INTRODUCTION
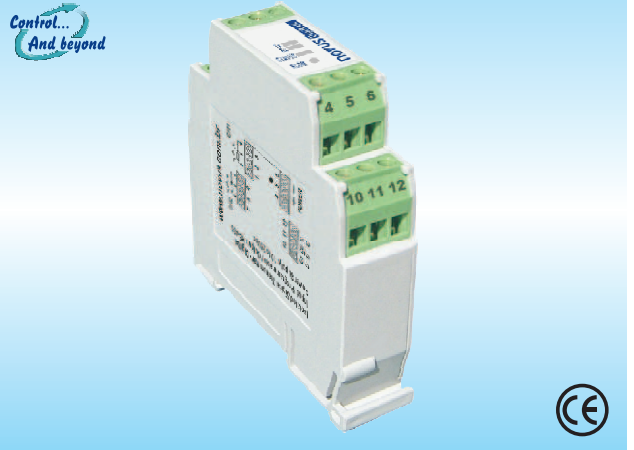
The **DigiRail** line of smart transmitters with Modbus RTU comunication interface provide a simple way for integrating analog or digital signals to supervisory systems. Featuring up to two universal input analog signal channels they are the most economical way to deliver analog inputs to PLC´s and SCADA systems.

The input signals are isolated from power thus protecting the electrical instruments by eliminating ground loop effects. This reduces substantially the undesirable interferences and instabilities in sensor measurements.

DigiRail can be easily configured and calibrated via the digital interface by using the Windows based **Digiconfig** software.

Control...
And beyond

CE

MODELS

The **DigiRail** line of transmitters complies 3 models, according to their input or output types:

- DigiRail-1A and DigiRail-2A, with 1 or 2 universal analog inputs respectively.
- DigiRail-4C, with 4 digital counters.
- DigiRail-2R, with 2 timer relay outputs.

CONFIGURATION

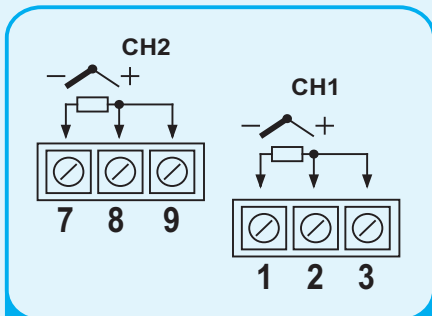**DigiRail** Configuration is done via the RS485 interface by using Modbus RTU commands.

The **DigiConfig** software allows for configuration of all **DigiRail** features as well as complete calibration and diagnosis. It automatically detects active devices in the Modbus network and permits configuration of all parameters.
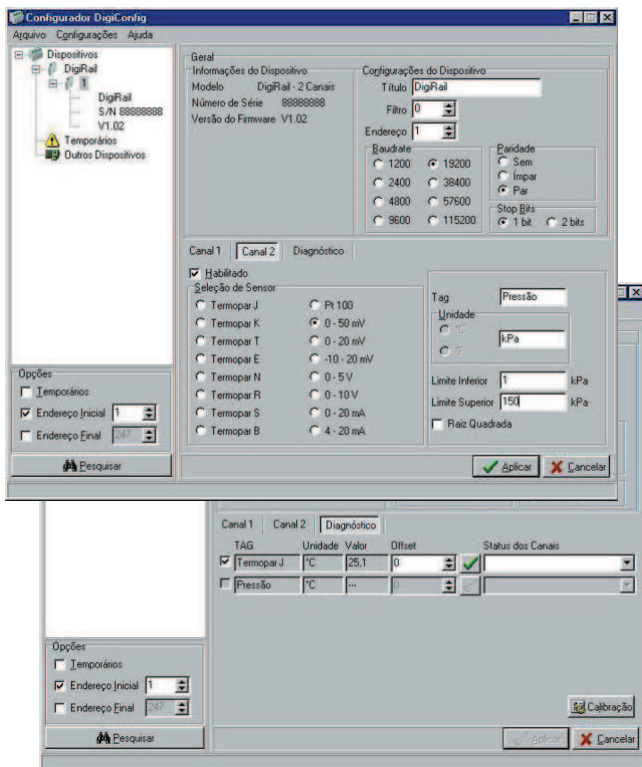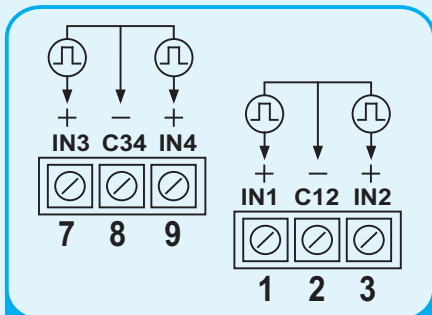

