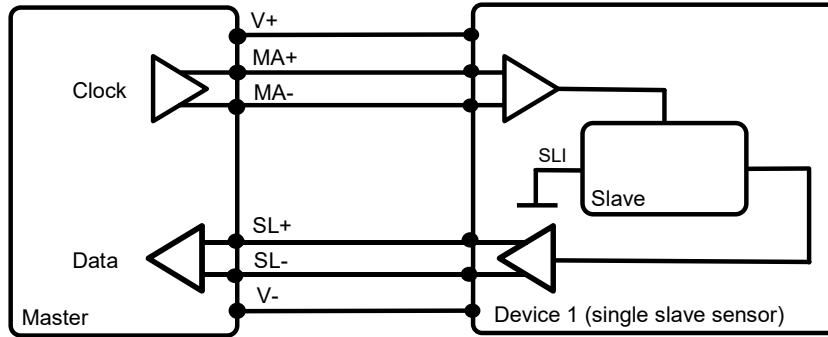


BiSS-C is a popular communications interface between controllers and position sensors. The IncOder BiSS-C interface is unidirectional and provides fast, compact, economic serial communications using RS422 (SSI) compatible hardware. The IncOder BiSS-C interface is a point to point configuration (a single device with a single slave), conforming to the requirements of BiSS-C Unidirectional. In this configuration, the IncOder is the only slave connected to the master (the host control system).



The Master transmits clock signals to the Slave via the MA line. The SL line carries the sensor data directly from the Slave back to the Master. The interface has only two unidirectional, differential lines (as the IncOder permanently connects the input SLI to '0'). Parameters for the individual data channels are specified below. These parameters can be pre-programmed in the controller and referenced via an ID or lookup table, or manually entered.

BiSS-C Timing Parameters

Symbol	Parameter	Min.	Max.	Unit
$1/T_{MA}$	Clock Frequency	600	2000	kHz
$T_{BISS-TIMEOUT}$	BiSS Timeout	15	20	micro-seconds

BiSS-C Data Channel Parameters

Number of Bits (SCD length)	31
Processing Time	12 Clock Cycles (12 x T_{MA} micro-seconds)
Data Area Length & Alignment	25Bits, Right Aligned
CRC	Width: 6Bits Polynomial: 0x43 Initial Value: 0x00 Output Inverted

Data Area Definition

MSB											LSB
F2	F1	FO	D21	D20	D19	D18	D3	D2	D1	DO

- F2: '1' = valid (the position reading is valid)
- F1: '1' = zero position default (the zero position is set to the factory default value)
- FO: '1' = sync (position data reading was synchronised to previous BiSS frame)
- D21: Most significant bit of the position data (if IncOder resolution is <22Bits the MSBs are set to '0')
- DO: Least significant bit of the position data.

Note. The IncOder implements a "pipelined" data output. The position (and status) returned in the Data Area Definition is from the reading triggered by the previous BiSS frame provided that the frame repetition period conforms to the requirements described for the SPI1 protocol (see Section 6.6).