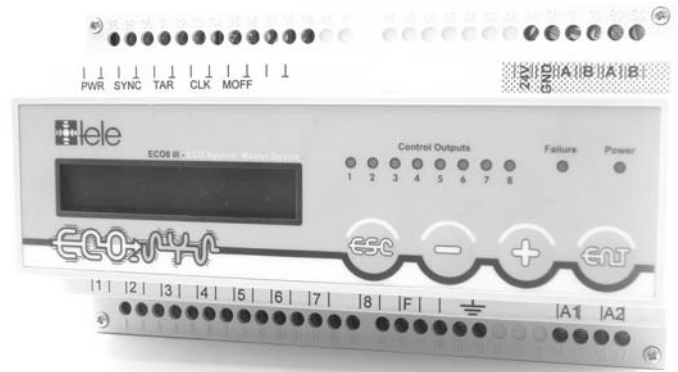


- ▶ Maximum load controller
- ▶ Real time clock
- ▶ Integrated data logger
- ▶ Energy data recording
- ▶ Determination of balance energy
- ▶ Connector to output extension unit
- ▶ 8 normally open contacts, 1 change over contact
- ▶ Width 157.5mm
- ▶ Installation design



## Technical data

### 1. Functions

Maximum load controller for allocation of power peaks.  
Trend computation by limitation of peak power. Variable cycle durations after specification of the EVU adjustable or limitation of the instantaneous values.  
Amplification up to 64 consumer groups by dint of ECO-GATE amplification modules.

### 2. Time ranges

Min. turn-on time for channels 1 to 8	00min 01s to 19min 59s
Min. turn-off time for channels 1 to 8	00min 01s to 19min 59s
Max. turn-off time for channels 1 to 8	00min 01s to 19min 59s
Priority for channels 1 to 8	00min 01s to max. Prior

### 3. Indicators

Green LED ON:	indication of supply voltage
Yellow LED ON/OFF:	indication of the status of the 8 circuits (1...8), terminals (1...16)
Red LED ON:	indication of failure status
Display:	LCD (alphanumeric) two-line; 16 characters in each line

### 4. Mechanical design

Self-extinguishing plastic housing, IP rating IP40  
Mounted on DIN-rail TS 35 according to EN 50022  
Mounting position: catch down  
Shockproof terminal connection according to VBG 4, IP rating IP20  
Recommended / maximal length of skinning: 6mm/9mm

#### Terminal capacity:

- 1 x 2,5mm<sup>2</sup> flexible without multicore cable end
- 2 x 0.5 to 1.5mm<sup>2</sup> flexible without multicore cable end
- 1 x 1 to 2,5mm<sup>2</sup> inflexible with multicore cable end

### 5. Input circuit

Supply voltage:  
Wide supply range: 110-240VAC 50/60Hz, 110-300VDC  
Tolerance:  
110V to 300V DC -15% to +10%  
110V to 240V AC -15% to +10%  
Own consumption:  
max. 3,6W (55mA @ 110V AC, 30mA @ 240V AC)  
Stromaufnahme:  
max. 100mA @ 110V AC, max. 50mA @ 240V AC)  
Duty ratio: 100%  
Reset time: —  
Nominal voltage of isolation: 300V  
Rated surge voltage: 4kV  
Minimal electric strength to other circuits:  
3000V AC/1min (enhanced isolation according to EN 60950)

### 6. Output circuit

8 potential free normally open contacts  
Outputs 1 to 8  
Function: Controlling of power demand  
Min. ON time: 0min 0s - 19min 59s  
Max. OFF time: 0min 1s - 19min 59s

