

# London Electronics Limited

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Precision calendar / clock module

## CCM-1

**Connection details and general information**

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Generates RS422 data output with time and date  
Sealed to IP65



notes

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# Introduction

Please contact us if you need help, if you have a complaint, or if you have suggestions to help us improve our products or services for you.

If you contact us about a product you already have, please tell us the full model number and serial number, so that we can give you accurate and fast help.

This product has a 2 year warranty. We will put right or replace any item which is faulty because of bad workmanship or materials. This warranty does not cover damage caused by misuse or accident.

## ***IMPORTANT***

If this equipment is important to your process, you may want to buy a spare to cover possible failure or accidental damage in the future.

This is because at some times, for example during our factory shutdown periods, you may have to wait several weeks for an equivalent replacement. Or, we may have no stock at the time you urgently need it.

You may also need to pay extra carriage charges if you want a fast, guaranteed courier service. Warranty repairs or replacements are normally returned with a standard courier service.

We do not offer any compensation for losses caused by failure of this instrument.

If you do not agree with these conditions, please return this item now, in unused, clean condition, in its original packaging and we will refund the purchase price, excluding any carriage paid.

We thought you'd prefer to know about possible delays and extra charges now, rather than during a panic.

We always try to improve our products and services, so these may change over time. You should keep this manual safely, because future manuals, for new designs, may not describe this product accurately.

We believe these instructions are accurate, and that we have competently designed and manufactured the product, but please let us know if you find any errors.



# Warnings

**Please carefully read all warnings and ONLY install the item when you are sure that you've covered all aspects.**

- \* Connect the equipment according to current IEE regulations and separate all wiring according to IEC1010.
  
- \* Power supplies to this equipment must have anti-surge (T) fuses rated at 315mA for DC supplies in the range 10-24 VDC.
  
- \* Check that the model number and supply voltage suit your application before you install the equipment.
  
- \* Don't touch any circuitry after you have connected the equipment, because there may be lethal voltages on the circuit board or connector terminals.
  
- \* Only adjust on-board switches or connections with the power turned off.
  
- \* Make sure all screw terminals are tight before you switch the equipment on.
  
- \* Only clean the equipment with a soft dry lint-free cloth. Do not use any solvents.

***Safety First .....Don't assume anything..... Always double check.  
If in doubt, ask someone who is QUALIFIED to help you in the subject.***

# Description

The CCM1 is a high precision date and time module, which can be used as a master to feed one or more clock or date displays.

This ensures that all displays are perfectly synchronised.

A high precision reference oscillator is used for the timing, with a typical accuracy of +/- 3 seconds per month.

The CCM1 is recommended for use in applications where a radio or satellite time signal is not available, or may be subject to local interference.

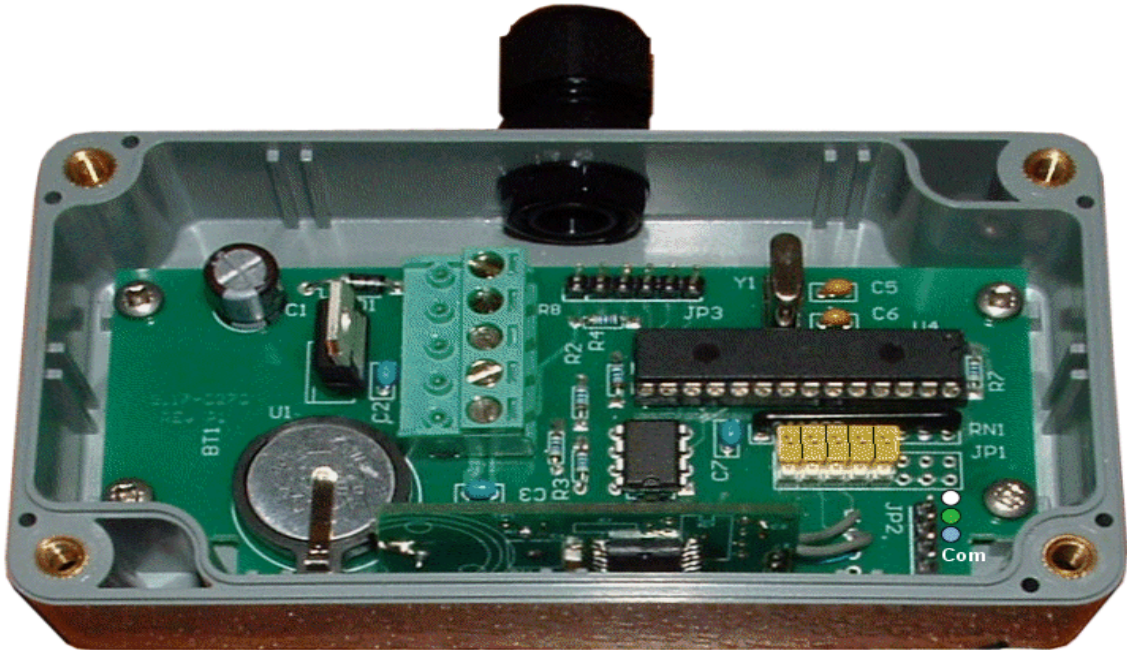
We make radio and satellite time references, which offer superior long term precision, if you are able to mount the receiver outside.

