



M210 Modular Timing System

The M210 is a highly flexible timing system designed for use in any applications where reliable time information is required. It is ideal where synchronisation of different output interfaces is desirable.



Features

- 3-slot module output capacity
- Choice of clock synchronisation options
- Choice of master clock accuracy
- Large range of output options
- 1 U high standard 19" rack mount
- 5-segment front panel button for equipment configuration and control
- Large alphanumeric display of time, date and status
- Equipment configuration stored in non-volatile memory

Main Options

Synchronisation source:

- Satellite (GPS)
- Terrestrial Low Frequency (MSF, DCF77, WWVB, etc)
- Timecode (IRIG, AFNOR, etc)

Master clock (in order of accuracy):

- Standard crystal
- Oven controlled crystal
- Commercial grade Rubidium
- Industrial grade Rubidium
- Industrial grade Caesium
- Military grade Caesium

Output:

- Serial data outputs (RS232, RS422, 20mA Current Loop)
- Parallel BCD output
- Time code outputs (IRIG, etc)
- Analogue clock impulse drives.

N.B. We have over 60 individual modules or use with the M210, and we are continually developing new ones. Please contact us for an up-to-date list.

Specifications

Performance Specification at 20°C

Time Accuracy:	Standard crystal oscillator maintains free-run accuracy of 20 milliseconds over 4 hours at 20°C.
Display:	2 row by 24 character LCD. Character height 5mm.
Keyboard:	5 button keyboard for equipment configuration and control. Storage of equipment configuration in non-volatile memory.
Power:	90-260V AC \pm 10% 50-60Hz Load 40W (typical)- subject to options and oscillator fitted. Connection via 3 pin IEC plug.
Mechanical:	19 inch rack mounting 1U high 305mm deep. The chassis has provision for up to 3 option modules to be fitted within the unit.

Environment (Operation and Storage)

Temperature:	0°C to +40°C
Humidity:	Up to 95% RH (non-condensing)
EMC:	CE Compliant

N.B. This system has 3 module slots. If you require more, then please see the M211 Modular Timing System, which has a 9-module slot capacity for even greater flexibility.

As we are always seeking to improve our products, the information in this document only provides general indications of product capability, suitability and performance, none of which shall form any part of any contract.

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Rev 4.1
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M211 Modular Timing System

The M211 is a high capacity flexible timing system designed for use in any application where reliable time information is essential. It is ideal where synchronisation of many different output interfaces is required.



Features

- 9-slot module output capacity
- Choice of clock synchronisation options
- Choice of master clock accuracy
- Large range of output options
- 3 U high standard 19" rack mount
- 5-segment button front panel keyboard for equipment configuration and control
- Alphanumeric display of time, date and status
- Equipment configuration stored in non-volatile memory

The M211 Timing System provides a Master Clock, which is based upon a central microprocessor. This provides all the timekeeping functions utilising an internal oscillator. A 5-segment front panel button is used in conjunction with an alphanumeric display for control and configuration of the unit. Such features as time entry and option configuration are achieved through the use of this facility.

The display also indicates time, date and status information. The M211 Timing System is designed to allow the inclusion of a large number of options such as data interfaces and standard time receiver modules. These options allow the output of time and date in various formats together with the automatic synchronisation of the Master Clock to the various national and international time standards that are available. The inclusion of a precision oscillator ensures a high long-term stability for the Timing System.

The M211 Timing System is designed to support applications requiring a large number of varied interfaces, or the inclusion of high precision oscillators. The provision of 9 module slots gives great scope to the functionality of the M211 Timing System, whilst it still remains compact within a 3U 19" rack mountable unit. This ensures that the M211 Timing System can fulfil complex system requirements, which are beyond the capacity of the smaller M210 Time System.

