



SENSORS TECHNICAL SHEET
INTELLIGENT TS 100

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The sensors are self-powered devices with their solar panel that charge ultracapacitors, thanks to this they do not require maintenance or battery changes, nor do they depend on the presence of minimum currents to be operational.

- Their life span is 1 million cycles (in practice, 15 to 20 years)
- A version for operations (fault and imbalance alarms) and another for non-technical losses in addition to the alarms and variables obtained by the operations department,

This set of smart sensors allows telemetry to the Operations Center in DNP3 protocol of 67 digital and analog parameters of the status of medium voltage power transmission lines. Among the parameters, the fault currents in each phase, permanent faults, angle and module of the current per phase and its result (load imbalance and power factor), as well as the reversal of the current flow stand out. This equipment will also allow measuring the energy consumed downstream of its location.

The devices are maintenance-free and are advanced equipment in terms of autonomy, measurement capabilities and communication and data server architecture.

For the detection of transient and permanent faults, it is based on the customization of ramps, with a current jump and followed by an absence of current that are configured for $3 di / dt$ sensitivities according to how the reclosers are set.

Brand	TECSYS
Model	TS100 Smart Sensor
Origin	Brazil
Guy	Fault indicator and absence and presence of current and voltage, measurement of energy, imbalance and phase angle in real time.
Service voltage	From 0 to 34.5 KV LL
Maximum design voltage	34.5 KV LL
Present voltage measuring range	6 to 34.5 KV LL
Present current measuring range	1 to 100 A / 4 to 400 A / 6 to 600 A
Current Capacity	20kA / 170ms
Power supply	Ultracapacitors with solar panel.
Minimum short circuit fault recognition time	2 cycles (40 ms / 32 ms)
Manufacturer Certification	ISO 9001.
Use	Weathering in MT electrical networks
Isolation	Polymer.
Installation on conductors	naked or coated up to 30 mm in diameter
Frequency	50Hz/60Hz.
Installation phase identification	The phase where it was installed is identified by software.
Internal Analog and Digital Sensors	Transient fault per phase and per group, Permanent fault per phase and per group, Current disconnection, Current reconnection, Fault current, Neutral current (phase imbalance), Current flow reversal, Inverted sensor, No power supply to the BT concentrator and Solar Panel (optional), Low load alarm of UC in Concentrator and Sensors, Voltage module, Current module per phase, Angle between current and voltage (per phase and per set), Current detection, Temperature, UC load. Energy measurement SW integration Losses
Geolocation	Uploading ID into GIS System and other existing systems.
Programming for fault detection	Programming of 3 sensitivity levels of di/dt % di/dt and dn/dt parameters and selection by SCADA of one of the 3 sensitivity levels.
Reset type	Automatic.
Minimum detectable current	1A
Degree of protection	IP67 Sensors, IP65 Hub
Signals to SCADA	32 digital and 35 analog signals

Communication interface (Sensor - Concentrator)	Use of unlicensed frequencies in proprietary protocol
Communication with the COD	3G/LTE, ETH Satellite, F0, WISUN.
Protocols to SCADA	DNP3
Energy Storage	Autonomous Using Ultracapacitors charged by solar panel (not depending on currents or minimum voltages in the network to be operational and in line with the SCADA)
Autonomy	up to 36 hours without sunlight
Shelf life	15 years
Connectivity distance between concentrator and sensors	Recommended up to 20 meters in urban areas
Maximum equipment connectivity per hub	3
Configuration, testing and integration	The configuration, testing and integration into the SCADA system arranged by the contractor will be carried out jointly by the supplier and the contractor's technical staff.
Mounting structure	The equipment must be suitable for installation on power conductors without causing damage or excessive loads, without the need for power interruption.
Operating Temperature / Humidity	-20°C to +70°C/ 100%
Database	Available for download.

COMMUNICATIONS

These devices connect to the concentrator by radio frequency of the order of 919 Customizable MHz. After processing the data, the concentrator sends it to the SCADA and a web server through 2 independent ports via a Modem-Router over an Ethernet or LTE 3G/4G network. In this case, the data is directed to the operator's APN and is collected by the SCADA in DNP3 and a Web Server.



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