

5 Remote Unit Housings

Remote Unit Housings contain all the equipment that connects to the EU, a climate control system, power supply equipment and various miscellaneous items.

They are designed to be installed in an outdoor environment with connections for power and communication coming up through the base.

The above-ground housings can be mounted either on a concrete base poured on site or on a precast concrete plinth. The UCEH is installed in an excavation.

5.1 Remote Housing Types

Four types of housing are used for Remote Units, in addition to installation of Remote Units in indoor racks.

► **480 Line 1G Remote Housing**

The 480 line 1G housing is a current production housing which may contain RIM or C-RIM equipment.

Refer: Section 5.2 on page 5–3.

► **240 Line 1G Remote Housing**

A 240 Line Remote Housing is no longer produced, however RIMs installed in 240 Line Remote Housings remain in service.

Refer: Section 5.3 on page 5–10.

► **180 Line Remote Housing**

The 180 Line 2G Remote Housing is a current production housing which is only used for C-RIM equipment.

Refer: Section 5.4 on page 5–11.

► **480 Line 2G Remote Housing**

The 480 line housing is a current production housing which is only used for C-RIM equipment.

Refer: Section 5.5 on page 5–13.

► **UCEH**

The UCEH (Underground CAN Equipment Housing) provides an underground enclosure for RIM equipment. Typically 480 channels are provided from a UCEH, but extra space is available.

Refer: Section 5.6 on page 5–15.

► **RCM**

The RCM housing was originally used for RCM equipment. It has also been used to house RIM equipment.

Refer: Section 5.7 on page 5–17.

5.2 480 Line 1G Housing

The 480 Line 1G Remote Housing, in the figure below, contains all the equipment for the Remote Unit. It has three separate compartments as follows:

- ▶ Cross Connect Compartment (CCC).
- ▶ Main Equipment Compartment (MEC).
- ▶ Power Compartment (PC).

The compartments are described in detail starting on page 5–5.

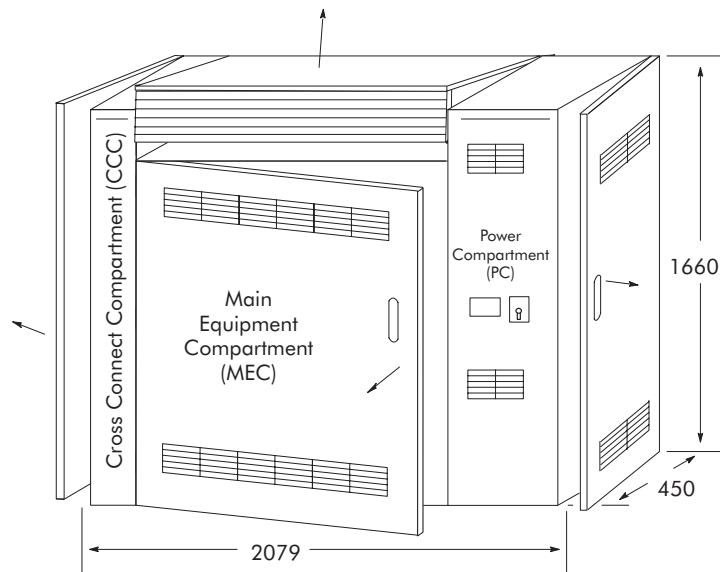


Figure 5–1 480 Line 1G Remote Housing

5.2.1 Weight

Approximately 500 kg fully equipped, but excluding batteries and plinth.

5.2.2 Environmental Limits

The 480 Line 1G Remote Housing operates in normal locations, within the limits of -10 deg C to $+50$ deg C and from 10% to 95% relative humidity.

5.2.3 Doors

All three compartment doors have a three position (90, 130, and 170 degrees) door stay that clips to a hole the inside of the door threshold.

Two keys are provided with the cabinet:

- ▶ A standard 219 (using Lockwood blank only) Line Terminal Pillar key fits the Cross Connect Compartment.
- ▶ An L30 type key fits the Main Equipment Compartment, the Power Compartment and the emergency generator plug cover.

