MODULAR A CCTALK

INDEX

1. INTRODUCTION AND DESCRIPTION OF COMPONENTS

This Technical Manual provides technical information corresponding to the coin validators in the **Modular A CCTALK®** range**.**

These coin *validators* are apparatus that, within the machine, and forming part of it, have the task of selecting and validating coins introduced into the machine. They are used in leisure, gambling, parking machines, etc.

This validator has a serial communication protocol compatible with CCTALK®. It has been designed to allow the interconnection of different coin control systems (hoppers, changers...) on a simple bus of to wires (a bidirectional data line and ground).

The specification used to implement this communication protocol is the following:

CCTALK Serial Communication Protocol

Generic Specification

Issue 4.3

The use of CCTALK® is free; it can therefore be used without paying licences or royalties.

In the rest of this Technical Manual the coin *validators* in the **Modular A CCTALK** range will be called *validator* or *validators*

1.1 MODELS IN THE MODULAR A CCTALK RANGE

Depending on the sensor module, they are divided into two groups:

- **A6-6S CCTALK**. This is a high sensorisation validator whose sensor module has 6 optic, 6 inductive sensors, and one acoustic sensor, it is recommended when a high discrimination capacity is required for frauds.

- **A6-2i CCTALK**. This is a normal sensorisation validator whose sensor module has 6 optic and 2 inductive sensors.

As for the mechanical format, the possibilities are:

- **A**. Coin entry at the top.

- **AC**. Coin entry at the side. This validator can be used with a small front plate.

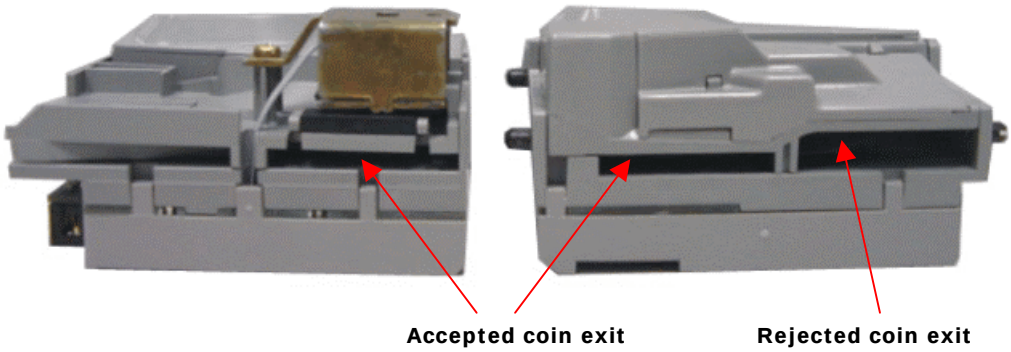
Normal

Short

Therefore, the available models are A6-6S CCTALK, AC6-6S CCTALK, A6-2i CCTALK etc.

With respect to coin routing, these differ in their position from the L and X ranges.

Validator A range	Validator L range



1.2 PRINCIPLE TECHNICAL CHARACTERISTICS

The most relevant technical characteristics of this range of *validators* are:

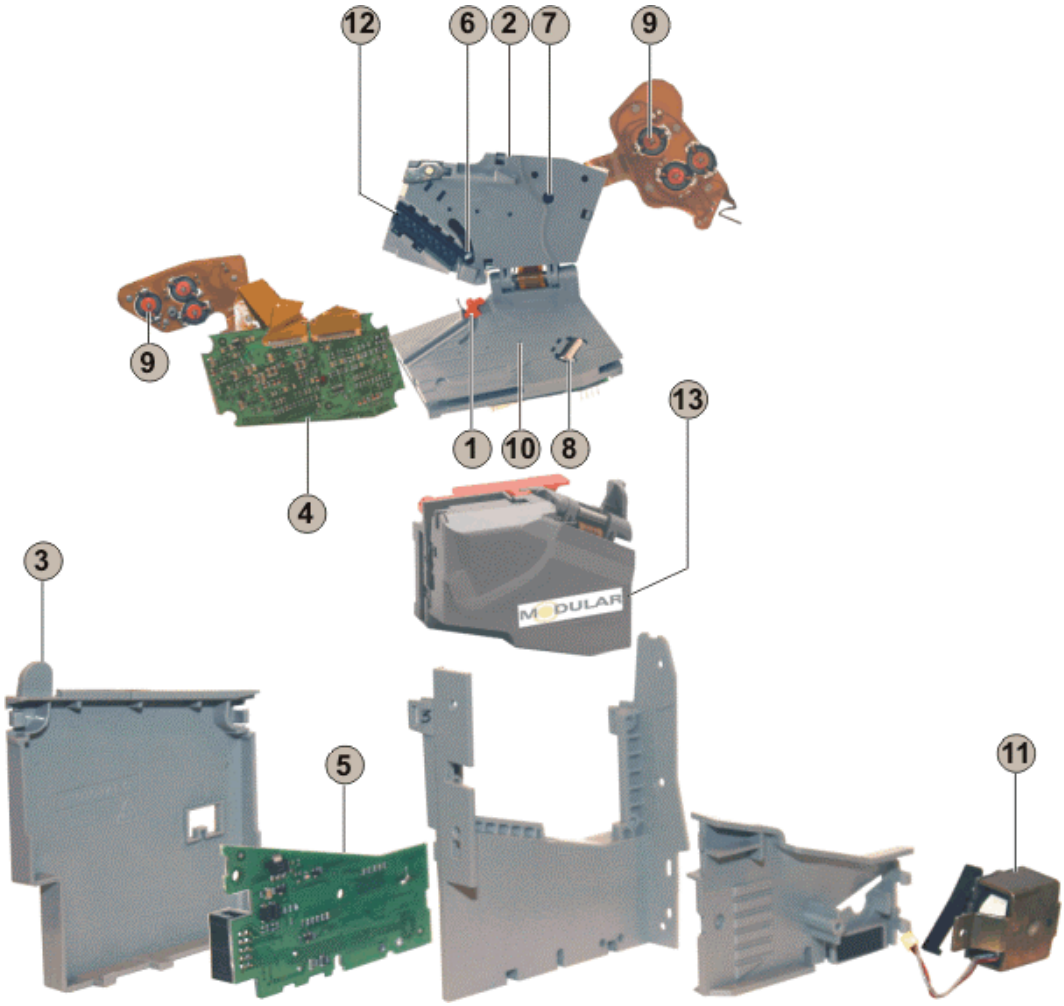
➘ Voltage and power consumption:

	Nominal	Maximum	Minimum
Voltage	12 a 24 Vdc	26,4 Vdc	10,8 Vdc
Power consumption of the acceptance solenoid	280 mA	400 mA	
Activation time of the acceptance solenoid	110 ms		
Power consumption of the sensor module on stand-by	50 mA		
Power consumption of the sensor module reading the coin parameters	120 mA		

- Modular construction: the measuring device can adapted to the requirements of the currency.
- The quality of its measurements depends on the characteristics of the Sensor Module installed.
- It implements the **CCTALK® protocol** with a wide range of commands. It allows the teleprogramming of the firmware directly from the serial port.
- It can work in "Safe Mode" which impedes the modification of its characteristics in the field.
- The *validator* admits 32 types of different coins, of which 2 can be reprogrammed by the operator on site at the machine.
- It can be programmed for different 4 coin acceptance levels.
- The following security systems are implemented in the validator:
  - An effective string detection system, which will foil any attempt at fraud using a string tied to a coin.
  - Anti-return. This system stops the coin from being pulled back up through the validator with a string after being accepted.
  - Control via software of the speed of the coins that impedes coins with very high or low speeds being credited.
  - Control and detection of the entry channel with infrared sensors.
- It is made of the latest generation of plastics that are resistant to wear, they dissipate static electricity, have high rigidity, and are dimensionally stable at high temperatures and humidity (low levels of absorption) and are resistant to sea spray.
- The useful life is guaranteed for **more than 1,000,000 services**.
- It has a hardware test (perform self-check), that when requested by the machine, informs the machine of the possible anomalies that the validator may have.