# Setting Time / Date

To set time or date, you will need to open the unit.

You will also need to be able to see the the display which the unit is sending time data to.

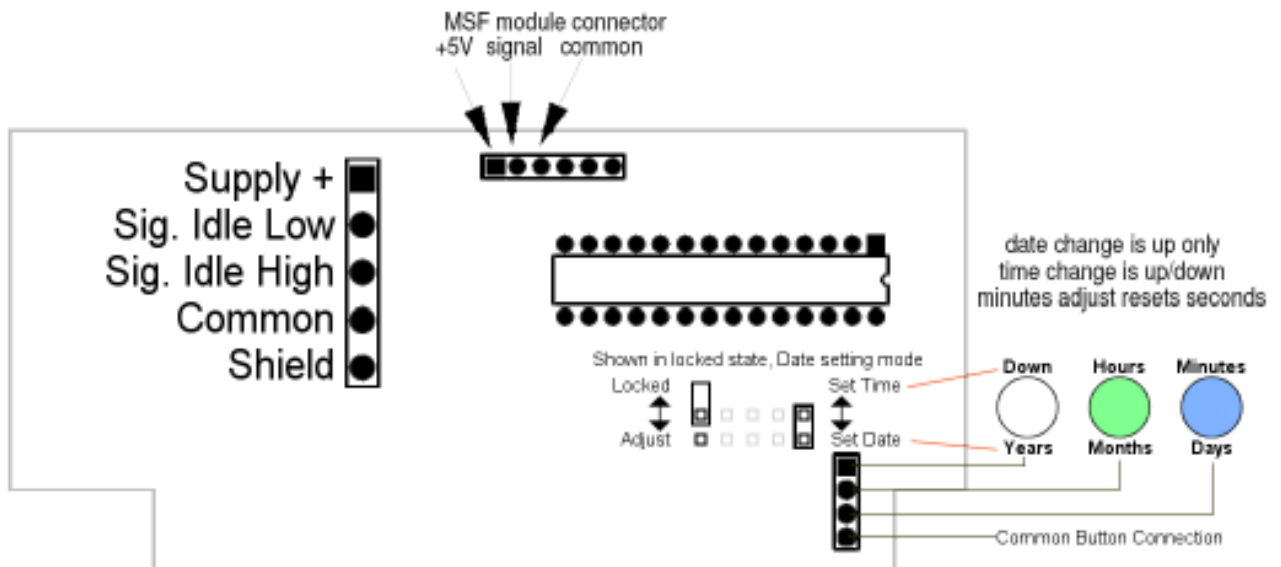
Remove the 4 corner screws, and lift off the lid, to reveal the circuit board.



Board layout subject to change without notice.

