



SOFTWATT V 2.5

CIRWATT Series

INSTRUCTION MANUAL

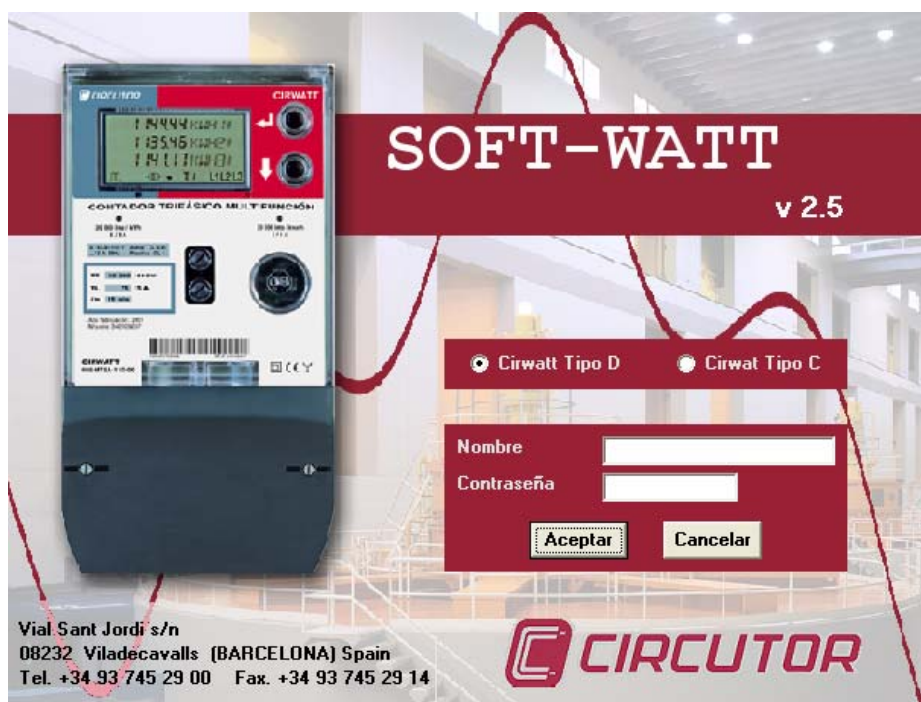
(M98166501-03-04A)

(c) CIRCUTOR S.A.

“SOFTWATT” is PC software that is used to set the meter and to obtain maximum performance from it.

Start-up.

It will be necessary to identify the user on starting up the software. The user may have some or many operating options depending on the access that he/she may have been granted.



There is a user defined as “Administrator” with no password set as a default. Enter this data if the program is being run for the first time.

It is important that the limits for each user are set. This is to prevent the meter being mishandled.

When the user name and password are entered, ensure that the format is the same as it was configured. The software is case sensitive.

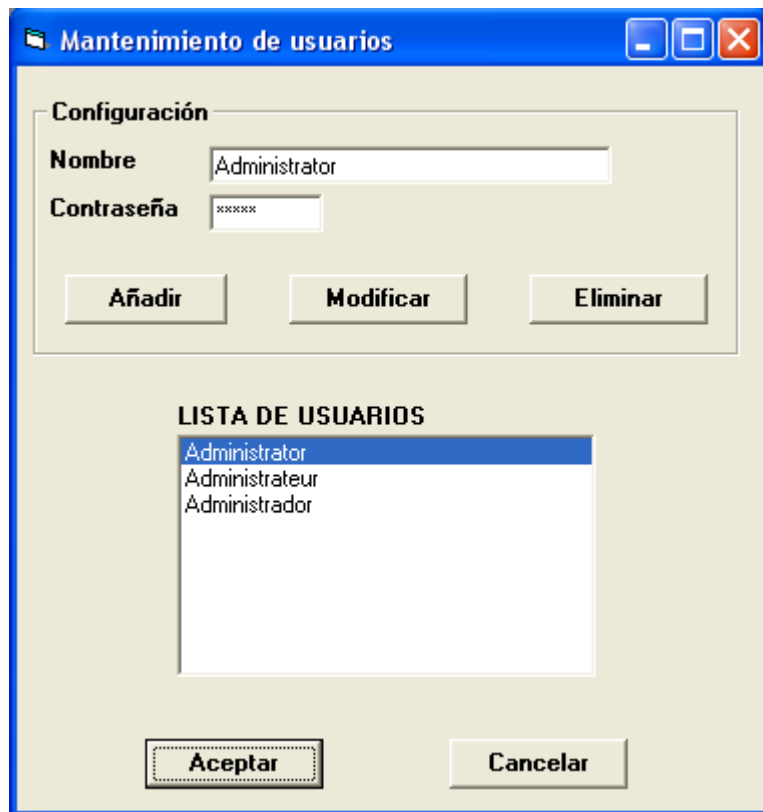
When the user name and password are entered, ensure that the format is the same as it was configured.

The software is case sensitive.

E.g.: Circutor ≠ circutor ≠ CIRCUTOR

Defining users. (Users' option).


This allows users to have access to different options in the PC Software.



- Enter the data for the new user and click “Add” to start.
- To change the user's data, select that user from the list, change the data and click the “Change” key.
- To remove a user, select the user from the list and click on the “Remove” option.

Communications.

Setting the PC.

From the “setting PC” option , select all communications options on how the PC is configured. Options such as **link address**, **measuring point address**, **access password**, **communications port** being used, **communications speed** used and **stop and parity bits**.