Main Options

Synchronisation source:

- Satellite (GPS)
- Terrestrial Low Frequency (MSF, DCF77, WWVB, etc)
- Timecode (IRIG, AFNOR, etc)

Master clock (in order of accuracy):

- Standard crystal
- Oven controlled crystal
- Commercial grade Rubidium
- Industrial grade Rubidium
- Industrial grade Caesium
- Military grade Caesium

Output:

- Serial data outputs (RS232, RS422, 20mA Current Loop)
- Parallel BCD output
- Time code outputs (IRIG, etc)
- Analogue clock impulse drives.

N.B. We have over 60 individual modules or use with the M211, and we are continually developing new ones. Please contact us for an up-to-date list.

Specifications

Performance Specification at 20°C

Time Accuracy:	Standard crystal oscillator maintains free-run accuracy of 20 milliseconds over 4 hours at 20°C.
Display:	2 row by 40 character LCD. Character height 5mm.
Configuration:	5-segment button for equipment configuration and control. Storage of equipment configuration in non-volatile memory.
Power:	90-260V AC \pm 10% 50-60Hz Load 40W (typical)- subject to options and oscillator fitted. Connection via 3 pin IEC plug.
Mechanical:	19 inch rack mounting 3U high 353 mm deep. The chassis has provision for up to 9 option modules to be fitted within the unit.

Environment (Operation and Storage)

Temperature:	0°C to +40°C
Humidity:	Up to 95% RH (non-condensing)
EMC:	CE Compliant

N.B. If you require a more compact version of the M211 Modular Timing System, then please see the M210 Modular Timing System, which is just 1U high and has 3 module slot capacity.

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Rev 2.4

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M355 LED Digital Time Display [4 or 6 Digit]

These displays provide a clear indication of time in a digital format and are suitable for any interior application where clearly presented time or date information is required. They can be used in conjunction with any time and frequency equipment with the required output interface.

Features

- Single-sided display
- Seven segment high-intensity LED digits
- Choice of 4 digit or 6 digit
- Available in Serial/Timecode or NTP display versions
- Excellent readability through clear acrylic window
- Wall or desk mounting options available
- Range of colours and styles



Serial/Timecode Time Display

A wide range of interfaces is provided in the product allowing it to be used in conjunction with a master timing system and in a variety of applications.

The display can be also operated in conjunction with an external Time Receiver. With this arrangement, the display only requires an AC power source to operate; the display will automatically acquire accurate time from the selected time source. External Time Receivers are available for most LF Time broadcast services and for reception of time from the Global Positioning System (GPS).

Alternatively, the display can be manually configured to run autonomously via switches set in the case.

Network Time Display

The M355 Network Time Display is available for use with computer networks operating Network Time Protocol (NTP). By connecting the display to the network, a clear indication of time or date in digital format is provided. Through use of NTP, the display automatically acquires accurate time at any location where a network connection is available.

Specifications

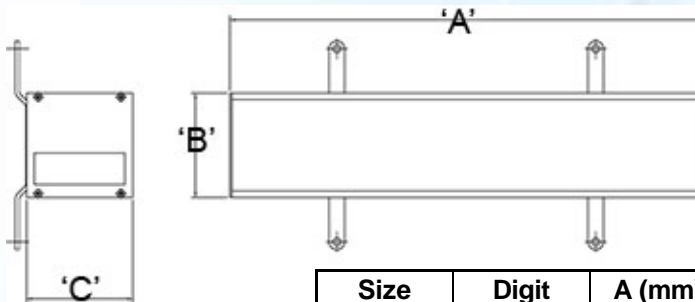
General

Display Technology: 7 Segment High Intensity LED.
Display Digit Colour: Red, Green or Yellow
Power: 115/230V AC \pm 10% 48-62Hz.

Environmental (Operation & Storage)

Temperature: 0°C to +40°C.
Humidity: Up to 95% RH (non-condensing)
EMC: CE Compliant

Dimensions:



Size	Digit Height	A (mm)	B (mm)	C (mm)	Weight (kg)
6 Digit	100mm	633.2	136	82	2.5
	60mm	362	81	82	1.8
4 Digit	100mm	468.2	136	82	2.2
	60mm	325.2	81	82	1.6

Serial/Timecode Time Display

Operation

- Stand-alone or Master/Slave Configuration.
- 3 button time setup facility for stand alone operation.
- RS232/RS422/20mA Current Loop interfaces for use with a Master Clock.
- 24V Impulse input for use with Analogue Clock circuits.
- EBU Time Code input for use in broadcasting applications.
- Interface to external Time Receiver for highly accurate operation without a Master Clock.

