

# INSTRUCTION MANUAL

## Change Over Unit ECO for ETC 24R



## Certification of the Producer

### STANDARDS

The device has been developed and produced in accordance with the EU Standards 89 / 336 / EWG.

Applied standards:  
EN 60950



### References to the Instruction Manual

1. The information in this Instruction Manual can be changed at any time without previous notice.
2. This Instruction Manual has been composed with utmost care, in order to explain all details in respect of the operation of the product. Should you, nevertheless, have questions or discover errors in this Manual, please contact us.
3. We do not answer for direct or indirect damages, which could occur, when using this Manual.
4. Please read the instructions carefully and start the setting-up of the product, only once you have correctly understood all information for the installation and of the operation.
5. The installation must only be carried out by skilled staff.
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## Content

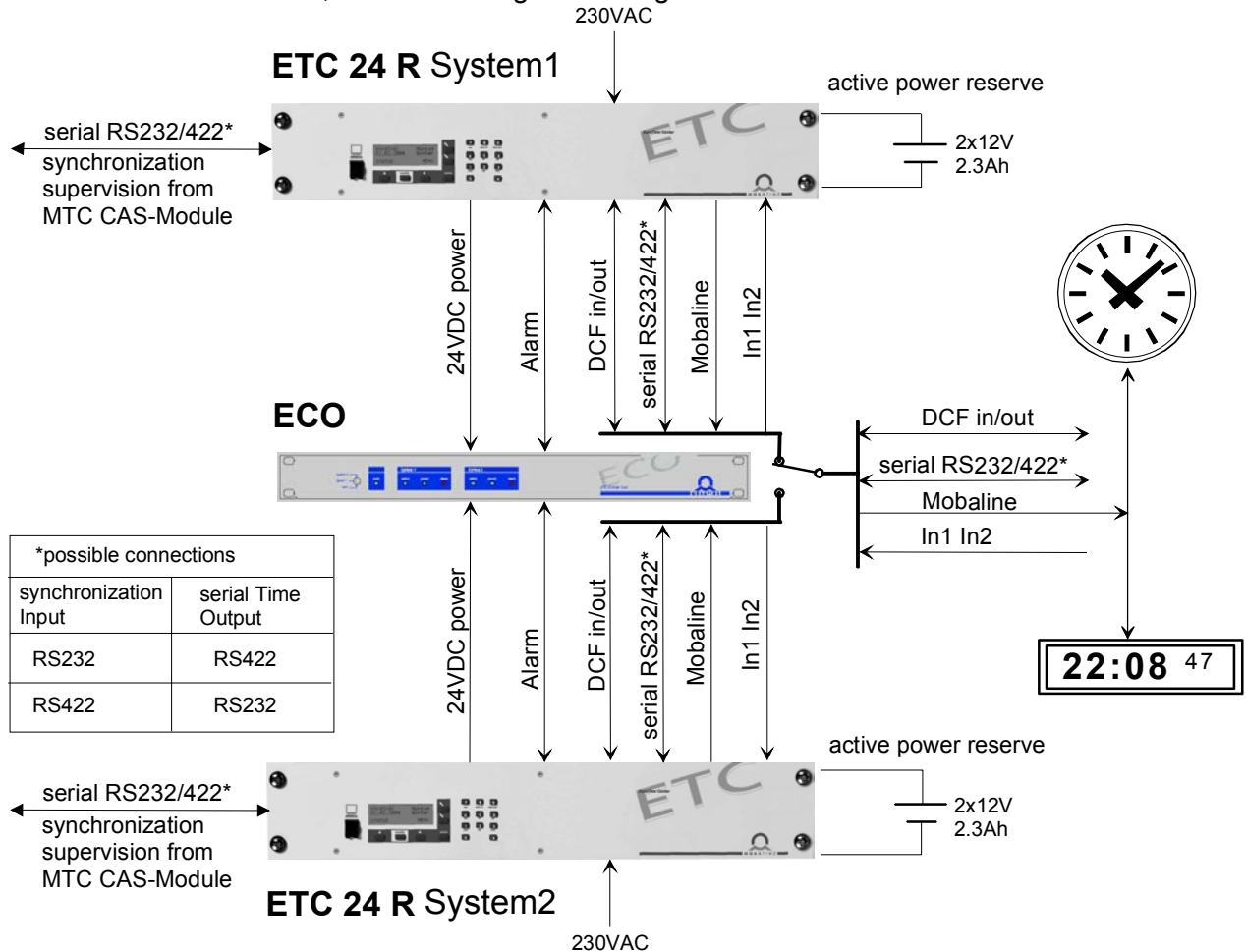
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# 1. Introduction

