A01

UNIVERSAL "KEY" FOR A FAST AND RELIABLE ASCON TECNOLOGIC INSTRUMENTS CONFIGURATION

QUICK GUIDE
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INTRODUCTION

The new key is able to operate with 4 different "objects":
- An instrument;
- A second A01 key;
- A Personal computer;
- A Personal computer and one instrument.

The key is subject to different "*rules*" according to the different connected object and to the action to be made.

The key is able to store all the configuration parameters of one instrument at a time.

Dialogue between Keys and Instruments

It is possible to perform two different actions:
- Copy parameter values from an instrument memory to the key memory.
- Copy parameter values from the key memory to an instrument memory.

No specific rules must be enabled when copying the instrument memory to the key memory (is always possible); this action copies all parameters (when present, also the program parameters). On the other side, to copy the key memory data to an instrument, prior to perform the transfer to the controller, the conditions that guarantee the configuration integrity are tested. These conditions ensure that the configuration that we are sending to the controller:
1. Has been created for the same instrument type;
2. Uses the resources built in the instrument itself.

Dialogue between two A01 keys

This action is subject to no specific rules (is always possible) this action copies all parameters (when present, also the program parameters [thermal profiles]).

The dialogue between two keys of different type is not allowed (a new key with an old one).

Dialogue between a key and a PC

This action is subject to no specific rules (is always possible) this action copies all parameters (when present, also the program parameters [thermal profiles] and, if available, the logging data).

⚠ The key does not verify the congruence of the data coming from a PC. The software in the PC must be able to perform all tests necessary to ensure the integrity and congruence of the configuration that is to be transferred to the key.

Note: If the configuration in the PC has been copied from a controller, the data are certainly congruent.

For this kind of dialogue, the key can be set to perform (or not) a special service related to the protocol used by Ascon Tecnologic instruments to transfer data through TTL interface.

All Ascon Tecnologic instruments (exception made for TLZ) use ModBus protocol for all interfaces but on the TTL interface they put 3 (FF) character before the standard string. These characters are used by the instrument to recognize the "*silence*" between two strings and identify the beginning of a new string.

By setting properly the dip switches, it is possible to obtain a dialogue with or without the 3 additional characters (FF).

Dialogue between an instrument and a PC through the key

In this action the key is used as a smart converter. The key is able to perform two different conversions:
- **TTL <-> USB** allows the dialogue between ALL Ascon Tecnologic instruments and a PC;
- **RS485 <-> USB** allows the dialogue between a PC and an instrument [Ascon Tecnologic or not] equipped with an RS485.

Also in this case the key can be set to filter or not the 3 (FF) characters.

The "*smart*" definition not only gives the ability to add/filter the additional FF characters but also the capability to automatically manage the direction of the RS485 line.

Note: Also in this case, the key does not verify the congruence of the data coming from a PC. The software in the PC must be able to perform all tests necessary to ensure the integrity and congruence of the configuration that is to be transferred to the key.
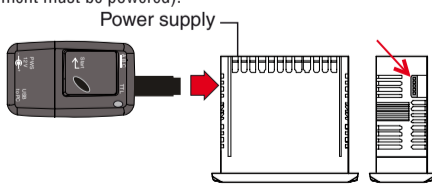
CONNECTIONS

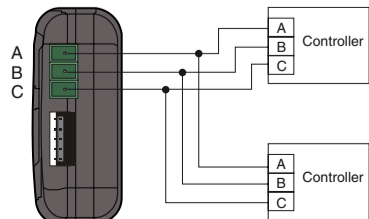**Note:** This device is designed for the temporary connection to the instruments.

Connection to an instrument using an external power supply (instrument not powered).

Power supply
9... 12 VDC / VAC
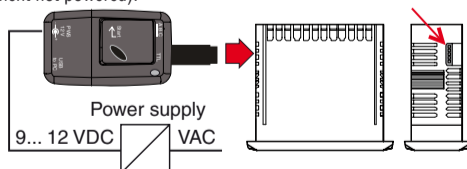
Connection to an instrument without external power supply (the instrument must be powered).

