



DA-06

Electronic purse with Chip Card



The **DA-06** manages the balances stored in the chip card, providing an adjustable connection time by the consumption of each one. It operates in independent mode, being able to operate like cards recorder or balances controller. It incorporates local controls for recording, activation, deny, balances consultation and cards "Setup". It allows changing the serial number to use several controllers in a same place, the exit is done through relay. It includes indicator leds, reader-recorder, and connection terminals.

TECHNICAL CHARACTERISTICS.

Voltage	2V. DC.
Min./max. Consumption	20 / 75 mA
Max. Admissible Output load	5A.
Compatible with Chip cards	Eeprom 1Kbyte.
Approximate reader's life duration	1000.000 cycles.
Max. balances number per card	5.
Output connection time	1 - 120 minutes/balance.
Reader board dimensions	65 x 45 x 14 mm.
Status Leds board dimensions	65 x 15 x 20 mm.
Main board dimensions	79 x 65 x 30 mm. mm.

POWER SUPPLY and INSTALLATION.

POWER SUPPLY. The DA-06 circuit had to be supplied by a 12 VDC power supply correctly filtered. We recommend you to use the FE-103 power supply, which has been developed to perfectly answer to the circuit needs.

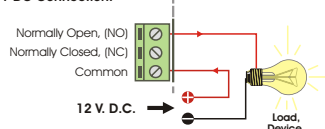
Install a switch has it is indicated on the schedule close to the power supply fuse. Both are necessary for the module's protection as well as for your own safety, as it is required by the "CE" regulations. Connect the positive and the negative of the power supply to the respective positive and negative terminals of the module inputs, indicated in the wiring map. The distance between the power supply and the module has to be as short as possible. Verify that the assembly is correct.

OUTPUT CONNECTION. LOAD. The DA-06 output is controlled by a relay (device electrically insulated from the circuit) which accepts any device up to 5 A. The relay is not a component supplying voltage but its function is limited to accept or deny the voltage passage like a standard switch. For this reason, you have to supply the load through this component.

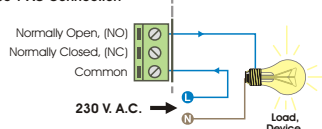
The relay has three output terminals: The normally open quiescent (NO), the normally closed quiescent (NC) and the common. Install it between the Common and the NO in accordance with the schedule "Output Connection. Load". For the inverse function you have to place the load between the NC and Common.

OUTPUT. CONNECTION OF THE LOAD. Module outputs re controlled by a relay, insulaeta device allowing any load until 5.A, as maximum consumption **The relay is not a component supplying voltage**, but its function is to allow or deny the electrical flow supplied through its contacts, like a standard switch. For this reason, you have to supply the load through this device. The relay has 3 output terminals the normally open at quiescent (NO), the normally closed at quiescent (NC) and the common. The operating mode of this mechanism is the same as a switch with two (2) terminals NO and common as it is indicated in the Fig. Nº1 . For the inverse function you have to place the load between the NC and Common.

12 V DC Connection.

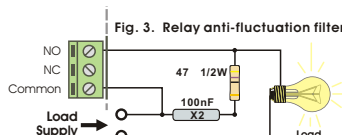


230 V AC Connection



INFORMATION ABOUT THE OUTPUT. Specially with inductive loads, a relay can generate a fluctuation or an incorrect output operating mode. In such case, you have to install an anti-spark circuit between both contacts of the relay used in this connection, as it is indicated on the drawing, to absorb the current peak provoking the mentioned problem.

If the load connected to the circuit is supplied at 230V, you have to use a **X2 type** 100nF/400 V capacitor type and a 47W. 1/2 W resistor (See fig. 2). If the load is supplied at 12 or 24 V, remove the resistor and install only a **X2 type** capacitor between relay both contacts. You must try values between 10nF and 47nF till the fluctuation disappears.



OPERATING MODE.

OPERATING MODE. The operating mode of the module can be basically divided in two parts or concepts, the Programming Mode and the Accesses and Balances Control Mode.

CARDS INSERTION. Before to describe the Programming Mode or the Accesses and Balances Control Mode, you will have to learn to correctly done the cards insertion operating into the reader. This operating is basic and indispensable for any circuit operating modes.

