BLUETOOTH FOR TELESCOPE HANDCONTROLLERS
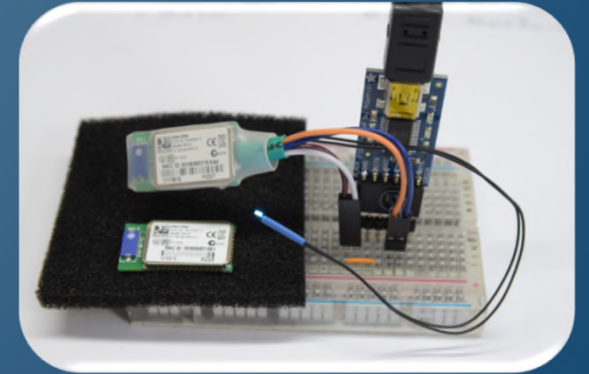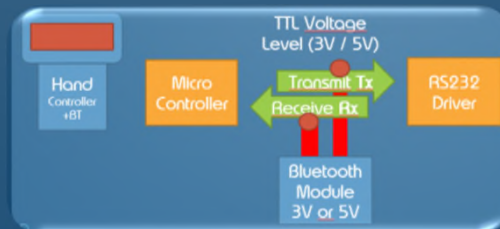
ALL INFORMATION, DOCUMENTS & VIDEOS

HANDCONTROLLER UPGRADE BIBLE

https://astro.marxram.de/handcontroller-upgrade-bible/

©Roland Marx

Version 1.0 (22.9.2018)

MY FREE APP:
SCOPE FRIEND
AVAILABLE @ GOOGLE PLAY STORE

Synchronize
Time
Date
Location

https://play.google.com/store/apps/details?id=de.marxram.astro.scopefriend
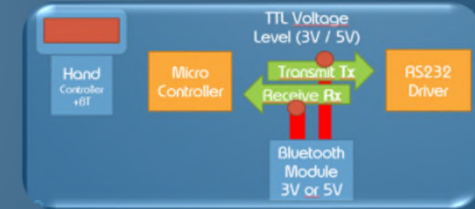
Scope Friend
Für Android
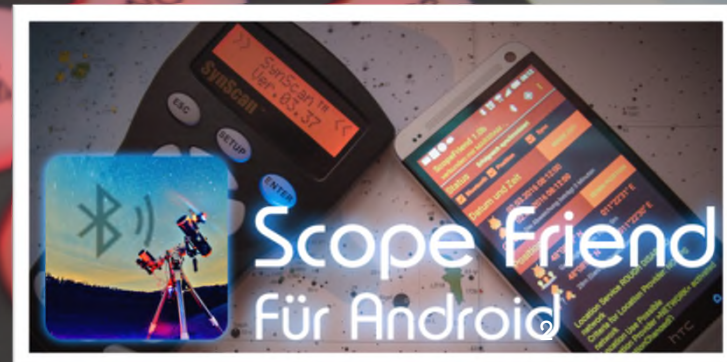
DISCALIMER

- This document is ment as a reference only

- It may also contain some errors like incorrect labels or voltages

- Please doublecheck if possible, check the electronic devices documentation, try to trace electricity (e.g. GND, VCC,…)

- To manipulate your Handcontroller may break it, or it's capabilities to communicate

- You should be experienced in soldering, before you start
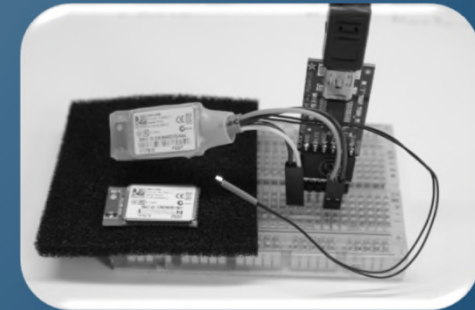
- Everything you do, you do at your own risk!

