# blumotix
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## Technical Manual

# BX-ACT04 + ACT08 + ACT12
## Switch Actuator 4 - 8 - 12 canali
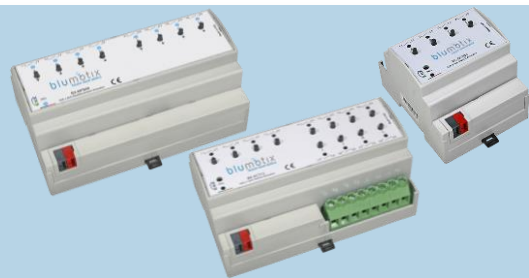
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# INDEX

# 1    General

BX-ACTxx are switch actuators.
Maximum current delivery from each channel is 16 A at 230VAC.
The device is ETS-programmable to perform a number of functions:

- o   Light and other utilities control
- o   recall and store KNX scenarios
- o   associate logical functions to relay outputs

This device can be used for both home and industrial applications.

## 2 Product Features

The actuator is powered by KNX.
The IP20 casing is pre-set for installation on a DIN 35mm bar (DIN EN 60715).
Its width footprint is equal to 8 18mm modules.
It is equipped with 16A toggle-type relays with contact directly connected to the terminals – with no phase-sharing.
The screw-type terminals are able to accept cable cross-sections up to 5 mm$^2$.
The relays can be manually controlled via the keypad provided on the device front, complete with contact state indicator LEDs.
The relays used can withstand an inrush current up to 320A for the first 2ms, therefore, they are particularly suitable for piloting inductive loads typical of fluorescent or neon lamps.

# 3 ETS library

The ETS Library features a number of parameters used to characterize the operation of each actuator output.
These parameters are conveniently divided into twelve pages dedicated to each channel configuration and one main page necessary to enable the possible use of logical functions.

## 3.1 General

The "**General**" page allows you to enable the use of logical functions associated with relay outputs.

| 1.1.4 BX-ACT12 > Generale | |
|---|---|
| **Generale** | Configurazione modulo     BX-ACT12 |
| Uscita A | |
| Uscita B | Funzioni logiche su uscite indipendenti ◯ No  ⦿ Si |
| Uscita C | |
| Uscita D | |
| Uscita E | |
| **Uscita F** | |
| Uscita G | |
| Uscita H | |
| Uscita I | |
| Uscita J | |
| Uscita K | |
| Uscita L | |
| Funzioni logiche su uscite indipendenti | |

By enabling there will be the appearance, at the bottom of the side menu, of an additional configuration page, dedicated to Logical Functions.

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## 3.2 A B C D E F G H I J K L outputs

| 1.1.4 BX-ACT12 > Uscita A | | |
|---|---|---|
| Generale | Tipo contatto | ◉ Normalmente aperto<br>○ Normalmente chiuso |
| **Uscita A** | Stato uscita alla partenza | Sempre off ▼ |
| **Uscita B** | Funzione luci scale | ◉ No ○ Si |
| Uscita C | | |
| Uscita D | Abilita scenari | ◉ No ○ Si |
| Uscita E | Abilita comandi generali | ◉ No ○ Si |
| Uscita F | | |
| Uscita G | | |
| Uscita H | | |
| Uscita I | | |
| Uscita J | | |
| Uscita K | | |
| Uscita L | | |
| Funzioni logiche su uscite indipendenti | | |

Contact Type defines whether the relay contact associated with the OFF logic condition should be open or closed.
The classic default value is open, meaning the circuit is closed.

"**Output Status at Start**" defines the behaviour of the relay when the system is switched on.

"**Always off**" is the precautionary condition that keeps the output off.
Alternatively, you can do the opposite by setting "**Always on**".

| Sempre off | ✔ |
|---|---|
| Sempre on | |
| Stato precedente | |

Or you can set "**Previous State**" to reset the setting before blackout. This condition is particularly suitable for use with lighting.

