

Application Note

SA40111 – Ultra-Dual Signal Conditioner Communication Protocol (RS232)

This Application Note details the communication protocol for the **SA40111 Ultra-Dual Signal Conditioner**. Please see the Product Data Sheet for general specifications and input/output connections.

Communication Protocol

Baudrate19200
Data width8 bits
Paritynone
Flow controlnone
Stop bit1

Commands

Commands can be sent in either lower or upper case.

a: Sleep modesave 40% of power, send any character to exit sleep mode
b: DAC inputcycle DAC input between EEPROM and sensors
c: X axisread X axis, see m for format
d: Y axisread Y axis, see m for format
e: Temperatureread temp in 10s of degree C (i.e. 28.4 deg C = 284)
f: Both axisread X and Y axis
g: Correctionturn on/off linearity correction and offset
h: Write addresswrite DDD at address AAA, address & data are in decimal format
i: Read addressread address AAA, address & data are in decimal format
j:reserved
k: Start/Stop looploop last channel/channels (k will stop the loop)
l: Reset memoryreset memory; to use, memory location 9 must be enabled, returns D if disabled, G if updated or E if error
m: Output formatcycle output format from ADC counts to angle in degrees
n:reserved
p: Update pots.....update X and Y gain pots with content of memory locations 187 and 188
s:.....reserved
r:reserved
t:reserved
u:reserved
v : Software version...show current firmware version
x: CPU reset reset/restart the CPU, it is required when the temp. correction is modified

Note: All other inputs will result in return of the characters sent and carriage return, line feed. All outputs from the module are terminated with carriage return, line feed.

EEPROM configuration

Note: Offsets in two's complement, values should be within +/- 10,000

00 = Reserved
01 = Offset low byte X axis
02 = Offset high byte X axis
03 = Offset low byte Y axis
04 = Offset high byte Y axis
05 = Spare
06 = Spare



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(cont'd)

07 = Scale Factor low (used when the m command is issued) (ADC counts ÷ Scale factor)

08 = Scale Factor high (used when the m command is issued)

09 = Config 1

bit 0-3 If 0 then power is 3 volts if 5 then power is 5 volts

bit 4 If set the memory initialization is locked

bit 5 If set when the unit starts the correction will be on

bit 6 If set when the unit starts it will send the angle in degrees

bit 7 If set use memory 183-184 for DAC X and 185-186 for DAC Y

11 = Reserved

12 = Reserved

13 = Start linearization look up table

124 = End look up table

125 = Start temperature correction, first word is slope, second word is offset, slope normalized to 4096

ch0

ch1

125 Cold Slope

127 Cold Offset

129 Hot Slope

131 Hot Offset

133 Cold Slope

135 Cold Offset

137 Hot Slope

139 Hot Offset

169 = End temperature correction table

170-180 = Spares for customer

182 = Config 2

bit 0 Enable DAC

bit 1 Enable temperature correction

bit 2 Turn on the output temperature in binary

bit 3 Setup dual axis sensor needs reset after change

183 = DAC X low byte

184 = DAC X high byte

185 = DAC Y low byte

186 = DAC Y high byte

187 = Pot X

188 = Pot Y

189 = Serial number low byte

190 = Serial number high byte

191-198 = Reserved

199 = Low byte scale factor Y

200 = High byte scale factor Y

201 = Setup gain for X and Y axis X b0 -> b3 Y b4 -> b7

b7/b3 b6/b2 b5/b1 b4/b0

0 0 0 0 gain 1

0 0 0 1 gain 2

0 0 1 0 gain 4

0 0 1 1 gain 8

202 = Temperature offset low byte (works only for Deg C)

203 = Temperature offset high byte

All the outputs from the module are terminated with LF and CR



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