

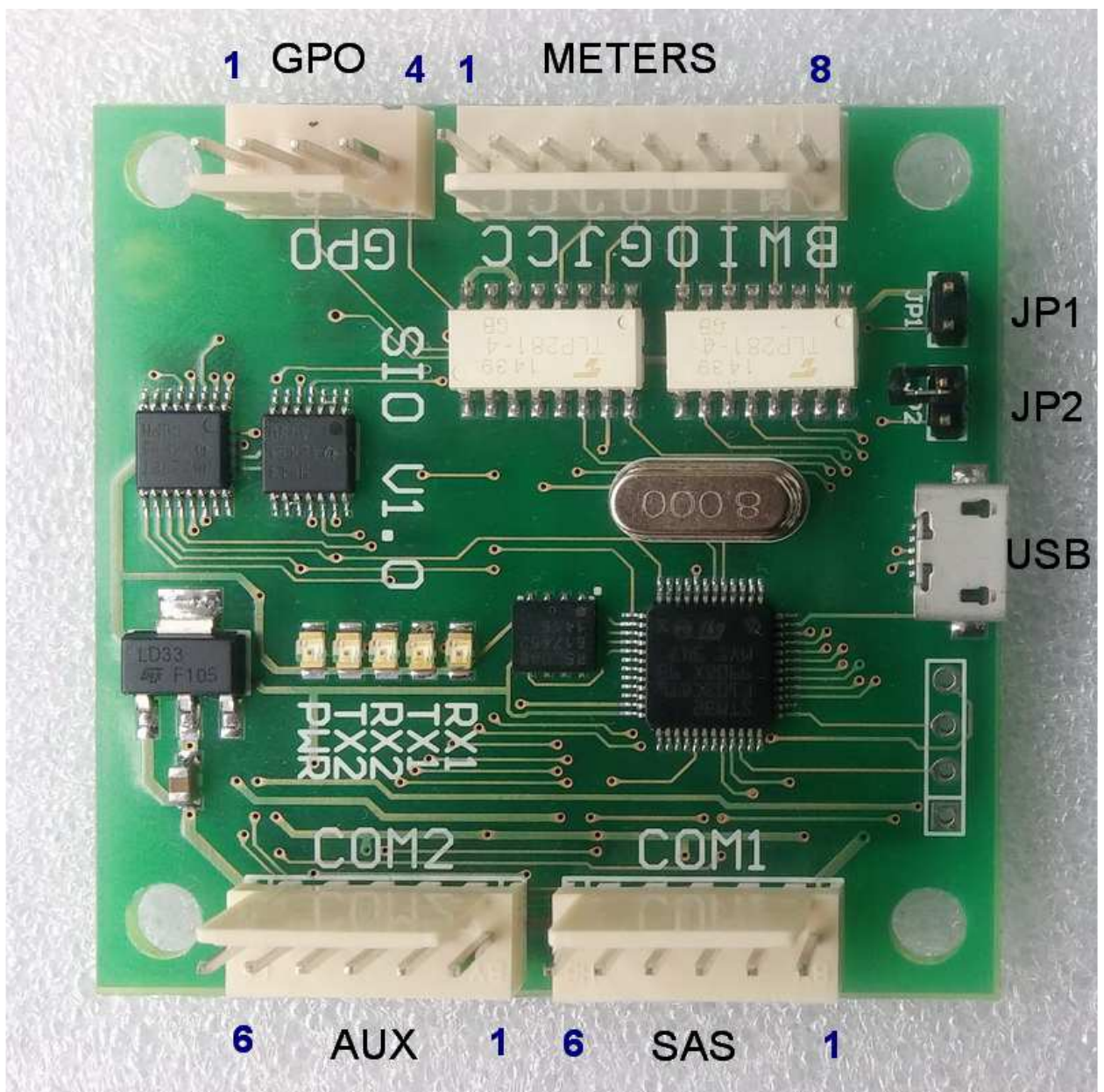
# SAS Emulator Board User Manual

## Introduction

SAS emulator board designed to allow old non-SAS gaming machines to be connected to existing SAS based data collection system or mystery jackpot.