Network Time Display

Display Connections

RJ45 socket for connection to a 10BaseT network. A 9-way D-type socket is also available for RS232 connection for configuration and status purposes (38.4kbaud, no parity, 8 bit characters and 1 stop bit).

Interface Standards

This display is compatible with NTP version 3 as defined by specification RFC 1305.

Network Configuration

Configuration of the network parameters including IP address, Subnet Mask, and Gateway Address is performed by means of the menu driven user port. All such details are stored in non-volatile memory.

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Rev 4.0

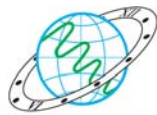
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M385 Analogue Clocks

We can provide both custom and semi-custom clock designs that are constructed from a selection of standard component parts. This means you can benefit from aesthetic designs at an economic price. This approach is particularly appropriate in architectural applications where the appearance of the clock must be in harmony with its surroundings.

Features

- High-quality economic designs
- Large range of sizes & styles available
- Hands: Hours & minutes, or hours, minutes & seconds
- Choice of Pulse, Intelligent or NTP versions
- Wall or ceiling mounting options available
- Range of colours and styles available



The standard components include mechanisms that allow the automatic setting of the clock hands to the correct time, digital day/date displays for calendar presentation within the clock, and rear illumination/LCD shutter systems for automatic blanking of the clock in the event of loss of control data to the clock.

A range of dial and hand sizes and styles are also available and custom versions can be supplied.

Available Clock Types

1. Pulse Analogue Clock

These analogue clocks are driven via a pulse received from the Master Clock or Timing System and are an economic solution to any analogue display requirement.

2. Intelligent Analogue Clock

These clocks include an integral control board and receive encoded time data from a Master Clock or Timing System. The main benefit of this type of clock is that the hands will set themselves to the correct position, even after a power interruption, resulting in minimal manual intervention.

3. NTP Network SMART Analogue Clock

The time displayed by these clocks can be derived from a national time standard, using a TFS Network Time Server. The clocks are synchronised by a permanent connection to a computer network on which a Network Time Server is running.

Fully automatic: The internal microprocessor synchronises to the NTP Server, and the SMART clock will automatically set itself to the correct time. After initially programming the SMART clock, when time moves backwards or forwards as in Winter/Summer time changeovers, no manual adjustments are required.

Easy repositioning: A SMART clock may be easily repositioned in a new location without disturbing the operation of other SMART clocks.

Multi time zone: Individual offsets can be programmed into each SMART clock so that the clock will automatically display the time in different time zones as required.

Quickly installed: The SMART clock is quickly fitted within any location, requiring only a minimum of installation and initial configuration.

General Options

Size:	Clock sizes from 300mm diameter up to 1m diameter can be accommodated.
Hands:	A range of sizes and styles of hands are available. Custom versions can also be supplied.
Styles:	Cardinal, ordinal and numeral presentation of the dial can be provided. Custom versions can also be supplied.
Clock Mechanism:	Two types of mechanism are available: 1) Impulse mechanisms using reverse polarity pulses 2) Stepper motor mechanisms with integral hand position sensing. Hour, minute and second and hour and minute only versions are available for both mechanism types.
Illumination:	Rear or front illumination is available. In both cases, illumination is automatically controlled so that it is extinguished in the event of loss of control data to the clock.
LCD Shutter:	In cases where rear illumination is selected, our LCD shutter can be incorporated. The LCD shutter is controlled such that in normal operation, the shutter is transparent. In the event of loss of the control data to the clock, the shutter is set to the opaque condition.

Please contact us for specifications on each clock type

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