Basics on Biosignal Measurement with g.USBamp v3.16.02

Multi-Channel System Setup

Unipolar / Bipolar Biosignal Derivations

Connecting External Sensors to g.USBamp

Synchronization of devices

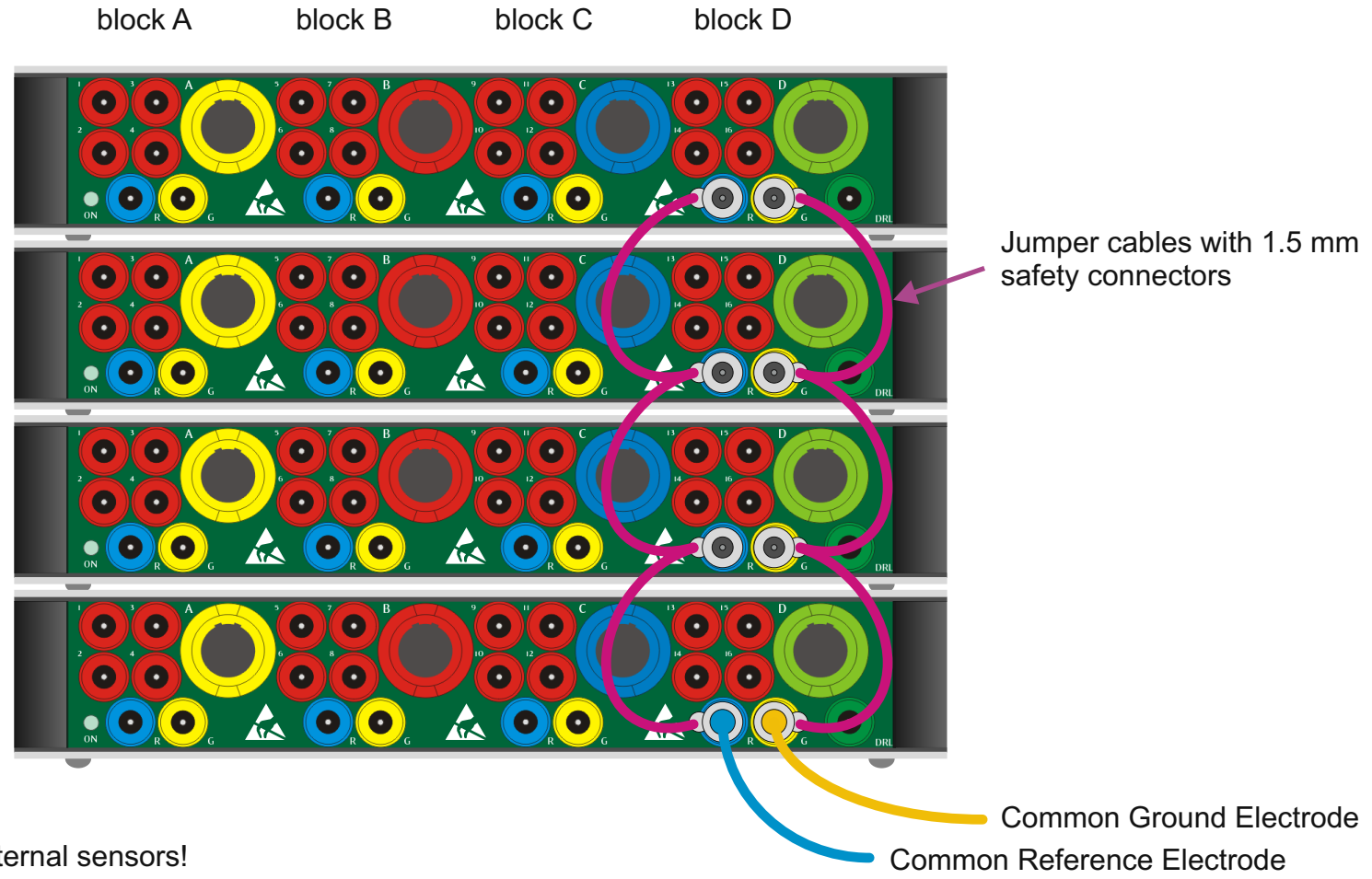
g.tec
GUGER TECHNOLOGIES

Setup of a (32-, 48-) 64-channel g.USBamp-System (front side)