Setting the equipment

This option allows the equipment's communications parameters to be set: speed, parity and optical port parity bit, channel 1, channel 2 and modem. By selecting the *pre-set* option, the default values will start: 96000, none, 1



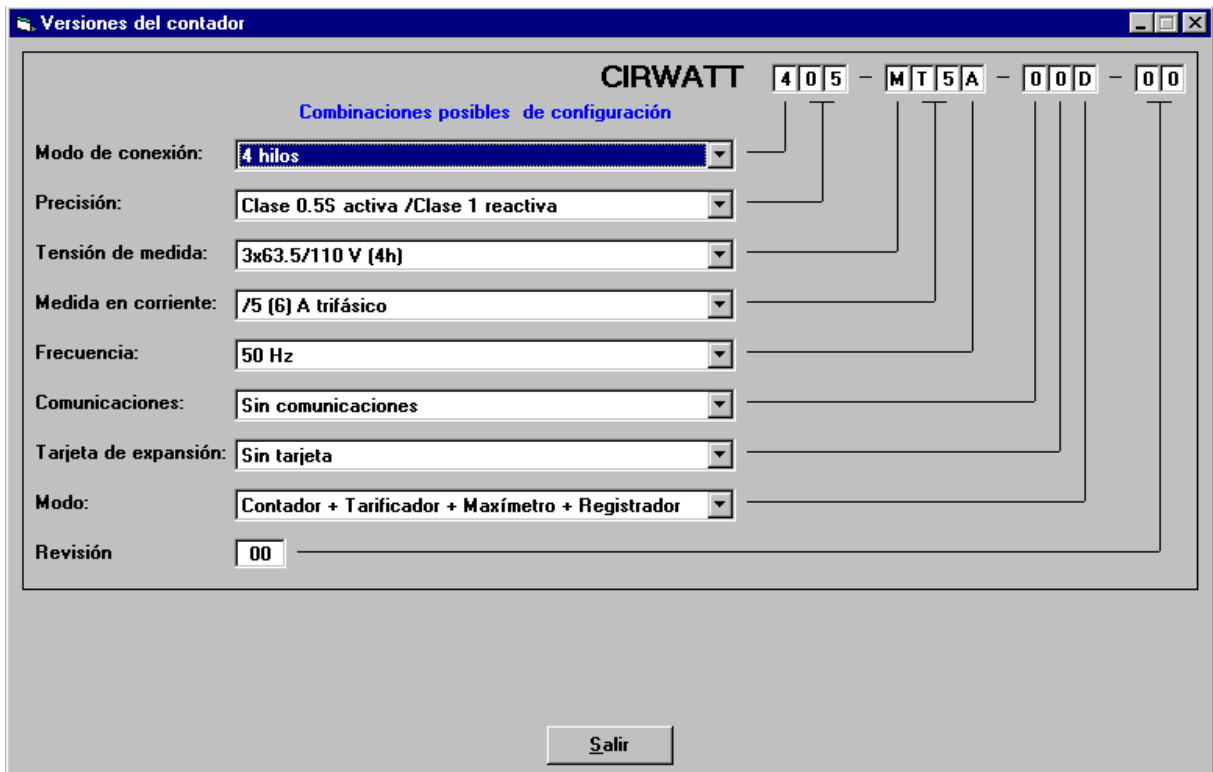
Operating / Setting the meter.

CIRWATT has a large number of operational possibilities and can adapt to many situations and applications

Meter model .

There is a large number of CIRWATT models. All meters have a Model number This code identifies a meter with all its specific features.

This code is for information purposes only and may only be used to find out which features are pre-set in the meter.




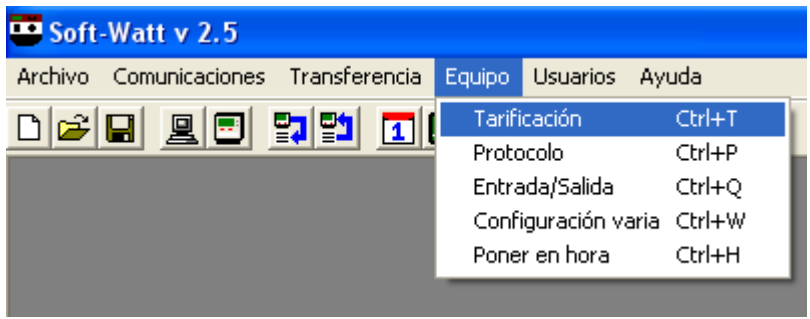
Where no meter is available to be connected, this option allows the user to find out the necessary meter model according to his requirements.

**This option does not change the meter setting.
It is for information purposes only.**

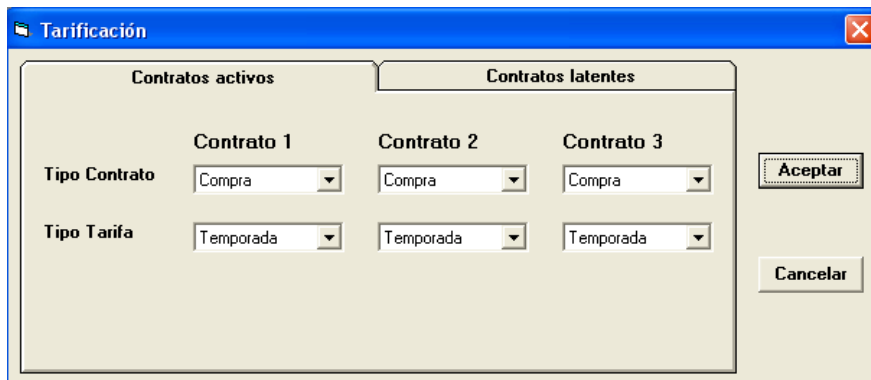
Tariffs

One of the main features of CIRWATT is its option to charge different tariff rates, making it the ideal meter for the large majority of situations.

To set it this way, the corresponding option must be selected from the menu of the button .



The tariff system to be used by each contract must be defined when starting this setting. This operation is very important as it will gain maximum performance from the CIRWATT:



- Type of contract: The type of energy to be billed for each contract must be defined. CIRWATT is a 4 quadrant meter meaning that it can operate as a generated energy meter (**Sale**), consumed energy meter (**Purchase**) or unused contract (**No**).
- Type of calendar: Once the contract type to be used has been selected, the calendar for each of the active contracts must be defined. There are **three** possibilities:
 - o Seasonal.
 - o Periodical.

Once the generic features of the tariff have been defined, the particular setting for each meter is then entered.

The PC's software offers the possibility of setting tariffs for one contract and storing them in files for subsequent settings.

This operation is done via the following screen options:



- Read: Obtains the tariff setting of a file (calendars, profiles, Maximum demand,...) and applies it to the selected contract..
- Save: Saves the setting of the current contract (calendars, profiles, maximum demand...) in a file to be used for subsequent settings.