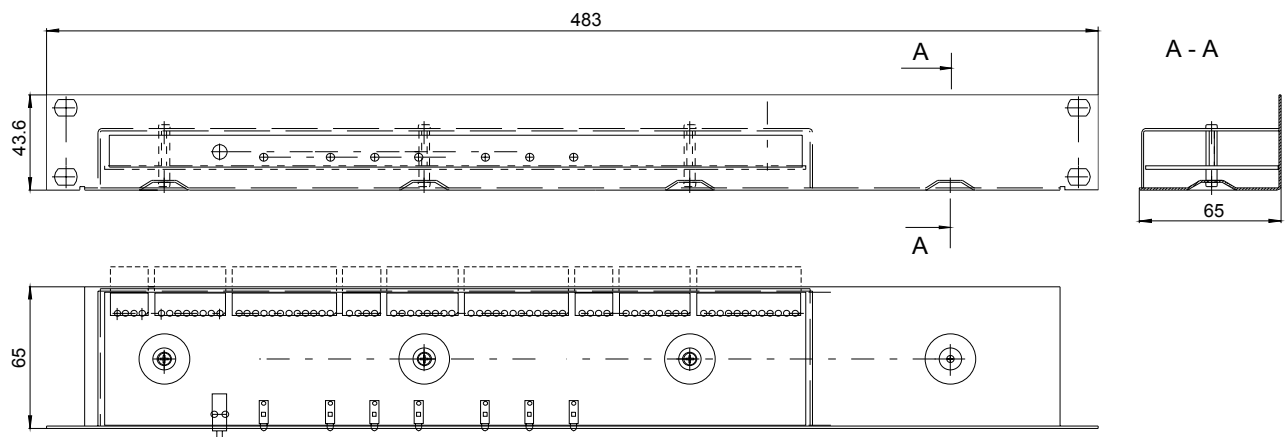
The ECO (ETC Change Over) is a changeover unit designed for the master clock EuroTime Center ETC 24R. It allows the changeover of all the important peripheral functions in a redundant equipped system with two master clocks.

# 2. System components

A standard installation contains two master clocks ETC 24R with active running reserve battery (24 V, 2.3 Ah) and one ECO. Please refer to the instruction manual (BE-800337) of the ETC for installation, commissioning and configuration of the master clocks.



# 3. Dimensions



## 4. Operation



Operation mode selection:

System 2  
System 1  
auto

Operation mode auto

State system 1/2:

active  
power  
alarm

*Selection of operation mode:*

Switch Position:	Meaning:
System 2	Master clock 2 is permanently selected as the active system
System 1	Master clock 1 is permanently selected as the active system
auto	Master clock 1 is working as the active system. In case of disfunction the ECO will change to master clock 2 automatically unless there is a disfunction too.