5.2.4 Fixtures

The housing contains the following fixtures:

- ▶ A holder on the inside of the compartment door for the storage of systems records.
- ▶ A fold-down shelf for the placing of test equipment or a craft terminal (a portable personal computer that runs NECTAS).

If mains operated test equipment is to be used, the nearest General Purpose Outlet (GPO) is located in the Power Compartment. A lead approximately 5 m long will be required.

- ▶ A DB25 socket is located in the top left corner of RIM 480 Line housings. This is used for connection to a serial port of the craft terminal. This port is functionally the same as the System Terminal Port, i.e. all Network Elements on this system can be interrogated from this point.
- ▶ An earth collector bar connected to the ECB in the Cross Connect Compartment.

5.2.5 Alarms

All the Power and Housing Alarms are detected via the Climate Controller which transfers them to the alarm management system.

Alarms are reported for the following items:

- ▶ Power compartment.
- ▶ Temperature, humidity and pressure sensors.
- ▶ Door open.
- ▶ Ring/Meter.

5.2.6 Compartments

(1) Cross Connect Compartment (CCC)

The Cross Connect Frame contains the following items:

- ▶ The Cross Connect Frame (CCF), which consists of standard Krone Disconnect type Insulation Displacement Terminals (IDT) and standard Krone 230V Protection Modules on the customer side of the distribution frame for terminating and protecting the customer lines.
- ▶ A light at the top of the compartment, which is activated together with an unauthorized entry alarm when the door is opened.
- ▶ An Earth Collector Bar (ECB) which is connected to the Telstra Earth, the Earth Bonding Terminal, the Krone frames and the ECB in the Main Equipment Compartment.
- ▶ An information card in a holder on the inside of the compartment door, for recording details of the equipment and line side cross connections.

(2) Main Equipment Compartment (MEC)

The Main Equipment Compartment contains the following items:

- ▶ Rack panels.
- ▶ Panels.
- ▶ Units.
- ▶ Sensors – temperature, humidity and pressure.
- ▶ Cabling for 480 lines (preinstalled).
- ▶ DDF.
- ▶ Lighting.

A moveable DC powered fluorescent light is provided. It is switched on when the door opens and is normally mounted under any of the front cable trays.

- ▶ Fixtures.

All mounting fixtures are suitably plated for effective earth connection, and are earthed to the same potential as the housing and equipment earth.

(3) Power Compartment (PC)