Min. OFF time:	0min 1s - 19min 59s
1 potential free change over contact	
Output F:	Notice of malfunction summary
Switching capacity:	690VA (3A / 230V AC)
Fusing:	—
Mechanical life:	20 x 10 <sup>6</sup> operations
Electrical life:	2 x 10 <sup>5</sup> operations
Switching frequency:	max. 60/min at 100VA resistive load max. 6/min at 1000VA resistive load (according to IEC 947-5-1)
Nominal voltage of isolation:	250V AC (entspricht IEC 664-1)
Rated surge voltage:	4kV, overvoltage category III (according to IEC 664-1)
Minimal electrical strength to other circuits:	1500V AC/1min (basic isolation according to EN 60950)

### 7. Control contact PWR

Function: Power pulse output of an energy meter  
Connection: Potential free, terminals 28, 29  
Type: S0 (according to DIN 43864)  
Sensing current: 12,5mA DC  
Sensing voltage: 15V DC  
Tolerance: +10%  
Frequency: max. 50Hz

### 8. Control contact SYNC

Function: Pulse for synchronisation from the grid operator  
Connection: Potential free, terminals 31, 31  
Type: S0 (according to DIN 4364)  
Sensing current: 12,5mA DC  
Sensing voltage: 15V DC  
Tolerance: +10%  
Frequency: Pulse 6s (nominal) each 5 to 99min

### 9. Control contact TAR

Function: Changing tariff input from the grid operator  
Connection: Potential free, terminals 32, 33  
Type: S0 (according to DIN 4364)  
Sensing current: 12,5mA DC  
Sensing voltage: 15V DC  
Tolerance: +10%

### 10. Control contact CLK (optional)

Function: Synchronisation of the block  
Connection: Potential free, terminals 34, 35  
Type: Stromschleife  
Sensing current: 6,25mA DC  
Sensing voltage: 15V DC  
Tolerance: +10%

### 11. Control contact MOFF (optional)

Function: Turn off all loads immediately  
Connection: Potential free, terminals 36, 37  
Type: Current loop

## ► Technical data

Sensing current: 6,25mA DC  
 Sensing voltage: 15V DC  
 Tolerance: +10%

### ► 12. Accuracy

Computational accuracy digital determinate, depending on the number of energy pulses of the counter.

Adjustment accuracy: —  
 Repetition accuracy: —  
 Voltage influence: —

## ► Functions

The consumption of every plant is characterised via periods of high and periods of low power, out of it follows day demand lines. Because the electrical grids must be dimensioned to the highest demand the can occur, the costs of the grid are calculated by the highest peak demand at the customer. Usually smaller plants are classified in a flat tariff without metering the power demand. Plants with a higher delivery rate are equipped with an energy meter including a peak load detection. The peak load is determined by the load which is simultaneously switched on. Thanks to an energy management system, peak loads can be reduced substantially. This can be done by postponing energy demand of certain electrical loads into time periods with lower power demand. Loads which have the ability to store energy, e.g. in the form of thermal energy (heating, coldness, frostiness), pressure, height (Level) ect. are very suitable for this purpose. But also loads which do not have this ability can be taken into account of energy management, delaying the demand into periods of lower power consumption. EcoSys calculates the energy consumption within a defined time period, which is specified by the local grid operator. For this reason it synchronizes itself either with the synchronic impulse of the grid operator or the internal real time clock. Information about the present situation of energy consumption can be acquired with the power pulses coming from the pulse output of an energy meter. By adequate setting of the parameters impulse value and transformer ratio, EcoSys can be configured to every meter and instrumentation transformer. EcoSys uses the controllable load to regulate the power demand below the adjusted set point. Therefore it can administer the demand of up to 64 load channels (in combination with up to seven Output Extensions EcoGate). For processing the optimisation there are three different algorithms available:

- Integrating Load Limiter (ILL)
- Energy Estimator (Freileistungsverfahren)
- Active Power Limiting

### Set point settings

The consumption of electrical energy can be optimized according to two criteria:

- Set point 1: fixed or via tariff input reversible
- Set point 2: separate set point every measurement cycle for determination of a desired course of day

Time period for calculating average power, specified by the grid operator.

Adjustable length of period:  
 5; 10; 15; 20; 30; 40; 45; 60; 80; 90

A separate set point for each cycle can be adjusted only for measurement cycles equal or greater than 15 min.

