

# 19" Modular Master Clock System



## Modular Master Clock System

Type series  
**980**



The microprocessor-controlled Master Clock System is composed of modules and may be freely configured to meet any and all individual customer demands (choice of type and number of modules according to requirement). All functional units (henceforth called modules) are packaged as plug-in cassettes to fit 19" racks in free-standing or wall-mounted cabinets, already owned by the customer or to be separately ordered from us. The integrated system bus takes care of interconnecting and addressing the individual modules. Additional interfaces facilitate data exchange with all established networks.

### Principle of Function

The virtual heart of the Master Clock System is the time base module, marked **1** in the schematic, from which all control of the Master Clock System emanates. To safeguard the security of operation, as a rule two time base modules (system redundancy) are used. In case of a power disruption, programmed configurations will be retained in a flash memory. The system is synchronised by the radio receiver module **2**, connected to a choice of DCF77 or GPS remote antenna.

Operation of slave clocks is facilitated by a separate line module **6** for every clock line, with a variety of choices of pulse patterns and line monitoring capabilities. An additional monitoring device **5**, measuring and indicating grounding resistance, line voltage and current on each line, is optional. Incoming error messages may be relayed through the earth-free contact **11** or monitored on a locally provided operator PC **10**.

For actuation of optical or acoustic signals (to indicate start/end of work and/or break periods) up to 8 switching modules **3** may be integrated, with 8 earth-free contacts each. Power is supplied to the Master Clock System by an internal mains adapter **7**. A rechargeable battery **8** provides power in case of a mains disruption (emergency power). Alternatively, power may be provided from an external source **9**.

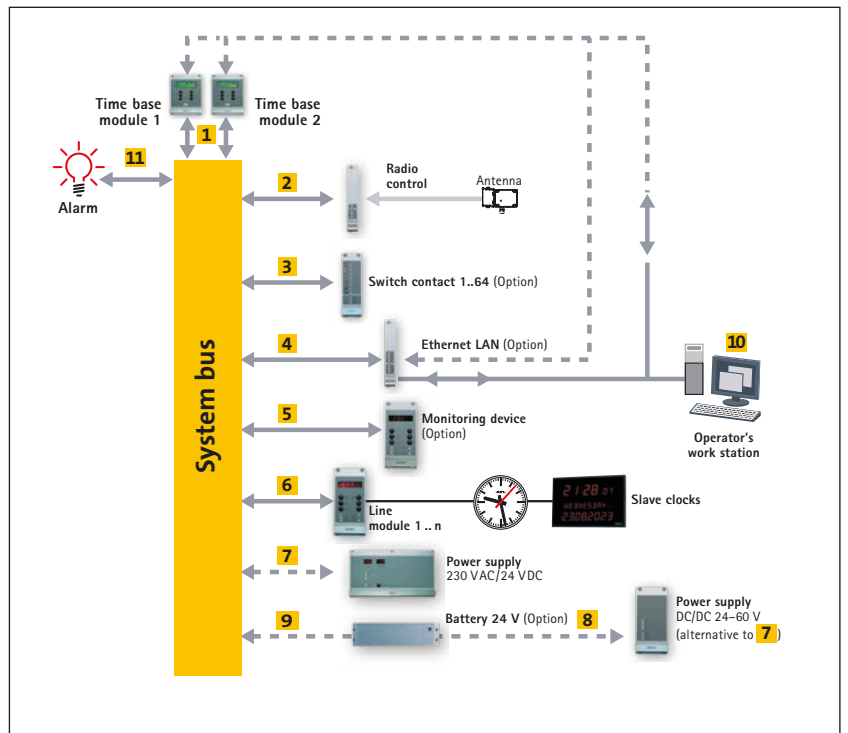
Make your choice of desired component groups and modules on this and the following pages or call us – we will be pleased to offer you an equipment set that meets your specific demands!



Example shown: 19" 15 HU wall-mounted cabinet with modules and blanking plates

Programming and control of the Master Clock System are effected either at the time base module or directly at the individual modules. Software and interface hardware for control from a locally installed PC **10**, connected by LAN **4**, are available as options.

Existing IT systems may be integrated either by LAN **4**. The Master Clock System will be completely wired and mounted in a wall-mounted or free-standing cabinet at our factory. Modules will be arranged to customer's specification.





## Free-Standing Cabinet 38 HU

Free-standing cabinet 38 HU interior height, with provisions for mounting of 19", 3 HU racks. Feet adjustable for height, lockable clear front door. All wiring connections accessible through rear wall,

secured by a lockable metal door. Side panels are detachable with inside locks. Dimensions (WxHxD) cir. 600x1.800x650 mm, weight empty cir. 75 kg.