1.3 DESCRIPTION OF COMPONENTS

The principle components of the *validator*s in the **A** range are:



1. Recuperation lever

Activating this lever will open the *validator* to free possible coin jams within the *validator*. The refund is activated by pressing the red button on the Front Plate, which presses on the side of the validator door

2. Validator door

This is the moving part of the *validator*. It opens when the recuperation lever or the refund button on the front plate is pressed.

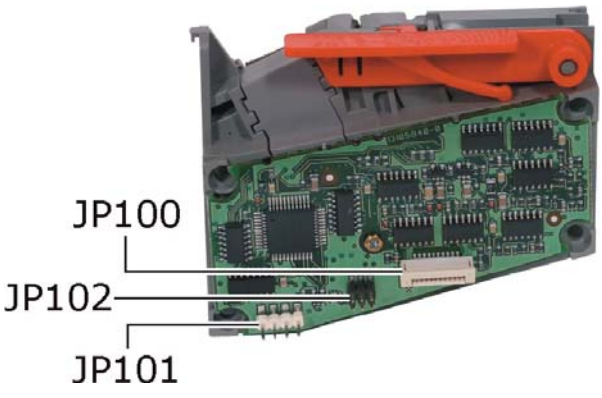
Validator door	

3. Cover

This cover protects the electronic elements in the *validator*.

4. Circuit board in the sensor module

It has a microprocessor that has a flash memory and teleprogrammable firmware.

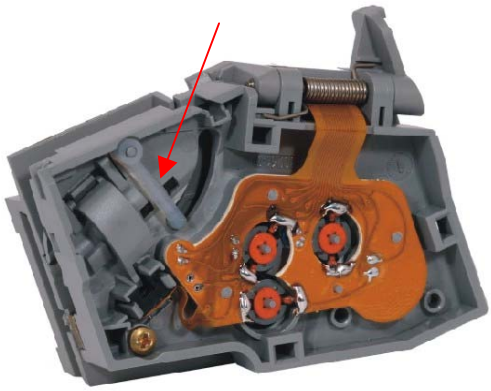


JP100:	Communication bus for the exit module
JP101:	Serial port
JP102:	Programming connection

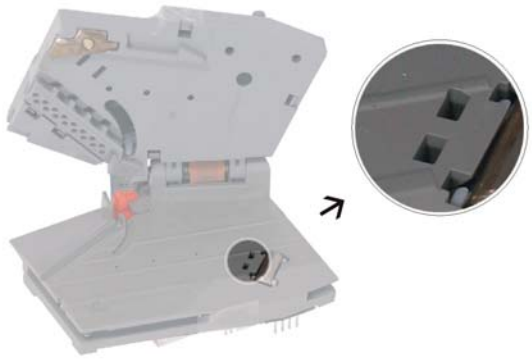
5. Outlet module

It has a microprocessor that has a flash memory and teleprogrammable firmware; the CCTALK connectors can be seen	

6. Coin entry rocker

The coin entry rocker is designed to stabilize the speed at which the coins move through the interior of the *validator*.	

7. Acoustic sensor

	In the lower part of the entry model is the acoustic sensor. This device receives the sound made by the coin when it hits the *metallic cylinder* on falling into the validator. The parameters received by this sensor are very important in the coin acceptance or rejection process.

8. Metal cylinder

This is a complement to the acoustic sensor.

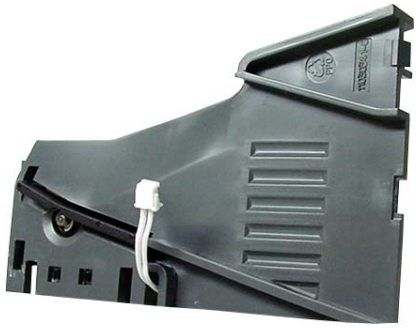
9. Inductive sensors

Depending on the model, the validator has between 2 and 6 inductive sensors that obtain coin parameters related to its thickness and alloy. Its design favours the reading of coins manufactured using bimetallic technologies and/or multilayer. An example of these technologies is the two-pound coin.	