Once the calendar has been set, it is finalised by clicking the following keys:

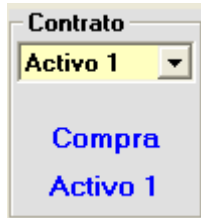


- Accept: To save the changes made to the tariff setting and to then send them to the meter.
- Cancel: Cancels the changes made during the tariff setting process that has just been undertaken.

No change made in this section will be transferred to CIRWATT until the “Transfer” menu option has been chosen.

Calendar

This part of the setting will depend on the type of calendar selected for each of the contracts.



→ Information on the contract being displayed. Moving from one contract to another may be done via the drop down list.

Tariffs may be set with three different settings at the same time: **contracts**. Plus three **latent contracts**. A latent contract is one where the user can set the starting date for that contract. In this way a change of setting activation date may be set for this meter.

There is a series of areas that must be very clearly set when the meter is first configured:

- Tariff: A set of meters that add up the energy to be invoiced or handled in the same way (CIRWATT has up to 9 possible tariffs.)
- Periods: Time intervals attached with period profile. This association may be done in several ways:
 - Seasonal: The calendar is divided into two seasons: winter and summer. The change over day between the two profiles coincides with the clocks changing (configurable). This calendar is perpetual given that when the year ends it automatically adopts the setting for the following year.
 - Period: The calendar is divided into time intervals called periods (maximum 12 periods). Each period is assigned a profile. The profile of each period varies according to whether it is a working day or a holiday. Two or more periods having the same profile setting is not permitted.
- Profile: Description of the period where it defines the active tariff at each moment and therefore the tariff at which the meters add up the energy (there is a maximum of 10 profiles available).

How to set each available calendar for each contract is described below.

Seasonal:

The year is divided into two seasons (winter and summer). The change over day between the two profiles coincides with the clocks changing.

A profile defined on the "Profile" page is assigned to each season.

The change over from one profile to another coincides with the day when the clocks change.

The screenshot displays a software interface for managing seasonal profiles. The main area shows a calendar for the year 2008, with months from Enero to Diciembre. Each month's calendar grid has days color-coded: red for 'Invierno' (Winter) and grey for 'Verano' (Summer). The transition from winter to summer occurs on the 31st of March. The interface includes tabs for 'Temporadas', 'Días festivos', 'Días especiales', 'Perfiles', 'Potencia Contratada/MD', and 'Cierre facturación'. On the right side, there are buttons for 'Compra Activo 1', 'Aceptar', 'Cancelar', 'Leer', and 'Guardar', along with a 'Ficheros' section.

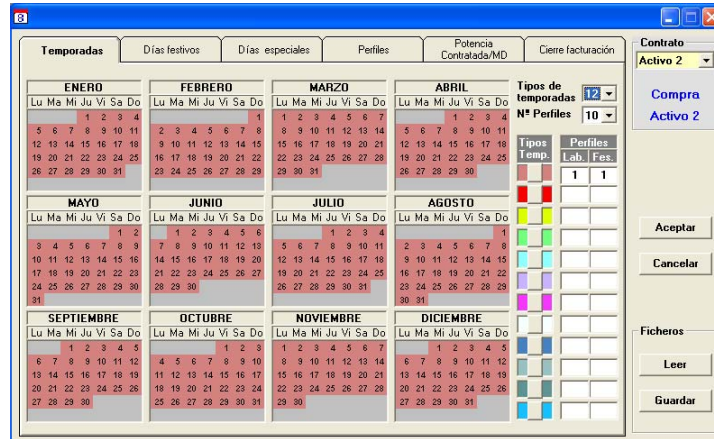
All days in the year are the same. There is no difference between working days, holidays or weekends.

Period:

The calendar is divided into periods that are assigned profiles that may differ depending on whether it is a holiday or working day.

Two or more periods having the same profile setting is not permitted.

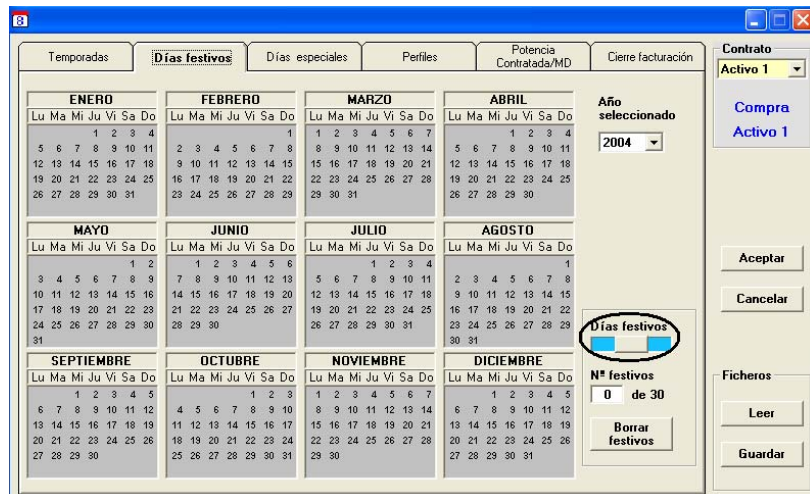
Intervals must be selected and a period assigned to each interval. This is done by first selecting the period. The start of the interval is shown by clicking left on the mouse on the box for the required start of the period. The software will automatically select the corresponding interval with the colour of the period.



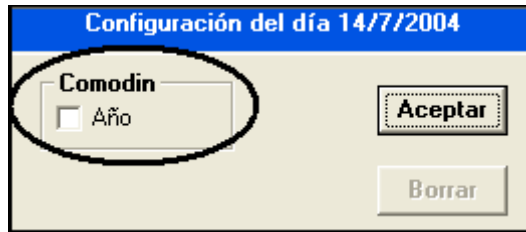
Holidays.

Saturday, Sunday and days deemed to be holidays will be considered as holidays and are selected from the calendar on the holiday page. A maximum of 30 days may be selected as holidays.

To indicate holidays, the holidays page is clicked on and then the days selected from the calendar.