Power supply

RS485 connection.

A
B
C   Controller

A
B
C   Controller

HOW TO OPERATE

INSTRUMENT BEHAVIOUR AT POWER ON

Power ON the instrument. After 1.5 seconds the LED can be:
LED OFF = Device not programmed.
Send the instrument back to the supplier;
Green LED, flashing fast = The device is properly programmed but no data are present in memory;
Red LED, flashing fast = The device is properly programmed but a checksum error has been detected. The error will be corrected automatically:
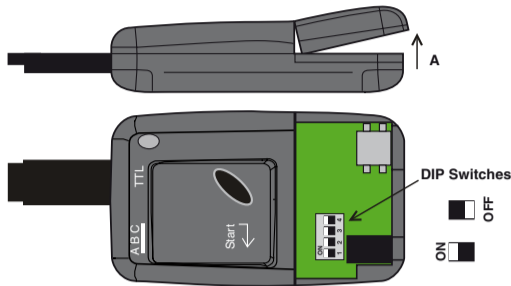 • Power OFF the instrument;
  • Power ON it again. If the error persists, send the device back to the supplier.
Green LED, steady ON = The device is properly programmed (a correct configuration is stored);
Red LED, steady ON = The device is set in order to operate with a PC.

HOW TO ACCESS TO THE DIP SWITCHES
1. Raise the cover (A).
2. The DIP switches are easily identifiable (Microswitches).

### WHERE TO FIND THE WINDOWS DRIVERS FOR A01 KEY
The drivers to ensure that Windows Operating System (from XP onwards) can recognize the A01 Key can be downloaded, free of charge, from Ascon Tecnologic website.
1. Open your **internet browser** and go to the **address**: www.ascontecnologic.com
2. With the mouse **select** Download;
3. Then A01-Driver;
4. Click on the latest version of the drivers file;
5. Then click on the file: AscontecnologicA01.zip the system asks if you want to **Open** or **Save** the selected file;
6. Choose **Open** and, unless a specific program is installed in the system, through the "**Browse**" button to select "**Explorer**";
7. At this point the two driver files can be copied in a directory prepared for this purpose (keep track of its location for future use).

LOADING THE A01 DRIVER ON A WINDOWS BASED PC
1. Power ON the key by the external power supply;
2. Set the dip switches as shown below:
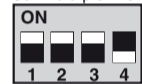
3. Connect the key to the PC using the USB cable. The Operating System detects the key and warns "**Found New hardware**";
4. When the system shows the message "**Allow to connect Windows Update to search for software**", select "**Not yet**" and click on "**Next**";
5. Select "**Display a list of the known drivers…**";
6. Select "**Include this location in the search**";
7. Access to the directory in which you previously extracted the driver and select it by clicking on it;
8. Push "**Next**";
9. Push "**Finish**";
10. Disconnect the key and connect it again.
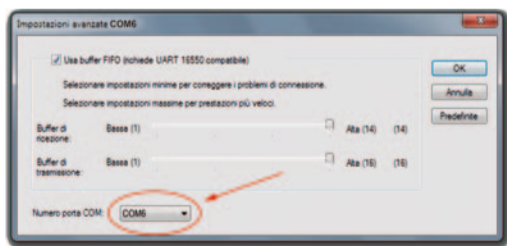
HOW TO SET THE SERIAL COMMUNICATIONS PARAMETERS
1. Enter in "**Control panel**";
2. Run "**System**";

3. Select "**Hardware**";
4. Click on "**Device manager**";
5. With the mouse left button double click on "**Ports**";

6. Double click on **Tecnologic USB_Key_A01**;

7. Select "**Port setting**";
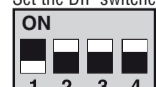8. Click on "**Advanced**";

9. Set the **COM** port number necessary to communicate with the configuration software (**AT_UniversalConf**).

OPERATIVE MODE SELECTION

Mode 1 - Firmware version detection
To detect the version of the Firmware loaded in the key, proceed as follows:
1. Set the DIP switches as shown below:

2. Power the device via the USB or an external power supply;
3. Push the "**Start**" button;
4. The double colour **LED** present in the key, **repeatedly lights** up with **green colour**; the **number of flashes** indicates the f**irmware revision number**.
5. After reporting the version, the **LED** will light up with **red colour** to indicate that the process has ended.
6. After about 1 s, the **LED** returns to the steady **green colour**.