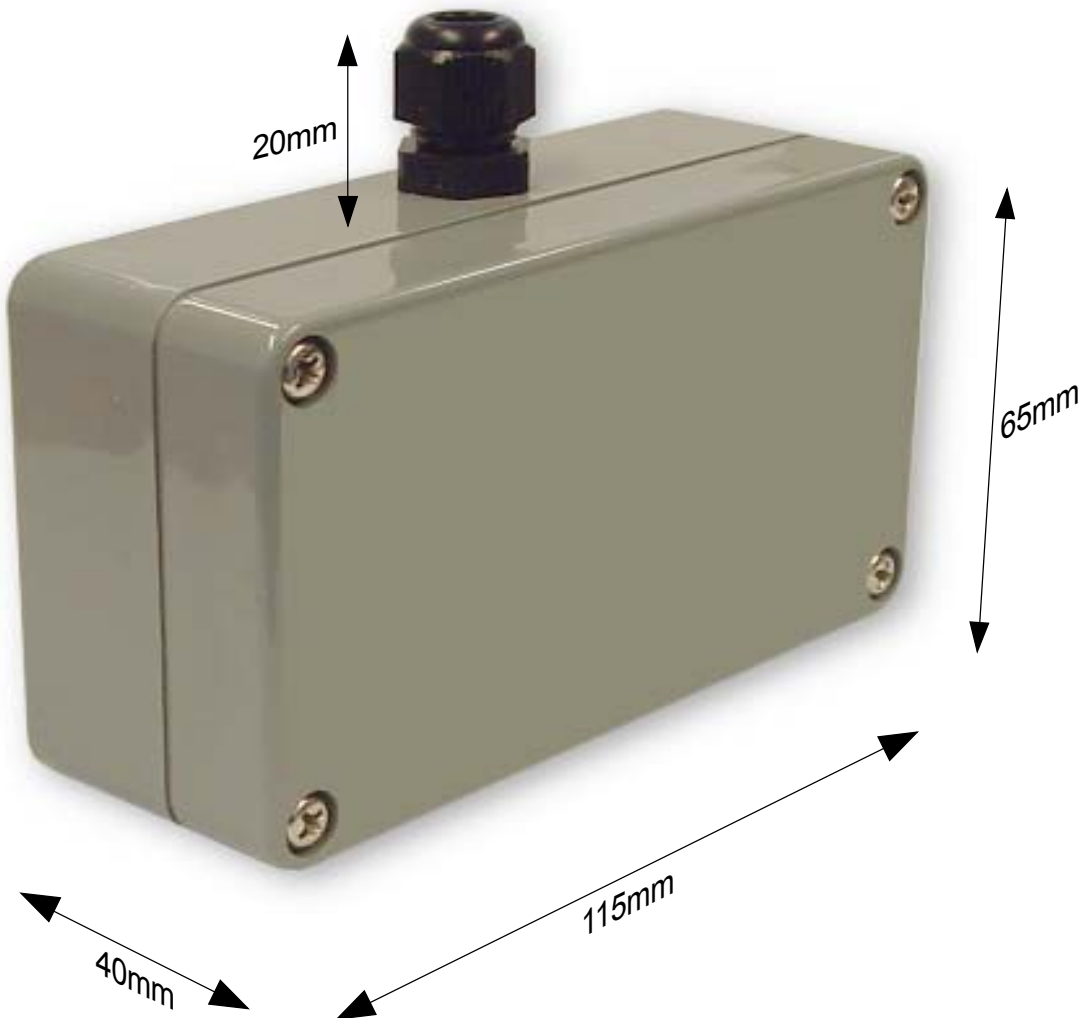
## IMPORTANT:

You must unplug the power / signal connector when switching on or off the lockout switch or time/date selection switch.