There is the option to indicate wildcard holidays so that the day indicated as a wildcard will be repeated in following years without the need to subsequently select it. To indicate a day as a wildcard just select the wildcard option on the holiday setting page.

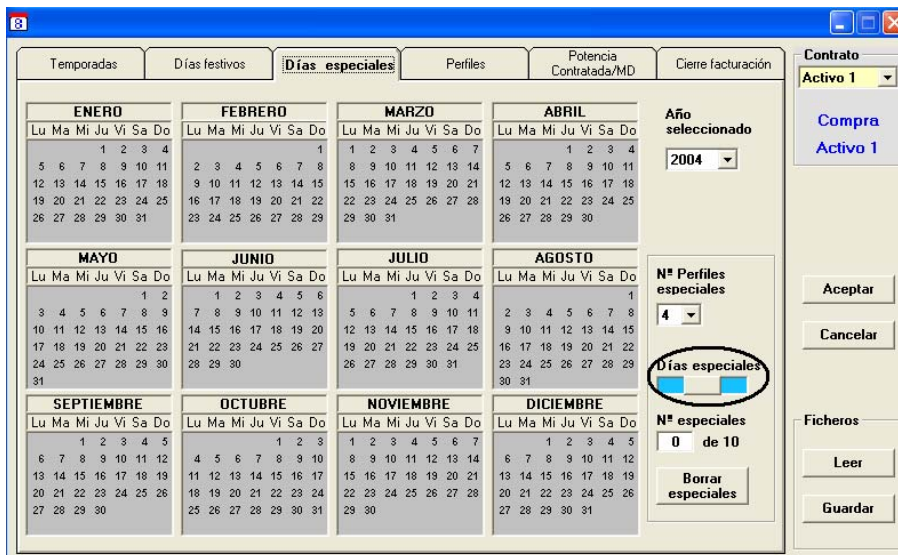


To clear holidays click on the “clear holidays” option.

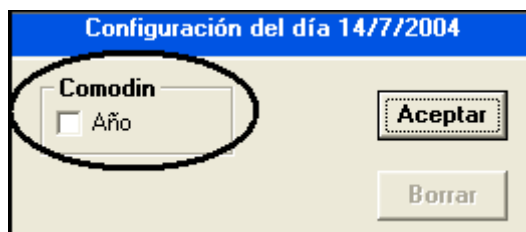
Special days.

A special day will be considered to be a day where the specific tariff is handled differently to the others. A maximum of 10 special days may be selected.

To indicate special days, the special days page is clicked on and then the special days selected from the calendar.



There is the option to indicate wildcard special days so that the day indicated as a wildcard will be repeated in following years without the need to subsequently select it. To indicate a day as a wildcard just select the wildcard option on the special day setting page.



To clear special days click on the “clear specials” option.

On the special days page there is the option to set the number of special profiles. The number of profiles appears on the profile page in the specials section.

Nº Perfiles especiales

4 ▼

Profile:

This allows each hour of the day to be described in the daily profiles. The tariff at which the energy is to be metered is defined in each profile.

Where the periodical tariff is selected, if “Periods” is chosen the number of available profiles is the number selected from the “No. of profiles” box on the “periods” page.

If “Specials” is selected the number of available profiles is the number selected from the “No. of profiles” box on the “specials” page.

For the seasonal tariff there are only two profiles available: winter/summer

This setting must be made for each contract.

There are two areas on the profile setting screen:

- Profile display: Where the current profiles and the hourly setting for each can be seen.
- Time setting: Where each profile is set.

To set the profiles, it is necessary to select the required profile by clicking on the P1, P2....P8 button in the “Profile display” area.

The selected profile setting will now be copied to the “Time setting” area. Here each of the profiles must be set with a profile.

Select a tariff by clicking (T1....T9). Then, click left on the mouse on those time zones that are to be applied to that tariff. This may also be done by dragging the mouse with the button pressed on to that time interval where the selected tariff is to be applied.

Select a second tariff and repeat the process. When the hourly profile is set, select another profile and repeat the process.

A screenshot of a software interface element. It consists of a rectangular box with a grey background. At the top left, the text "Nº Tarifas" is written in a bold, black font. Below this text is a white input field containing the number "9". To the right of the input field is a small downward-pointing arrow icon, indicating a dropdown menu.

In order to facilitate the display of repeated groups, the maximum number of tariffs that will be used to define the calendar must be indicated.

This process may be done in several ways:

- By “clicking” on a specific day, the selected profile will be applied.
- Keeping the left button on the mouse pressed down will assign the selected profile to all those days that the cursor passes over.
- To apply the selected profile to all days in the month, click on the name of the chosen month.

This process must be done for each contract.

Contracted power/Maximum demand.

Maximum demand

The term maximum demand is usual when dealing with all tariffs. There are many options offered by CIRWATT in terms of this parameter.

This setting must be made for each contract. If a contract is using a flexible calendar, it must also be set for each of the calendar years.

Máxima demanda

Magnitud: kW

Periodo: 15 minutos.

Modo de cálculo: bloque

Modo de sincronismo: sincro

The following points must be defined when doing this setting:

- **Reference magnitude:** Maximum demand calculation parameter: KW or KVA
- **Time of recording:** Measurement integration period from which the maximum demand is to be calculated (5 / 10 / 15 / 20 / 30 / 60 Minutes).
- **Method of calculation:** The type of integration window is selected to calculate maximum demand:
 - Block: The power is added up during the integration period. At the end it is compared with the previous maximum value and if it exceeds this, it updates the new maximum and the integration period when it occurred.
 - Rolling: In the rolling demand system the integration period is split into 60 intervals. In this system there is the current average value for the interval being metered together with the 59 previous intervals. This produces a rolling filter effect.
- **Synchronisation mode:** This selects whether the integration periods are to be synchronised with the clock. Synchronisation with the exact time. It will operate in the following way, depending on the method of calculating maximum demand:
 - Block calculation mode
 - Synchro: the size of the first period will be fitted to the first multiple of the integration period.
 - Non synchro: On starting up the equipment waits for the first integration before getting the first maximum power value.
 - Rolling calculation mode
 - Synchro: recording maximum demand will be synchronised with the time.
 - Non synchro: Recording maximum demand is always done at the end of the calculation period.

