

# Ternary Command Modules

*Andres Albanese, Ph.D.*  
[www.myhomevillage.com](http://www.myhomevillage.com)

**ABSTRACT:** Ternary command modules are common 2-module commands configured with 4-keys, UP, DOWN, STOP, and END. Using this configuration, a user is capable to send ternary numbers with many digits, the numbers are separated by pressing the END key. Using this method a user can address and control all devices in a home. Each ternary address specifies a scenario that is executed in the home controller. A single switch can control as many scenarios the user decides. When pressing a key once, in the wall switch, the command behaves in the normal way by the home controller toggling a device from OFF to ON, or ON to OFF. But, when pressing several keys in sequence the controller interprets the ternary number of a predefined scenario to execute. A controller can be programmed with more than 100 scenarios, therefore in principle one can program scenarios to control all devices in the home from a single switch.

## INTRODUCTION:

During the first day class on information theory, I learnt that "e", or "nèper", is the optimum measure to represent information. Searching in Wikipedia, I did found the use of "nat", "nit", and "nèpit", to refer all to a value close to 2.73 . Computer and telecommunication engineers have use the integer numbers of 2 and 3 to simplify and to approximate to the optimal value of e. A binary unit, called bit, represents a unit of information of 2-states, 1 and 0 . A bit is used in today's computers to read, and to write information. But often, there are cases in which information was represented with ternary numbers, a trit, or single digits representing 3 states, "+1" , "0", and "-1" .

For many years, before the matured evolution of fiber optics and integrated circuits, there was a strong competition between the computing industry using the binary system for computing, and the transmission industry using ternary number for transmission. Ternary transmission has the property of passing through transformers because of the alternating polarities. Luckily for my generation, a common solution was chosen to process and transmit information. Because

of the progress in computer and network technologies, the difference in cost for processing and transmitting a message was insignificant when compared to the cost of the information, therefore an optimal solution was no longer necessary. But, as we move forward into a mobile age, we may require to reconsider the advantages using a binary and ternary systems.

Today, remembering the old times, within the comfort of my home, I watch the commands in the wall flickering their LEDs, and I wonder weather a binary system is really a better solution than the ternary system. The switches for the lights are binary devices (ON/OFF), but the switches for the window shutters are ternary devices (OPEN/CLOSE/STOP). The user interface of mobile devices is one of the most critical components for their success. We human are characterized for not being digital, ON/OFF. A ternary interface base on gestures is preferable for enabling the user to move among applications in a tablet, and to scroll the browser when viewing a single page. The users prefer simple dialogs without may multiple choices, but a maximum of three choices.

My home is full of automations, and the user interfaces have evolved into simple glass plates where I use soft gestures to control the devices in my home. This time, some manufacturers were clever enough to make configurable devices. Configurable in “bits” for controlling lights, and configurable in “trits” for controlling shutters.

#### IMPLEMENTATION:

This site describes how to communicate and command our homes with gestures, and it shows how using ternary digits is probably the fastest and easiest way for communicating between a user and the home. I am getting familiar with the ternary number system because it enables to shorten the number of commands using a single gesture, which is faster than entering several clicks. A computer may work with bits, but users prefer the use of tris for better communication with the computer.

Ternary command modules are common 2-module commands configured with 4-keys, UP, DOWN, STOP, and END. Using this configuration, a user is capable to send ternary numbers with many digits, the numbers are separated by pressing the END key. Using this method a user can address and control all devices in a home. Each ternary address specifies a scenario that is executed in the home controller. A single switch can control as many scenarios the user decides. When pressing a key once, in the wall switch, the command behaves in the normal way by the home controller toggling a device from OFF to ON, or ON to OFF. But, when pressing several keys in sequence the controller interprets the ternary number of a predefined scenario to execute. A controller can be programmed with more than 100 scenarios, therefore in principle one can program scenarios to control all devices in the home from a single switch. There are 9 scenarios possible using a 2-key sequences, there are 27 scenarios using 3-key sequences, there are 81 scenarios possible with 4-key sequences, .... In practice, the user implements a small number of scenarios of interest to the locality of the switch, but there are not limits to the number of possible scenarios set by the input command modules. In a room there may be a half dozen of devices that can be commanded from a single command module. For convenience the user may have portable devices that behave the same way as remote controllers.

#### CONCLUSIONS:

As you may have guessed, in a smart home it is possible to have fewer wall switches and more scenarios while simultaneously lowering the cost of home automations installations and increasing the smartness in the home. Contact [MyHomeVillage.com](http://MyHomeVillage.com) to help you with the programming your home scenarios.