SAS emulator board connects to the gaming machine's mechanical meters. It counts every meter change and stores current values into the onboard non-volatile memory chip. On the other side of an emulator board located a SAS port for connecting SAS SMIB board.

Emulator board's firmware implements a subset of SAS 6.02 specification allowing external SAS server to identify a gaming machine and to read meters.

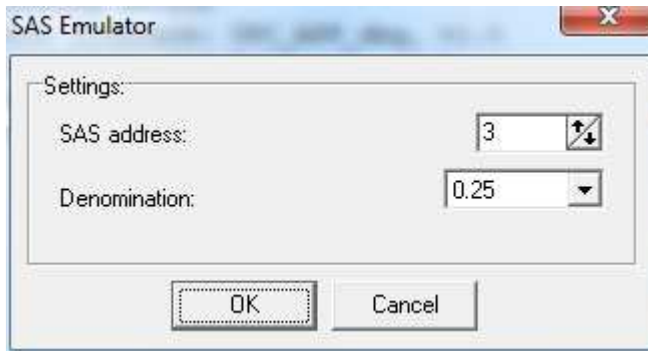


## Powering the board

Board can be powered with 4.5-12 V power supply. Power can be delivered through the COM1 or COM2 connectors. Board should be powered from the gaming machine's power supply.

## USB interface

USB interface is used for board configuration and firmware update. Use a micro USB cable to connect the board to a PC. In this mode power is provided through the USB interface, no other connection is required. Virtual serial port driver must be installed prior to connecting the board. Using UpcConfig utility user can set SAS parameters like address and denomination:



Also meter values can be set (e.g. to match machine's electronic meters):



## Boot loader mode

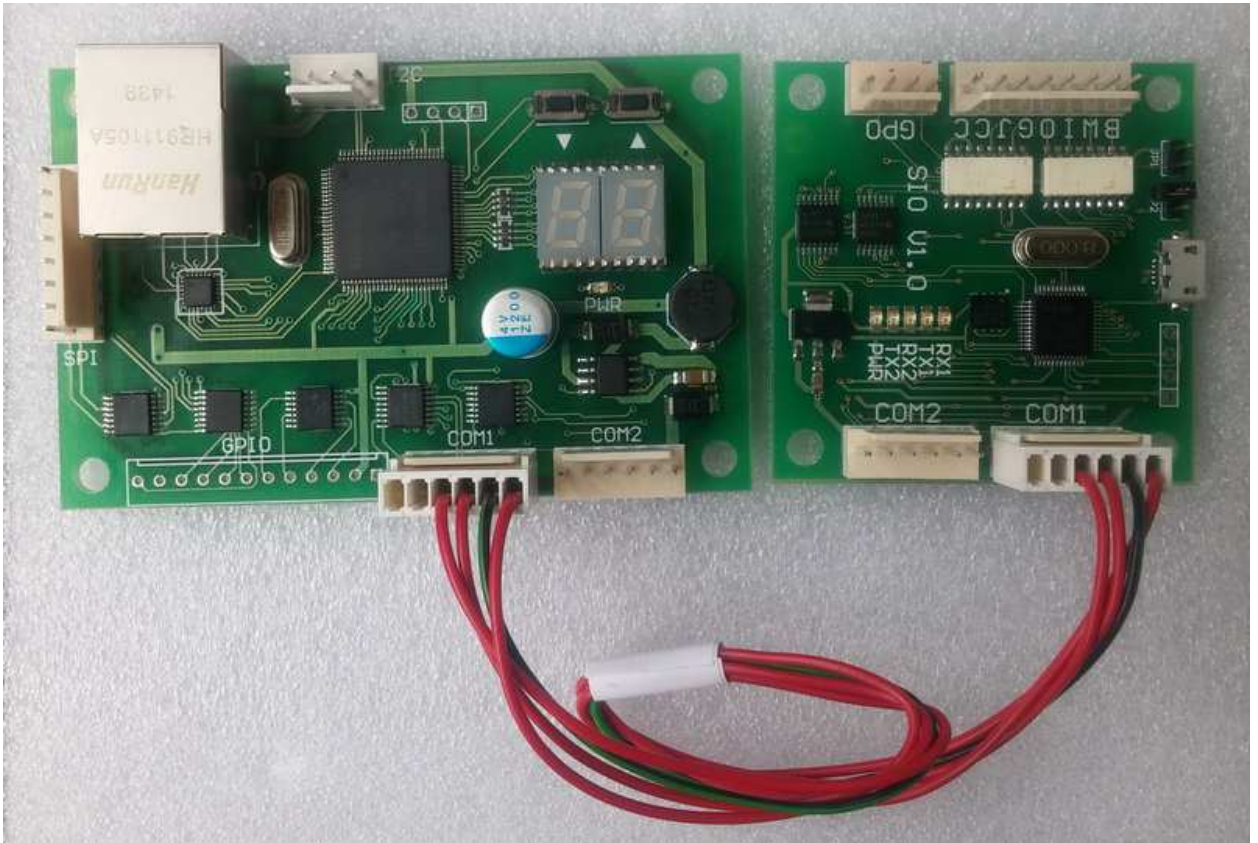
Boot loader mode is used for firmware upgrade. Usually it is entered automatically by the command from USB interface. However, if a wrong or corrupt firmware was programmed previously boot mode can be forced by installing JP1 jumper. Jumpers are sampled upon power up. Boot loader mode indicated by all LEDs lit.