Contracted power.

The units in which maximum demand is set will depend on the units of active power displayed by the meter.

These values are vital for excess calculations. It will be necessary to define in each contract the value of the contracted power for each tariff.

Potencia contratada		
Tarifa		
1	<input type="text" value="0,00"/>	kw
2	<input type="text" value="0,00"/>	kw
3	<input type="text" value="0,00"/>	kw
4	<input type="text" value="0,00"/>	kw
5	<input type="text" value="0,00"/>	kw
6	<input type="text" value="0,00"/>	kw
7	<input type="text" value="0,00"/>	kw
8	<input type="text" value="0,00"/>	kw
9	<input type="text" value="0,00"/>	kw


Bill closure.

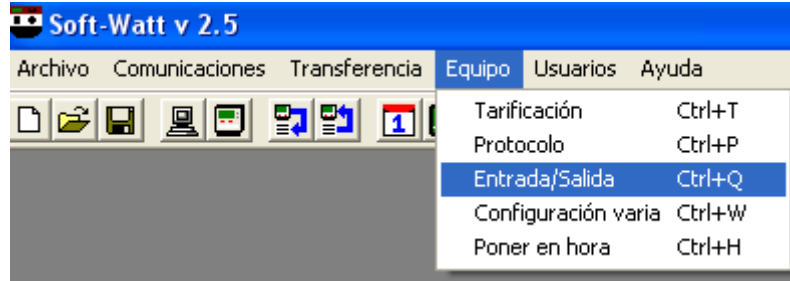
In order to end a tariff period it will be necessary to follow the “Bill closure” process. CIRWATT has the option to automatically perform the bill closure (using the equipment's software).

The screenshot displays the 'Cierre facturación' (Billing Closure) window. It features a calendar grid for the year 2004, with months from Enero to Diciembre. The calendar is organized by month, with days of the week (Lu, Ma, Mi, Ju, Vi, Sa, Do) and dates. On the right side, there are radio buttons for selecting the closure option: 'No hay cierre' (selected), 'Último día del mes', and 'Cierre el día:'. Below the calendar, there are buttons for 'Aceptar', 'Cancelar', 'Leer', and 'Guardar'. The interface is in Spanish and includes a 'Contrato Activo 1' dropdown menu.

One of the following options must be selected to perform the bill closure; last day of the month, day closure or no closure.

Setting digital inputs and outputs

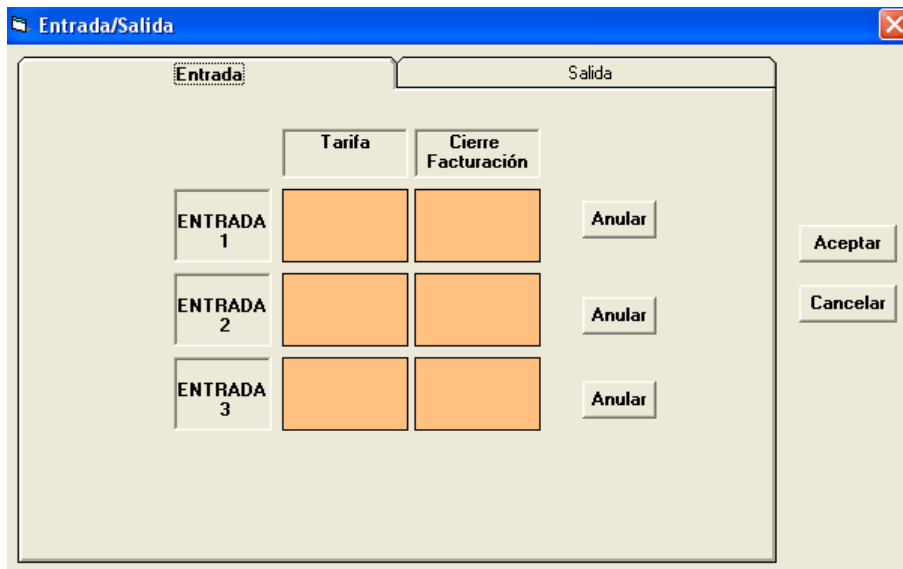
To set the digital inputs and outputs, the corresponding option must be selected from the menu or  button.



It will then proceed to set the inputs and outputs.

Setting the inputs.

CIRWATT may have 3 digital inputs. Each may be associated with a function.



The functions that may be assigned to each input are:

- Tariff display.
- Bill closure.

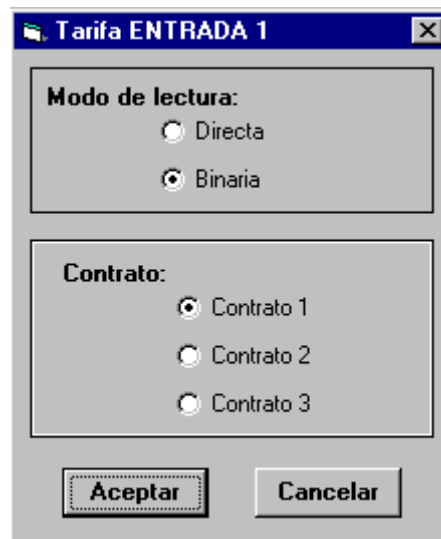
By clicking left on the mouse on the intersecting box between the input and the function to be set, this function will then be entered.

Once each input has been set it will be displayed in the intersecting box.

Each input may only be programmed to perform one function.

Tariff selection:

An external signal may at any time instruct the meter on the tariff at which energy is to be metered



Tarifa ENTRADA 1

Modo de lectura:

Directa

Binaria

Contrato:

Contrato 1

Contrato 2

Contrato 3

Aceptar **Cancelar**

There are two options to instruct the meter on the tariff to meter the energy:

- Direct: Tariff selection is done by activating each of the inputs. Each input refers to a specific tariff.
- Binary: Tariff selection is done by a binary combination of these.

It is also necessary to indicate the contracts to which these inputs refer.