IMPORTANT:
External sensors such as g.GSR, g.PULSEsensor, g.RESPsensor, snoring sensors, microphones, g.TEMPsensor, ... use interconnected REF and GND inputs! Do not use block D for such signals as the impedance check will not work properly for this case. Connect all external sensors to the same block(s) if possible.

Do not use a block for external sensors together with electrophysiological signals (EEG/EOG/EMG/ECG/ECoG/...).

Do not use the "Common Reference" function for blocks with external sensors connected. Sensor signals might interfere with biosignals recorded with other blocks.



Note: Use blocks A, B or C for external sensors!

Fig. A: Common Ground / Common Reference

Setup of a (32-, 48-) 64-channel g.USBamp-System (rear side)

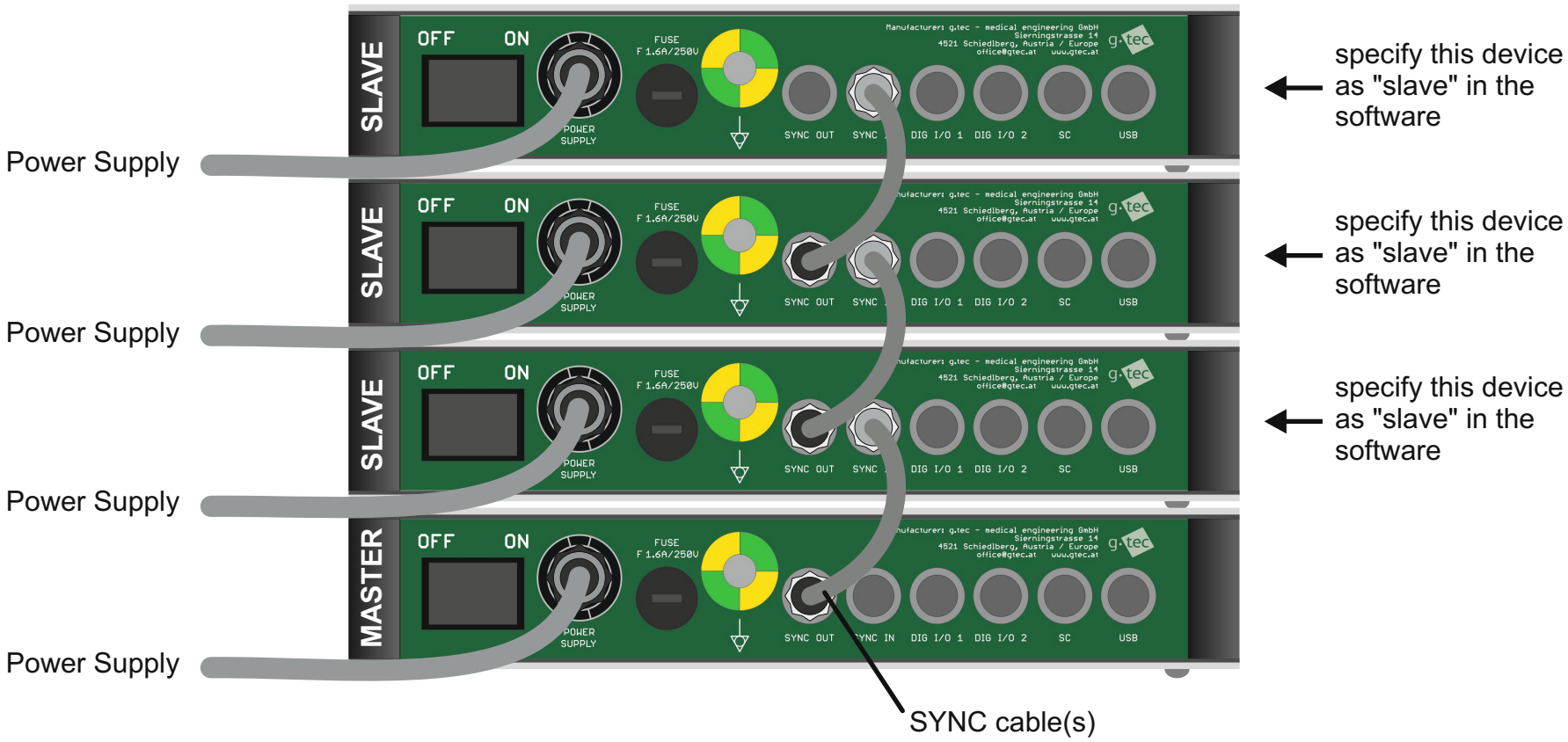
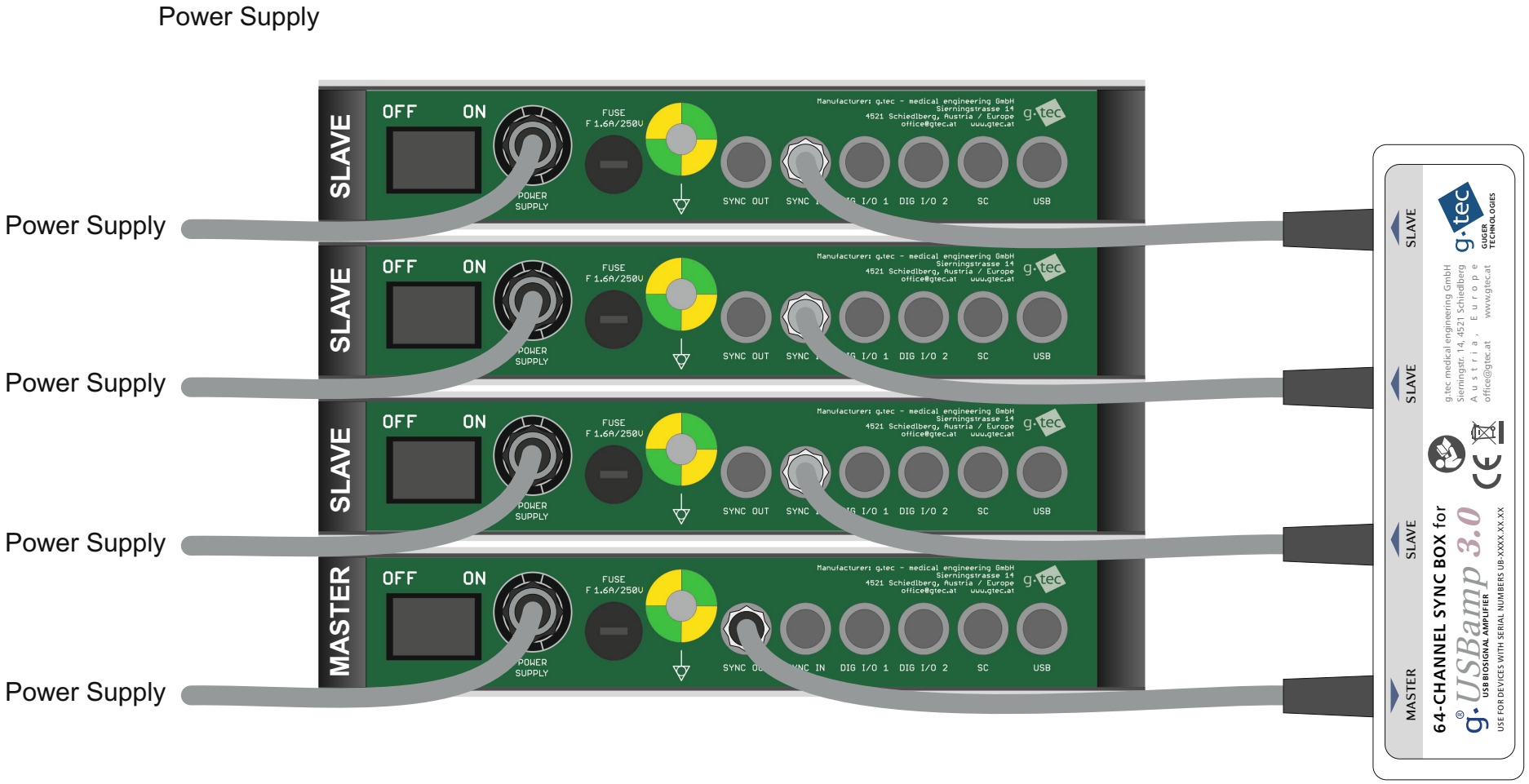