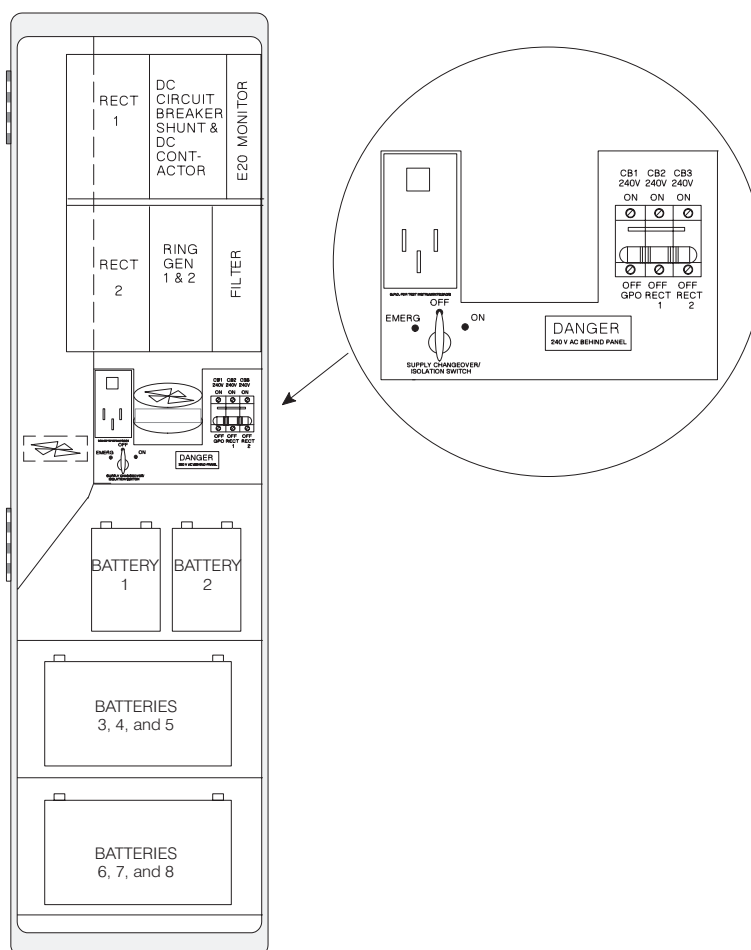


Figure 5-2 Power Compartment Layout

The Power Compartment contains the following items:

- ▶ All power cabling, harnesses and circuit breakers. Drawings in the *RIM Technical Handbook* show the AC/DC power distribution and the power supply interconnection. The power equipment is contained within its own area at the top right hand corner of the power compartment.
- ▶ One AC rectifier is mounted above the mains voltage power point (labelled 'Rectifier 2'), with space for an optional redundant second rectifier (labelled 'Rectifier 1') located just above the first.
- ▶ One Monitor Module.
- ▶ AC and DC distribution modules.
- ▶ Two Ring/Meter Units.

- ▶ Two independently controlled cooling fans with independent temperature sensors.
- ▶ Batteries and battery trays.

AC mains cables enter at the bottom and there is an earth bonding terminal provided.

The Monitor Module is used to monitor housing voltage and current, and perform battery tests. Both manual and automatic battery testing facilities are provided, the test frequency and duration are set on the Monitor Unit. It resides in the top right hand corner of the Power Compartment.

5.2.7 The Climate Control System

(1) General

The Climate Controller in the 480 Line Remote Housing keeps the climate (temperature and relative humidity) inside the cabinet within acceptable limits.

(2) Hardware Description

The climate control system comprises a Climate Control (CLC) unit with 16 M leads and a Climate I/O (CLIO) unit. The CLIO unit collects sensor data from around the cabinet and drives the fans. The CLC communicates with the CLIO over an I²C bus. The following is a list of the CLIO features:

- ▶ Seven sensor inputs.
 - Two MEC temperature sensors.
 - One external MEC temperature sensor.
 - One internal PC temperature sensor.
 - One external PC temperature sensor.
 - One relative humidity sensor.
 - One filter pressure differential sensor.
- ▶ Twenty three fan rotation speed inputs (open circuit tachometers).
- ▶ Ten fan control outputs (on/off).
- ▶ I²C alarm reports from the sensors.
- ▶ 30 VDC converter for low voltage fan operation.
- ▶ Temperature sensor and switch circuit for controlling low & high voltage fan speeds.

(3) Fans

Internal air circulation past the heat exchanger is by 7 columns of fans with 2 fans in each column. If the door is opened, a switch on the front door of the cabinet turns the fans off and sets an unauthorized entry alarm.

A further row of 7 inlet lid fans are located at the top of the housing and are accessible through a hinged lid. These fans direct filtered air over the heat exchanger and then to an outlet on the rear of the cabinet. They are also turned off when the lid is opened.