Type	Capacity	Item No.	€ each
19" free-standing cabinet, 38 HU (without content)	36 HU, 84 WU	11.980.138	5,990.-



## Wall-Mounted Cabinet, 12 HU, 15 HU

Wall mounted cabinet for 19" racks (3 HU each), interior height 12 HU or 15 HU. Lockable clear front door. The mounting frame is hinged to swing out and make all wiring connections accessible from behind.

Dimensions (WxHxD) 12 HU: cir. 600x612x515 mm, 15 HU: cir. 600x746x515 mm, weight empty cir. 16 kg and 18 kg resp.

Type	Capacity	Item No.	€ each
19" wall-mounted cabinet, 12 HU (without content)	12 HU, 84 WU	11.980.112	2,890.-
19" wall-mounted cabinet, 15 HU (without content)	15 HU, 84 WU	11.980.115	3,090.-



## 19" Rack Element (component group carrier) with integrated system bus

19" rack element (3 HU) for plug-in mounting of the required component groups. All individual modules are interconnected by the integrated system bus, each module's address being defined by its mounting position.

The external connections of the individual modules are located at their rear faces. Mounting different types of modules on the same rack element is permissible. Unoccupied spaces must be covered by blanking plates.

Type	Capacity	Item No.	€ each
19" rack element, 3 HU, incl. system bus (without content)	3 HU, 84 WU	11.980.184	995.-
Blanking plate, 84 WU	3 HU, 84 WU	01.980.184	149.-
Blanking plate, 12 WU	3 HU, 12 WU	01.980.112	72.-
Blanking plate, 4 WU	3 HU, 4 WU	01.980.104	49.-



## Time Base Module

The microprocessor-controlled time base module is used to set the operating parameters for the entire Master Clock System, it takes central control and monitors all system functions. Once programmed, the configuration will be saved in a flash memory in case of power disruptions. Change between summer to winter time is automatic by radio control through DCF77 or GPS and the respective remote antennas and/or receivers. Programming is effected by six buttons on the front panel or - optionally - by a locally installed PC or by modem from a network. Data

interfaces and programming software for all established operating systems may be ordered as extras. Error warnings in case of malfunction or power disruption are signalled by the alarm output contact or the operator's PC. The two-line, 16 digit LCD display in the front plate indicates current (system) time and date and (multiple language) messages for operator guidance. LEDs indicate current status. To enhance the security of operation, as a rule two time base modules (redundant system) are used in parallel.

Type	Dimensions	Item No.	€ each
Time base module	3 HE, 20 TE	11.980.211	2,390.-



## Modular Master Clock System

Type series

# 980



Make your choice of desired component groups and modules on this and the following pages or call us - we will be pleased to offer you an equipment set that meets your specific demands!



**Modular  
Master Clock  
System**

Type series

**980**



## Receiver Module with Antenna

Capable of synchronising one or more time base modules, the receiver modules come complete with appropriate (DCF77 or GPS) remotable antennas. Antennas may be mounted indoors or outdoors (GPS

outdoors only). LED indicator for quality of reception. Mounting device for antenna and 10 m connecting wire included (extension to several times this length possible, please call for information).

Type	Dimensions	Item No.	€ each
Receiver module DCF77, incl. antenna (IP55)	3 HU, 4 WU	11.980.221	1,150.-
Receiver module GPS, incl. antenna (IP65)	3 HU, 4 WU	11.980.231	1,995.-



## Line Driver Module

Controlled by the superimposed time base module, the line driver modules administer switched power to the slave clock lines connected to them. The line voltage is either 24 V or 60 V (48 V on request) the line/pulse current is 1 A per module max., protected by an electronic fuse. The pulse mode may be chosen as:

- minute pulse, polarity alternating
- half-minute pulse, polarity alternating
- second pulse, polarity alternating
- PEWETA DCFport24 telegram (24 V version only).

Module circuitry includes automatic recognition of too high and/or too low line

voltage with automatic safety cut-off, at the cut-off or alarm threshold of your choice. In case of a malfunction of the time base module, the line driver modules automatically without delay take over control of their slave clock lines. The line driver modules may be programmed either through the time base module or by six buttons on their front plates. The slave clock line may be visually monitored by means of a 6-digit software monitor slave clock, the LED display of which is also used for operator guidance during programming. LEDs on the front panel enable instantaneous status recognition..