Fig. B1: Power Supply and SYNC connection

Synchronization of 3 or 4 devices for high sampling rates (9.600 Hz, 19.200 Hz or 38.400 Hz)



64-channel sync box for g.USBamp 3.0

Fig. B2: Power Supply and SYNC connection

Setup of a (32-, 48-) 64-channel g.USBamp-System (rear side)

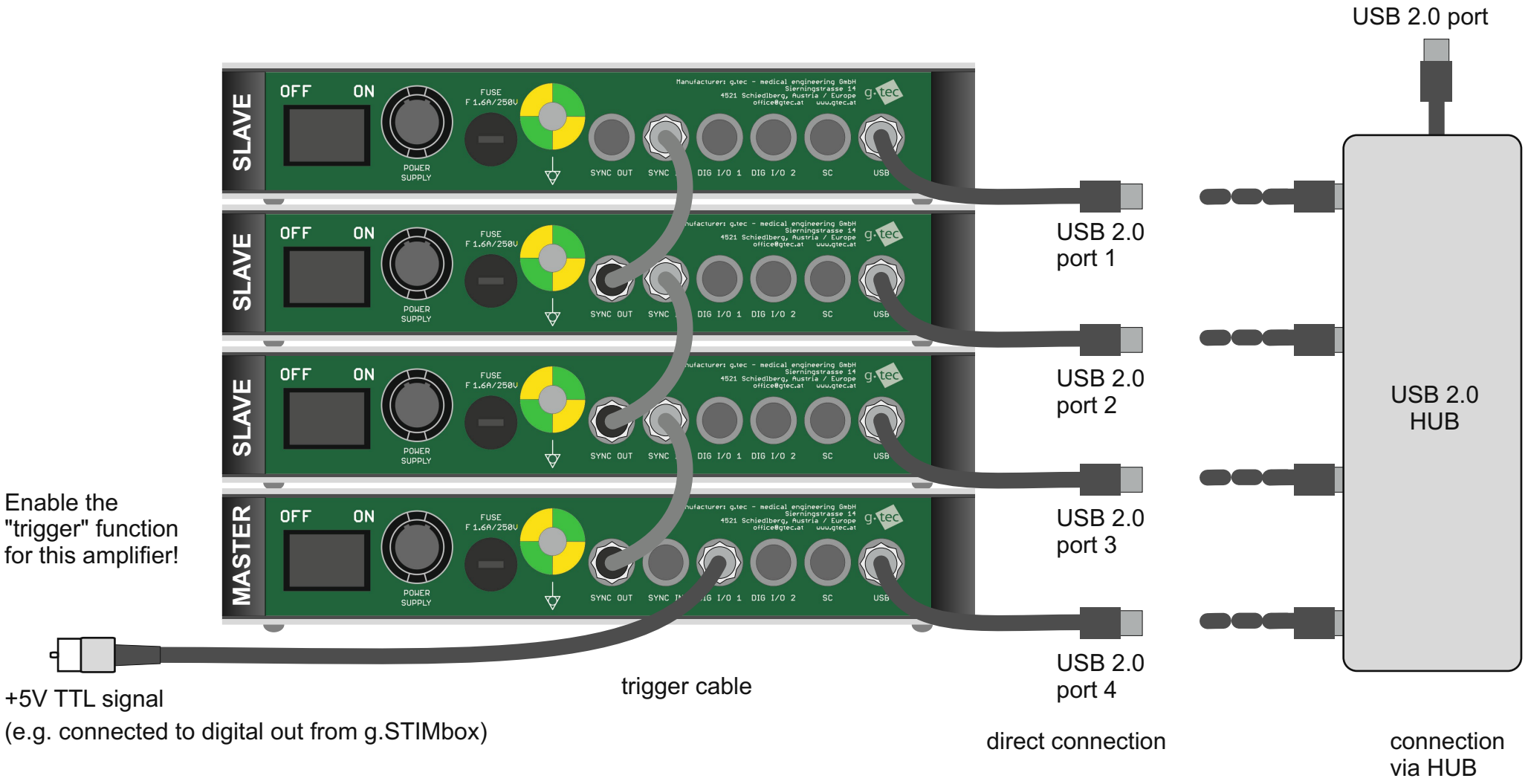
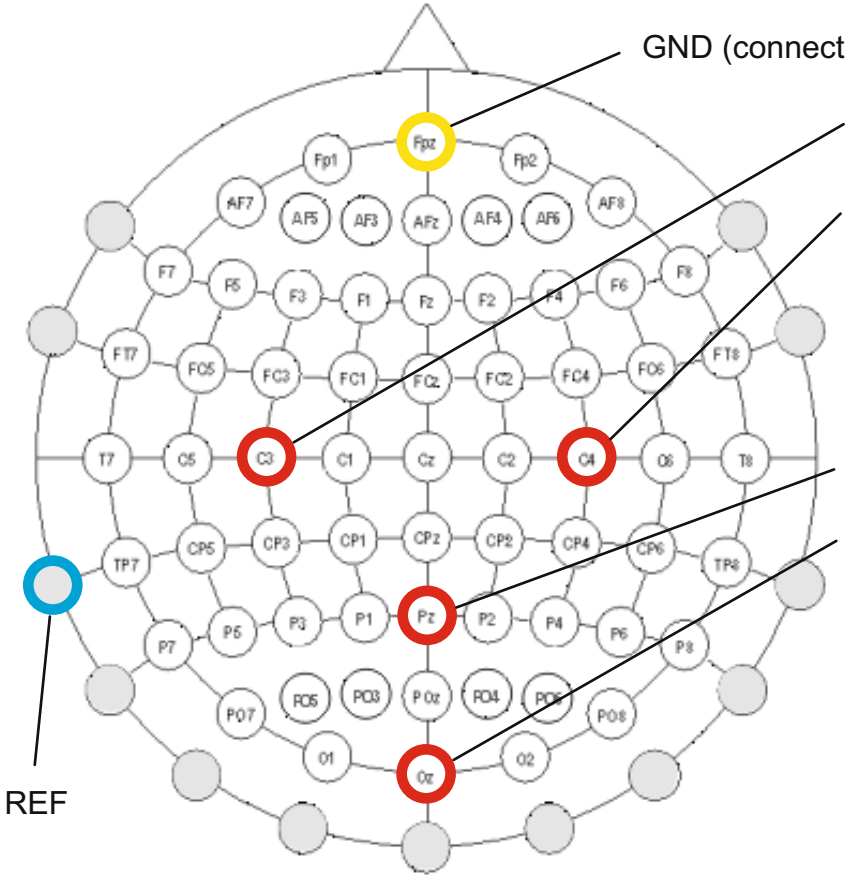


Fig. C: trigger input / USB connection

Unipolar EEG recording with g.USBamp



GND (connect to block D for impedance check !)