Firstly, you have see the fig 2, corresponding to a standard chip card. You will note that each card include in its reverse part a chip easily identifiable. Place the card to have the chip downwards in the direction of the reader entrance. See illustrations fig.3 and fig.4.

Fig. 2 Reverse of the card

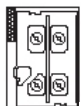


Fig.3 Circuit of the reader



Back (card face without chip)



Fig.4 Card inserted in the reader

Once the card has been correctly oriented, at a normal speed, without abruptness, introduces it through the groove inside the reader and in the way indicated in the drawing.

PROGRAMMING MODE.

See General Wiring Map section. The circuit is composed by three dips batteries, one with 8 (Control), one with 12 (Data) and a last one with 4 (Credits/Time). Thanks to these batteries and the "Enter" key, you could do all operations offered by the Programming Mode.

Activation of the Serial number. The first operation that you must do is the activation of the serial number. Potentially several users with a DA-06, and all users with cards similar to yours. Theoretically, this situation could allow that any other person without any relation with your module, but with a Cebek Chip card with a number that you were registered in your module, could consume balances in this one. In order to avoid this situation, you have to program the DA-06 with a serial number between 0 and 4096 that individualize it and make it exclusive. The serial number will be registered into the module and into all cards activated with this one. Then, only cards activated with your DA-06 could operate.

In order to register the serial number, firstly you have to accede to the Programming Mode. Place the DIP 8 (Control) in ON position, automatically LED "PRG" will be illuminated indicating that you have correctly reach this mode. Then, places DIP 1, (Serial Number activation), also in ON position (the rest of dips, except the 6 must to remain in OFF position), LED "PRG" will start a continued intermitence.

The following step will be to configure on the DATA battery, through the 12 dips composing it, the wished serial number. Do the combination that you want placing in ON or OFF the 12 dips of the battery. It is a code with internal purpose for the circuit.

PROGRAMMING MODE.

Once introduced, it will not be necessary to reproduce nor to remember it (except if you combine several DA-06, then you must to consults the corresponding section).

Once selected the code, you have to press the Enter key. The LED "CONFIRM" will be illuminated and you have 5 seconds to confirm the order pressing again Enter. If you do it correctly, LED "01" will be illuminated confirming the correct execution of the serial number activation. Otherwise, if after five seconds you don't press the Enter key: the module will return to its initial state of Programming Mode, illuminating previously the Led "ERROR", without doing any change in the memory of the circuit.

Note. Each time you activate a serial number, the rest of data stored in the module (like card numbers, etc...) will be Irrevocably erased.

Cards Recording. The module is supplied with 2 Eeprom Chip cards with 1 Kbyte. Although you can acquire additional packs composed by 10 units (ref C -7294). It is not important that Eeprom Cards are empty or not, you have to install data on each card that later allows the module to recognize them.

The recording will have two functions: firstly it will be the assign a number between 0 and 999 that later and according to the module's programming, will allows its access. Secondly to internally record the serial number of the circuit on each card, doing it only available for the DA-06 with which cards have been recorded. This function is automatically and without user's intervention done when the mentioned card number is activated.

In order to record and to assign a number between 0 and 999 to a card, firstly you have to select on the DATA battery (12dips) and in binary mode the number you wish to record.

To convert a decimal number to binary number or vice versa you can do it with a scientific calculator. Read instructions of your calculator regarding this matter. However, normally they have a button with DEC (decimal) and BIN (Binary) abbreviations. In order to do the conversion from decimal to binary, firstly you have to place the calculator in DEC mode, then introduce the decimal number. Finally you have to select the BIN option and the calculator will do the conversion indicating the corresponding binary number. This number composed by "0" and "1" will be the number you have to assign on the Data battery dips. If you place any dips in ON position, this one will remain configured as 1. If you place any dips in OFF, the DIP will adopt the value "0". Then you could write on the battery the required binary number.



Equivalent to 0



Equivalent to 1

DIP 1 corresponds to the bit with smaller weight. (LSB) whereas DIP 12 is the greater weight. (MSB). It supposes that you have to introduce the binary number in the opposite way that you write it on a paper sheet.

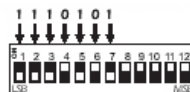
Example 1. Configuration of the Data battery for the number 87.