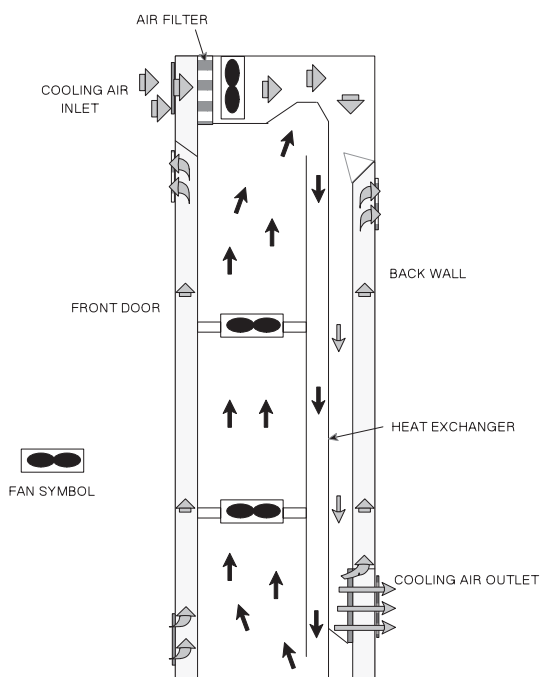


Figure 5–3 MEC cooling system air flow

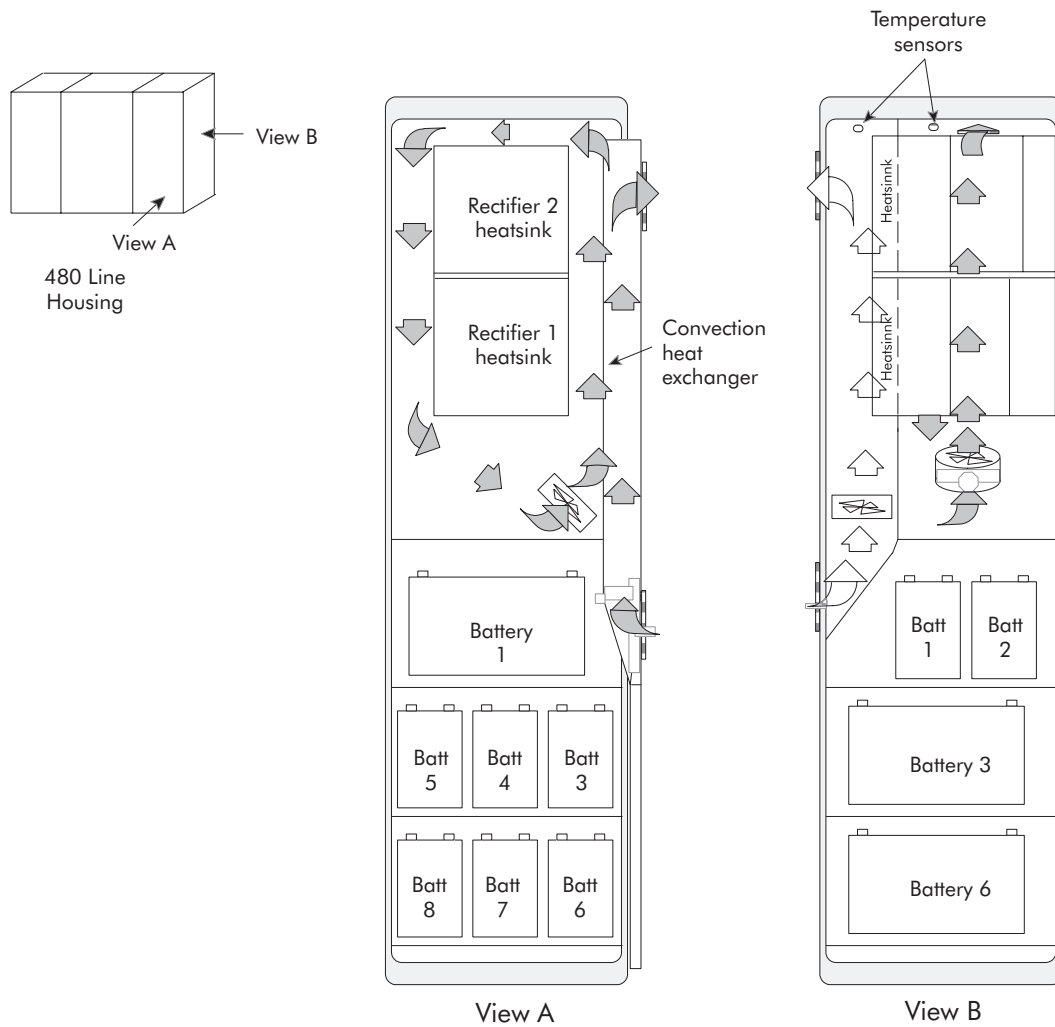


Figure 5–4 Power compartment cooling system air flow

5.3 240 Line 1G Remote Housing

The 240 Line 1G Remote Housing is very similar to the 480 Line 1G Remote Housing, with the main difference being that the Main Equipment Compartment is narrower. The effects are:

- ▶ The maximum number of Access Panels which can be fitted is four.
- ▶ Fewer fans are fitted.
- ▶ The overall length of the housing is 1543 mm.