Mode 2 - Copying all parameters from an instrument to a key (Upload)
1. Set the DIP switches as shown below;
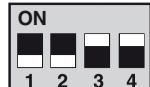
2. Make sure that the instrument and/or the key are powered;
3. Connect the key to the instrument;
4. Make sure the LED is lighted in **green** (**steady** or **flashing**);
5. Push the "**Start**" button;
6. The LED shows the **steady red colour** to indicate that the command is in progress;
7. Wait for a few seconds. At the end of the copy procedure the **LED** can be:
   • **Steady green**: Operation properly terminated.
   - The key can be removed.
   - The key has stored a valid configuration.
   • **RED, slow frequency flashing**: **Copy failed**. One of the following conditions occurred:
   - The key has been withdrawn before the operation has ended;
   - A communication error occurred;
   - The device contains no valid data.
   The action must be repeated.

Mode 3 - How to copy all data from a key to an instrument (Download)
1. Set the DIP switches as shown below:

2. Make sure that the instrument and/or the key are powered;
3. Connect the key to the instrument;
4. Make sure the **LED** is lighted in **green** (**steady** or **flashing**);
5. Push the "**Start**" button;
6. The **LED** shows the **steady red** colour to indicate that the command is in progress;
7. Wait for a few seconds. At the end of the copy procedure the **LED** can be:
   • **Steady green**: Operation properly terminated.
   - The key can be removed.
   - The key has stored a valid configuration.
   • **RED, slow frequency flashing**: **Copy failed**. One of the following conditions occurred:
   - The key has been withdrawn before the operation has ended;
   - A communication error occurred;
   - "**PACS**" parameter (enables/disables the instrument remote configuration) is set to disable the remote instrument configuration.
   - The instrument has retained the data it had before the transfer attempt.
   • **RED, fast frequency flashing: Copy failed**. One of the following conditions occurred:
   - The configuration stored in the key is not compatible with the connected instrument.
   - An attempt was made to transfer the configuration for a new instrument to an old controller.
   In any case, both the key and the instrument maintain the previously stored configuration.

Mode 5 - Copying the configuration only from a key to an instrument
1. Set the DIP switches as shown below:

2. Make sure that the instrument and/or the key are powered;
3. Connect the key to the instrument;
4. Make sure the **LED** is lighted in **green** (**steady** or **flashing**);
5. Push the "**Start**" button;
6. The **LED** shows the **steady red** colour to indicate that the command is in progress;
7. Wait for a few seconds. At the end of the copy procedure the **LED** can be:
   • **Steady green**: Operation properly terminated.
   - The key can be removed.
   - The key has stored a valid configuration.
   • **RED, slow frequency flashing**: **Copy failed**. One of the following conditions occurred:
   - The key has been withdrawn before the operation has ended;
   - A communication error occurred;
   - "**PACS**" parameter (enables/disables the instrument remote configuration) is set to disable the remote instrument configuration.
   - The instrument has retained the data it had before the transfer attempt.
   • **RED, fast frequency flashing**: **Copy failed**. One of the following conditions occurred:
   - The configuration stored in the key is not compatible with the connected instrument.
   - An attempt was made to transfer the configuration for a new instrument to an old controller.
   In any case, both the key and the instrument maintain the previously stored configuration.