Firstly you have to convert the decimal number into binary. The binary equivalent for 87 is 1010111. After the conversion you can insert the code 1010111, (87) in the battery. Remember that units correspond with DIP 1; tens with DIP 2; hundreds with DIP 3, etc. Therefore you have to compose the number as it is indicated in the fig 6. Dips not used, in this case 8, 9, 10, 11 and 12 must remain in 0, (OFF).

fig 6. Configuration of the card number 87, binary code 1010111.

1º. 87 decimal = 1010111 binary

2º. To place the Binary number considering LSB and MSB bits.



Example 2. Configuration of the Data battery for number 3.

Repeat the process of the previous example introducing this time binary code 11, (3). As for the example 1, dips not used, in this case dips 3 to 12. Must remain at 0, (OFF). See fig. 7.

fig 7. Configuration of the card number 3, binary code 11.

1º. 3 decimal = 11 binary

2º. To place the Binary number considering LSB and MSB bits.



Example 3. Configuration of the Data battery for number 99.

Repeat the process of the previous example introducing this time binary code 1100111, (99). As for the example 1, dips not used, in this case dips 9 to 12. Must remain at 0, (OFF). See fig. 8.

fig 8. Configuration of the card number 999, binary code 11100111.

1º. 999 decimal = 11100111 binary

2º. To place the Binary number considering LSB and MSB bits.



When you have selected the Number you wish to record: Place the DIP 8 of the CONTROL battery in ON position to accede to the programming mode. Place also DIP 2 (Card Recording), in ON position. The rest of dips, Except for 5 and 6 must remain in OFF position. The LED ~PRG~ will blink if you correctly done this operation.

Then insert the card you wish to record in the reader and press the Enter key, like in the previous function: LED CONFIRM- will be illuminated and you have 5 seconds to confirm the order pressing again the same key. After the confirmation, LED ~CONFIRM~ will blink during the recording and finally the LED ~OK~ will be illuminated indicating the correct conclusion of the operation.

If you don't confirm the order during these 5 seconds, or because of an incorrect card insertion or any other reason the operation would not conclude successfully, the LED ~ERROR~ will briefly illuminating to indicate this fact. Once completed the recording, remove the card from the reader and change to the card number the Data battery.

Repeats the process so many times as cards you wish to record.

We suggest you to print or label each card with the number used to be recorded for its later control, erasure or checking.

To activate Cards. Once cards have been recorded, to allow module to valid cards access during their insertion, and then to activate the output, you must activate each card.

From Programming Mode and remember that you have to place DIP 8 of the Control battery in ON position. LED ~PRG~ would be illuminated indicating that you have successfully reach this mode. The rest of dips, except 5 and 6 must remain in OFF Position.

Then, insert the previously recorded card and presses Enter key: Like in the rest of previous functions. LED ~CONFIRM~ would be illuminated and you will have 5 seconds to confirm the order pressing Enter again.

After the confirmation, the LED ~CONFIRM~ will blink while the module is registering the card and finally the LED ~OK~ will be illuminated to indicate the correct conclusion of the operation. If there is any problem avoiding the card activation, not allow the discharge. The LED ~ERROR~ will indicate it, briefly illuminating. Once this operation done, the card will be permanently stored in the memory of the circuit. Later, in the Accesses Control mode, when the card is introduced the circuit activates the exit.

The module memory will remain unalterable even without electrical supply and you could only be able to erase data deactivating cards or initializing the circuit through a serial number activation.



PROGRAMMING MODE.

Balances recording. With the DA-06 you can record each card with data concerning the access previously mentioned, but you can also charge or recharge balances in each card, up to a maximum of five balances. Later the user will be able to consume them according to its needs.

In order to record balances in a card, firstly you have to configure the dips on the Credits/Time battery the number of wished balances. See fig 9

Fig 9. To select Balances.



Accede to the Programming Mode placing DIP 8 of the CONTROL battery in ON Position. Place also DIP 5, (Balances Recording) in ON. The rest of dips, except 6, must remain in OFF position. LED --PRG-- will blink if this operation correctly done.

Then, insert the card in the reader and presses the Enter key. Like in the previous function, LED --CONFIRM-- will illuminate and you have 5 seconds to confirm the order pressing again the same key. After the confirmation, LED --CONFIRM-- will blink during the recording and finally LED --OK-- will be illuminated indicating the correct balances recording in the card.

To activate the Serial number through card data. In the corresponding section it is described how to activate serial number through the Data battery. However, it can be necessary to initialize the DA-06 with the same serial number than a card previously recorded.

