

- 3-Phase current and voltage relay test system
- High burden relay test set
- Designed for testing electromechanical, solid state and numerical relays
- Universal testing capability for all relays
- Transient playback and harmonics

## A P P L I C A T I O N

ART 3 can test all the following relays

RELAY TYPE	IEEE NO
Distance relay	21
Synchronizing device	25
Under/over-voltage relay	27/59
Directional Power relay	32
Field relay	40
Reverse phase current relay	46
Phase sequence voltage relay	47
Incomplete sequence relay	48
Instantaneous over-current relay	50
Inverse time over-current relay	51
Power factor relay	55
Voltage balance relay	60
Ground detector relay	64
Directional over-current relay	67
Phase angle out of step relay	78
Automatic reclosing relay	79
Frequency relay	81
Pilot wire receiver relay	85
Lockout relay	86
Differential protection relay	87
Voltage directional relay	91
Power directional relay	92
Tripping relay	94



## ART 3 SPECIFICATION

### 3-Phase current module

#### AC/DC current outputs

	CURRENT A	POWER VA	RESOLUTION
3 X	0...50	150	3.0 mA
3 X	0...25	150	1.5 mA
3 X	0...10	150	1 mA
3 X	0...2.5	150	1 mA
1 X	0...150	450	9.0 mA
1 X	0...50	450	3.0 mA

- Independent adjustment of current outputs.
- Duty cycle: continuous.
- Waveform resolution: 24 bit.
- Capable of stepping or ramping the current.
- Rate of change programmable between  $\pm 0.001$  A/s and  $\pm 999$  A/s.
- Output accuracy:  $\pm 0.5\%$  of the range.
- Distortion: 0.1% total maximum.
- Automatic protection for overloads.
- Current outputs are isolated from each other and without a common neutral.

### 3-Phase voltage module

#### AC/DC voltage outputs

	VOLTAGE V	POWER VA	RESOLUTION
3 X	0...250	50	15.2 mV
3 X	0...125	50	10 mV
3 X	0...62.5	50	10 mV
3 X	0...12.5	25	10 mV
1 X	0...250	150	15.2 mV
1 X	0...500	150	45.6 mV

- Independent adjustment of voltage outputs.
- Duty cycle: continuous.
- Waveform resolution: 24 bit
- Capable of stepping or ramping the voltage.
- Rate of change programmable between  $\pm 0.001$  V/s and  $\pm 999$  V/s.
- Voltage accuracy:  $\pm 0.5\%$  of the range.
- Distortion: 0.1% total maximum.

- Automatic protection for overloads.
- Voltage outputs have a common neutral.

### Angles

Phase angle range:  $0^\circ$  -  $360^\circ$ .

Resolution:  $0.1^\circ$ .

Angle accuracy:  $\pm 0.5^\circ$ .

### Output frequency

Frequency range: from 25 Hz to 999.9999 Hz.

Capable of selecting the output frequency on:

- . V1 only;
- . I1 only;
- . All voltages (V1-V3);
- . All outputs.

With the first three selections, other outputs generate the pre-fault frequency.

Maximum frequency error: 50  $\mu$ Hz (1 ppm).

Resolution: 0.1 mHz.

Capable of generating waveform with a superimposed harmonic distortion.

### Time measurements

Binary inputs: 8 inputs, clean or with voltage from 24 to 220 V DC (60 to 220 V AC), with a point in common.

Timer range: 0 - 999,999.9999 s (277 hours).

Resolution: 0.1 ms.

Timer accuracy: 0.01% of reading  $\pm 0.1$  ms.

### Auxiliary outputs

Two timed auxiliary output contacts plus one not timed.

Characteristics of contacts with a resistive load:

- . Maximum voltage: 250 V AC;
- . Maximum current: 5 A.

Range of programmable delay: from 0 to 999.99 s.

### Auxiliary DC Voltage supply

Output range: 0 V to 260 V DC, program controlled.

Output power: 100 W or 2 A on all range; continuous duty.

Accuracy: 1%.

Automatic protection for overloads.

### Serial Interface

Type of interface: RS232.

Transmission rate: 19,200 baud.

### Power supply

Power supply: 230 V AC  $\pm 15\%$ , 50/60 Hz or 110/230 V AC  $\pm 15\%$ , - 50/60 Hz.

Power consumption:

- . 100 W complete configuration, no-load;
- . 900 W complete configuration, full load.

### Case

Two aluminum cases with removable covers and with handles.

### Weight and dimensions

Weight:

- . Current module: 30 kg.
- . Voltage module: 29 kg.

Dimensions of each module (including the cover):

290 (h) x 500 (l) x 370 (d), mm.

### Accessories supplied with the unit

Power supply cable.

Set of test leads.

Serial interface cable.

Serial port adapter, 9 to 25 way.

Instruction and maintenance manuals.

## APPLICABLE STANDARDS

### Electromagnetic compatibility

Directive no. 89/336/CEE dated May 3, 1989, modified by the directive 92/31/CEE dated May 5, 1992.

Applicable Standards:

EN 50081-2; EN 50082-2; EN 55011; EN 61000-3-3;  
EN 50082-2; ENV 50140; ENV 50141; ENV 50204;  
IEC 1000-4-2; IEC1000-4-4; IEC 1000-4-6; IEC 1000-4-8.

### Low voltage directive

Directive n. 73/23/CEE, modified by the directive 93/68/CEE.

Applicable standards, for a class I instrument, pollution degree 2, installation category II: CEI EN 61010-1.

In particular:

- . Operating temperature: 0 - 45°C; storage: -25°C to 70°C.
- . Relative humidity: 10 - 80% without condensing.

### Ordering information:

CODE	MODULE
20104	ART 3 3 x I 0...50 A 3 x V 0...250 V 1 x V DC 0...260 V
10015	TDMS - Test & Data Management Software

### Option for ART 3

CODE	MODULE
13104	Set of Test cables

## ART 3 ACCESSORIES



ART 3 - Standard Tests Leads



ART 3 - RS232 cable