# Dimensions and weights

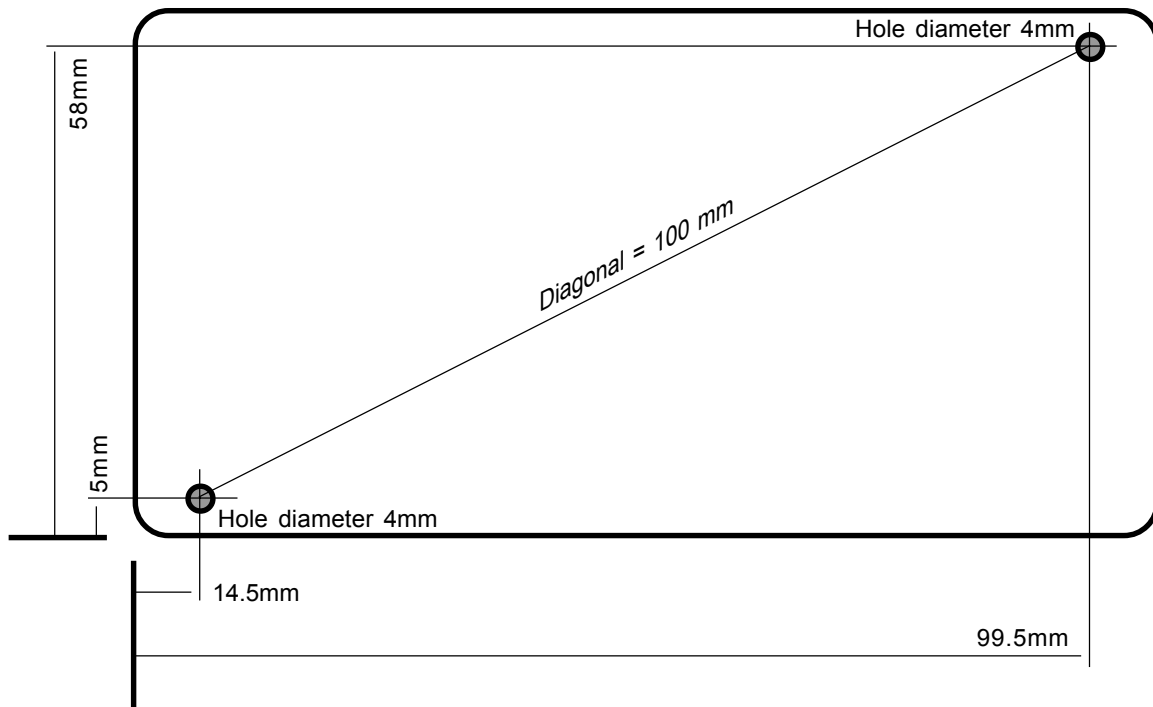
Case width	:	115.0	mm
Case forward projection	:	40.0	mm
Case height	:	65.0	mm
Cable gland height	:	20.0	mm
Typical weight	:	175	grams
Operating conditions	:	0 to 50	degrees C
Storage conditions	:	-20 to +70	degrees C
Case sealing	:	IP65	
Case Material	:	PolyCARBONATE	
Cable dimensions	:	Accepts 4 core screened cable 4.5 to 6.5mm dia.	
Flammability Class	:	V0 (UL94)	





# Mounting the module

The CCM1 has 2 diagonally positioned mounting holes, outside the sealed enclosure. You can use these to wall or surface mount the module.



# Connections

**WARNING:**

Do not open the enclosure if moisture or dirt could contaminate the electronics. Only open in clean, dry conditions.

Remove the 4 outer corner screws, so that you can lift the grey lid, to expose the electronic assembly.

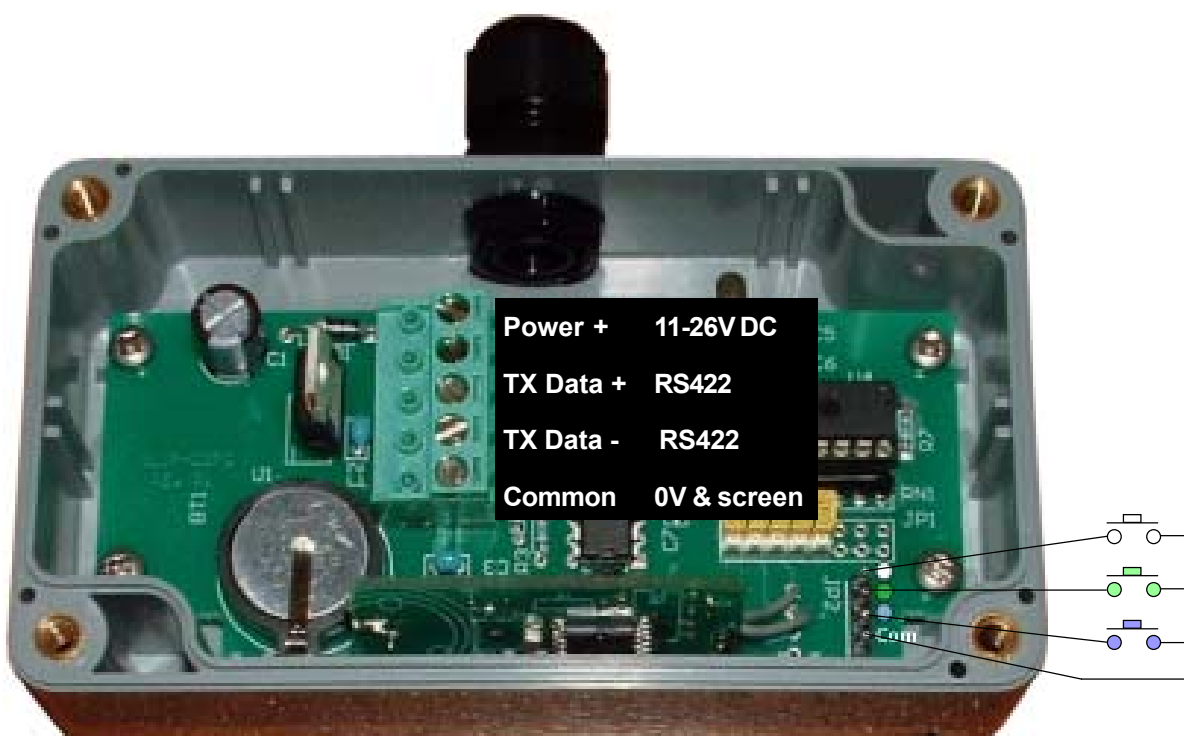
Feed your 4 core cable through the cable gland and wire to the terminal block as shown below.