10. Infrared sensors

	3 pairs of infrared sensors that obtain parameters related to the diameter of the coin.

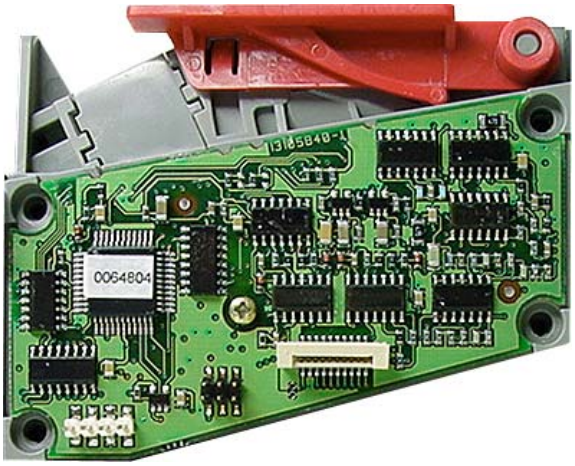
11. Acceptance gate

When the *validator* validates a coin, the electromagnet opens the gate to let the coin through the accepted coin channel.	

12. String detector

Inside the *sensor module* is the "string detector system." An electro-mechanical system to foil any attempt at fraud using a string tied to the coin. The system is based on an infrared beam passing through a hole in the *shutter*. The beam is interrupted when the string attached to the coin tenses and moves the *shutter*. The *validator* interprets this signal as a fraud attempt and inhibits the coin.

13. Sensor module

This element has the majority of the parts responsible for measuring and control in the *validator*. It is a common element of the *validators* that have the same sensors, it is where the different measurements and controls are carried out to determine if the coin is accepted or rejected.	

2. HOW IT WORKS

The validator is a peripheral of the machine, which has total control over the validator. Every time the machine is switched on or a reset is carried out, the validator inhibits all the coins.

Once the machine starts the communication with the validator, it informs the validator of the coins that are to be accepted and where they are to be sorted. This programming is stored in the RAM memory of the validator and can be modified at any time by order of the machine only.

The machine-validator communication is permanent (credit polling), receiving any credit or error the validator generates. If communication is interrupted for more than 1 second, the validator will stop accepting coins.

Once a coin has been introduced, it is analysed by the sensor module and if it corresponds to a programmed coin that is not inhibited, it is automatically accepted and the validator then informs the machine of its presence.

To obtain more information on the different commands, consult the **CCTALK Protocol manual** for this product.

2.2 PROGRAMMING OF TWO COINS OR METALLIC TOKENS

The command to auto-programme these two coins or tokens are sent from the machine using the commands **[201] REQUEST TEACH STATUS and [202] TEACH MODE CONTROL**.

This request is activated using an option in the machine; the validator will be waiting for the coins or tokens that are to be programmed to be introduced. Once the operator has introduced 25 coins or tokens, the programming of them will be automatically stored on the validator.

The coin numbers available for the implementation of this command are 15 and 16.

3. WORKING CONDITIONS AND NORMS

Optimum results from using this equipment can be obtained by meeting the following requirements:

- Install the Coin validator with a maximum inclination of +/- 3º on all axes.
- Temperatures:
  - ➘ Storage: from -25 to +70ºC.
  - ➘ Working from +5 to +55ºC, at the extremes, double the percentage of normal coin rejection for valid coins.
- Humidity: maximum 95% (relative humidity without condensation)
- Physical characteristics of the coins that are admitted:

	Minimum	Maximum
Diameter	16.5 mm	32.5 mm
Thickness	1.2 mm	3,5 mm

The typical acceptance of legal currency is 97% on the first try (without deformations and with standard electrical conductivity and magnetic permeability parameters).