For each output parameterized as Generic Load, two communication objects are always assigned, the first called **On-off command** to switch the output, the second called **On-off state** to notify the output status changes.

| ⇄ | 0 | Uscita A | Comando on-off | 1 bit | C R W - - | switch | Bassa |
|---|---|---|---|---|---|---|---|
| ⇄ | 4 | Uscita A | Stato on-off | 1 bit | C R - T - | switch | Bassa |

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## 3.3 Stair lights function

When you activate the Stair Lights function, the following configuration parameters appear.

| | |
|---|---|
| Funzione luci scale | ○ No  ◉ Si |
| Base tempi ritardo luci scale | 1 Secondo ▼ |
| Fattore tempi ritardo luci scale | 30 ▲▼ |
| Riavviabile | ◉ No  ○ Si |
| Tipo telegramma attivazione luci scale | ○ Attivazione con telegramma 0<br>◉ Attivazione con telegramma 1 |

**Stair lights delay time** factor is the parameter that defines the duration of the Stair Lights function.

To know the exact value, it will be necessary to multiply this factor by the unit of measure defined in the above field called **Base time delay stair lights.**

| |
|---|
| 1 Secondo ✓ |
| 1 Minuto |
| 1 Ora |

You can select the second, the minute, or the hour.
The product of these two factors is the time that the Stair Lights remain on.
By enabling the Stair Lights function, a dedicated communication object is introduced to activate the function itself.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ↕136 | Uscita A | Comando luci scale | 1 bit | C R W - - | switch | Bassa |

This means that it will be possible to provide the timing of Stair Lights with the communication object **Stair Lights Control**, or turn it on permanently with the standard object **On-off Control**.
Enabling the parameter "**Reboot**" you can make sure that the time count starts every time the start telegram is sent, vice versa, without enabling it, the time will flow until the end without the possibility of prolonging the activation.

**Type telegram activation stair lights** indicates with what value you cause the activation of the function Stair lights. In this case, as in other cases, it is not obvious to decide which data should cause the activation: it could be the value 1 sent by the closure of a button or the value 0 generated by the opening of a door contact.

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# 3.3.1 Scenarios

For each output there is the possibility to activate KNX Scenarios.

Abilita scenari      ◉ No   ○ Si

In this case the side menu is configured to access the page "**Scenarios Output X**".

| Uscita A |
| --- |
| **- Scenari Uscita A** |

A scenario is a default number sent on the bus to synchronize all devices that are enabled to recognize it.
It is a very powerful technique to synchronize the operation of communication objects that have different Data Types, since the value to be assigned to the state was previously stored in the device as a configuration parameter.

Each channel enabled to use scenarios will have its own communication object "**Set scene**" at 1 byte (Data Type 5), through which it will be able to receive a telegram of synchronization containing the number of the scene to which to refer in order to assign the state.
The scenarios available in Konnex are 64, numbered sequentially from 0 to 63.

| | 65 | Out F | Set scene | | 1 Byte | C | R | W | T | - | 8-bit unsigned value |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

### 1.1.4 BX-ACT12 > - Scenari Uscita A

| Generale | Spegnimento prima del nuovo scenario | ◉ No ○ Si |
| --- | --- | --- |
| Uscita A | | |
| **- Scenari Uscita A** | Numero scenario 1 | 1 ▾ |
| | Valore scenario 1 | ◉ Spento ○ Acceso |
| Uscita B | Abilita memo scenario 1 | ◉ No ○ Si |
| Uscita C | | |
| Uscita D | Numero scenario 2 | 2 ▾ |
| Uscita E | Valore scenario 2 | ◉ Spento ○ Acceso |
| Uscita F | Abilita memo scenario 2 | ◉ No ○ Si |
| Uscita G | | |
| Uscita H | Numero scenario 3 | 3 ▾ |
| Uscita I | Valore scenario 3 | ◉ Spento ○ Acceso |
| Uscita J | Abilita memo scenario 3 | ◉ No ○ Si |
| Uscita K | Numero scenario 4 | 4 ▾ |
| Uscita L | Valore scenario 4 | ◉ Spento ○ Acceso |
| Funzioni logiche su uscite indipendenti | Abilita memo scenario 4 | ◉ No ○ Si |

Blumotix actuators allow to assign to each output 8 different actions to be assigned to one of the 64 available scenarios.