## SMIB connection

External SAS SMIB board is connected to COM1 port. For a physical connection you need to make a cable with 3 wires: RX (data receive), TX (data transmit) and GND (ground). RX/TX signals can be either true RS232 voltage levels (+/-12V) or TTL. SAS port of the SMIB board has corresponding RX/TX pins for both levels. You need to find out the voltage levels used in your SMIB before connection. Usually it is RS232. You should never connect RS232 and TTL signals together – this can damage SMIB board or emulator board.



Ethernet and Wi-Fi SAS SMIBs with emulator board connected:



### **Additional peripheral**

COM2 connector can be used for auxiliary purposes like bill acceptor emulation.

### **COM1 / COM2 6-pins type WH-6 - Serial port connectors**

<b>Pin</b>	<b>Name</b>	<b>Type</b>	<b>Description</b>
1	+12V	Power input	Power supply input (5-15V)
2	GND	Ground	
3	TX TTL	Output OC	Serial port transmit, open collector
4	RX TTL	Input	Serial port receive
5	TX RS232	Output	Serial port transmit
6	RX RS232	Input	Serial port receive

**Note:** use proper level RX/TX pair, 3-4 or 5-6 but not both simultaneously.

### **Meters 8-pins type WH-8 – Mechanical meters input connector**

Used for connecting gaming machine's mechanical meters outputs.

<b>Pin</b>	<b>Name</b>	<b>Type</b>	<b>Description</b>
1	C	Common DC	Common wire (5-24V)
2	C	Common DC	Common wire (5-24V)
3	J	Input	JACKPOT meter input
4	G	Input	GAME meter input
5	O	Input	OUT meter input
6	I	Input	IN meter input
7	W	Input	WIN meter input
8	B	Input	BET meter input

### **GPO 4-pins type WH-4 – General purpose output connector**

Used for external device control or for sensor emulation (like door open sensor).

<b>Pin</b>	<b>Name</b>	<b>Type</b>	<b>Description</b>
1	OE2	Output OE	Open emitter 2
2	OC2	Output OC	Open collector 2
3	OE1	Output OE	Open emitter 1
4	OC1	Output OC	Open collector 1

### **Physical characteristics**

Length: 50 mm

Width: 50 mm

Weight: 15 gm

## METERS and GPO input / output circuits