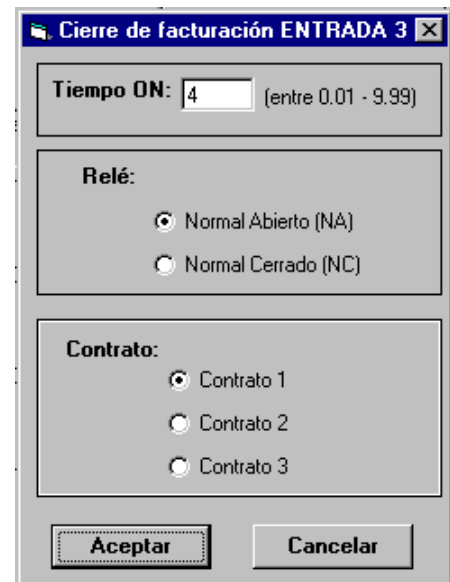
Bill closure:

One input is used to receive the bill closure pulse.

It will be necessary to define the characteristics of this pulse:

- Type of input signal: Normally open (NO) or Normally Closed (NC)
- Length of input pulse.

It will be necessary to indicate which contract is being referred to by the bill closure



Cierre de facturación ENTRADA 3

Tiempo ON: 4 (entre 0.01 - 9.99)

Relé:

Normal Abierto (NA)

Normal Cerrado (NC)

Contrato:

Contrato 1

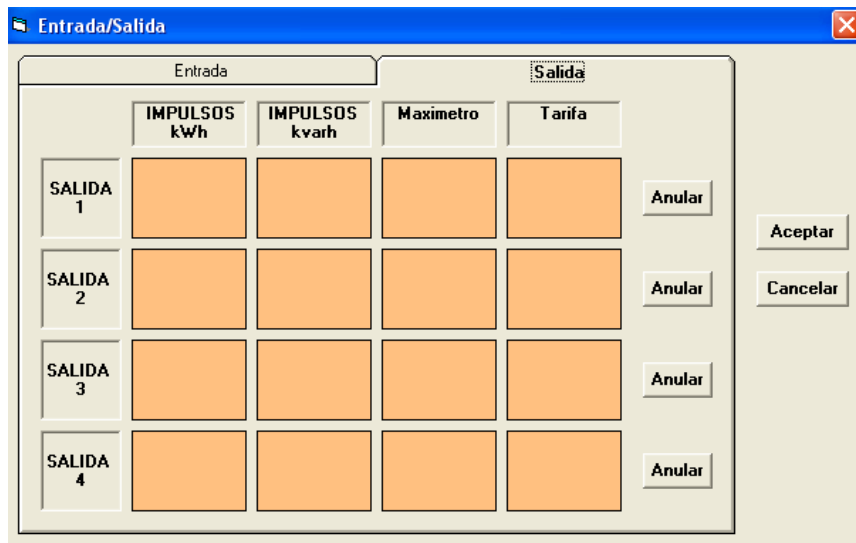
Contrato 2

Contrato 3

Aceptar **Cancelar**

Setting the outputs

CIRWATT may have 4 digital **inputs**. Each may be associated with a function.



The functions that may be assigned to each output are:

- Energy pulses: active and reactive.
- Power demand meter synchronisation signal.
- Tariff.

By clicking left on the mouse on the intersecting box between the output and the function to be set, this function will then be entered.

Once each output has been set it will be displayed in the intersecting box.

Each input may only be programmed to perform one function.

Energy pulses:

One of the meter's outputs is set so that it emits pulses proportionate to the energy. It differentiates between the option to emit active energy pulses and reactive energy pulses.

Both are set in exactly the same way:



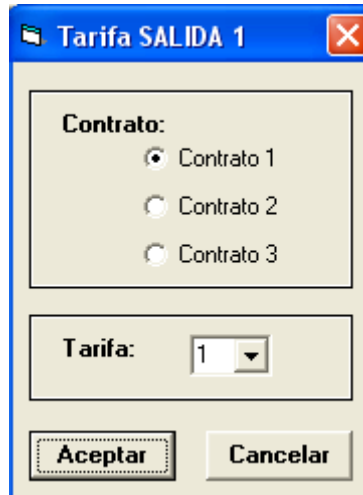
→Indicates the resolution available in the output. It will be necessary to enter the amount of pulses that CIRWATT must emit per kWh or kvarh.

→As CIRWATT is both a generated and consumed energy meter, it will be necessary to indicate the energy type to which it is referring.

Synchronisation of the power demand meter: This setting is used to have the CIRWATT's Power demand meter synchronisation signal externally available.

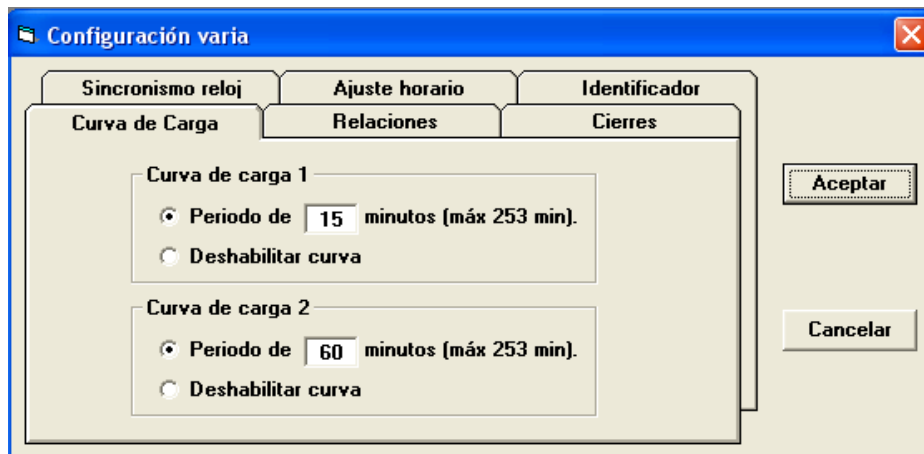
Tariff:

The outputs will give an external indication of the electrical tariff at which is metering energy at any given time. To do so it will be necessary to indicate the contract to which it is referring.