Use good quality 4 core SCREENED cable with protective outer plastic sheath. Connect the screen to the COMMON terminal.

You can have up to 500 m of cable between the receiver and the other equipment in the system. For cable lengths more than 50m, we recommend a supply voltage of 12V DC. You should also use low capacitance data cable for lengths above 50 metres,

Some typical connections to London Electronics remote displays (refer to their manuals also):-

CCM1	INT-S panel mounting display	S17XX large display
TX Data + TX Data - Common	Terminal 3 Terminal 2 Terminal 1 (Set rear switches for RS422/485)	Green Data A Blue Data B Yellow Common (Set for RS422/485)



# Data from the CCM1

The data string updates every second and is in the format...

**<hr><min><sec><day><mnth><yr><Status><cr>**

So at 13:53:12 on the 10th of April 2005, with data coming from rugby synchronised signal, the string would have been seen as :-

**13|53|12|10|04|05|-|<cr>** (Spaces for clarity only, to show separation of data fields)

Each field has the following characteristics:-

- hr** : from 00 to 23
- min** : from 00 to 59
- sec** : from 00 to 59
- day** : from 01 to 31
- mnth** : from 01 to 12
- yr** : last 2 digits. For example in 2005 this will be 05
- status** : May be a - sign, a + sign or a space
- cr** : ASCII 13 Carriage return (Hex 0d)

# Specifications

Power supply	:	10 to 24 V DC at up to 100mA into short cable 10 to 12V DC at up to 100mA into cable >50m long
Data output	:	RS422 at 2400 Baud
Precision	:	3.5 parts per million. approx +/- 10 seconds / month.
Battery life	:	Typically 2 years
Case width	:	15.0 mm
Case forward projection	:	40.0 mm
Case height	:	65.0 mm
Cable gland height	:	20.0 mm
Typical weight	:	175 grams
Operating conditions	:	0 to 50 degrees C
Storage conditions	:	-20 to +70 degrees C
Case sealing	:	IP65
Case Material	:	Polycarbonate
Cable dimensions	:	Accepts 4 core screened cable 4.5 to 6.5mm dia.
Cable type	:	Low capacitance data cable
Flammability Class	:	V0 (UL94)

# Revisions

Rev 0 Released 20 June 2007  
Rev 1 27 July 07 Added note that you must switch off device when unlocking the programme buttons.

# Notes



# Declaration of Conformity

We designed and manufactured this Product to meet the following specifications :

EN55022:1987 Conducted Emissions: Class B  
EN55022:1987 Radiated Emissions : Class B  
IEC801-2:1984 Electro-Static Discharge Immunity: 8kV Air  
IEC801-3:1984 Radiated ElectroMagnetic field Immunity: 3V/m

The products conform with these standards:

EN50081-1:1992 (normative)  
EN50082-1:1992 (normative)

and comply with the requirements of Council Directive 89/336/EEC for Electro-Magnetic Compatibility,  
& are designed to meet 72/23/EEC safety directive.

## Conditions

The device covered by this certificate must be installed according to the following conditions :-

Cabling must be routed separately to heavy power carrying cabling (includes relay output wiring)  
All signal cabling must be screened. The screen must only be connected to the power earth terminal

Signed as true and correct, for and on behalf of London Electronics Ltd.

Warren Court, Beds.

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J.R.Lees Director