- Norms that are met.
  - ➘ EN50081-1. General emission norm
    - EN50022: Radiated emission (measurement of the radiated perturbation field).
    - EN50022: Conductive emission (measurement of the conductive perturbations in power supply).
  - ➘ EN50082-1: General immunity norm.
    - IEC801-2: Electrostatic discharges (measurement of the immunity to electrostatic discharges).
    - IEC801-3: Radiation immunity (measurement of the immunity to electric fields).
    - IEC801-4: Transitory peaks and spikes (Measurement of the immunity of transitory peaks and spikes).
  - ➘ EN60335-1 (94-95). Electrical appliance safety norm
  - ➘ CE

4. CLEANING AND MAINTENANCE

The amount of dirt coins leave and the foreign objects and dirt that may obstruct its elements determine the maintenance the coin validator requires. Use the following guidelines for cleaning:

- Disconnect the power.
- Clean the dirty areas with paintbrush or brush with fine vegetable fibers (never metal) impregnated with alcohol. Clean with detail:
  - The coin guide
  - The metal ramp
  - The optic sensor holes
  - The string detector photocells
  - The string detector system

WARNING:

The parts that are held by screws should never be removed. Their manipulation may cause the validator to measure and detect coins erroneously.

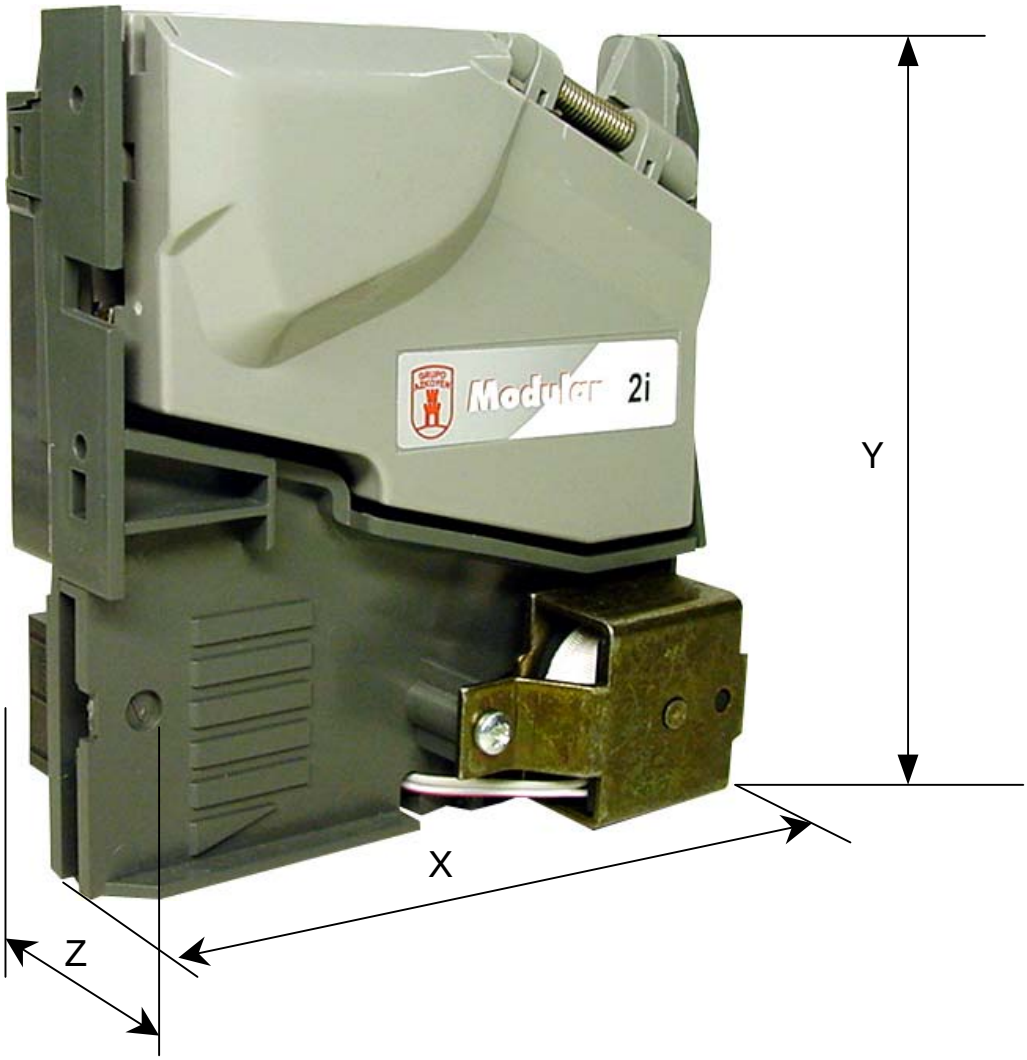
Never use products that contain benzene hydrocarbons. These products severely degenerate the plastic parts producing irreparable damage.