### Bus interface

The bus interface permits EcoSys to extend with external components. Such components are e.g. the output extension EcoGate, a coupling module to a PC or a terminal module for visualisation.

Interface type RS485  
 Attendee settings: 1 to 32  
 Master settings: 1 to 5  
 Power supply output: 24V; 100mA

Temperature influence: —

### ► 13. Ambient conditions

Ambient temperature: 0 to +50°C (according to IEC 68-1)  
 Storage temperature: -25 to +70°C  
 Transport temperature: -25 to +70°C  
 Relative humidity: 15% to 85%  
 (according to IEC 721-3-3 class 3K3)  
 Pollution degree: 2, if built in 3  
 (according to IEC 664-1)

### Data logger

EcoSys is equipped with an internal data logger, recording the most important energy data of a system. Therein the data from the last and the current month are stored in a non-volatile memor. As a consequence, there is one months time to read out the data from the internal logger and store it on a backup system. The data space gives the following information for each day:

- Total Average Power (i.e. the consumed energy)
- Average Power, not exceeding set point 2
- Maximum cycle average power of the day
- Time and date stamp from the maximum of the day
- Set point 1 when the maximum occurred
- Set point 2 when the maximum occurred

### Real time clock

The system devices of ECO-8III has a built in real time clock as a standard equipment. The real time clock can be re-triggered with the control input CLK to avoid a long term drift.

### Timer

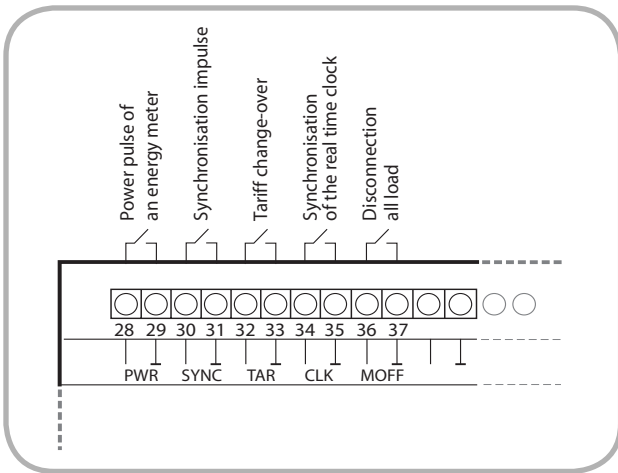
For each load channel, up to seven time blocks with certain behaviour of the output may be defined. As a matter of fact, it is possible to create up to 56 time blocks for a device. The action in the time block can be configured as follows:

- Channel fixed switched ON (from - to)
- Channel fixed switched OFF (from - to)
- Channel on a day of week (Mon - Sun) fixed switched ON (from - to)
- Channel on a day of week (Mon - Sun) fixed switched OFF (from - to)
- Channel at date fixed switched ON (from - to)
- Channel at date fixed switched OFF (from - to)
- Changing priority of the load channel

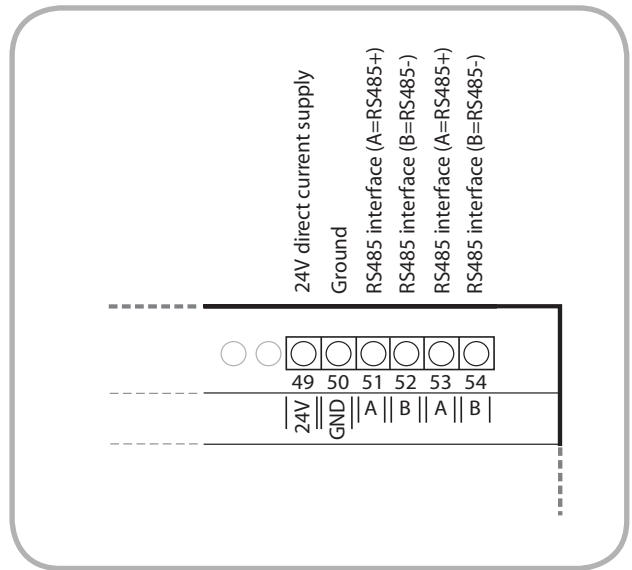
The timer supports switching based on a certain period (switching by date) and switching based on a weekly period (switching by day per week). The start and end parameters define which switching method is used. By entering time and date the switching by date is activated. Entering time and weekday will activate the switching by weekday per week.