Various settings TR.

In the "various settings" box Softwatt may set parameters such as load curve, transformation ratios, closures, clock synchronisation, time setting and identification.



Load curves:

The options to select the recording period for load curves range between: 1 and 253 minutes as a maximum. There is also the option to deactivate the selected curves by selecting the activation box.

Curva de carga 1

Periodo de minutos (máx 253 min).

Deshabilitar curva

Curva de carga 2

Periodo de minutos (máx 253 min).

Deshabilitar curva

Transformation ratios:

The transformation ratios on the equipment may be set by using Softwatt. The maximum values admitted by the software are 9999999.9V and 9999999.9A

Relación de Transformación

Tensión compuesta de primario:	<input type="text" value="110"/>	Valores máximos:
Tensión compuesta de secundario:	<input type="text" value="110"/>	9999999,9 V
Intensidad de primario:	<input type="text" value="5"/>	
Intensidad de secundario:	<input type="text" value="5"/>	9999999,9 A

Closures:

The minimum time between closures may be set by using this option. The button for the meter's manual closures may be enabled or disabled.

Tiempo mínimo entre cierres

de 1 a 255 minutos

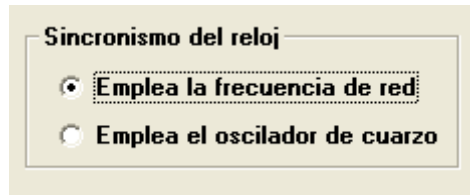
Cierre con pulsador

Cierres con pulsador habilitados

Cierres con pulsador deshabilitados

Synchronising the clock:

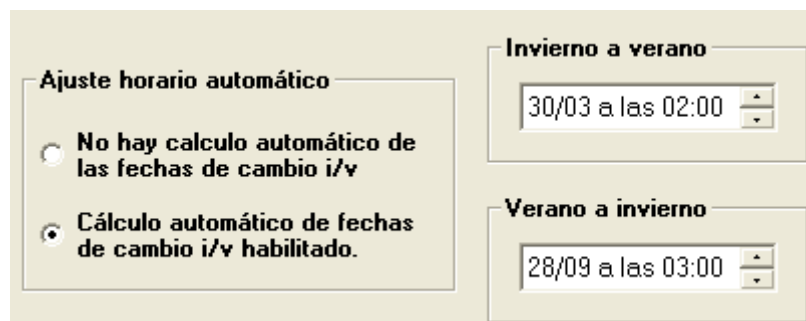
How the meter's clock is to be synchronised may be selected with the clock synchronisation option. By using the mains frequency or the quartz oscillator.



Setting the time:

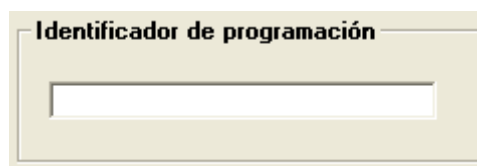
Setting the day and time when the winter-summer and summer-winter clock changes occur depending on the country where the meter is operating. The setting is done by using the cursors to the right of the dates.

- No automatic calculation of the w/s changeover date: By selecting this option, the user will set the dates when the clocks will change.
- Automatic calculation of the w/s changeover date: Enabling this option calculating the changeover dates is done automatically.



Setting identifier:

This option permits the introduction and saving of a text in the meter's memory.



Monitoring the meter

The measurements taken by the meter are monitored in real time. This option is for information purposes only.

To perform this software option the meter should be connected to a PC.

The lower part of the “Monitoring” screen gives details of the meter's transformation ratios setting.

Relaciones de transformación

400.0 / 400.0 V 5.0 / 5.0 A

Salir

18:06 del 16/01/04

Quality: Real time measurements of the meter's main electrical parameters (Voltage, current, power ...)

Calidad

	L1	L2	L3	III	
Potencia Activa	84,9	84,9	84,8	254,8	kW
Potencia Reactiva	50,1	50,1	50,1	150,5	kvar
Potencia Aparente	98,6	98,6	98,6	295,9	kva

	L1	L2	L3	
Tensión fase - neutro	2302,7	2301,0	2298,7	V
Corriente	42,800	42,824	42,855	A
Coseno Phi	0,86	0,86	0,86	

Frecuencia	50,0	Hz
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Energy Absolute value of all the energy meters. Both consumed energy and generated energy.

Energía


Energía activa consumida	21	kWh
Energía activa generada	0	kWh
Energía reactiva (Q1)	0	kvarh
Energía reactiva (Q2)	0	kvarh
Energía reactiva (Q3)	0	kvarh
Energía reactiva (Q4)	0	kvarh

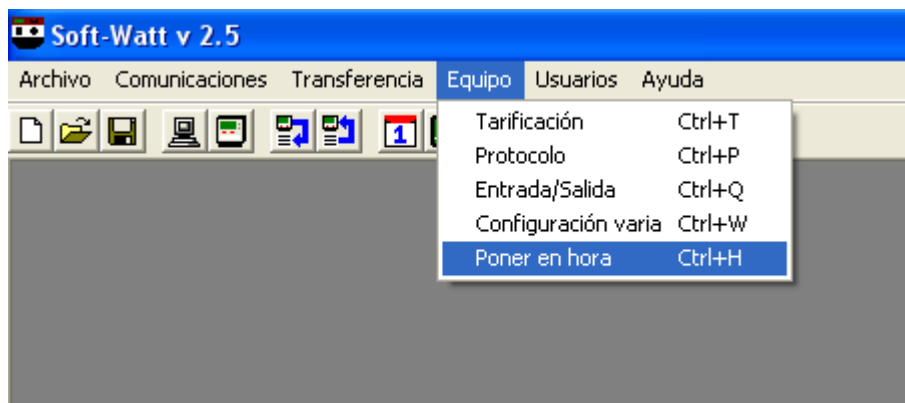
Tariffs: Value of all energy meters for each of the tariffs in each contract. It also will display the maximum demand values obtained for each tariff during the current tariff period (From the last closure). The tariff at which the meter is measuring energy at that time is shown in green. The meters' absolute values are shown in blue.