CONTENT

MANY CONTROLLERS – SAME APPROACH

IDEA: REPLACE CABLE BY BLUETOOTH

Hand Controller
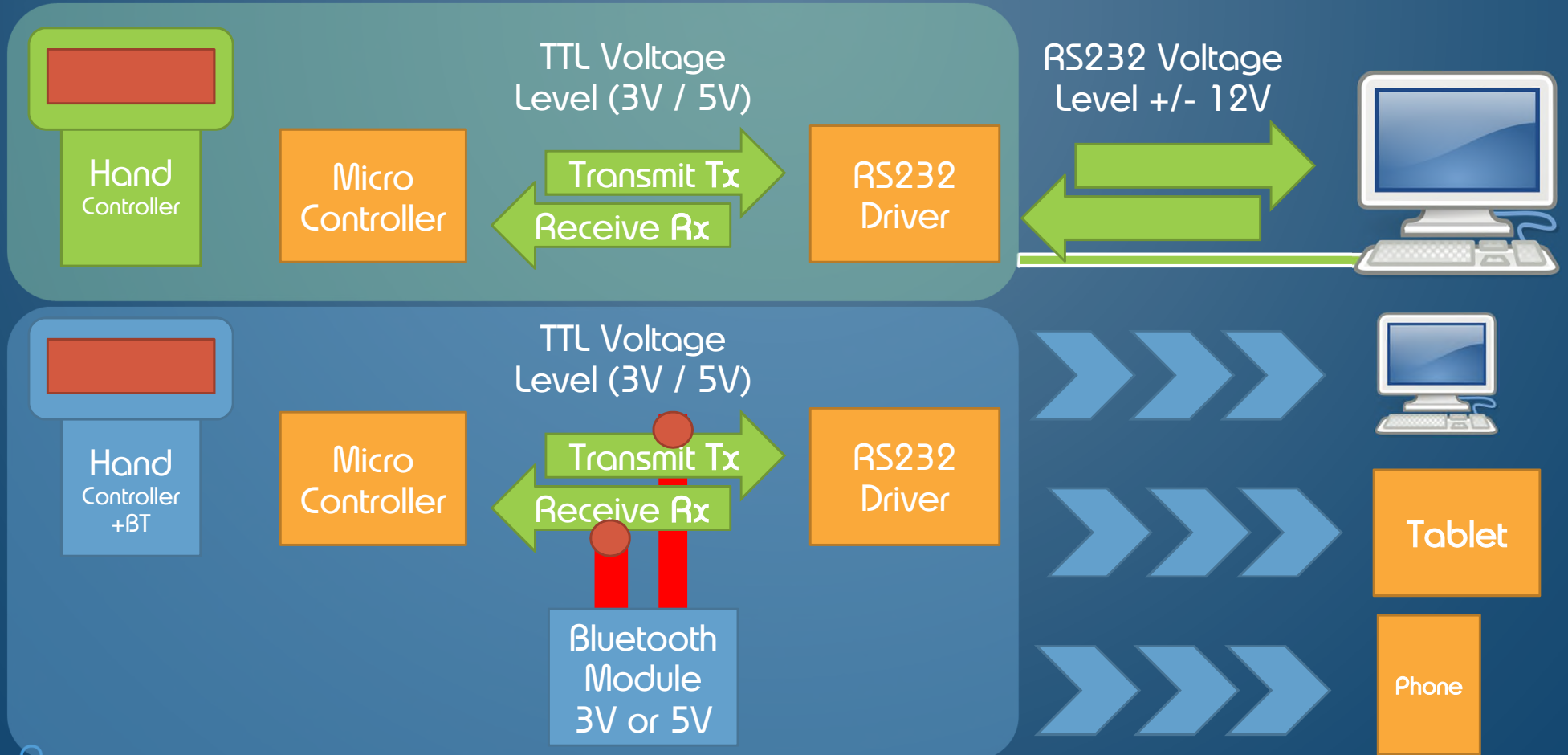
RS 232 Cable
12 V Logic Levels

RS232
USB Connector

Serial Adapter
to connect different
Handcontrollers to a PC
(not at the same time)