SPECIFICATIONS

- Analog inputs: programmable for thermocouples (J, K, T, E, N, R, S, B), Pt100, mV, V, mA. Refer to table 1.
- Cold junction compensation for thermocouples and compensation for Pt100 3-wire cables.
- Open loop detection for thermocouples, Pt100 and mV.
- Sampling rate for 1 analog input: 10Hz for mV, V and mA. 5Hz for t thermocouples and Pt100.
- Analog input resolution: 17 bits.
- Digital inputs: in voltage, 4 to 35V to activate. internally limited current in 5mA.
- Digital outputs: 8A / 250Vac SPDT relay, resistive load.
- Power: 10 to 35Vdc, 50mA maximum current.
- 2-wire RS485 communication with Modbus RTU protocol. Configurable address and baud rate (1,200 to 115,200bps).
- LED indicators for communication and status. Key for resetting communication parameters to original factory default.
- Accuracy (at 25°C): Pt100, mV, V and mA: ±0.15% of full scale. Thermocouples: ±0.25% of full scale.
- Temperature effect: 0.003% of full scale/°C.
- Cold junction compensation for thermocouples: ±1°C at 25°C. ±0.05°C/°C.
- Isolation: 1000Vac from inputs (analog or digital) and power or communication. Comunication and power are not isolated from one another nor are the analog inputs from each other. Every two digital inputs are isolated from other pairs of same inputs.
- Windows.based configurator software.
- Dimentions: 72 x 78 x 19mm.
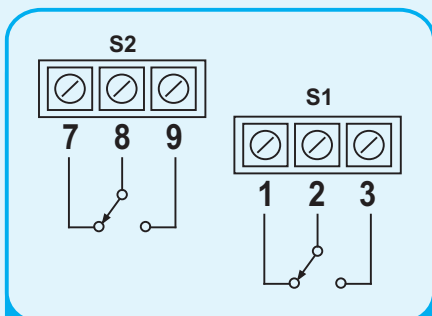- Mounting: 35mm DIN rail. Refer to drawing.
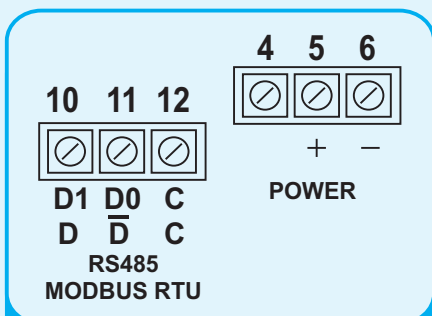- Working temperature:0 to 70°C.

TRANSMITTERS

DigiRail MODBUS Isolated TRANSMITTER

ELECTRICAL CONNECTIONS

DigiRail - 2A Analog Inputs (CH2: 7 8 9; CH1: 1 2 3)

DigiRail - 4C Digital Inputs (IN3 C34 IN4: 7 8 9; IN1 C12 IN2: 1 2 3)

DigiRail - 2R Relay Outputs (S2: 7 8 9; S1: 1 2 3)

Communication and Power (for all models)
- 10 11 12 — D1 D0 C / D D̄ C — RS485 MODBUS RTU
- 4 5 6 — + − POWER

Obs.: Terminals 6 and 12 are connected internally.

BLOCK DIAGRAMS

DIGIRAIL - 4C
IN1, C12, IN2, IN3, C34, IN4 → REG, CPU → POWER, RS485

DIGIRAIL - 2R
S1, S2 → REG, CPU → POWER, RS485

DIGIRAIL - 2A
CH1, CH2 → MUX → A/D → REG, CPU, REG → POWER, RS485
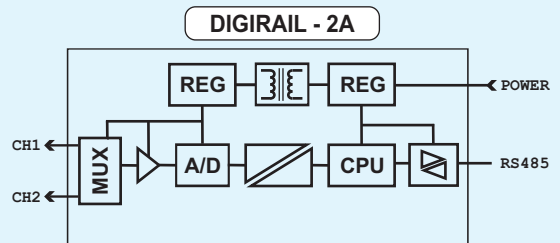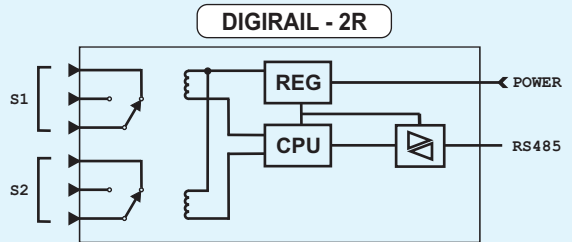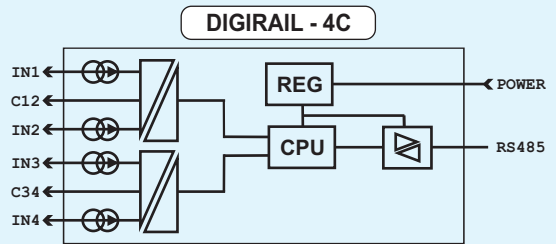
INPUT TYPES AND MAXIMUM RANGES

INPUT	MEASURING RANGE
Thermocouple J	-130 to 940°C / -202 to 1724°F
Thermocouple K	-200 to 1370°C / -328 to 2498°F
Thermocouple T	-200 to 400°C / -328 to 752°F
Thermocouple E	-100 to 720°C / -148 to 1328°F
Thermocouple N	-200 to 1300°C / -328 to 2372°F
Thermocouple R	0 to 1760°C / 32 to 3200°F
Thermocouple S	0 to 1760°C / 32 to 3200°F
Thermocouple B	500 to 1800°C / 932 to 3272°F
Pt100	-200 to 650°C / -328 to 1202°F
0 to 50mV	
0 to 20mV	
-10 to 20mV	Measuring range and engineering
0 to 5V	units are user configurable.
0 to 10V	Custom linearization is optional.
0 to 20mA	
4 to 20mA	

Table 1

DIMENSIONS

77 mm, 78 mm, 77 mm, 72 mm, 19 mm, 69 mm, 72 mm

TRANSMITTERS