4234 600 and 4234 601
Katharometer power supply units

Introduction
This instruction manual describes the installation and operation of the 4234 600 and 4234 601 power supply units (PSUs), designed to provide a stabilized (optional 500, 400, 350, 250 or 180 mA) DC supply for operation of a single katharometer unit and an auxiliary 10 V DC supply for katharometer temperature control.

For more information
The Data Sheet for the 4234 600 and 4234 601 PSUs is available for free download from: www.abb.com/analytical
(see link and reference number below) or by scanning this code:
Electrical safety

This equipment complies with the requirements of CEI/IEC 61010-1:2001-2 ‘Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use’. If the instrument is used in a manner NOT specified by the Company, the protection provided by the instrument may be impaired.

Symbols

One or more of the following symbols may appear on the equipment labeling:

- **Warning** – Refer to the manual for instructions
- **Caution** – Risk of electric shock
- Protective earth (ground) terminal
- Earth (ground) terminal
- Direct current supply only
- Alternating current supply only
- Both direct and alternating current supply
- The equipment is protected through double insulation

Health and safety

To ensure that our products are safe and without risk to health, the following points must be noted:
- The relevant sections of these instructions must be read carefully before proceeding.
- Warning labels on containers and packages must be observed.
- Installation, operation, maintenance and servicing must only be carried out by suitably trained personnel and in accordance with the information given.
- Normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and/or temperature.

Safety advice concerning the use of the equipment described in this manual or any relevant hazard data sheets (where applicable) may be obtained from the Company address on the back cover, together with servicing and spares information.

Information in this manual is intended only to assist our customers in the efficient operation of our equipment. Use of this manual for any other purpose is specifically prohibited and its contents are not to be reproduced in full or part without prior approval of the Technical Publications Department.
Contents

1 Document symbols ......................... 4
2 Description .................................. 4
3 Specification ................................. 5
4 Mechanical installation ..................... 6
5 Electrical installation ....................... 7
   Interconnection diagrams and cable requirements ... 7
   Katharometer connections .................. 7
   Temperature control circuit ................ 7
   Accessing the PSU terminals ............... 8
   Electrical connections ..................... 8
6 Servicing ................................... 9
   Fuse replacement .......................... 9
1 Document symbols

Symbols that appear in this document are explained below:

**WARNING – BODILY INJURY**

This symbol in conjunction with the signal word ‘WARNING’ indicates a potential electrical hazard. Failure to observe this safety information will result in death or severe injury.

**CAUTION – MINOR INJURIES**

This symbol in conjunction with the signal word ‘CAUTION’ indicates a potentially dangerous situation. Failure to observe this safety information may result in minor or moderate injury. The symbol may also be used for property damage warnings.

**IMPORTANT (NOTE)**

This symbol indicates operator tips, particularly useful information or important information about the product or its further uses. The signal word ‘IMPORTANT (NOTE)’ does not indicate a dangerous or harmful situation.

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2 Description

The PSU is available in two separate versions defined in Specification on page 5.

The unit is housed in a metal case fitted with mounting lugs. Cable gland entries are provided at opposite ends of the case for supply voltage input and output cables respectively.

A printed circuit board assembly (see Figure 1) contains the circuit components. The supply voltage input is connected to terminal block (TB1) located on the pcb, adjacent to the fuses F2 and F3. The constant current output terminal block (TB2) is located on the gland assembly at the opposite end of the assembly. The auxiliary 10 V output terminal block (AUX 10V) is located on the PCB near to TB1. The pcb is mounted on a steel chassis and secured by six screws. The cover is perforated to allow ventilation for cooling.

Two identical fuses (L & N) are mounted within the unit on the mains input. A third fuse is connected in the DC line circuit of the transformer. A fourth fuse is connected in the auxiliary 10 V DC line. The L & N fuses are a high breaking capacity type and must be replaced only with identical types. See Specification on page 5 for rating.

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**WARNING. HAZARDOUS VOLTAGES**

There are no serviceable parts in this unit.

If faulty, return to the manufacturer or seek the services of a qualified engineer.

Ensure the mains supply is switched off and disconnected before removing the cover.

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**Figure 1  Location of internal components**
3 Specification

4234-600 and 4234-601

Mains supply
- Series 4234-601: 115V AC 50/60 Hz
- Series 4234-600: 230V AC 50/60 Hz

Permissible supply
- Voltage variation: ±15%
- Frequency range: 46 to 64 Hz

Power consumption
- Katharometer: 3.5 W max.
- Katharometer with temperature control: 13 W max.