Never submerge the *Coin validator* in any liquid.

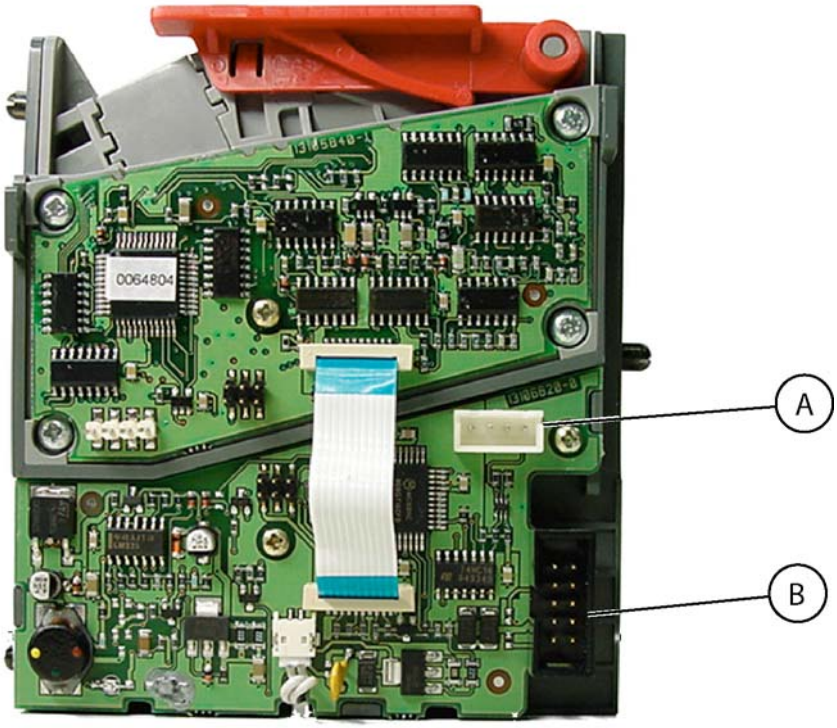
5. DIMENSIONS

The *validator* has the same general external dimensions as the "L": 3.5 type *validator*. The *validator* will fit in the same housing as the "L" *validator*. The supports are removable and compatible with market standards. The validator can be installed in the same place as the "L" type validators except for the differences in coin entry and exit and the fixing points that are unique to the "A" validator.

