1.5kVA EARTH TESTING CURRENT INJECTION SYSTEM

4023/4024B DATASHEET

REDPHASE INSTRUMENTS

1.0. BRIEF DESCRIPTION.

The Model 4024B is a switch mode voltage source that is used with the Model 4023 Coupling Transformer to produce a high current low voltage or high voltage low current in an earth loop. The current from the Model 4023 is coupled into the earth loop being investigated via a selectable multi-tap output.

Frequencies from 45Hz to 65Hz can be generated and the voltage drops around the earth loop are measured with the Model 4025D tuneable multimeter.

In most cases the operator will try to inject the maximum current into the earth loop being tested since that gives maximum signal for the Model 4025. For that reason the 4023 has tap settings for earth loop impedances from 0.5 OhmS to 40 OhmS which covers most test situations.

For impedances outside this range the earth loop current will be less than maximum but still sufficient for testing purposes.

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2.0. FEATURES.

2.1. The Model 4024B has a 160 X 128, LED back-lit graphical LCD and a keyboard. This is used for entering data and displaying test parameters such as voltage, current and loop impedance as measured by the 4024B.

2.2. The software enables automatic or manual ramping from zero to maximum current in any tap setting, and ramping down to zero.

2.3. The software will prompt the operator to change tap settings if maximum current is not attained.

2.4. LEDs are located on the front panel to show error conditions and when the target output is reached.

2.5. The 4024B mains input is protected with a magnetic circuit breaker.

2.6. The 4024B will trip or power down in less than 100 milliseconds in the case of an open circuit condition, such as when a member of the public accidently cuts the injection line during operation.

2.7. An emergency stop push button is located on the front panel to power down the switch-mode source.

2.8. A buzzer on the front panel alerts the operator to any problems.

3.0. PERFORMANCE SPECIFICATIONS.

3.1. Mains supply:
Single Phase: 200V - 250V, 50Hz - 60Hz

3.2. Model 4024B output voltage: 0 - 180V
Power Rating (max): 1500VA

Please note that coupling of the 4024B to the 4023 transformer implies a 180V input source for the Model 4023. The 4023 then translates this to a graded multi-tap output selection as shown below:

Tap	Current	Voltage
0.5Ω	55A	26V
1.0Ω	37A	38V
2.0Ω	26A	53V
4.0Ω	19A	75V
7.0Ω	14A	99V
10.0Ω	12A	113V
20.0Ω	8A	167V
40.0Ω	6A	236V

3.3. Output frequency 45Hz - 65Hz.

3.4. Temperature ratings:
A fan is fitted to the 4024B to allow operation at maximum 1500VA output for 1 hour at up to 40deg C ambient.

Maximum output under following conditions:
At 50deg C ambient:
800VA continuous.
1500VA for 10 minutes maximum at 25% duty cycle.

At 40deg C ambient:
1200VA continuous.
1500VA for 1 hour at 50% duty cycle.

At 30deg C ambient:
1500VA continuous.

Both the 4023 and 4024B are fitted with thermal sensors/cut-outs to protect the 4023 coupling transformer and the signal drivers in the 4024B. When these trip, the current is ramped down to zero and will only reset once the temperature drops to a safe level.

4.0. ENCLOSURE.

The 4024B is housed in a moulded case, and is supplied complete with a transit case for protection, interconnection lead to 4023 and operating manual.

5.0. SIZE AND WEIGHT.

4024B: 615mm X 530mm X 230(H)mm
12kg.

4024B in transit case with interconnecting:
680mm X 290mm X 600(H)mm;23kg.

4023: 370mm x 310mm x 360(H)mm
32kgs

Note that cables are not supplied with the 4023 or 4024B for connection into the earth loop.
This is because the operator may need many hundreds of metres of cable depending on the layout of the site being tested.
Any type of cable can be used provided it has sufficient current rating.

Every care has been taken to ensure that the above data is correct at the time of printing. Always refer to the latest data sheet when purchasing.
RED PHASE INSTRUMENTS reserves the right to alter specifications without notice.