CAN in Simulation

Switch Module

Rev. 1.0

Switch Module

The Switch module is equipped with 24 input ports designed to connect various types of switches. These switches can range from common ones like SPST or SPDT switches, multi switches, pushbuttons, to more advanced options like relay contacts, optical switches, and electronic switches.

All the switches are designed to connect and switch to the ground.

CAN ID	node ID	data type	service code	message code	data byte 0	data byte 1	data byte 2	data byte 3
710h	node	0Bh	item	num	data	0	0	0

Switch Module Message

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
–	–	–	–	–	–	off	on

Switch Module Data Byte

The ***parameter*** associated with the switch module is:

Offset	The Switch module is capable of handling up to 24 switches, each of which is assigned a unique ID. Starting with the `offset` value, the eight encoders are given consecutive ID values, which will be included in the CAN message sent by the board. Since the ID values are 1 byte wide, up to 256 different switches can be distinguished under a given Node-ID.

Parameter Setting

To modify the parameters of a module, the *Module Configuration Service* (MCS) is utilized. The MCS is assigned a unique CAN-ID of `7D0h` (equivalent to decimal value `2000`):

CAN ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
7D0h	node	00h	0D0	1	pdat	0	0	0

node-ID:	node ID (node)
data type:	NODATA (00)
service code:	MCS (0D)
message code:	parameter ID (pid = 1)
message data:	Byte 4: parameter data (pdat = offset value)

Parameter ID Values

Upon completion of the parameter modification request, the response message will have a message code of `0` (zero) if the operation was successful. However, if the requested parameter is out of the valid range or the parameter ID is invalid, the response message will contain a message code of `-6`.

CAN-ID Setting

The CAN-ID range for switch board messages is *710h..717h* (decimal *1808..1815*).

To change the CAN-ID of the switch board, the *CAN Identifier Setting Service* (CSS) can be used. The message code (parameter ID) should be set to 0.

Node-ID Setting

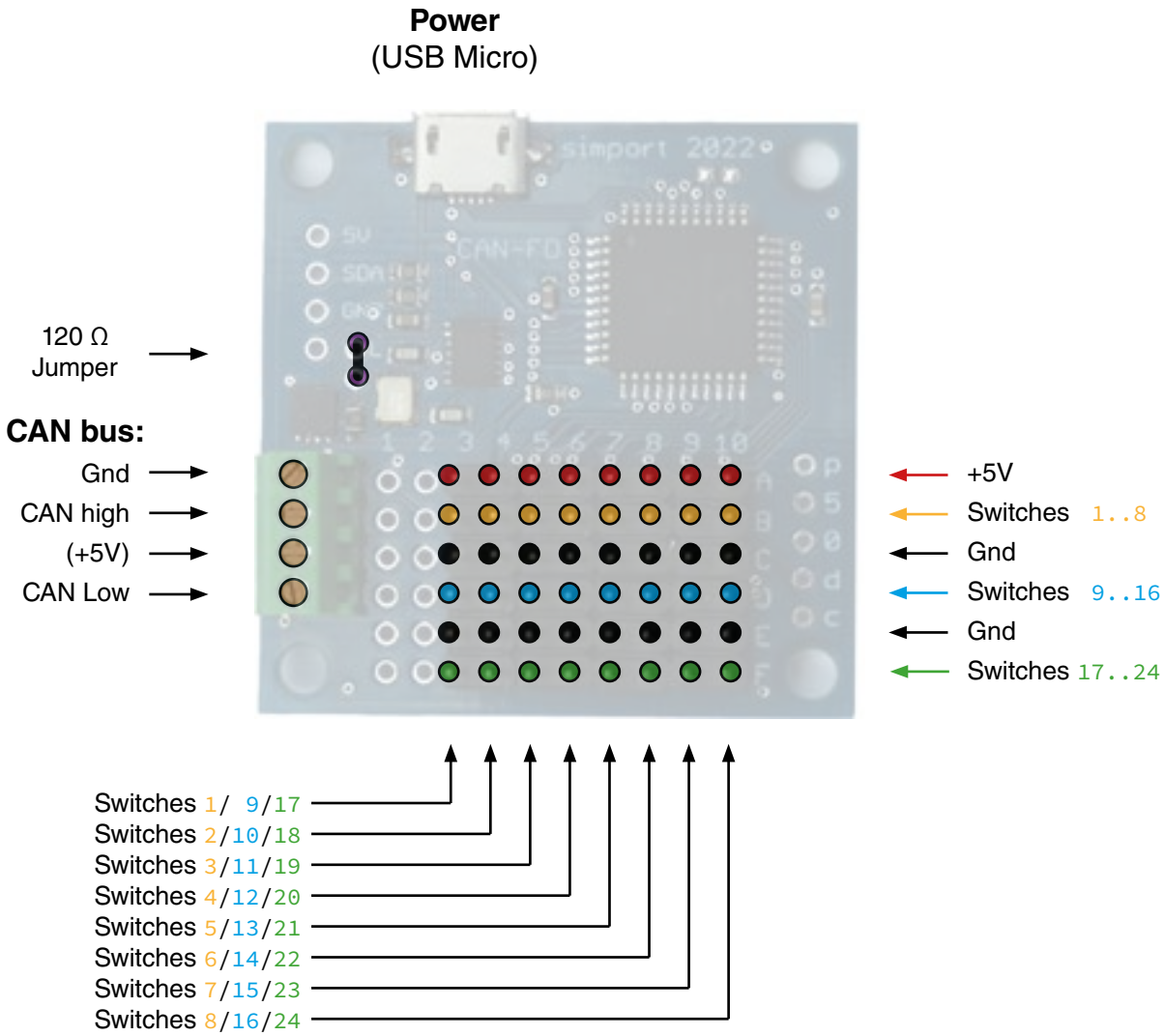
To change the Node-ID of the switch board, the *Node ID Setting Service* (NIS) can be used. Node-ID values are in the range of 1 to 255.