Dimensions (mm): X = 89, Y = 102, Z = 48



6. DIAGRAMS AND PIN-OUTS



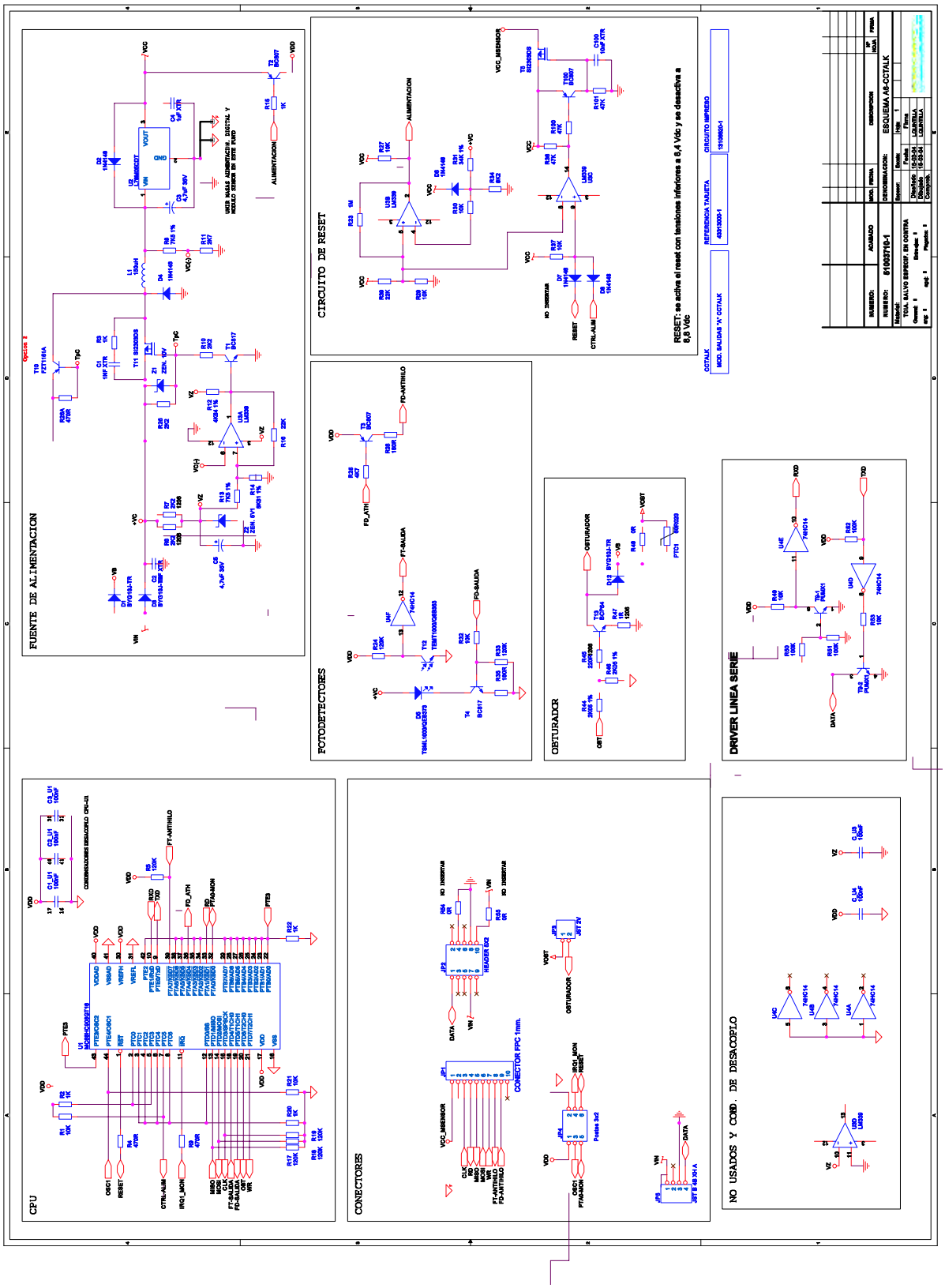
The *validator* has 2 connectors called:

A. *Connector CCTALK Standard*: 4 pins JST “standard interface” type

4-way connector CCTALK standard		
Pins	Name	Description
Pin 1	Vin	Power to the validator
Pin 2	N.C.	Not connected
Pin 3	GND	Ground, connected to 0V
Pin 4	/DATA	Data line

B. General c*onnector* 10-way MOLEX series 862 reference 10-89-1101

10-way sorter connector.		
Pines	Name	Description
Pin 1	/DATA	Data line
Pin 2	N.C.	Not connected
Pin 3	N.C.	Not connected
Pin 4	N.C.	Not connected
Pin 5	N.C.	Not connected
Pin 6	N.C.	Not connected
Pin 7	VIN	Power to the validator
Pin 8	GND	Ground connected to 0 V
Pin 9	N.C.	Not connected
Pin 10	N.C.	Not connected


FUENTE DE ALIMENTACION
CIRCUITO DE RESET
RESET se activa el reset con tensiones inferiores a 8,4 Vdc y se desactiva a 8,6 Vdc
FOTODETECTORES
OBTURADOR
DRIVER LINEA SERIE
CPU
CONECTORES
NO USADOS Y COMO DE DESACOPLO
ESQUEMA AB-CCTALK
CIRCUITO IMPRESO
MOD. BALIDAS "A" CCTALK

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