



CANACE8C Developer Information

Overview

These modules have 8 inputs. The inputs have resistive pullups to 5V so are normally logic high. If switched to their 0V line, they give a logic low. They will also work with 5V logic inputs and have input protection against higher voltages. The pullup value is 100K so they will work well with opto-isolators or other similar open collector devices.

A logic high is considered an OFF state and a logic low an ON state for CBUS purposes.

The CANACE8C module requires a power supply of 5V DC and the CANACE8C_2 a 12V DC supply.

In addition to producing a CBUS event when an input changes, these modules can have their inputs polled by another module or PC so their input states can be determined at any time. They can be taught an event which, when received, will prompt a sequence of 8 events reflecting the input states. This is referred to as the Start of Day (SoD) event. It would be used to determine the complete layout state on power up or at any other time required. An additional mode (mode 1) of learned events prompts a single response event (long) where the LSbyte reflects the 8 inputs. To distinguish this from a long event caused by an input change, bit 0 of byte 1 is also set. i.e. an EN of 01 00 to 01 FF. Note that a high input produces a '1' bit, a low input produces a '0' bit. A possible use of this is for route setting with rotary switches attached to the inputs. The LSbyte is the number set on the switches.

The default state of a CANACE8C/CANTOTI is the sending of long events when an input is changed. The upper two bytes of the event are the Node Number and the lower two bytes, the input number. The inputs are numbered 1 to 8. The events are the usual ON or OFF (0x90 or 0x91). However, individual inputs can be allocated Device Numbers (DNs) for the short event (addressed) mode. This requires teaching the module the DN corresponding with each input. If an input has been given a DN, it will only produce short events with that DN when the input changes or on a SoD event. The DN has a two byte range.

Node variables

Node variables: Up to 9 (depending on firmware version)

NV1, NV2, NV3, NV6, NV7 & NV8 are byte values with bits 0 to 7 corresponding to inputs 1 to 8.

The default values are zero.

NV1 is a byte where each bit determines whether a particular input sends ON / OFF or ON only events.

If a bit is set, only ON events are generated. The default is ON and OFF.

NV2 is a byte value that determines whether an input is to be inverted giving an active-high input.

The default is low-active.

NV3 is a byte value which enables the delay on each of specified inputs.

If input delay is enabled for an input, the input must be continuously ON for at least the ON delay time before an ON event is generated, and must be continuously OFF for at least the OFF delay time before an OFF event is generated.

NV4 is the ON delay time in units of 10ms, the default value is 10 (100ms).

NV5 is the OFF delay in units of 10ms, the default value for CANACE8C is 10 (100ms) and for CANTOTI is 50 (500ms).

NV6 is a byte value which enables **Push Button Toggle** mode on each of specified inputs.

When a bit is set, the corresponding input will alternate between sending ON and OFF events each time the input state changes from high to low.

NV7 controls the route options.

Value of 0xFF (255) generates an ON event on every change <0x90><NNHi><NNLo><0x02><Input code> in addition to

any actual change event.

It is expected that any other value consists of a single bit set but no check is made to see that this is the case.

When a change occurs on an input who's bit is set within NV7 the 'Route Event' generated will be On or Off according to the change that has taken place, since the trigger input value is a part of the <Input code> the On and Off events will be unique. This will prevent the inverse trigger event from undoing the wanted event actions. (Bob V. M660)

NV8 is a byte value which disables SOD on each of specified inputs.

When a bit is set, the input never generates an event in response to a SOD request.

NV9 is reserved for future expansion.

Events

Number of stored events: 32 (EN# of 1 to 32)

Number of EVs per event: 2. (EV# of 1 or 2)

EV1 sets the mode for the learned event. EV1 = 0 is for the SoD event. EV1 = 1 is for the 'route' event. EV1 of 00001000 to 00001111 relate the event to a particular input. This is used when teaching a DN for a given input and also for polling a particular input by its DN.

EV2 The code allows for an additional EV but this is not currently used.

Supported OpCodes

This table shows the supported OpCodes (HEX value and mnemonic) in FLiM mode.

HEX	Mnemonic		HEX	Mnemonic		HEX	Mnemonic
*0D	QNN		59	WRACK		96	NVSET
10	RQNP		5C	BOOTM		97	NVANS
*11	RQMN		*5D	ENUM		98	ASON
42	SNN		6F	CMDERR		99	ASOF
50	RQNN		70	EVNLF		9A	ASRQ
51	NNREL		71	NVRD		9B	PARAN
52	NNACK		72	NENRD		9C	REVAL
53	NNLRN		73	RQNPN		9D	ARSON
54	NNULN		74	NUMEV		9E	ARSOF
55	NNCLR		*75	CANID		B2	REQEV
56	NNEVN		90	ACON		B5	NEVAL
57	NERD		91	ACOF		*B6	PNN
58	RQEVN		92	AREQ		D2	EVLRN
			93	ARON		D3	EVANS
			94	AROF		*E2	NAME
			95	EVULN		EF	PARAMS
						F2	ENRSP

* These OpCodes are introduced from firmware Major Version 2

Module ID

The module ID number is 5 for the CANACE8C and 17 for the CANTOTI. The manufacturer number is 165.

Notes

Even in SLiM mode, it is possible to read the node parameters over the bus. The NN must be the value set by the switches and links. This may be useful for reading the code revision. In SLiM mode the CAN_ID will be the same as the NN as it is set by the same switches.

For bootloading in SLIM mode, the NN as set by the switches and links must be used.

Lead Developer

The original development of the CANACE8C was done by Mike Bolton and Gil Fuchs.

This project is currently coordinated by *Phil Wheeler* [<http://www.merg.org.uk/forum/memberlist.php?mode=viewprofile&u=2000>]

kits, cbus, software

cbus/canace8cdev.txt · Last modified: 2022/01/17 14:01 by grovenor