Building a strong smart grid and popularization of the intelligent substation made secondary monitoring protection has undergone a historic transformation. The change in the way of data transmission in process level has brought new problems to test and calibration work. The traditional instrument has not completed optical digital signal measurements, the living construction or substation maintenance person need a new method for optical digital signal analysis. NS601 handheld digital signal analyzer is a professional digital signal tools for the optical measurement, with multi-meter, oscilloscope, harmonics analysis, phase check, CT polarity analyze function, as well as, automatic detection, resolve IEC61850-8-1, IEC61850-9-1, IEC61850-9-2, IEC60044-8 formal messages. It's portable, stable and user-friendly, and also the essential tool for intelligent substation maintenance.

**Portable**

**Stable operation**

**User-friendly,**

- Automatically detect IEC61850-8-1, IEC61850-9-2, IEC61850-9-2/LE, IEC60044-8 format SV message parameters are displayed in real-time.
- IEC61850-9-1: LDName, Number of ASDU, Sample Frequency, Channel Status, Configuration Version Number, APPID, Allowed Survival time, Commission, test, configuration version, StNumber, SqNumber, Database Number, VIan Sign (Priority, VID)
- IEC61850-8-1: IGoCBRef, GOOSE ID, DataSetRef, MAC destination address, APPID (0X), Allowed Survival time, Commission, test, configuration version, StNumber, SqNumber, Database Number, VIan Sign (Priority, VID)
- IEC61850-9-2: SVID, Number of ASDU, APPID, Channel Number, MAC Destination Address, Synchronization State, VLAN Message (Priority VID)

- Automatic analyze harmonics information including:
  - Harmonics amplitude
  - Harmonics degree and phase
  - Frequency of the sample value

- Automatically detect IEC61850-1 SV message of different MAC addresses in the network and analyze the message of the optional GOOSE control model.

- 2 group optical port: receive signal from 2 groups MU at the same time
- Comparing RMS, phase
- Automatic Analyze harmonics information including:
  - Harmonics amplitude
  - Harmonics degree and phase
  - Frequency of the sample value

- Real-time displays GOOSE status
- Real-time displays the GOOSE deflection
- Offer history status consulting of GOOSE

- Harmonics amplitude
- Harmonics degree and phase
- Frequency of the sample value

- Automatic Analyze harmonics information including:
  - Harmonics amplitude
  - Harmonics degree and phase
  - Frequency of the sample value
**Technic parameter**

**Environment Conditions**

- **Altitude:** ≤4000m
- **Environment temperature:** -10 ~ 50℃
- **Relative humidity:** 5% ~ 95%
- **Atmospheric pressure:** 86 ~ 106 kPa

**Security Standard**

- GB / T 17626.2-1998 EMC testing and measurement techniques Electrostatic discharge immunity test
- GB / T 17626.4-1998 EMC testing and measurement techniques Electrical fast transient burst immunity test
- IEC 60255-21-1:1988 Electrical relays Part 21: Measuring vibration, shock, burst and seismic tests of relays
- **Enclosure rating:** IP5X

**Type of fiber optic cable**

- 62.5/125um multi-mode fiber or 50/125um multi-mode fiber.

**Power Supply**

- **Battery:** A 18650 lithium ion battery, large capacity, rechargeable battery
- **Charging power adapter:**
  - **Input:** 100V ~ 240V AC, 50 ~ 60Hz
  - **Output:** 19V DC, 4.74A
- **Charging time:**
  - Full of need: 2-3 hours
  - New battery: greater than 12 hours
- **Standby time:**
  - 8-9 hours

**Support the signal detection and numerical analysis specification**

- IEC61850 GOOSE signal
- IEC60044-7 / 8 optical serial signal

**Interface parameters**

- **USB port (2):**
  - 1. USB interface for digital signal input
  - 1. USB interface: 100Mbps Optical Ethernet: 1310nm wavelength, receiving the IEC61850-9-2/1 samples, GOOSE messages
- **ST Interface:**
  - 850nm wavelength, multimode fiber interface (supports 2.5M, 5M, 10M baud rate), receiving the FT3 signal.

**Dimensions:**

- 270mm (length) × 280mm (width) × 55mm (H)
- **Display:**
  - 7 inch TFT color screen, 800 × 480 dot-matrix, liquid crystal display
- **Keyboard:**
  - 64-bit rubber full function keyboard
- **Expansion slot:**
  - SD card slot

**Other parameters**

- **Display size:**
  - 288mm (width) × 288mm (height) × 28mm (depth)
- **Display:**
  - 10.4 inch LCD screen, 800 × 600 dot-matrix, touch screen display
- **Self-protection:**
  - Over-charging, over-discharging, and over-temperature protections are set to ensure the reliability of rechargeable battery.