IDEA: REPLACE CABLE BY BLUETOOTH + USE SMARTPHONES & TABLETS

Hand Controller +BT

Bluetooth

Tablet

Phone

SCHEMATICS

Hand Controller

Micro Controller

TTL Voltage Level (3V / 5V)

Transmit **Tx**

Receive **Rx**

RS232 Driver

RS232 Voltage Level +/- 12V

Hand Controller +BT

Micro Controller

TTL Voltage Level (3V / 5V)

Transmit **Tx**

Receive **Rx**
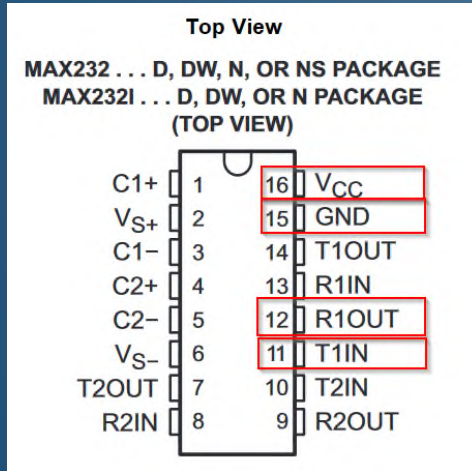
RS232 Driver

Bluetooth Module 3V or 5V

Tablet

Phone

CONNECTION PLAN
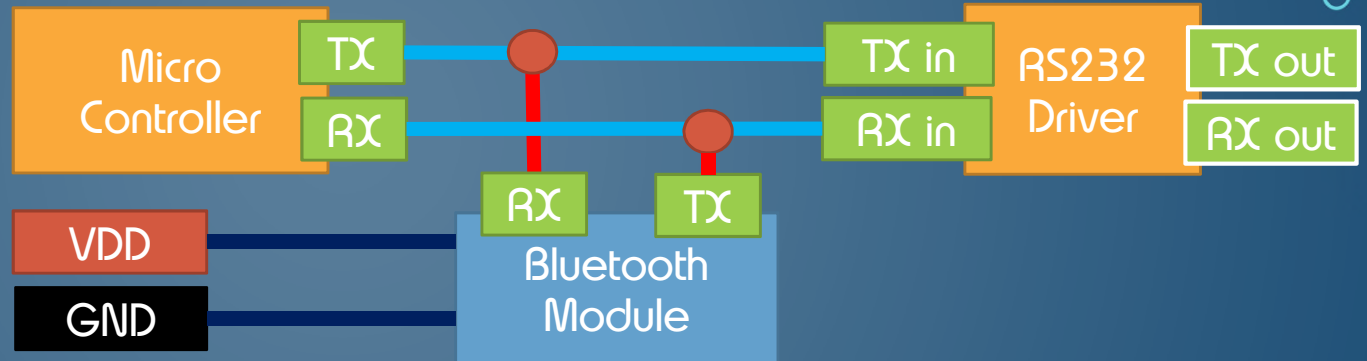
- Adding BT Module parallel to RS232-Driver
- RS232 and BT both functioning @9600 BAUD

- During Firmware upgrades Baud Rate changes!
  - BT Module cannot change BAUD Rate → disturbes signal
  - Need to disconnect VDD, Rx & Tx from BT Module during FW-Update
  - Upgrades only possible via RS232 Cable

DRIVER-IC'S

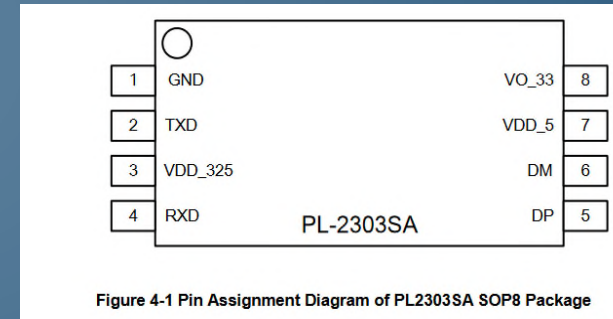Top View

MAX232 . . . D, DW, N, OR NS PACKAGE
MAX232I . . . D, DW, OR N PACKAGE
(TOP VIEW)

