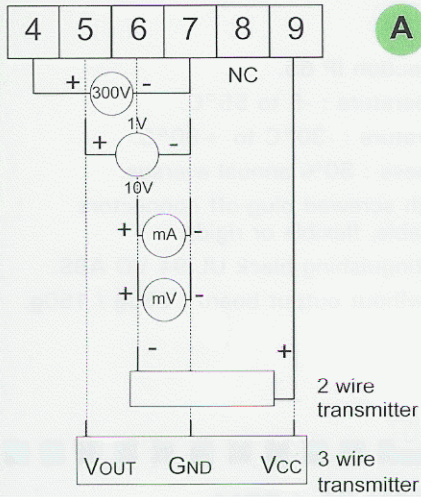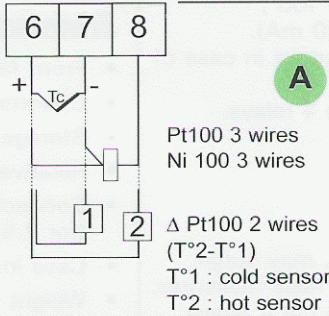
RESISTANCE and POTENTIOMÈTER   (A)

5	6	7	8

0-440Ω resistor

Resistor >440Ω up to 2kΩ (0-8kΩ as option) strap 5 and 8 on terminal

Potentiometer

LOGIC INPUTS (options)

| 23 | — LOG 1 | (C)
| 24 | — LOG 2 |
| 25 | — COM |

2 channels

or

| 32 | — LOG 1 | (E)
| 33 | — LOG 2 |
| 34 | — COM |
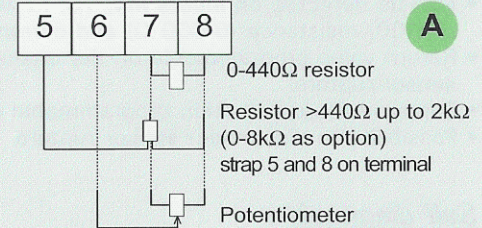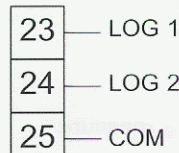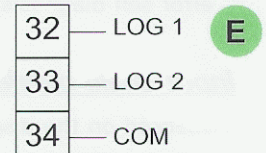
2 channels

OUTPUTS (options)

VOLTAGE PASSIVE CURRENT   (C)   ou

23	+
24	
25	

V   + Rc
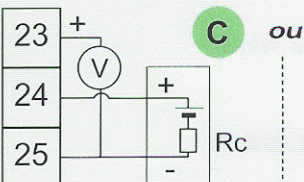
0-4/20mA passive external source 30 V max.

ACTIVE CURRENT   (C)

23	
24	
25	

mA   +
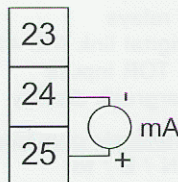
0-4/20mA active

2 RELAYS: (D) OR (E)

| 26 | —T1 ○ | (D)
27	—C1
28	—R1
29	—T2 ○
30	—C2
31	—R2

4 RELAYS: (D) AND (E)

| 32 | —T3 ○ | (E)
33	—C3
34	—R3
35	—T4 ○
36	—C4
37	—R4

T : NO
C : Common
R : NC

DIGITAL   (B)

20	— B : Rx+ Tx+
21	— A : Rx- Tx-
22	— COM

Data link RS 485

POWER SUPPLY   (A)

1	2	3

AC ~   ~
DC +   -

KLAY-INSTRUMENTS