

TEL310

TEL-310
TELECOORDINOMETER

INCLINOMETERS
& PENDULUMS





TEL - 310 TELECOORDINOMETER

TEL-310 Telecoordinometer (Telependulum) is designed to take automatic readings of the coordinates of pendulum's plumb lines. It is characterized by high accuracy and resolution, wide measuring range and the possibility of measuring many steel wire simultaneously.


TEL-310 is composed by three units: SUS (optical sensor unit), CUS (control unit with on board web server) and PWS (power supply unit). Moreover this instrument offers auto-diagnostic functions for measurements validation through a built-in software. Either local readings by portable PC or remote operation via RS-485 serial interface are possible. TEL-310 is also implemented with 4-20 mA output for OMNIAlog network application.

APPLICATIONS

- Arch dams
- Concrete dams
- Skyscrapers
- Slender structures
- Bell towers
- Minarets

FEATURES

- Wide measuring range
- Contactless measuring technology
- IP68 waterproof components
- Flexible structures for easy maintenance
- Remote auto-diagnostics
- High level built-in software for statistical data elaboration and validation

 *Meet the essential requirements of the EMC Directive 2014/30/UE and Safety Low Voltage Directive 2014/35/UE*

TECHNICAL SPECIFICATIONS

	MODEL 0TEL3103GS0
Measuring principle	contactless
Measurement area	X-axis: 0-150 mm (145 mm real) Yaxis: 0-60 mm
Resolution	0.005 mm
Repeatability+hysteresis	X-axis: ± 0.007 mm / ± 0.005 mA Yaxis: ± 0.012 mm / ± 0.007 mA
Accuracy Pol. MPE ⁽¹⁾	X-axis: ± 0.010 mA Yaxis: ± 0.015 mA
Power supply	85-230V AC, 50-60Hz
Output:	
- Local readings	Ethernet, USB 2.0,
- Remote monitoring	RS485, 4-20mA (to OMNIAlog)
Sensitivity ⁽²⁾	see calibration report
Memory	2 GB
Temp. operating range	-10°C +60°C
Detectable wire (diameter)	minimum 1 mm
Protection	IP68 until 50 kPa

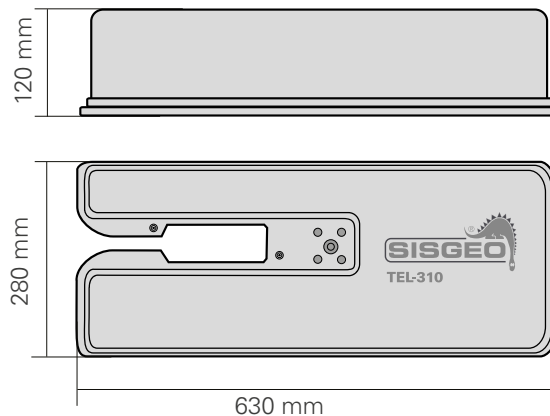
(1) MPE is the Maximum Permitted Error on the measuring range (FSR). In the Calibration Report, the accuracies of the gauge are calculated using both linear regression (\leq Lin. MPE) and polynomial correction (\leq Pol. MPE).

(2) Sensitivity is a specific parameter different for every gauge. The sensitivity is calculated during gauge calibration test and inserted into the calibration report.

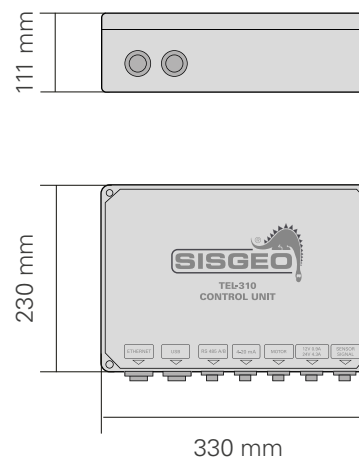
COMPONENTS AND PHYSICAL FEATURES

OPTICAL SENSOR UNIT (SUS)	
- Dimensions	630x280x120 mm
- Weight	11.2 kg
CONTROL UNIT (CUS)	
- Dimensions	330x230x111 mm
- Weight	4.8 kg
POWER UNIT (PWS)	
- Dimensions	330x230x111 mm
- Weight	5.8 kg
PWS - CUS CABLE	
- Length	5 m
SUS - CUS CABLE	
- Length	5 m