*State indication (LED):*

LED:	State:	Meaning:
auto	on	Operation mode "auto" selected
	off	Operation mode "System 1" or "System 2" selected
active	on	System is currently active
	off	System is currently inactive
power	on	Power supply is available
	off	Power supply is not available
	flashing	Power failure occurred in the past (only in mode "auto")
alarm	on	Active alarm on system reported
	off	Normal operation
	flashing	Alarm occurred in the past (only in mode "auto")

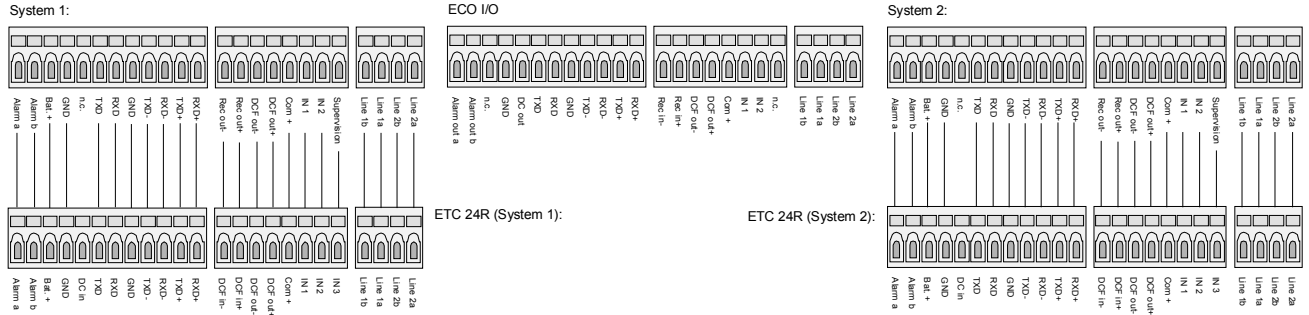
*Confirmation of stored alarms (only in mode "auto"):*

A flashing LED (alarm or power) is either indicating a past alarm or a past power failure. If the switch position is changed the LED will stop flashing and all stored alarms will be confirmed.

## 5. Installation

### Basic cabling:

The terminals of the ECO are to a large extent identically to those of the ETC 24R. This allows a simple direct connection of the master clocks with the ECO. Basically all terminals can be connected together like shown below:

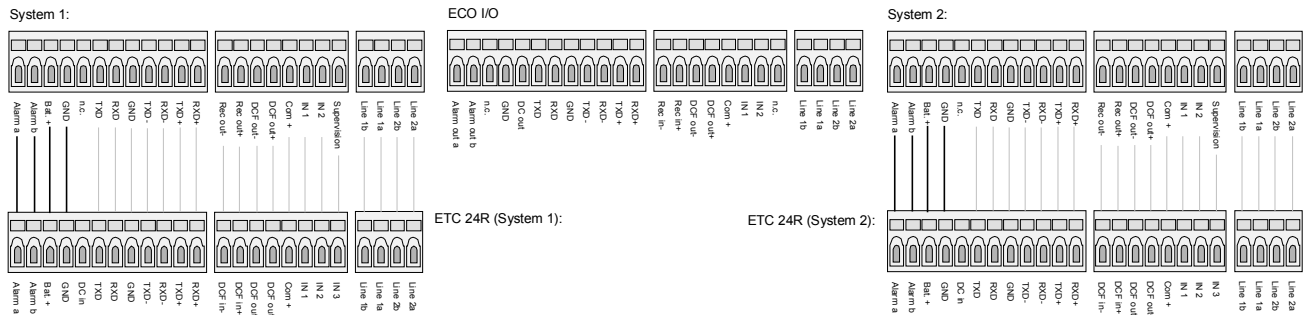


## 6. Reasons for changeover

The alarm outputs (terminals Alarm a and Alarm b) and the supply voltage (terminals Bat.+ and GND) of both master clocks must be connected to the ECO (refer to drawing).

As soon as a disfunction on the ETC 24R (system 1) is reported the alarm contact will be opened and the ECO will release a changeover to system 2 (conditions: operation mode "auto" is selected and system 2 is working).

