EB-500 GPS Engine Board
Evaluation Kit User's Manual

AN-01

TRANSYSTEM INC.

No. 1-2 Li-Hsin Rd. I, Science-Based
Industrial Park, Hsinchu, Taiwan
T : +886-3-5780393 / F : +886-3-5784111
www.transystem.com.tw
sales@transystem.com.tw

Rev.1.2

Table of Contents

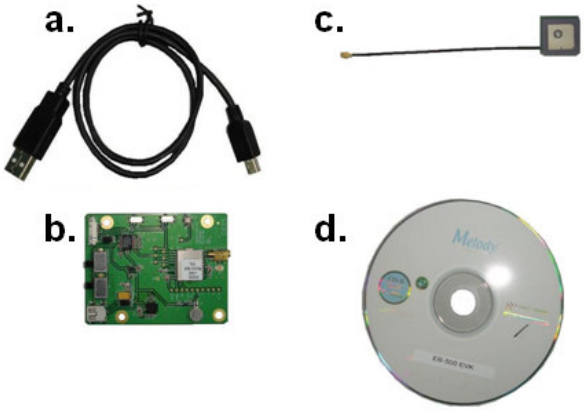
1. Introduction

EB-500 evaluation kit is an user friendly tool for your evaluation of TSI's EB-500 GPS engine board. With its miniature size, low power consumption and superior performance, EB-500 is your ultimate choice for all embedded applications such as :

- Handheld devices (PDA, Smart phone…)
- Automotive and Marine Navigation
- Automotive Navigator Tracking
- Emergency Locator
- Geographic Surveying
- Personal Position
- Sporting and Recreation

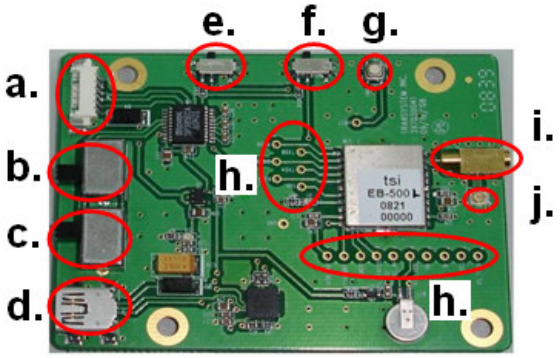
2. When you open it

2.1. Checking the package content



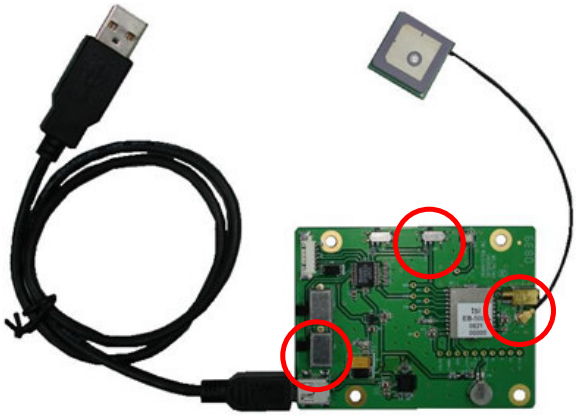
a. USB cable *1
b. EB-500 evaluation board *1
c. GA-110 active antenna *1
d. CD-ROM *1 (with technical documents and testing software.)

2.2. Evaluation Board Picture



a. RS-232 port
b. UART0 & UART1 select switch
c. USB & RS232 select switch
d. Mini USB port
e. Standby switch
f. GPS on/off switch
g. Hardware reset button
h. Test point
i. Aux RF port1 (MMCX)
j. RF port2 (IPEX)

