



مرکز آموزش نیرا سیستم

nirasystem.com

CAN - Formula

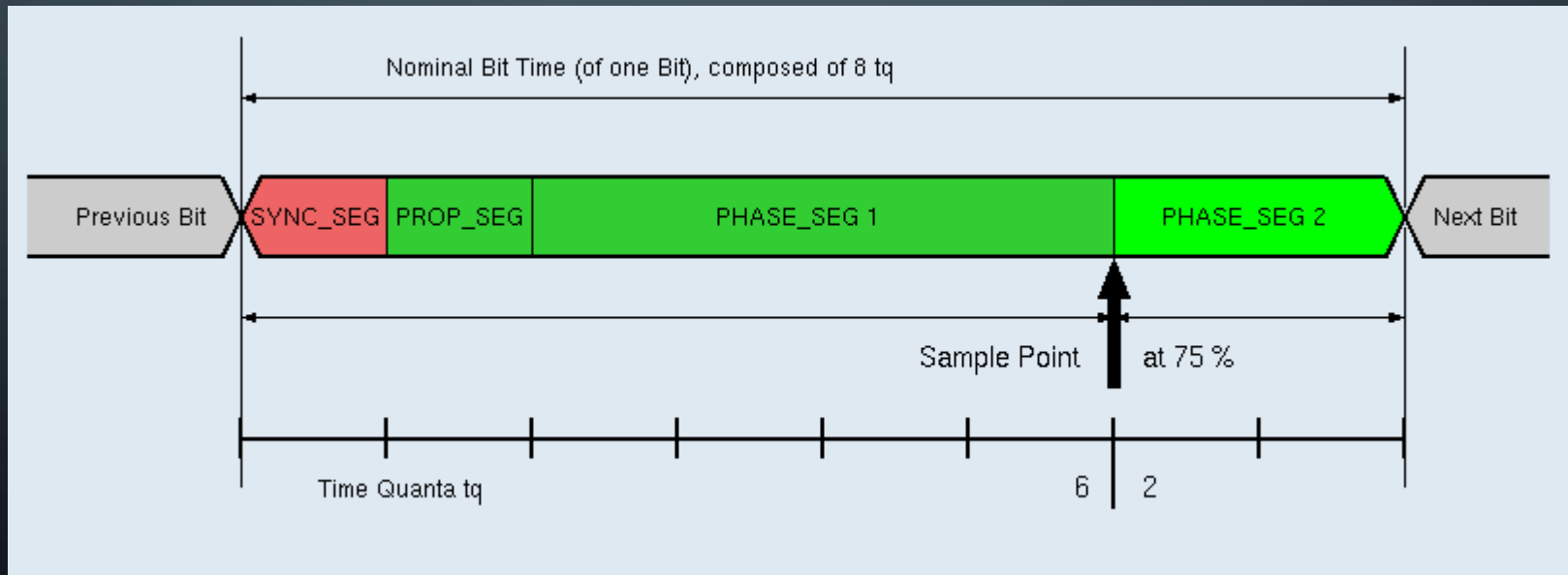
Ali Mirghasemi



Sample Point

- 87.5 % is the preferred value used by CANopen and DeviceNet, 75% is the default value for ARINC 825

- $$SP = \frac{SJW + S1}{SJW + S1 + S2}$$
$$SP = \frac{SJW + PROP + S1}{SJW + PROP + S1 + S2}$$



Formula

- $T_{BS1} = T_q \times (S1 + 1)$
- $T_{BS2} = T_q \times (S2 + 1)$
- $T_q = (BRP + 1) \times T_{PCLK}$
- $T_q = \frac{BRP+1}{PCLK}$
- $BRP = T_q \times PCLK - 1$
- $NBT = 1 \times T_q + T_{BS1} + T_{BS2}$
- $BR = \frac{1}{NBT}$

- $BRP = \frac{PCLK}{(SJW+S1+S2) \times BR} - 1$



Example

- $PCLK = 42Mhz$
- $SJW + S1 + S2 = 16$
- $BR = 125kbps$
- $SP = 87.5\%$
- $BRP = \frac{42Mhz}{16 \times 125kps} - 1$
- $BRP = 20$
- $SJW + S1 = 16 \times 87.5\%$
- $SJW + S1 = 14$
- $SJW = 1, S1 = 13, S2 = 2$



Online Calculator

- [CAN Wiki](#)

ST Microelectronics bxCAN

Clock Rate in MHz, **from 1 to 300**. Use the value of the clock rate at the first stage of the BaudRatePrescaler BTR, not the clock of the controller or crystal (typically for a 16 MHz clocked NXP SJA1000 use '8').

Sample-Point at: in %, **from 50 to 90** (87.5 % is the preferred value used by CANopen and DeviceNet, 75% is the default value for ARINC 825).

SJW: numerical value **from 1 to ..** (1 is the preferred value used by CANopen and DeviceNet. The value is currently not used in all calculations, please look at the values used below the bit timing table).

The table will be calculated for all CANopen defined bit rates. If you like to have the calculation for one special arbitrary bit rate, enter the the value here in kbit/s

Debug: ☐ generates debugging information to the calculation after the table.

Request Table

A table can be requested by passing parameters on the http request line like
`http://www.bittiming.can-wiki.info/?CLK=8&ctype=Philips&calc=1` With possible parameters: CLK=, SJW=, SamplePoint=, ctype=, calc=. Where ctype is the controller type. If calc=1, calc is true, the table is immediately calculated and displayed.