OPTICAL SENSOR UNIT (SUS)



CONTROL UNIT (CUS)



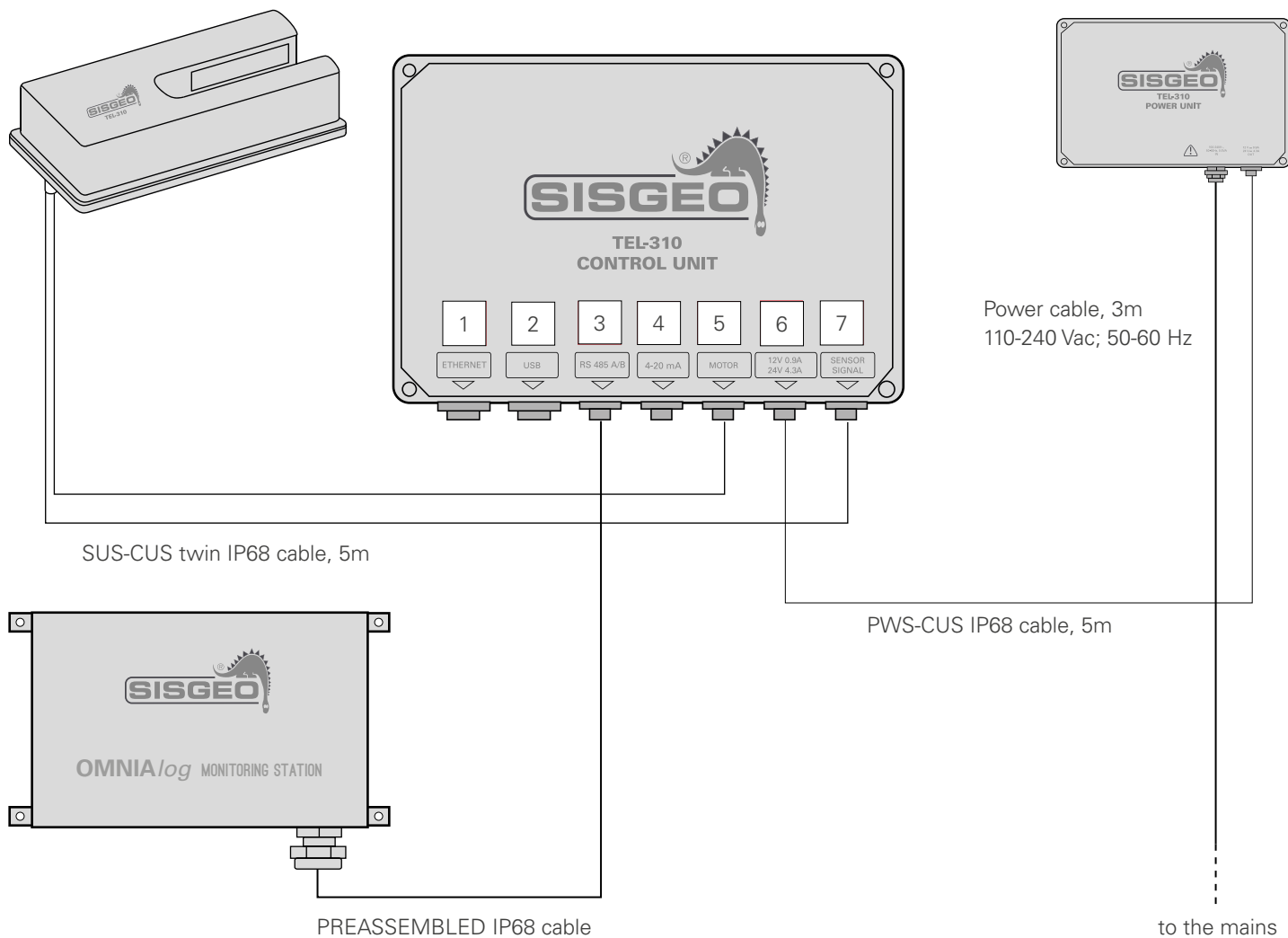
POWER UNIT (PWS)