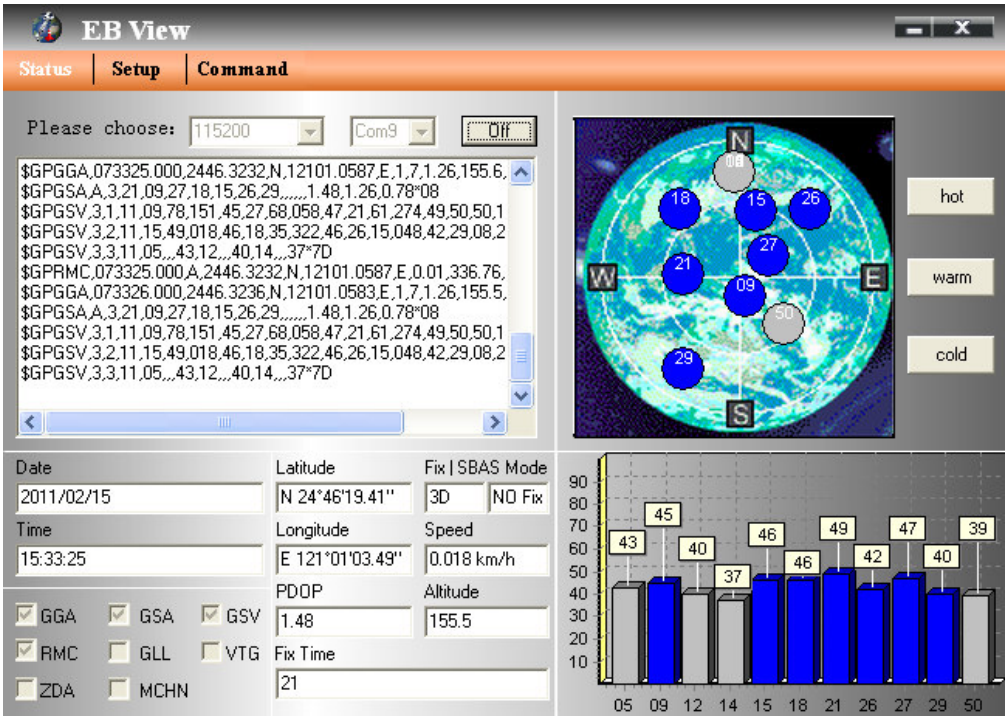
2.3. USB Setup



a. Plug active antenna into the RF port2 (IPEX)
b. Connect USB cable between EB-500 evaluation board and PC
c. Turn USB & RS232 select switch to "USB" position
d. Turn GPS on/off switch to "GPS on" position