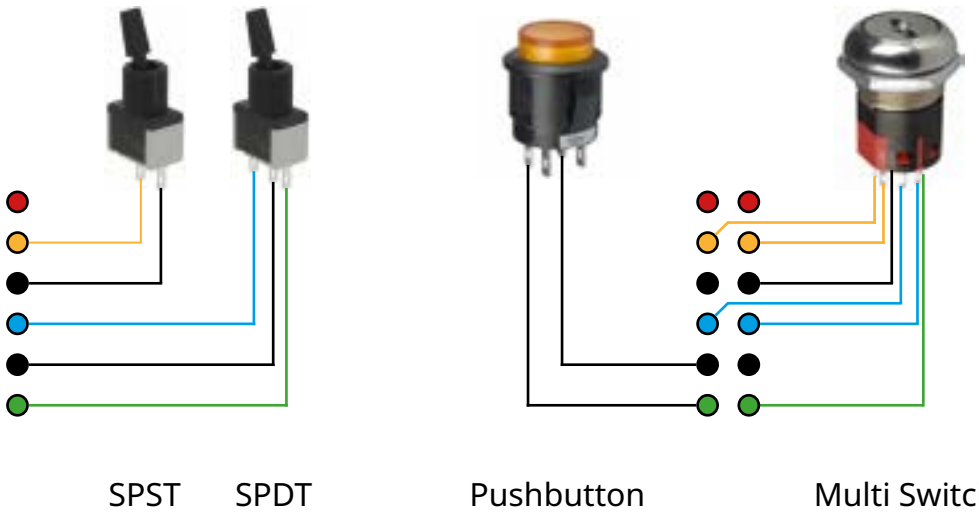
Status Transmission Service

The CAN bus bus messages are designed to be triggered only when there is a change in the state of any switch. The *Status Transmission Service* (STS) allows for the simultaneous interrogation of all switches at once. As a result, a total of 24 messages are generated, providing an up-to-date reflection of the current states of all switches on the board.

The Switch numbers transmitted in the CAN message are adjusted by the offset parameter, which is added to the base numbers ranging from 1 to 24. This modification allows for flexible and customizable mapping of Switch values within the CAN message.

Board Layout





Example Wiring

Board Dimensions