The 240 Line 1G Remote Housing is only used for traditional RIM.

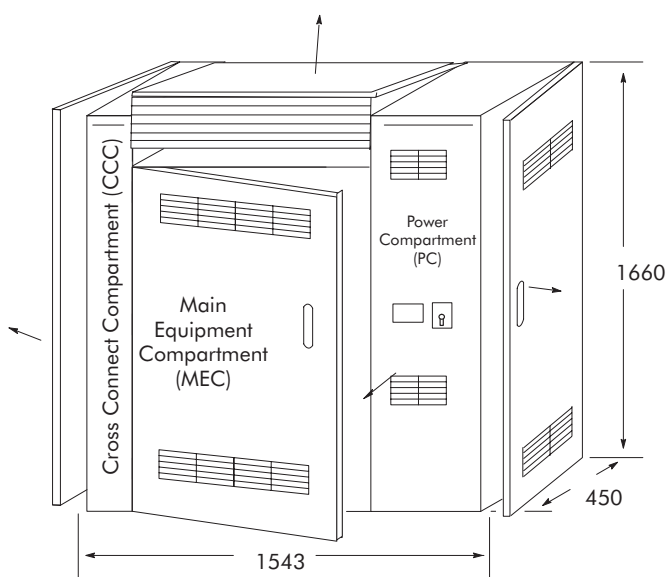


Figure 5–5 240 Line 1G Remote Housing

5.4 180 Line Housing

The 180 Line Remote Housing is only used for C–RIM. It has two separate compartments:

- ▶ The Main Equipment Compartment (MEC) is located at the centre/right of the housing with a single door opening at the front.
- ▶ The Cross Connect Compartment (CCC) is located to the left of the MEC. Its door is at the left end of the housing.

The 180 Line Remote Housing is mounted on a concrete plinth. Batteries are accommodated in a compartment at the right hand end of the plinth.

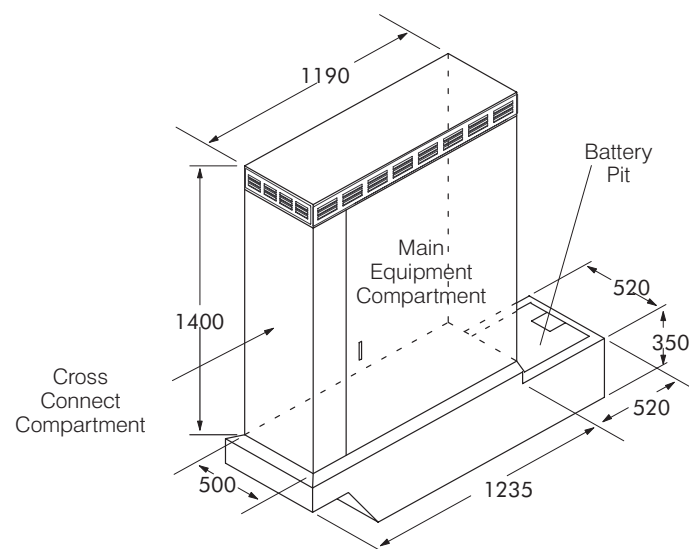


Figure 5–6 C–RIM 180 Line RU Housing and Plinth

5.4.1 Main Equipment Compartment

The MEC houses the Main Panel and Access Panels. It also houses the power subsystem, cooling system and a DDF module. In addition there is space available in the MEC to mount a panel which may be up to an 8 rack units high, though this is limited to 50W dissipation.