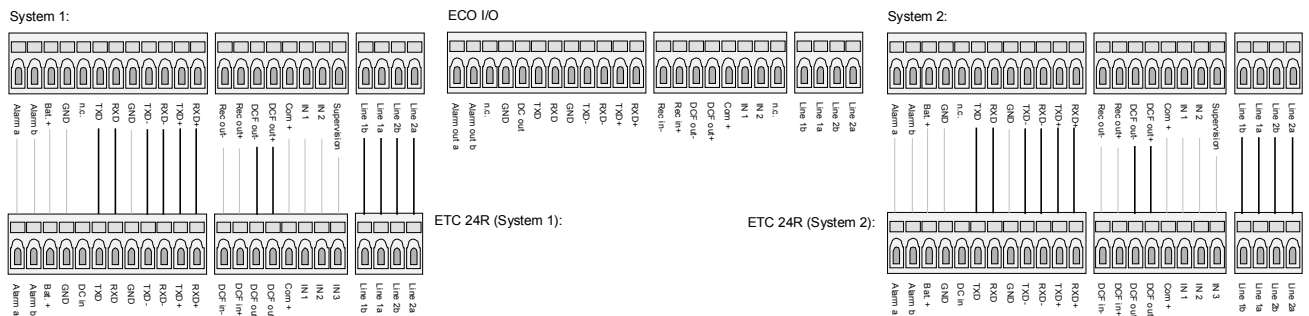
As soon as the supply voltage of system 1 is falling below 20 VDC, the ECO will release a changeover to system 2 (conditions: operation mode "auto" is selected and system 2 is working).



## 7. Switched lines

In case of a changeover the following lines will be switched by the ECO:

Interfaces:	RS 232 (COM1):	TXD
		RXD
	RS 422 (COM2):	TXD-
		RXD-
		TXD+
		RXD+
Slave clock lines:	Line 1 <sup>1)</sup>	
	Line 2 <sup>1)</sup>	
Time code output:	DCF out-	
	DCF out+	

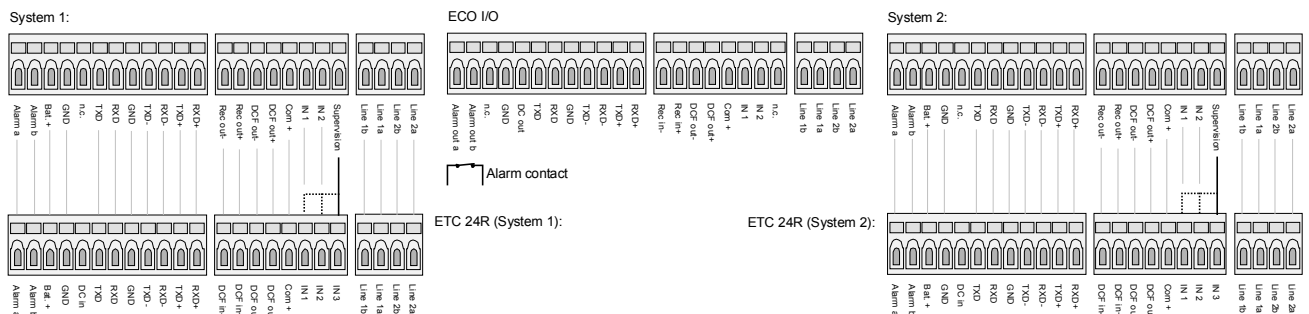


- <sup>1)</sup> Note: The slave clock lines of the master clocks must run in mode MOBALine. A changeover for impulse lines is not recommended due to possible lost of impulses.

## 8. Supervision of ECO

One of the control inputs of the master clocks can be configured to supervise the ECO. As long as the ECO is working properly it displays a control signal at the terminal “Supervision” (frequency: 10 Hz). An ETC 24R working as a sub-master clock can for example report the failure of the ECO to the master clock <sup>2)</sup> (e.g. via CAS communication to MTC).