OPERATING PRINCIPLE

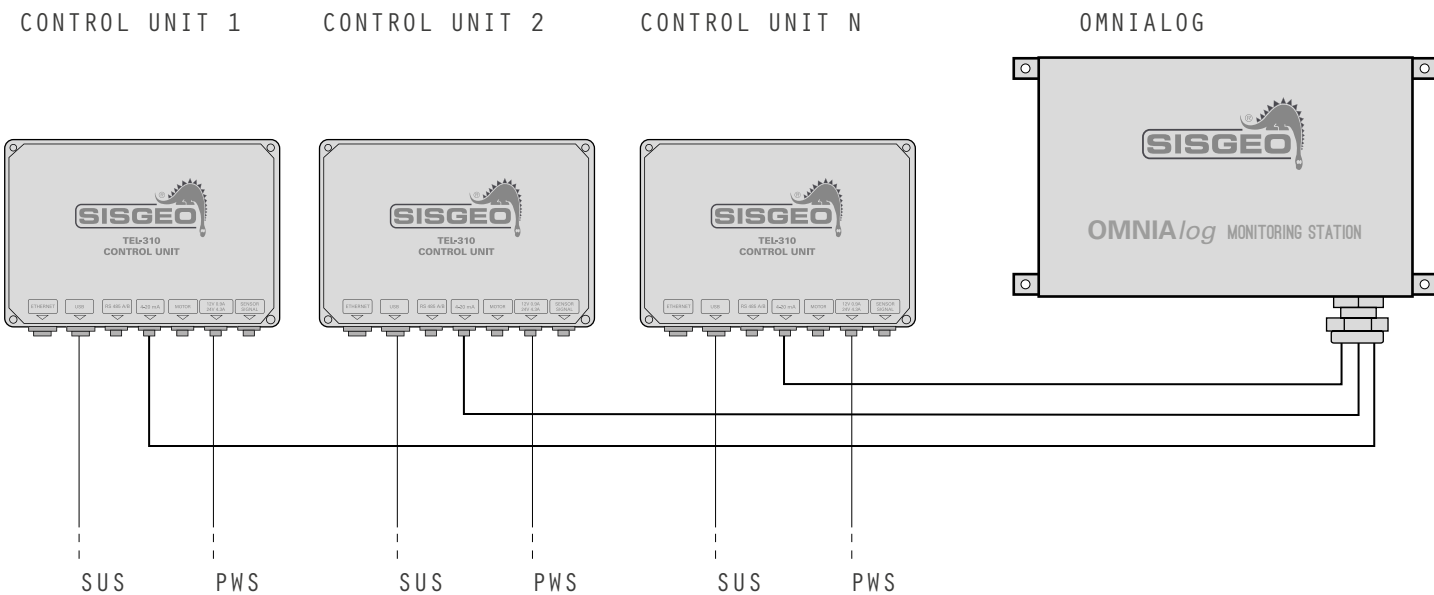
The coordinates X-Y of the plumb line are determined by means of a pairs of photocells mounted on a slide activated by a stepping motor. For each measurements cycle the plumb wire intercepts the photocells light rays twice: during the forward slide travel and its return. The coordinates of the line are automatically computed, as the average of the two readings of a complete cycle. Consecutive cycles may be programmed, at the end of which the instrument automatically provides the average of the measurements. Two pins are mounted in known positions at the two ends of the measuring range. For each cycle of measurement the distance between pins is automatically used to validate the readings.