5.4.2 Power Supply Subsystem

The power supply subsystem is contained within the MEC. It comprises:

- ▶ Power Supply Unit.
- ▶ AC Distribution Panel.
- ▶ DC Distribution Panel.

5.4.3 Climate Control

The MEC is cooled by means of fan assisted internal air circulation, an air to air heat exchanger, and convective external airflow. The fans are controlled by either a FABC or a FABD, which also collects housing alarms.

5.4.4 Dimensions and Weight

The 180 Line Remote Housing is 500mm deep, 1400mm high, and 1190mm wide. Fully equipped the 180 Line Remote Housing weighs approx. 200 kg (excluding plinth and batteries).

5.4.5 Environmental Limits

The 180 Line Remote Housing operates in normal locations within the limits of – 10 to +45 degrees C and from 10% to 95% Relative Humidity.

5.4.6 Plinth and Batteries

The plinth and batteries are supplied by Telstra. A battery compartment is located at the right hand end of the plinth, with a lift up lid in the top of the battery compartment for access to the batteries and associated cabling.

5.5 480 Line 2G Housing

The 480 Line 2G Remote Housing is only used for C-RIM. It has two separate compartments:

- ▶ The Main Equipment Compartment (MEC) is located at the centre/right of the housing with a single door opening at the front.
- ▶ The Cross Connect Compartment (CCC) is located to the left of the MEC. Its door is at the left end of the housing.

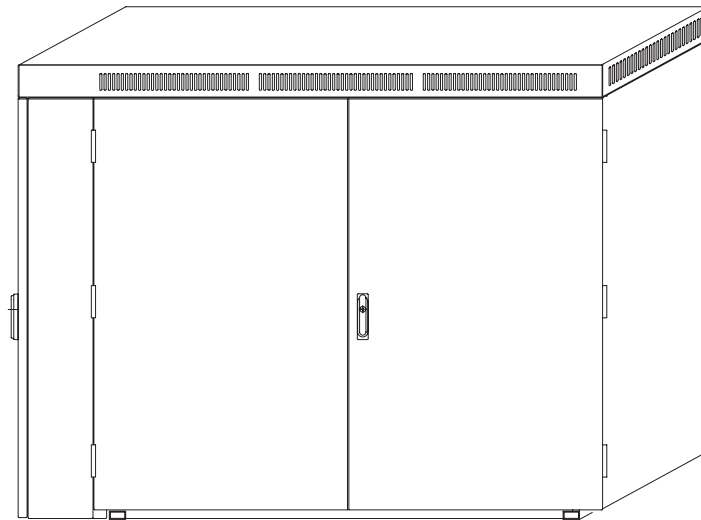


Figure 5–7 C-RIM 480 Line 2G Housing

5.5.1 Main Equipment Compartment

The MEC houses the Main Panel and Access Panels. It also houses the power subsystem, cooling system and a DDF module.

5.5.2 Power Supply Subsystem

The power supply subsystem is contained within the MEC. It comprises:

- ▶ Power Supply Unit.
- ▶ AC Distribution Panel.
- ▶ DC Distribution Panel.
- ▶ Fan And Battery Device (FABD).

5.5.3 Climate Control

The MEC is cooled by means of fan assisted internal air circulation, an air to air heat exchanger, and convective external airflow. The fans are controlled by the FABD, which also collects housing alarms.

5.5.4 Dimensions and Weight

The 480 line 2G Remote Housing is 500 mm deep, 1430 mm high, and 1815 mm wide. Fully equipped the 480 Line 2G Remote Housing weighs approx. 350 kg (excluding plinth and batteries).

5.5.5 Environmental Limits

The 480 Line 2G Remote Housing operates in normal locations within the limits of –10 to +45 degrees Celsius and from 10% to 95% Relative Humidity.

5.5.6 Plinth and Batteries

The plinth and batteries are supplied by Telstra.
Batteries are located in a pit external to the housing.

5.6 Underground CAN Equipment Housing

The Underground CAN Equipment Housing (UCEH) provides an underground enclosure for RIM equipment. Typically 480 channels are provided from a UCEH, but extra equipment space is available.