Mode 7 - Copying the program area only from a key to an instrument
This action is possible if programmer functions are present.
1. Set the DIP switches as shown below:

2. Make sure that the instrument and/or the key are powered;
3. Connect the key to the instrument;
4. Make sure the **LED** is lighted in **green** (**steady** or **flashing**);
5. Push the "**Start**" button;
6. The **LED** shows the **steady red** colour to indicate that the command is in progress;
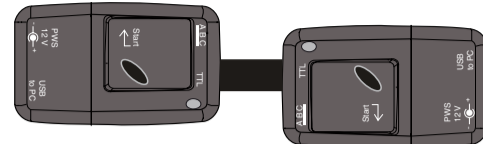7. Wait for a few seconds. At the end of the copy procedure the **LED** can be:
   • **Steady green**: Operation properly terminated.
   - The key can be removed.
   - The key has stored a valid configuration.
   • **RED, slow frequency flashing**: **Copy failed**. One of the following conditions occurred:
   - The key has been withdrawn before the operation has ended;
   - A communication error occurred;
   - "**PACS**" parameter (enables/disables the instrument remote configuration) is set to disable the remote instrument configuration.
   - The instrument has retained the data it had before the transfer attempt.
   • **RED, fast frequency flashing: Copy failed**. One of the following conditions occurred:
   - The configuration stored in the key is not compatible with the connected instrument.
   - An attempt was made to transfer the configuration for a new instrument to an old controller.
   In any case, both the key and the instrument maintain the previously stored configuration.

Mode 9 - Copying all parameters from Source (A) to Target key (B)
1. Set the DIP switches as shown below:

Source Key   Target Key

2. Make sure that at least one of the keys is powered with an external power supply;
3. Connect the two keys through the TTL port as illustrated:

4. Control that the **LED** of the **SOURCE** key is **lighted in green** colour, the **LED** of the **DESTINATION** key must be lighted in **green colour**, but can be **steady** or **flashing**;
5. Push the "**Start**" button **on one of the 2 keys**;
6. The **LED** of the key on which has been pressed the "**Start**" button shows the **steady red** colour to indicate that the command is in progress;
7. Wait for a few seconds. The **LED** of the key on which has been pressed the "**Start**" button can be:
   • **Steady green**: Operation properly terminated.
   - The key can be removed.
   - The two keys contain the same configuration.
   • **RED, slow frequency flashing**: **Copy failed**. One of the following conditions occurred:
   - The key has been withdrawn before the operation has ended;
   - A communication error occurred;
   - The Slave key contains no valid data;
   In any case, the **Master key contains the original configuration**. **Repeat the whole sequence.**

Mode 10 - Using the key as a smart USB <-> RS485 converter
1. Set the DIP switches as shown below:

2. Make sure that the instrument and/or the key are powered;
3. Connect the key to the instrument using the RS485 terminals;
4. Connect the key to the PC using the USB cable;
5. Make sure that the key **LED** is **steady red**.
6. Verify the setting of the interface stored by the PC;
7. During serial communications, the **LED flashes** all the times the **Master sends a request**.

Mode 11 - Using the key as a smart USB <-> TTL converter without FF filter
1. Set the DIP switches as shown below:

2. Make sure that the instrument and/or the key are powered;
3. Connect the key to the instrument using the 5 pin connector;
4. Connect the key to the PC using the USB cable;
5. Make sure that the key **LED** is **steady red**.
6. Verify the setting of the interface stored by the PC;
7. During serial communications, the **LED flashes** all the times the **Master sends a request**.

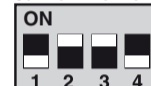### Mode 12 - Using the key as a smart USB <-> TTL converter with FF filter
1. Set the DIP switches as shown below:

2. Make sure that the instrument and/or the key are powered;
3. Connect the key to the instrument using the 5 pin connector;
4. Connect the key to the PC using the USB cable;
5. Make sure that the key **LED** is **steady red**.
6. Verify the setting of the interface stored by the PC;
7. During serial communications, the **LED flashes** all the times the **Master sends a request**.