## Connections

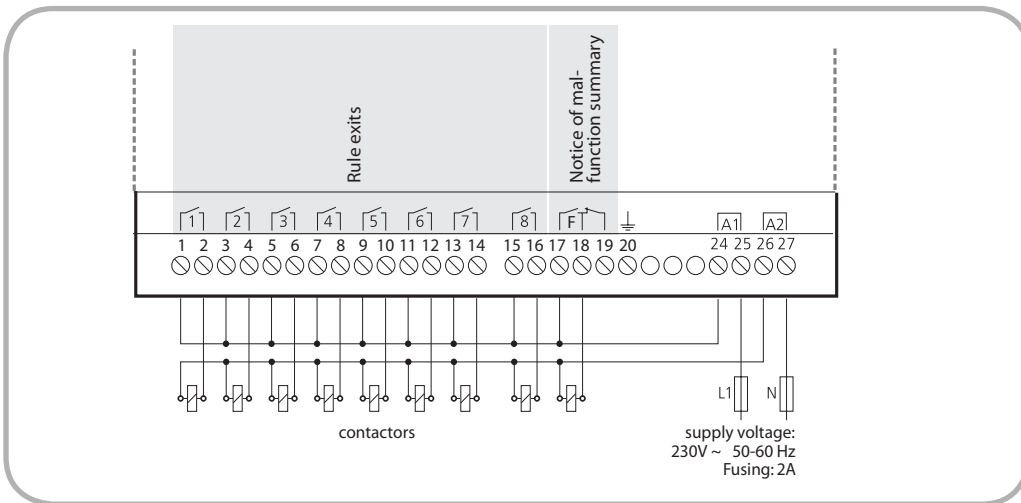
### Control inputs



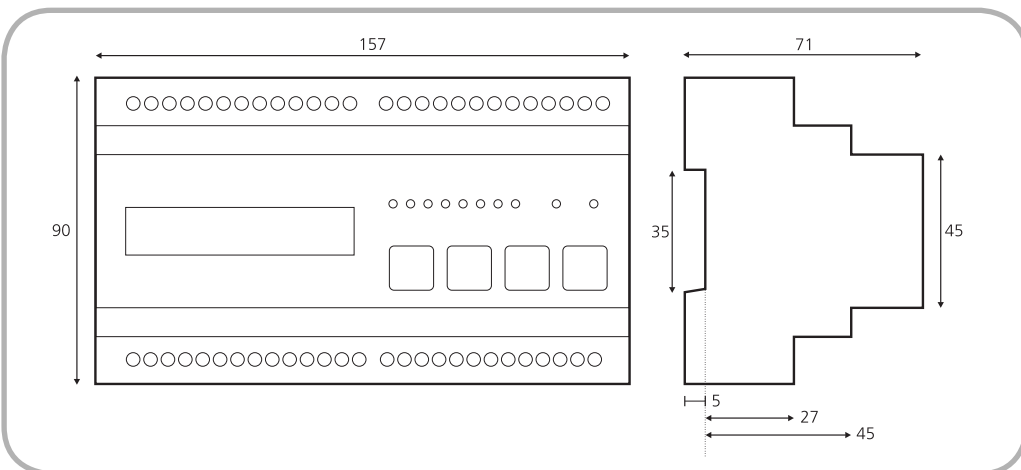
### Connections



### Outputs



## Dimensions



**Notes**

Subject to alterations and errors