To do this, you must reach the Programming Mode. Remembers that you have to place the DIP 8 of the Control battery in ON Position. Place also DIP 7 in ON. The rest of dips, except 5 and 6, have to remain in OFF position, LED --PRG-- will blink if this operation correctly done. (The rest of dips except 5 and 6 must be in OFF.

Then insert the previously recorded card and press the Enter key. Like in the rest of previous functions, 5 sec the led --CONFIRM-- will be illuminated and you have 5 sec. to confirm the order pressing Enter again; after the confirmation, LED --CONFIRM-- will blink during the module's configuration with the new serial number. Finally LED --OK-- will be illuminated indicating the correct result of the operation. If there was some problem avoiding to activate the serial number, the LED --ERROR-- will indicate it, briefly illuminating.

Remembers that each time you activate a serial number, data previously stored in the circuit will be erased.

Note. Remember that if you activate you activate a serial number, the rest of data stored in the module, like card numbers, etc... will be irrevocably erased.

Combined use of several D0A-06. There are applications requiring several DA-06 installed in different places, but that all of them must be compatible. Therefore, with a same card you could activate the access in some modules whereas in another no. Moreover, you could have cards with access to all the readers and others only with access to some readers. All this without using a different card type for each reader.

To manage a system composed by several DA-06 and to activate them between them, firstly you have to assign to each one the same serial number. This operation can be done activating the serial number in a first circuit and with a card recorded by this one to initialize the rest of DA-06, or through the DATA battery Data repeating the same process code the serial number activation in all of them. In any mode the result will be the same.

Later, and with cards recorded with its corresponding identifier number you have to manage in which modules and which cards will have access to each of them. For instance, if you wish that a card can be used as key for a system composed by five DA-06, you have to activate each reader: if you needs that a card only has access in a couple of them, you have to activate it in these two modules and no more. Thus, the balances consumption will be subject to have access in the corresponding DA-06.

This "Levels" system is the used one in gymnasiums with different accesses to the different services, companies with different privileges under payment, etc.

ACCESS CONTROL & BALANCE MODE.

The balance and access control mode configure the circuit to do a single function: to read the introduced card, to deny or accept the access according to its registry in the circuit memory and if this one has balances, to consequently activate the relay output during the selected time. In any case it will accept programming functions.

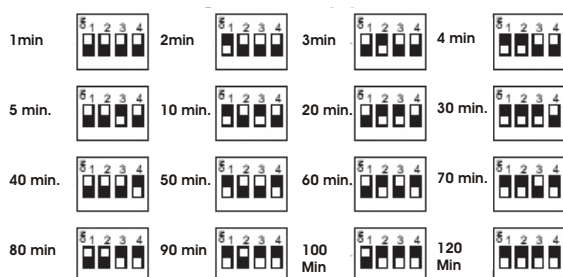
In order to establish the DA-06 operating in Balances and Access control mode Control, check the DIP 8, (Programming), of the Control battery one is in OFF Position. The module will confirm this situation extinguishing all Leds on the main board. From this moment, the module will exclusively operate as Balances and Access control device.

Time per Balance. Each time the user will consumes a balance, the exit will be activated. The time that this one remains connected will depend on the previously assigned time per balance.

The time selection per balance can be only done in the Balances and Access control device mode, through the dips of the Credit/Time battery.

The module admits a time per balance: 1 minute as minimum and of 120 minutes as maximum. See fig 10 and configure the Dips battery the wished time.

Fig. 10 To select time per Balance



Balances Consumption. In order to activate the circuit output, firstly the user have to introduce the chip card in the reader, and then to press the Enter key. Automatically the circuit will discount and consume a balance from the card, activating the output during the pre-assigned time per balance.

Later the user will be able to remove the card, the output will not be deactivate up to the end of the timing. Until then, the module will not accept the consumption of a new balance.

During the consumption of a balance, the state Leds, initially lighted on will be progressively lighted off according to the time up to the end of the balance.

Each one of these five Leds will indicate with 20%, 40%, 60%, 80% and 100%, the consumed percentage. A complementary illuminated Led indicates that the indicate percentage is still available. An intermittent LED will indicate that half of that percentage has been consumed, and a lighted off LED will indicate that this percentage has been consumed.