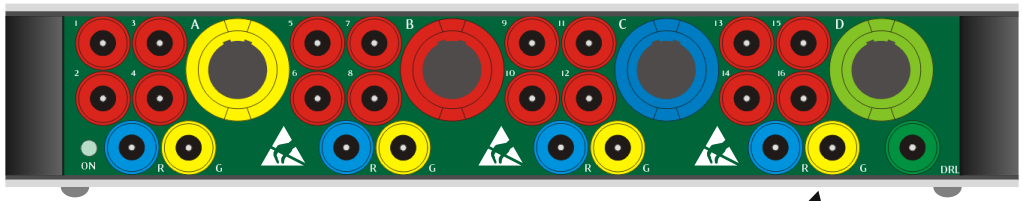
Ch 1 (unipolar, monopolar derivation C3)

Ch 2 (unipolar, monopolar derivation C4)

Ch 3 (unipolar, monopolar derivation Pz)

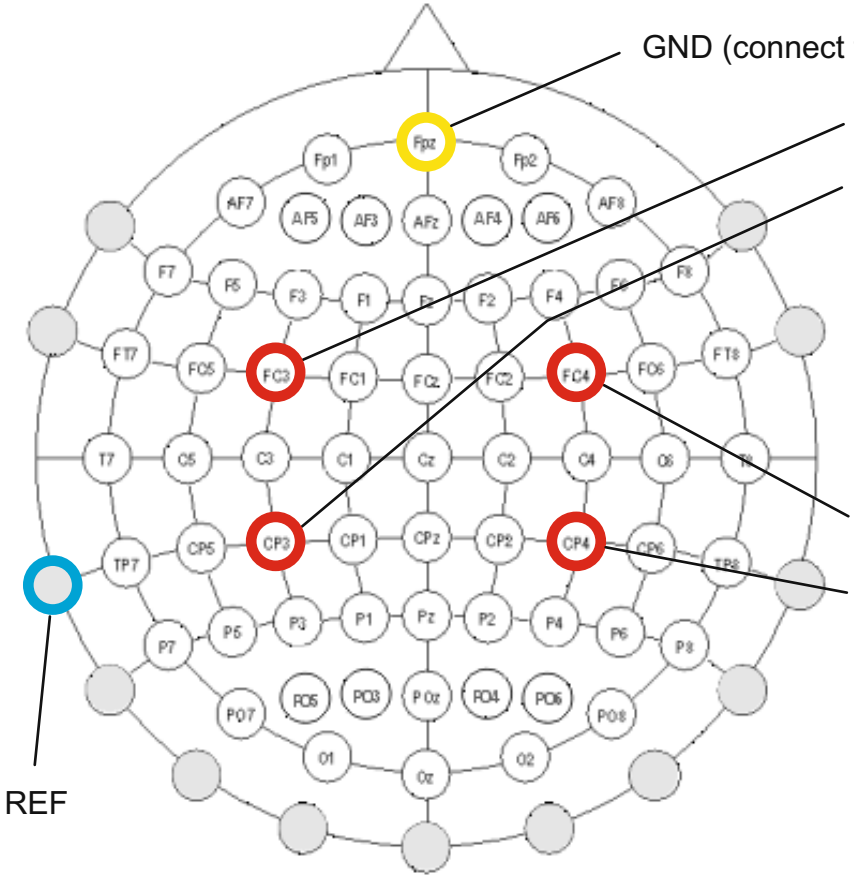
Ch 4 (unipolar, monopolar derivation Oz)

block A block B block C block D



USE THIS GND FOR IMPEDANCE CHECK !