Tarificación									
CONTRATO: Contrato 1		Tarifa activa		Fecha inicio: 08:56 del 15/01/04					
	Abs. Activa	Inc. Activa	Abs. Ind.	Inc. Ind.	Abs. Cap.	Inc. Cap.	Máxima Pot	Exceso Pot	Fecha Máxima
T1	21	20	0	0	0	0	3	0	14:45 del 15/01/04
T2									
T3									
T4									
T5									
T6									
T7									
T8									
T9									
TOTAL	21	20	0	0	0	0	3	0	14:45 del 15/01/04
	kWh	kWh	kvarh	kvarh	kvarh	kvarh	kW o kvar	kW	

CONTRATO: Contrato 2: The meter that is to be displayed may be selected from this box. Any of those contracts pre-set in the meter and with which it is communicating, may be selected.

Setting the meter's time

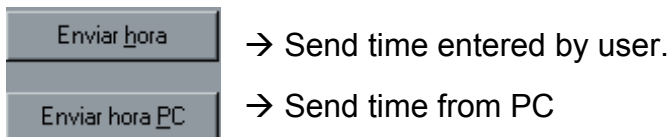
Setting the meter's time may be done via a PC. Just select the menu option or the  icon:



There is the option to indicate the required time to the meter or send the pre-set time to the meter via a PC.

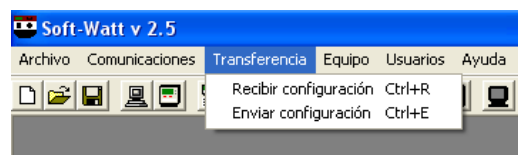
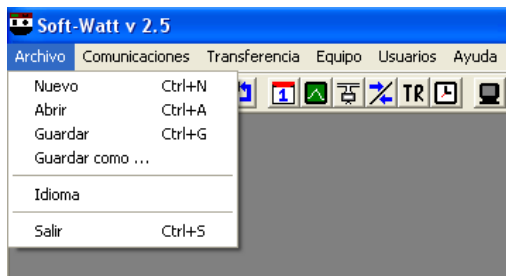


This setting is instantly done when the following is selected:



Settings (Open, Read, save, send...)

SOFTWATT allows different equipment settings to be prepared without the need for the equipment to be connected. There is also the option of sending any of this information to a CIRWATT as well as reading its settings.



New Setting: File→ New or

This is used for a new meter setting for subsequent transfer to a meter or saving it on a disk for later use.

Open existing setting: File→ Open or

This allows settings already on disk to be changed or sent to a meter.

Save setting: File → Save or 

This allows the current setting to be saved onto disk for later use.

There is also the option to save the setting on a PC under another name to keep the previous setting. This is done via the “**File option → Save as...**”.

Read CIRWATT setting: Send → Receive or 

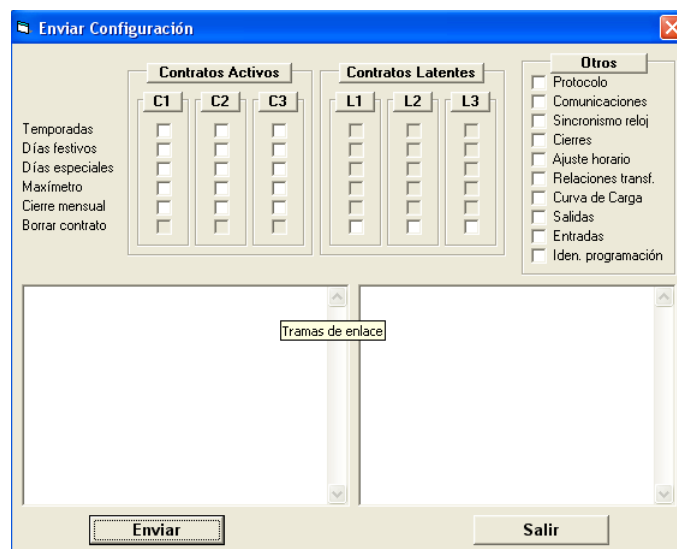
Read the currently connected CIRWATT's setting. By doing this, the meter's setting is known and how this information can be used to be able to send it to other meters.

If this setting is to be saved on a PC for other uses, it can be done by using the “Save” or “Save as...” options.

Any user may read a meter's setting as well as any other access he may have.

Sending a setting to CIRWATT: Transfer → Send or 

Send the current setting being edited by the software to the CIRWATT Meter.



Active and latent contracts:

Sending calendar settings. This allows each contract to be individually sent.

Others:

Communications: Sending the equipment's communications.

Clock synchronisation: Sending the setting on how the equipment's clock is to be synchronised.

Closures: Sending the minimum time between closures and whether the manual closure button is set.

Adjusting the time: Sending the time setting.

Transformation ratios: Sending the transformation ratios setting.

Idem program: Sending the programmer identifier.

Inputs: Sending the setting of the digital inputs.

Outputs: Sending the setting of the digital outputs.

Protocol: Sending the REDESSA communications protocol setting.

- Address: Link address.
- Password and transfer t.: Access password and transfer time.

Display: sending the display screens settings.

Load curves: Sending the load curve recording time.

Quick guide

PC Software Option Menu		Description
File	New	Create a setting file where a new setting may be defined.
	Open	Open an already existing setting file by the user.
	Save	Save the current setting in the current file.
	Save as	Allows the current setting to be saved under a new name.
	Exit	Exit the PC program.
Communications	PC	Current communications parameters for the PC. (Information only)
	Equipment	Editing the CIRWATT's communication parameters settings.
Transfer	Receive file	Read the current meter setting.
	Send file	Send new setting to the meter.

Equipment	Tariffs	Setting the different tariff calendars.
	Protocol	
	Input / Output	Setting the different digital inputs and outputs on the meter.
	Various settings	Load curve, closures, time setting, ratios, identifier, clock synchronisation.
	Time setting	Allows the meter's time to be set (Synchronisation).
Monitoring		Real time meter display.
Versions		Version of the meter to which data is being transferred.
Users		Allows users to be added or removed. Gives permission for setting.
Help	Contents	Software assistance manual.
	About...	Software version.