C1+	1	16	Vcc
Vs+	2	15	GND
C1−	3	14	T1OUT
C2+	4	13	R1IN
C2−	5	12	R1OUT
Vs−	6	11	T1IN
T2OUT	7	10	T2IN
R2IN	8	9	R2OUT

RS232-Driver
Chips
different sizes

Easy to solder

tough soldering

Figure 4-1 Pin Assignment Diagram of PL2303SA SOP8 Package

1	GND	VO_33	8
2	TXD	VDD_5	7
3	VDD_325	DM	6
4	RXD	PL-2303SA DP	5

USB-Driver
Chips
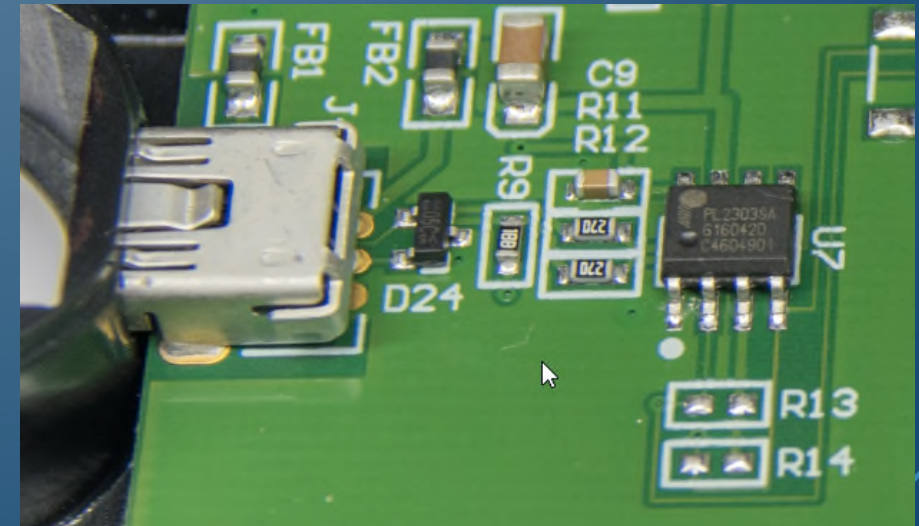
Soldering pads nearby → easy soldering

More Videos and Documents

https://astro.marxram.de/handcontroller-upgrade-bible/
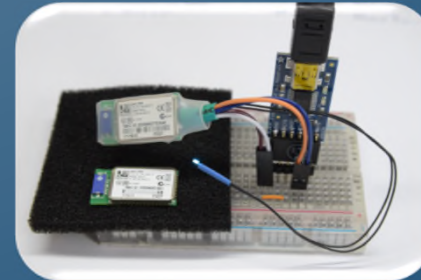

1. General Information on Upgrading to BT
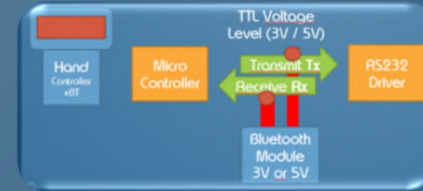
2. Bluetooth Modules
   - Specs
   - How to program BT Name, Pin ...
   - Status LED

3. Hand Controllers in detail
   - Skywatcher, MEADE, Celetsron
   - HowTo solder guide

GOOD LUCK,
CLEAR SKIES &
THANKS FOR WATCHING

YOU LIKE MY VIDEOS?

> SUBSCRIBE MY CHANNEL + GIVE A THUMBS UP
> http://youtube.com/c/AstroKanalMARXRAM

YOU LIKE SCOPE FRIEND?

> PLEASE RATE & COMMENT

YOU LIKE MY PROJECTS?
> DONATIONLINK https://www.paypal.me/MARXRAM

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