Bipolar EEG recording with g.USBamp

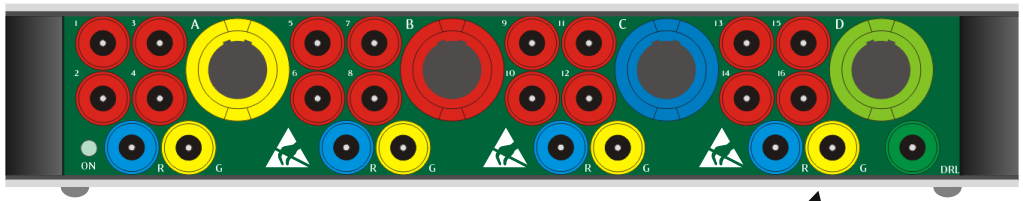


GND (connect to block D for impedance check !)

Ch 1
Ch 2
bipolar derivation C3 (setup: Ch 1 bip Ch 2, signal displayed on Ch 1)

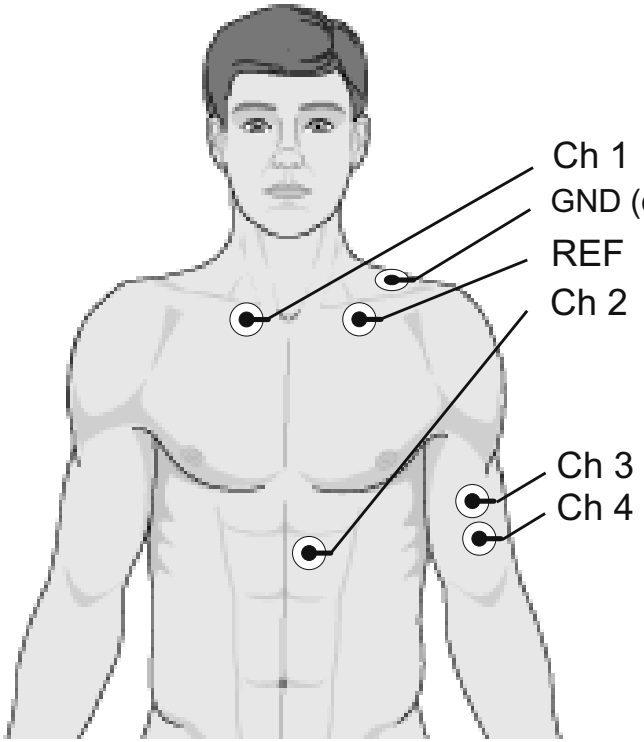
Ch 3
Ch 4
bipolar derivation C4 (setup: Ch 3 bip Ch 4, signal displayed on Ch 3)

block A block B block C block D



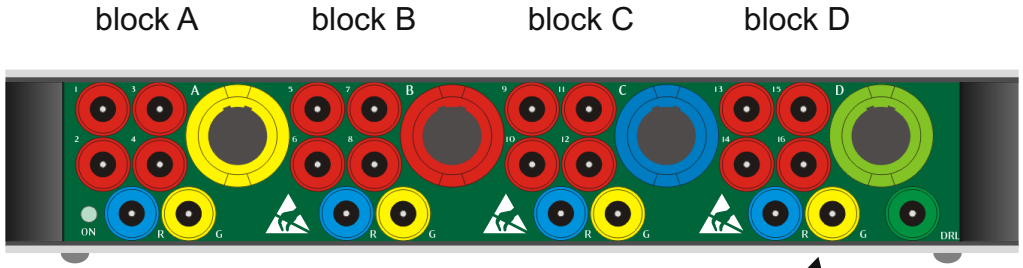
USE THIS GND FOR IMPEDANCE CHECK !