TEL-310 WIRING SCHEME

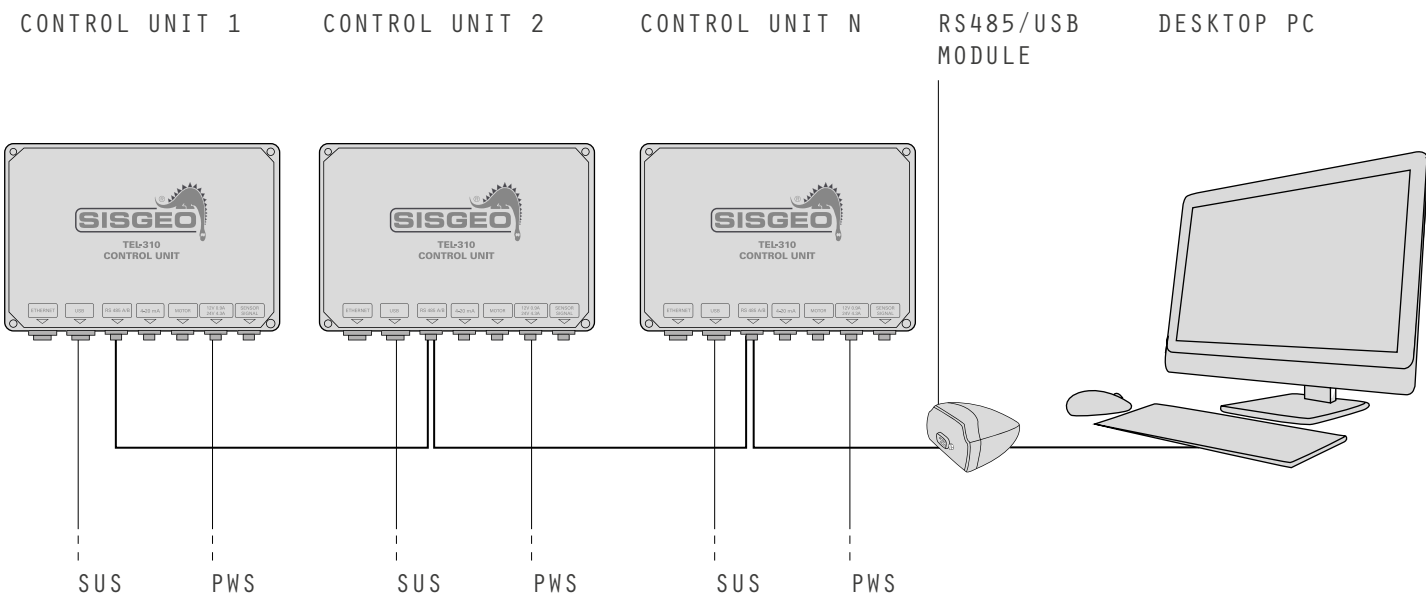


- | | | | |
|---|---|---|---------------------------|
| 1 | Ethernet communication port | 5 | Motor |
| 2 | USB communication port | 6 | Power unit input |
| 3 | RS 485 A/B port for TEL-310 network | 7 | Optical sensor unit input |
| 4 | 4-20 mA output for connection to OMNIAlog | | |

4-20mA
CONNECTION



RS485
NETWORK



ACCESSORIES AND SPARE PARTS

CALIBRATION KIT
OTEL310CALO

Calibration frame to verify the accuracy of TEL310 system, composed by a steel plate with precise reference pin.

ADJUST. SUS SUPPORT
OTEL310ANSO

Adjustable optical sensor unit (SUS) support, stainless steel made.

JIG FOR ADJ. SUPPORT
OTEL310ANDO

Mounting jig for adjustable SUS support

4 - 20 MA IP68 CABLE
OTEL310XC83

Preassembled IP68 cable for 4-20mA network, length 3 m. It connect each TEL310 control unit to OMNIAlog datalogger.

RS485 IP68 CABLE
OTEL310XC53

Preassembled IP68 cable for RS485 network, length 3 m. It connect in series the TEL310 control units and last CUS to the USB/RS485 PC module

RS485/USB INTERFACE
OTEL310X485

Optoisolated RS485 to USB interface for RS485 network connection to PC/laptop.

ELONGATION CABLE
OWE104K00ZH

2-twisted pairs cable, 22 AWG, with LSZH flame retardant jacket. Used to extend the length of OTEL310XC53 and OTEL310XC83 preassembled cables.

SPARE SUS UNIT
OTEL310SUSO

Spare TEL310 optical sensor unit (SUS). It includes stepper motor, optical photocells, red cover and SUS-CUS connection cable. IP68 up to 50 kPa.

SPARE CUS UNIT
OTEL310CUSO

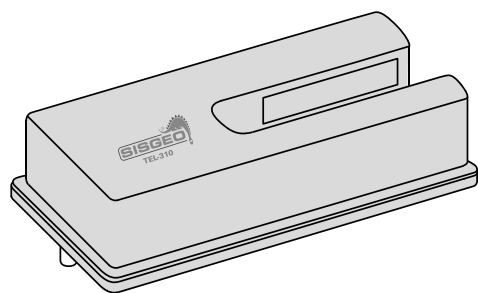
Spare TEL310 control unit (CUS). It includes aluminum box with control boards, web server, memory card. IP68 up to 50 kPa.

SPARE PWS UNIT
OTEL310PWSO

Spare TEL310 power unit (PWS). It includes aluminum box with electronic board, protections and power cord. IP68 up to 50 kPa.