Mode 13 - Dialogue between the key and a PC without FF filter
1. Set the DIP switches as shown below:

2. Make sure that the instrument and/or the key are powered;
3. Connect the key to the instrument using the 5 pin connector;
4. Connect the key to the PC using the USB cable;
5. Make sure that the key **LED** is **steady red**.
6. Verify the setting of the interface stored by the PC;
7. During serial communications, the **LED flashes** all the times the **Master sends a request**.

Mode 14 - Dialogue between the key and a PC with FF filter
1. Set the DIP switches as shown below:
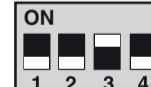

2. Make sure that the instrument and/or the key are powered;
3. Connect the key to the instrument using the 5 pin connector;
4. Connect the key to the PC using the USB cable;
5. Make sure that the key **LED** is **steady red**.
6. Verify the setting of the interface stored by the PC;
7. During serial communications, the **LED flashes** all the times the **Master (PC) sends a request**.

| Mode	SW1	SW2	SW3	SW4	Function
					DIP Switch position
1	OFF	ON	ON	ON	Firmware version detection
2	OFF	OFF	ON	ON	Copying all parameters from an instrument to a key (Upload)
3	ON	ON	ON	ON	Copying all data from a key to an instrument
4	ON	OFF	ON	ON	Reserved
5	OFF	OFF	OFF	ON	Copying the configuration only from a key to an instrument
6	ON	OFF	OFF	ON	Reserved
7	ON	ON	OFF	ON	Copying the program area only from a key to an instrument
8	OFF	ON	OFF	ON	Reserved
9	ON	ON	ON	ON	Copying from a key to another - A (Source) key
	OFF	OFF	ON	ON	Copying from a key to another - B (Target) key
10	ON	ON	ON	OFF	USB <–> RS 485 converter
11	OFF	ON	ON	OFF	USB <–> TTL converter without FF filter
12	OFF	OFF	ON	OFF	USB <–> TTL converter with FF filter
13	OFF	ON	OFF	OFF	Dialogue between the key and a PC without FF filter
14	OFF	OFF	ON	OFF	Dialogue between the key and a PC with FF filter

Error messages

Function	LED	Reason	Action
UPLOAD	Flashing RED	The transfer has been stopped and the key stored no the new configurations	Verify the compatibility of the configuration stored in the key with the connected instrument. Repeat the action
DOWNLOAD	Low frequency flashing RED	The transfer has been stopped and the key stored no the new configurations	
DOWNLOAD	Flashing GREEN	No configuration is stored in the key	Load a configuration prior to try the transfer
DOWNLOAD	High frequency flashing RED	The configuration stored in the key is not compatible with the instrument connected	Verify the configuration compatibility

CHARACTERISTICS

TECHNICAL DATA

Case: Self-estinguishing plastic degree V0 according to UL94;
Dimensions:
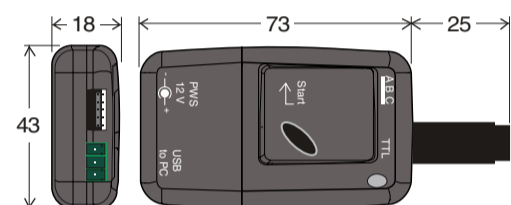
Connector TTL:	JST S 5B-PH-KL - 2 mm;
Connector TTL female:	SAMTEC SQT-105-02-L-S - 2 mm;
Connector RS485:	Phoenix MC 1.5/3-G-3.5;
Connector USB:	Mini-USB;
Push buttons:	1;
LED:	1 two colour LED (red/green);
Power supply:	VDC, 1.3 mm jack;
DIP switches:	4 microswitches;
Operating temperature:	0... 50°C (32... 122°F).
Storage temperature:	-20... +70°C (-4... +158°F).
Relative Humidity:	20... 80% RH without condensation;
Pollution degree:	II.