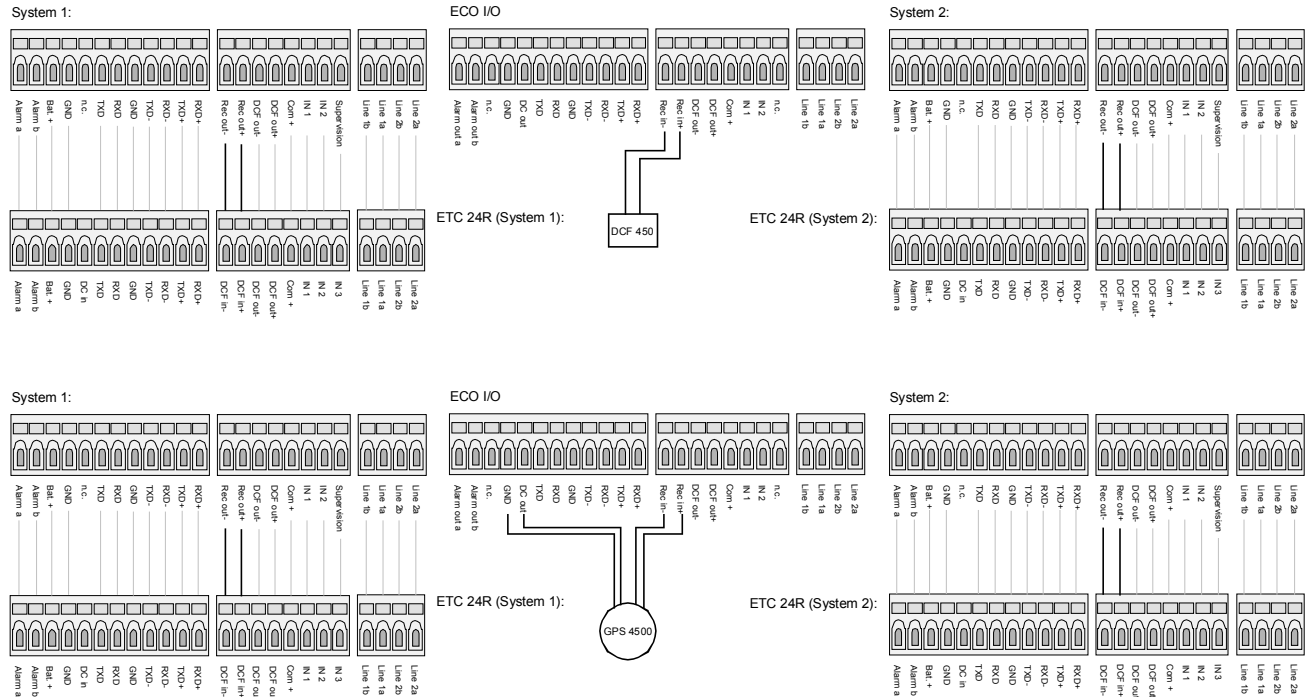
The ECO contains further a relay contact to indicate any type of alarm. E.g. failure of system 1 or system 2. In case of alarm the contact is open.



- <sup>2)</sup> Note: The alarm from supervision of the ECO must be masked on the ETC 24R to avoid an alarm loop.

## 9. Synchronization

If both master clocks shall be synchronised by a single DCF 77 or GPS time code receiver it has to be connected to the ECO like shown in the drawing:



## 10. Technical Specification

Power consumption from 24 V DC	<2.4VA (< 100 mA)
Dimensions	19" rack, 1HU (H x W x D [mm]) = 483 x 44 x 53)
Weight	approx. 500g
Ambient temperature	0 to 50°C, 10-90% relative humidity, without condensation
Alarm contact	Load: 30 VDC / 1 A / 30 W resp. 125 VAC / 1 A / 60 VA
DC output (DC out)	22..29 VDC 100 mA max.
Standards	EN 60950, Protection class I



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