The UCEH consists of a sealed and waterproof central chamber that houses the power supply and transmission equipment. The UCEH can be air conditioned.

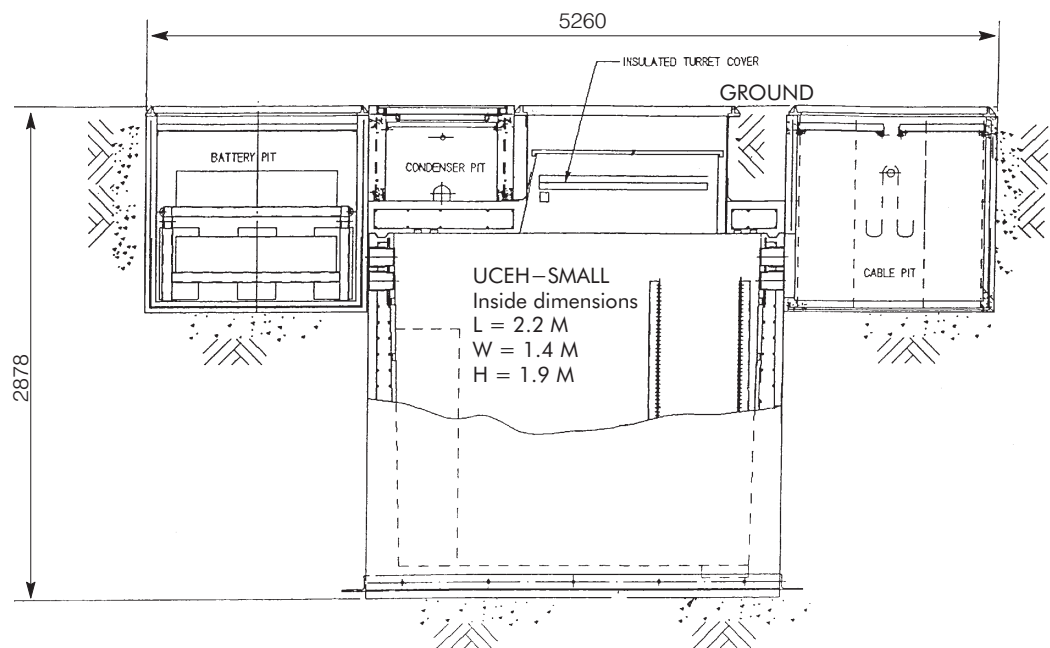


Figure 5–8 UCEH–Small – Cross–section

An end satellite pit houses 2 strings of emergency battery reserve which will provide service for some 8 hours.

A cable pit may be located at the other end of the main chamber or in the next street. The cable pit houses a maintenance loop of cable.

A CCU cabinet is located nearby.

UCEH can be supplied with equipment/items fitted at the factory to minimise fit–out time. A UCEH can be delivered overnight from the factory for immediate installation into a prepared excavation the next day.

For overview details refer also to drawing CL–1976 for UCEH–Small and CL–1977 for UCEH–Large.

5.6.1 UCEH Inside Dimensions

Inside dimensions of the two sizes of UCEH are listed in Table 5–1.

UCEH Size	Length	Height	Width
UCEH–Small	2200 mm	1900 mm	1400 mm
UCEH–Large	2200 mm	1900 mm	1950 mm

Table 5–1 UCEH Inside Dimensions

5.7 RCM

The Remote Customer Multiplexing (RCM) housing has also been used to contain RIM equipment.

Some RCM housings were provided with an add-on CCU at one end (which eliminated the need for a 900 pair pillar), whilst other RCM housings had the batteries housed in a compartment in a special concrete plinth. In this plinth battery compartment, lower battery temperatures occur and so the batteries last longer.

A 240 volt, 50 Hz, 16A power supply is provided along with 8 hours of emergency battery reserve.

The RCM housing is 1570 mm long, 600 mm wide and 1600 mm high. (Refer CSK – 23015). A suitable pre-cast concrete foundation plinth is shown on drawing CL-1681.