SPARE PWS-CUS CABLE
OTEL310XC65

Spare preassembled IP68 cable for PWS-CUS connection, length 3 m.



OPTICAL SENSOR UNIT (SUS)
OTEL310SUSO

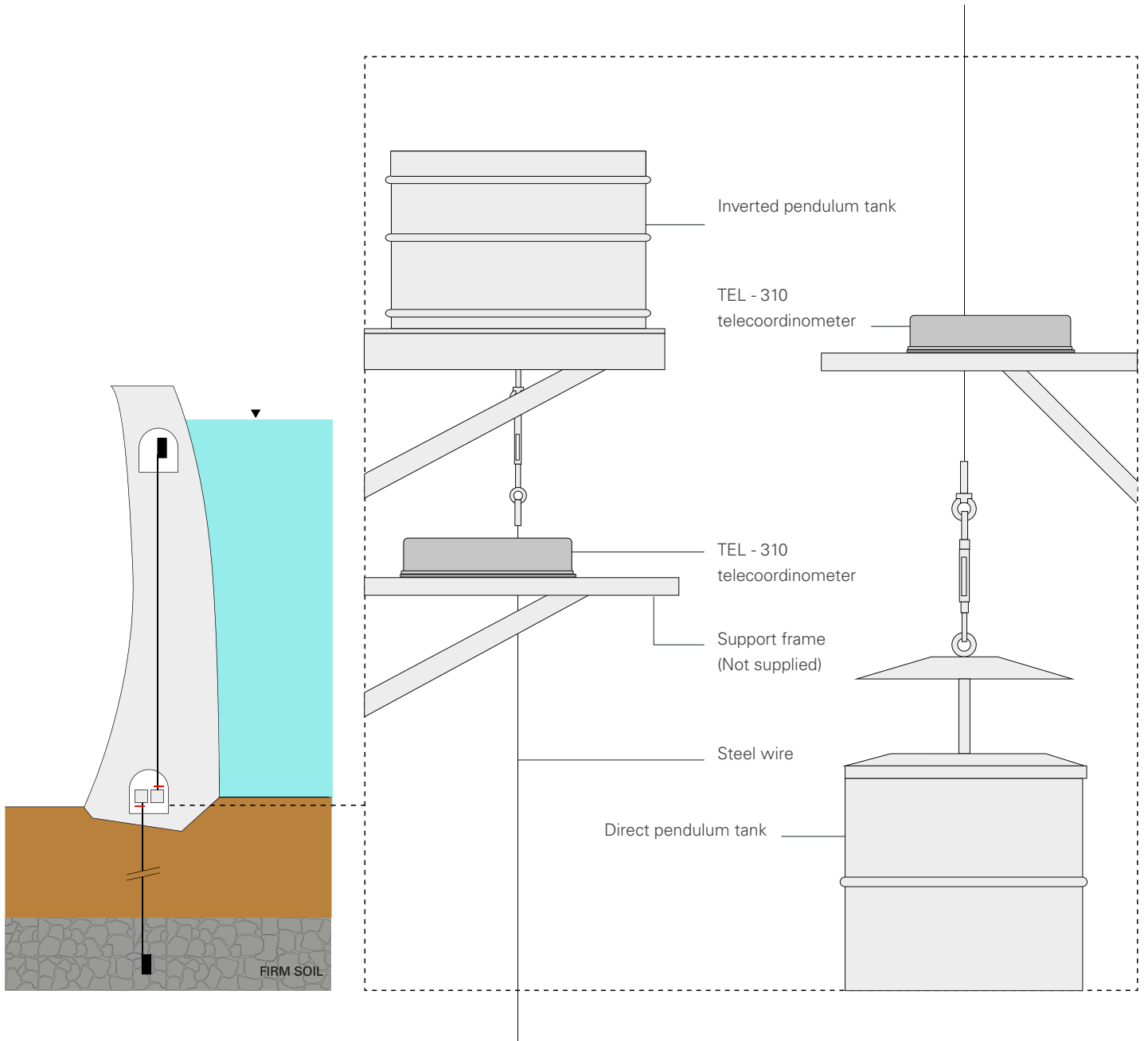


CONTROL UNIT (CUS)
OTEL310CUSO



POWER UNIT (PWS)
OTEL310PWSO

TYPICAL DAM INSTALLATION



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