



450A.05



451A.05



452A.05



453A.05



454A.05

**Radio & GPS  
Time Code  
Synchronisation**

*Please refer to the  
484 & 488GPS data sheets  
for information on radio  
and GPS time code  
synchronisation.*



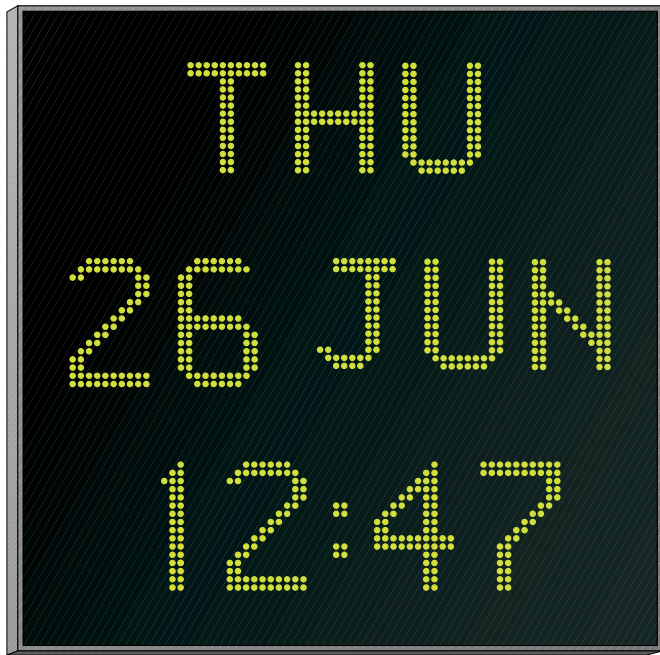
455A.057



460A.05



467A.05



454A.12

450A, 451A, 452A and 453A models are available as **.12** versions with 12cm and 10cm character heights as the 454A.12 model shown above.

The 455A model is available with 7.5cm and 10cm character heights in addition to the 5.7cm version illustrated.

Model No.	Case size	Character height	Viewing distance
450A.05 & 451A.05	550 x 90 x 58mm	50mm & 30mm	20m
450A.12 & 451A.12	1450 x 180 x 58mm	120mm & 100mm	50m
452A.05 & 453A.05	480 x 180 x 58mm	50mm	25m
452A.12 & 453A.12	900 x 400 x 58mm	120mm & 100mm	50m
454A.05	300 x 300 x 58mm	50mm	25m
454A.12	600 x 600 x 58mm	120mm & 100mm	50m
455A.057	450 x 240 x 58mm	57mm	25m
455A.075	600 x 320 x 58mm	75mm	35m
455A.100	800 x 425 x 58mm	100mm	50m
460A.05 & 467A.05	460 x 90 x 58mm	50mm	25m

400A series multi-function electronic calendar clocks provide a precise and elegant display of time and date using bright red or green LED characters.

## Operation

The following standard operating modes may be selected by the user:

- 12 or 24 hour time display format.
- Automatic, pre-programmable, forward-backward seasonal time correction.
- Automatic or manual preset brightness control.
- User selection of stand-alone operation or from over 30 different types of slave operation including synchronising control by alternate and single polarity impulses, EBU/SMPTE time code, GPS and radio time codes, IRIG-B/Afnor NFS 87 500 time codes, MB serial and MOBAline<sup>®</sup> time codes, serial ASCII messages at RS232 or RS485/422 levels in a wide range of formats and data rates and control using w482<sup>®</sup> time code to display time from one of fifteen different time zones. Optional low-cost internal wBus<sup>®</sup> interface cards are required for EBU/SMPTE, IRIG-B/Afnor, NFS 87 500 and RS232 or RS485/422 operation. DCF or MSF radio time code or GPS satellite synchronisation requires the appropriate receiver, Please refer to the appropriate data sheet for further information.
- The day-of-week and month information can be displayed using a single language or using two or three alternating languages selected from the following list: Catalan, Czech, Croat, Danish, Dutch, English, Finnish, Flemish, French, Galician, German, Hungarian, Italian, Lithuanian, Norwegian, Polish, Portuguese, Russian, Slovak, Spanish, Swedish, Welsh.
- 450A, 452A and 452A Calendar models have four additional, user selectable, display modes to show:  
The day-of-year (Julian day) in place of the day-of-week.  
The week number in place of the day-of-week.  
A numeric display of date as DD MM YY.  
A numeric display of date as MM DD YY.

## Case Styles and Colours

The 400A series clocks are available in cases suitable for surface wall mounting, ceiling suspension, flush mounting in a panel with rear access or supplied with a steel mounting box for flush mounting in a solid wall.

Clocks are supplied as standard with cases finished in black, bronze or silver fine brushed anodising. Flush mounted cases are normally supplied in black anodising. Other finishes are available at extra cost.

## Wharton Electronics

Unit 15, Thame Park Business Centre  
Wenman Road  
Thame, Oxfordshire  
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## Power Supply

110V or 230V 50/60Hz operation as standard. 12, 24 or 48V dc or 48V ac operation at extra cost. An automatically re-charging internal battery maintains timekeeping in the event of a mains power failure.

## Output Signals

All 400A models may be fitted with wBus<sup>®</sup> output modules to enable the clock to function as a time signal source.

- When fitted with the optional 404.2 (RS232) or 404.4 (RS485) wBus<sup>®</sup> interface module the clock will provide serial ASCII time messages in one of seven different message formats.
- When fitted with an optional 404.M wBus<sup>®</sup> interface module the clock will function as a master clock to control up to ten other 400A series clocks or calendar clocks.

## Internal wBus<sup>®</sup> Option Interface Modules

wBus<sup>®</sup> modules are small, plug-in, printed circuit boards which locate on a ten way expansion connector within the clock.

## Environment

Operating Temperature:	0-50°C
Altitude:	0 to 3,000m
Relative Humidity:	0% to 95% (non-condensing)
MTBF:	> 50,000 hours
Accuracy:	
Stand-alone operation -	99.9998% @ 20°C ±3°C
Locked to MSF or DCF -	within 20mS of UTC
Locked to GPS -	within 1mS of UTC

MOBAline<sup>®</sup> is a registered trade mark of MOSER-BAER AG

wBus<sup>®</sup> and w482<sup>®</sup> are registered trade marks of Wharton Electronics

## Electromagnetic Compatibility & Safety

400A series calendar clocks, when used in accordance with our recommendations, comply with the European Community Electromagnetic Compatibility Directive 89/336/EEC and Low Voltage Directive 73/23/EEC and conform to the following standards:

- **EN 50081-1** 55022 class B
- **EN 50082-1** IEC 801-2 level 3  
IEC 801-3 level 3  
IEC 801-4 level 3
- **EN 60950**

Please contact us for information on our CSA approved and UL recognised models.

*Designed and manufactured by:*

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