Indication of balances and cards state. When the user introduces a chip card in the DA-06, if it wasn't be previously activated, the LED Error blinks until you remove the card from the reader. If at the opposite the card was previously activated, the module remains you press Enter and start the consumption of a balance. Each time you press Enter, if the card has no balance, the five state leds will blink until the card is removed from the reader.

If the card had balances, when Enter is pressed the module will initially indicate how many balances are available in the card illuminating the corresponding number of state Leds. When Led OK on the main board is lighted off, state Leds will change their indication to indicate the time of the balance consumption.

DO NOT FORGET.

In the different module functions, you have to check you have placed dips battery as it is indicated in the corresponding instructions. Selecting by error more than one DIP will provoke an incorrect operating mode of the function you want to execute.

Do not remove, extend or modify the communication cable between the main board and the reader. Otherwise, the module doesn't operate correctly and the warranty will be cancelled.

In the module installation, this one must be insulated from devices that can provoke interferences or network parasites. Use, if necessary, a network filter and place the circuit in a protected place, far away from these disturbances.

Do not bend, twist nor dirty cards chip, otherwise can irremediably damage them.

Maintains cards far from direct sun, like car dashboard, windows, or any other place that the excess of heat can deform the card.

Protects the chip installed on the card from elements that can shred or destroy the copper part composing it.

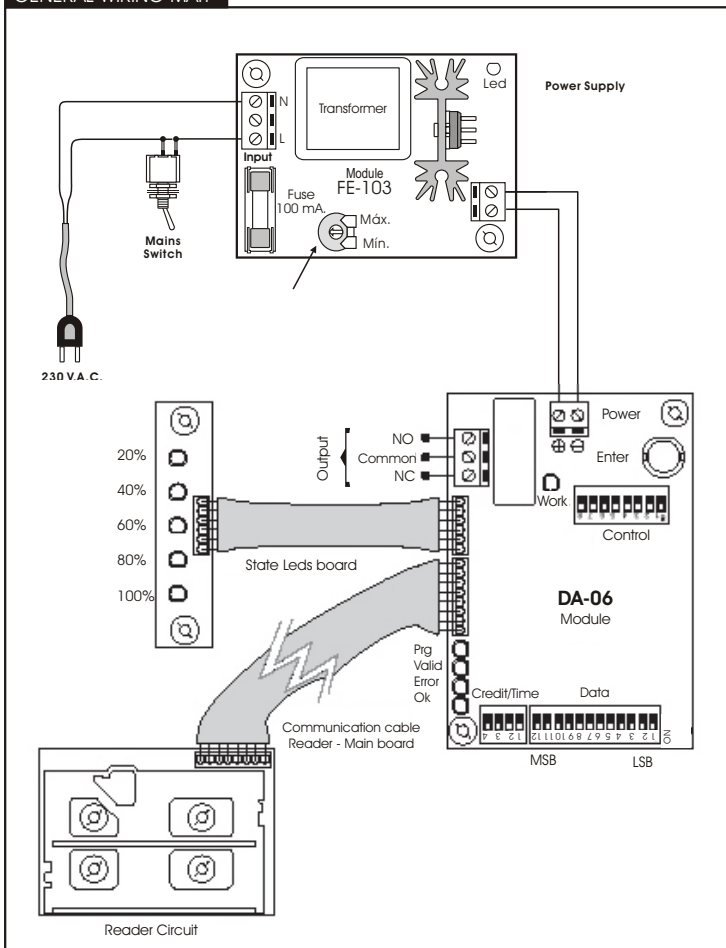
Do not place the reader in a place where it is not protected from the rain or extreme humidity, because it doesn't have protection against such elements

The damage because of the failure or omission of these considerations, as well as an incorrect manipulation will be exempt of the module warranty.

DIP SWITCH



GENERAL WIRING MAP



TECHNICAL SUPPORT AND INFORMATION.

For any questions or more information:

By Fax. (24h.) +34.93.432.29.95 **By Mail:** C/ Quetzal, 17-21, Entlo. 2º (08014) BARCELONA - SPAIN.

By E-Mail: sat@cebek.com

Keep you invoice. For any repairing could you send this with module. Else, the module will lost the warranty.



All the module's CEBEK have **3 years of total warranty** in thecnical repairing, and spares from the date of buy.

CEBEK is trade make of FADISEL S.L. more than 300 module's are available in stock for any purpose **request our CATALOGUE**, or visit our Web site www.cebek.com