ELECTRICAL DATA

External Power Supply

Voltage:	9... 12 VDC;
Consumption:	150 mA max. at 9 VDC (the A01 key only, no instrument connected).

RS485 Interface

Type:	Not isolated;
Cable length:	3 m max.;
Electrical levels:	According with RS485 standard;
Line speed:	1200... 38400 baud;
Parity:	None;
Format:	8 bit;
Start Bit:	1;
Stop Bit:	1.

TTL Interface

Type:	Not isolated;
Cable length:	3 m max.;
Electrical levels:	5 V according with TTL standard;
Line speed:	1200... 38400 baud;
Parity:	None;
Format:	8 bit;
Start Bit:	1;
Stop Bit:	1.

USB Interface

Type:	2.0.

Memory dimension

Memory: The key memory is divided in 2 areas:
- Memory area for configuration parameters;
- Memory area for programs (or logging);
Both areas can store 500 parameters maximum.

Power supply

The key can be powered in two different ways according to the connected instrument type and of the action you desire. The following table defines the necessary supply type in the various conditions.

Instrument family	PIN	Function	External power supply	Instrument power supply
TLK 43 TLK 48	3	Copy from a key to an instrument	Yes	Yes
		Copy from an instrument to a key	Yes	Yes
		Copy from PC to instrument with a key (TTL)	Yes	Yes
		Copy from PC to instrument with a key (485)	Yes	Yes
Others and futures	5	Copy from a key to an instrument	Only one must be supplied	
		Copy from an instrument to a key	Only one must be supplied	
		Copy from PC to instrument with a key (TTL)	Yes	Yes
		Copy from PC to instrument with a key (485)	Yes	Yes
From a key to a key or to a PC	5	From an A01 key to another A01 key	At least one key must be supplied	
		Copy from a key to a PC	Yes	--s
		Copy from a PC to a key	Yes	--

In all cases both power supplies are allowed.

GENERAL NOTES

PROPER USAGE

Every possible use not described in this manual must be considered as a improper use.

⚠️ **Ascon Tecnologic S.r.l. and its legal representatives do not assume any responsibility for any damage to people, things or animals deriving from violation, wrong or improper use or in any case not in compliance with the instrument features.**

MAINTENANCE

1. **Remove the Power supply from the key;**
2. Using a vacuum cleaner or a compressed air jet (max. 3 kg/cm²) remove all deposits of dust and dirt which may be present on the louvers of the connectors.
3. Remove the cover of the dip switches and, using an air jet, remove all deposit of dust and dirt which may be present on the internal circuits trying to be careful to not damage the electronic components.
4. Clean external plastic or rubber parts use only a cloth moistened with:
   - Ethyl Alcohol (pure or denatured) $[C_2H_5OH]$;
   - Isopropyl Alcohol (pure or denatured) $[(CH_3)2CHOH]$;
   - Water (H_2O);
5. Before using the key, be sure that it is perfectly dry;
6. Re-connect the Power supply to Power.

DISPOSAL

The appliance (or the product) must be disposed of separately in compliance with the local standards in force on waste disposal.

WARRANTY AND REPAIRS

This product is under warranty against manufacturing flaws or faulty materials that are found within 18 months from delivery date. The warranty is limited to repairs or to the replacement of the instrument. The tampering of the instrument or an improper use of the product will bring about the immediate withdrawal of the warranty effects.

In the event of a faulty instrument, either within the period of warrantee, or further to its expiry, please contact our sales department to obtain authorisation for sending the instrument to our company.

The faulty product must be shipped to Ascon Tecnologic with a detailed description of the fault found, without any fees or charge for Ascon Tecnologic, except in the event of alternative agreements.

ORDER CODE

A01 - UNIVERSAL KEY

Model
A01- = Universal Key

TTL Connector
3 = 3 PIN
5 = 5 PIN

AC Adapter
E = 230 VAC
- = None

Accessories
S = Cable USB + Connector 485
- = None

Package
- = Standard
N = Neutral

A01- ☐ ☐ ☐ ☐