Bipolar ECG/EMG recording with g.USBamp



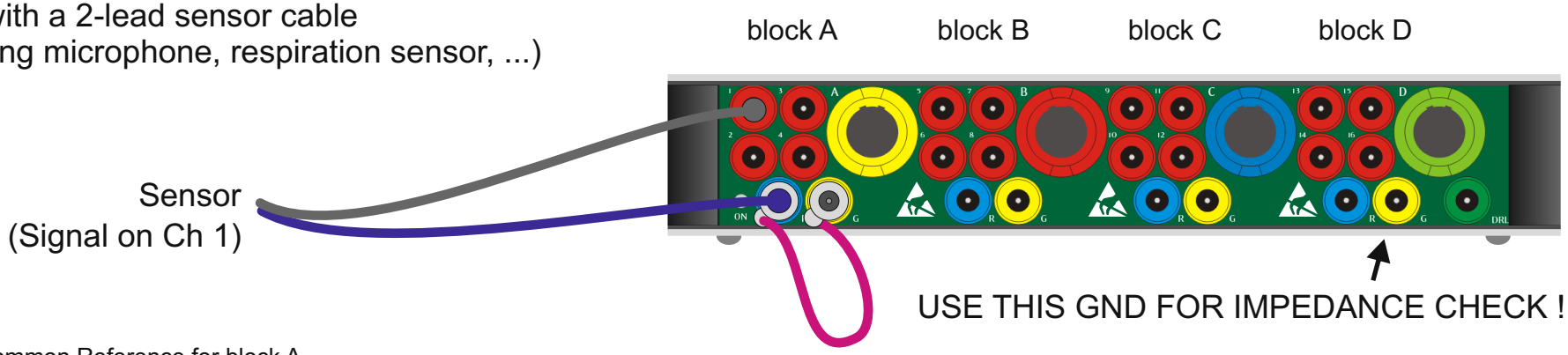
Ch 1
Ch 2 | bipolar ECG derivation (setup: Ch 1 bip Ch 2, signal displayed on Ch 1)

Ch 3
Ch 4 | bipolar EMG derivation (setup: Ch 3 bip Ch 4, signal displayed on Ch 3)



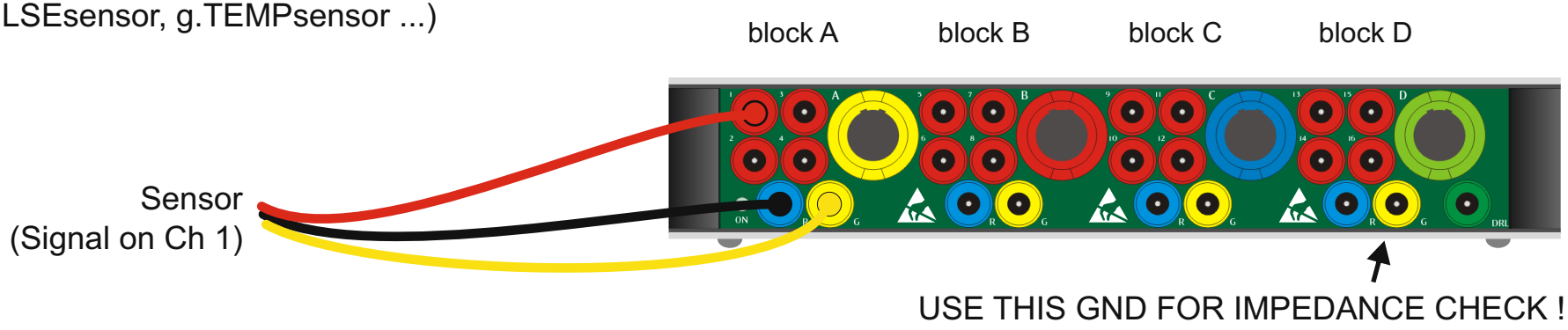
Connecting external sensors to g.USBamp

Sensors with a 2-lead sensor cable
(e.g. snoring microphone, respiration sensor, ...)



Do not use Common Reference for block A
Use block A also for other external sensors or g.TRIGbox
Use blocks B, C and D for EEG/ECG/EMG/EOG/... recording

Sensors with a 3-lead sensor cable
(e.g. g.PULSEsensor, g.TEMPsensor ...)



Anti-Static Kit

Avoid or reduce artifacts in biosignal recordings resulting from electro-static charges in a sub-optimal lab environment and protect sensible electronics.