Type	Dimensions	Item No.	€ each
Line driver module, 1 A, line voltage 24 V	3 HU, 12 WU	11.980.324	1,050.-
Line driver module, 1 A, line voltage 60 V	3 HU, 12 WU	11.980.360	1,150.-



## Monitoring Device

For extra security of operation, the monitoring device monitors grounding resistance, line voltage and line current of the connected line modules. Voltage and current of each line may be visually checked

by means of the 6-digit digital LED display. If a line is grounded, an alarm will be triggered. LEDs on the front panel enable instantaneous status recognition.

Type	Dimensions	Item No.	€ each
Monitoring device	3 HU, 12 WU	11.980.390	2,250.-



## Switching Module

The switching module offers 8 earth-free contacts for triggering optical and/or acoustic signals or alarms as well as on/off control of other systems (such as lighting or illumination). 4 of the 8 relay contact outputs are rigged for alternate function switching, the other four are for on/off switching only. On/off interval switching is programmable with intervals of 1 ... 59

seconds. A three-position switch with indicating LED per channel enables manual override of the automatic function to permanently on or off. Current capacity per contact is 6 A at 230 VAC. Up to 8 switching modules (8x8= 64 channels or circuits) may be operated in one Master Clock System. LEDs on the front panel enable instantaneous status recognition.

Type	Dimensions	Item No.	€ each
Switching module, 8 free-floating switch contacts	3 HU, 8 TU	11.980.481	1,295.-

Make your choice of desired component groups and modules on this and the following pages or call us – we will be pleased to offer you an equipment set that meets your specific demands!



## Mains Power Supply Module

Power for the entire Master Clock System is supplied by the mains power supply. Input voltage is 230 VAC +/- 10 %. Output voltage is 24 VDC (rated voltage). Three output current capabilities are available: 5 A, 10 A and 20 A sustained load. The power supply is protected against short

circuits and overloads. 2 LED digital displays indicate input and output voltage and current. Alarm threshold for low input voltage cut-off may be programmed. LEDs on the front panel enable instantaneous status recognition.

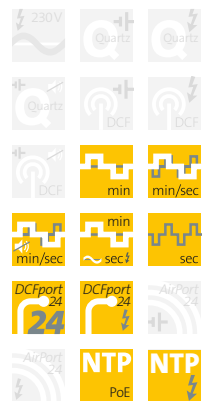
Type	Dimensions	Item No.	€ each
Mains power supply module 230 VAC/24 VDC – 5 A	3 HU, 48 WU	11.980.605	1,790.–
Mains power supply module 230 VAC/24 VDC – 10 A	3 HU, 48 WU	11.980.610	2,390.–
Mains power supply module 230 VAC/24 VDC – 20 A	3 HU, 48 WU	11.980.620	4,190.–



## Modular Master Clock System

Type series

# 980



## Battery Module

Lead-acid rechargeable batteries with immobilised electrolyte are used to supply power to the Master Clock System and the slave clock lines (duration determined by number of slave clocks connected). The batteries are protected against excessive

input current by automatic circuit breakers. Two battery capacities are available: 20 Ah or 65 Ah. Maintenance-free Dryfit rechargeable batteries come complete with 19" rack element.

Type	Dimensions	Item No.	€ each
Battery module 24 V/20 Ah	3 HU, 84 WU	11.980.720	2,490.–
Battery module 24 V/65 Ah	6 HU, 84 WU	11.980.765	4,790.–



## DC/DC Converter Module

If power to the Master Clock System is supplied from an external DC source, the 8 VDC converter module is needed to supply the individual modules. Input and output voltages are completely insulated against each other. Input is protected

against wrong polarity and momentary power loss. Outputs are short-circuit-proof. The number of converter modules required is determined by the number of modules to be supplied.

Type	Dimensions	Item No.	€ each
DC/DC converter module 24 V/8 V/2 A	3 HU, 12 WU	11.980.824	890.–
DC/DC converter module 60 V/8 V/2 A	3 HU, 12 WU	11.980.860	890.–



## Data Interface Module, Software

The Master Clock System may be expanded by an Ethernet interface to match the Master Clock System up with an Ethernet Local Area Network (LAN). Thus, other peripheral equipment connected to the LAN will receive accurate time through the NTP protocol.

The following software for operating the Master Clock System is available:

- Operator software for programming various time bases
- Signalling software for the programming of switching module outputs.

Type	Dimensions	Item No.	€ each
Ethernet data interface module	3 HU, 4 WU	04.980.915	2,095.–
Operator software		05.980.932	1,290.–
Signalling software		05.980.933	1,450.–

Make your choice of desired component groups and modules on this and the following pages or call us – we will be pleased to offer you an equipment set that meets your specific demands!