Fuse ratings
- L & N: 250mA (T) (20 x 5 mm) 250 VA, 1500A h.b.c. cartridge type
- DC line: 400mA (F) (250V AC)
- Auxiliary 10V DC line: 1A (F) (250V AC)

DC output
- Optional, stabilized 500, 400, 350, 250 or 180 mA

Load
- One katharometer (12.5 Ω max.)
- plus interconnecting cable (1.5 Ω max.)

Output
- Output: 180, 250, 350, 400 or 500 mA DC (constant current)

Output regulation
- Within ±0.8 % for:
  a) Load variation ±15 %
  b) Supply variation ±6 %
  c) Ambient temperature ±10 °C (50 °F)

Ripple
- Less than 17.5 V across 10 Ω load peak to peak

Output stability
- Within ±0.7 % of initial setting over a period of one month with load resistance, supply voltage and ambient temperature at nominal stated values

Auxiliary output
- 10 V DC nominal at 1 A for katharometer temperature control

Environmental

Protection
- IP30 (NEMA 1)

Ambient temperature range
- –20 to 55 °C (–4 to 131 °F)

Mounting centers
- 140 x 110 mm (5.5 x 4.33 in)

Overall dimensions (height, width, depth)
- 160 x 170 x 111 mm (6.3 x 6.7 x 4.4 in)

Weight
- 2.12 kg (4.7 lb) approx.
4 Mechanical installation

The PSU must be mounted in a clean, dry, well ventilated position (on a wall or panel) in a safe area by means of the four fixing lugs. Figure 2 gives dimensions and fixing details for the unit.

Before commencing installation, ensure that the unit supplied is suitable for the supply voltage available – see Specification on page 5 and Figure 3.

Dimensions in mm (in)

Ensure a clearance of at least 100 mm (4 in) at both ends of the unit for access to the cable glands and to minimize cable bends.

An adaptor kit (part number 4234 519) is available for mounting the 4234 600/601 PSU in place of the 004235 000/01/02 PSU.

Figure 2 PSU dimensions

Figure 3 Typical identification labels and locations
5 Electrical installation

Interconnection diagrams and cable requirements

See Figure 4 for interconnections for typical gas analysis systems.

Katharometer connections

Cable connecting the constant current DC supply from the PSU to the katharometer should be selected so that the maximum cable resistance is less than 2 Ω. This limits the maximum cable length between the katharometer and its associated PSU.

Note that the cable gland accepts a cable between 5 and 9 mm in diameter.

Temperature control circuit

The cable connecting the auxiliary 10 V DC supply to the katharometer temperature control circuit must have cable conductance capable of passing 1 amp without undue voltage drop or excessive heating.

Note also that the cable gland will accept a cable between 5 and 9 mm in diameter.

Figure 4  Typical interconnecting diagram showing 4234 600/601 PSU, katharometer and displays
...5 Electrical installation

Accessing the PSU terminals

**WARNING. HAZARDOUS VOLTAGES**
If the PSU is cubicle mounted or has its cover removed for test purposes, AC mains supply voltage is exposed at certain locations within the assembly when supplies are connected. Thus, there is a risk of electrocution.

All normal precautions must be taken to avoid the risk of accidental electrical shock during installation and maintenance of the equipment. Ensure that the supply cable is disconnected at its source before touching any electrical connections.

**CAUTION – PROPERTY DAMAGE**
Ensure that the correct version of the unit has been supplied for the supply voltage available. A 115 V unit cannot be used with a 230 V supply or vice versa.

Check that the current output meets the katharometer input requirements (see katharometer data label) – see Figure 7. If in doubt contact ABB Limited.

Remove the power supply unit cover to obtain access to the separate labeled terminal blocks – see Figure 5.

Electrical connections

The mains terminal block, TB1, is situated next to the transformer, T1, and fuses, F2 and F3.

Connect the AC mains input cable as in Figure 6.

**IMPORTANT (NOTE)**
Earth bonding to be made via M5 earth stud.

Connect the DC output and 10 V cables as in Figure 7.

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**Figure 6  AC mains supply connections**

**Figure 7  Outputs connections**
6 Servicing

Fuse replacement

There are no serviceable components in the PSU; the only servicing that can be performed is fuse replacement – see Figure 8. The fuses must be replaced only with those stated in the specification. If a fault occurs, return the PSU to the nearest ABB Service Centre or to the factory for repair.

**IMPORTANT (NOTE)**

Suitable fuses may be obtained from ABB using the following part numbers:
- F1 0231555 (400 mA(F) cartridge).
- F2 and F3 0231577 (250 mA (T) 1500 A hbc cartridge)
- F4 0231599 1 A(F) 250 V

![Switch off and disconnect the mains power supply](image1)

1. Switch off and disconnect the mains power supply
2. Remove the four securing screws and lift off the cover
3. Replace fuse(s)
4. Refit cover, connect to mains power supply and switch on.

Figure 8 Replacing the fuses
Notes