**Scenario number X** defines the number of the scenario to be associated with that action.

**Value scenario X** defines the state to be assigned to the action you want to perform.

**Enable Memo Scenario X** allows you to enable the storage function.

You can in fact send a command on the bus to ask the devices to store their contingent state as a new value to be assigned to that scenario.
The new value will take the place of the one stored in the configuration parameters.
This option allows the end customer to configure the scenarios independently without having to resort to the programming of the plant.

Finally, we have to talk about the first parameter configurable in the table.
It is called "**Shutdown before the new scenario"** and provides that, before changing the status of the outputs due to the activation of a scenario, the module has all the outputs in OFF mode.
It's a very similar precaution to the interlocked mode to avoid the closure of two relays with opposite functions, while the configuration changes.

## 3.3.2 Logic functions

The logical functions allow to change the state of a channel in determined situations, defined through the configuration of the logical operators.
16 generic logical operators are available to be assigned to the desired channels without restrictions.
If a logical function is assigned to a channel, its state will no longer be determined only by its communication object, but by the result of the logical operation between its communication object and the one assigned to the logical function called **Logic Function X**.

Let's see an example of how you can create a Block function.
We want the actuator output to be inhibited by enabling a communication object (Logic Function 1) that we will call Block.

| Funzione logica 1 | |
|---|---|
| Abilita funzione logica | ○ No ◉ Si |
| Canale associato | A ▼ |
| Operatore logico | AND ▼ |
| Valore variabile | ○ Valore diretto ◉ Valore negato |

To do this, we enable Logic Function 1, assigning it the AND port function and denying its input value.
This configuration corresponds to the following logical scheme:



This logical scheme has the following table of truths from which the operation of output A can be inferred:

| Output A | Logic Function 1 | Final Output |
|:---:|:---:|:---:|
| O | O | O |
| 1 | O | 1 |
| O | 1 | O |
| 1 | 1 | O |

Questo significa che l'uscita corrisponderà all'ingresso soltanto se la Funzione Logica 1 è uguale a 0.

As already mentioned several times, the logical functions resources that can be freely associable to any channel.
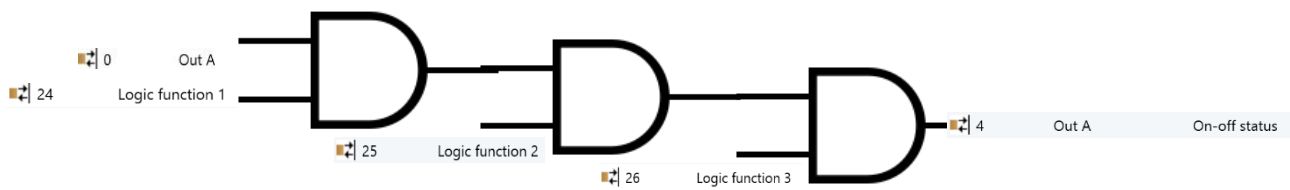


Therefore, it can happen to allocate more than one of them on the same channel, as in the example above.
In this case the final result is calculated by putting the ports in series, from the port with the lowest identifier to the port with the highest identifier, applying the output of the first oneto an input of the next one.

The available ports are AND, OR, XOR and NOT.
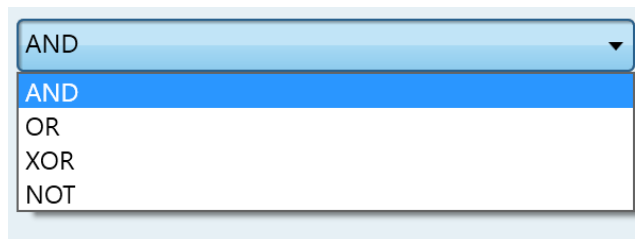
### 3.3.3 General Parameters

We have so far omitted to mention some particular communication objects called **All outputs**, capable of simultaneously modifying the state of multiple outputs of our actuator if previously enabled.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 163 | Tutte le luci scale | Comando on-off | 1 bit | C | R | W | - | - | switch | Bassa |
| 162 | Tutte le uscite | Comando on-off | 1 bit | C | R | W | - | - | switch | Bassa |

We have a command **All outputs** to switch programmed outputs such as Generic Load and a command **All stair lights** for stair lights function.
An output responds to the **All outputs** command if the **Enable General Commands** option is enabled.

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