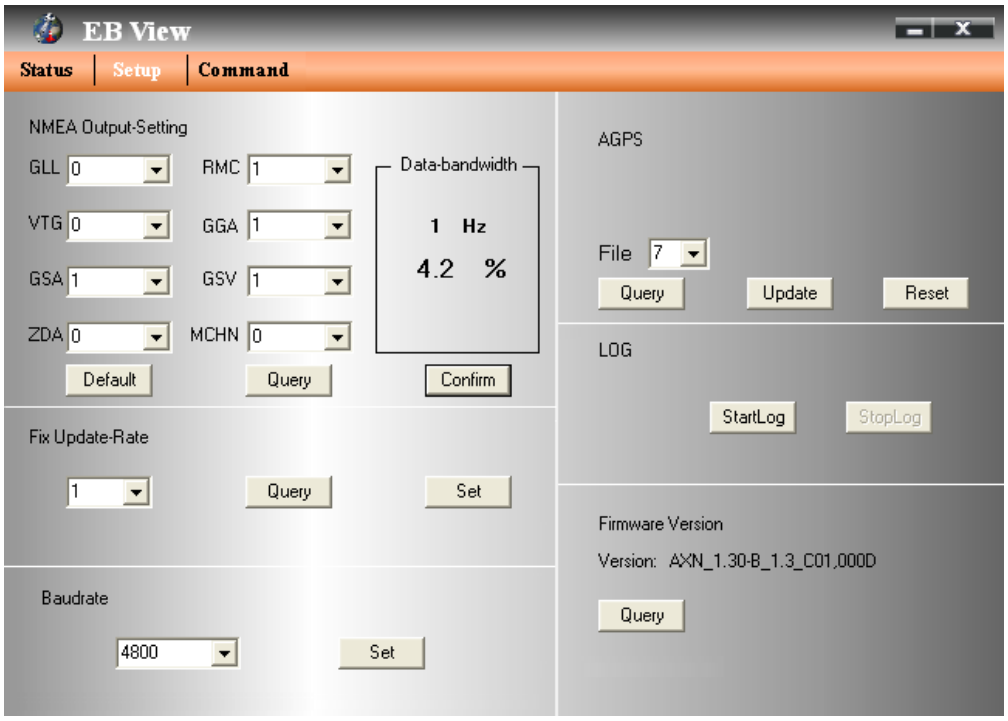
3. EB View Software

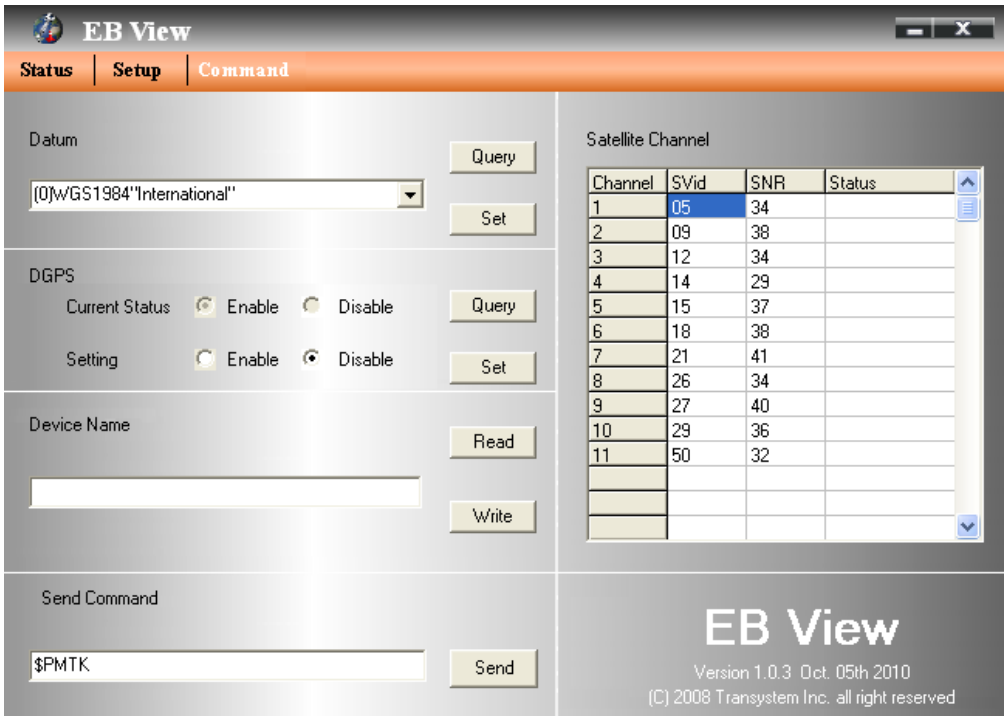
Open EB View software and select correct COM port and Baud Rate and then click "On" button to establish the communication between EB-500 evaluation board and PC. If the connection is successful, the NMEA stream will keep showing.



3.1. Configuration

In Setup and Command Page, Output frequency of each NMEA can be changed from 1second to 5 seconds and Fix update–Rate can be changed from 1 time to 5 times per second. DGPS like WASS, EGNOS, MSAS can be enable or disable. Here also allow users to update the AGPS and record the NMEA sentence.





For example:

NMEA output setting	+	Fix update-rate	=	Real NMEA output
GGA(1), GSA(1), GSV(1), RMC(1)	+	1	=	GGA(1), GSA(1), GSV(1), RMC(1)
GGA(1), GSA(1), GSV(1), RMC(1)	+	2	=	GGA(1/2), GSA(1/2), GSV(1/2), RMC(1/2)
GGA(1), GSA(1), GSV(1), RMC(1)	+	3	=	GGA(1/3), GSA(1/3), GSV(1/3), RMC(1/3)
GGA(1), GSA(1), GSV(1), RMC(1)	+	4	=	GGA(1/3), GSA(1/3), GSV(1/3), RMC(1/3)
GGA(1), GSA(1), GSV(1), RMC(1)	+	5	=	GGA(1/5), GSA(1/5), GSV(1/5), RMC(1/5)
Note:	1. GGA(1) means GGA sentence output every 1 second, GGA(2) output every 2 seconds. 2. GGA(1/2) means GGA sentence output 2 times per second, (1/5) output 5 times per second.			

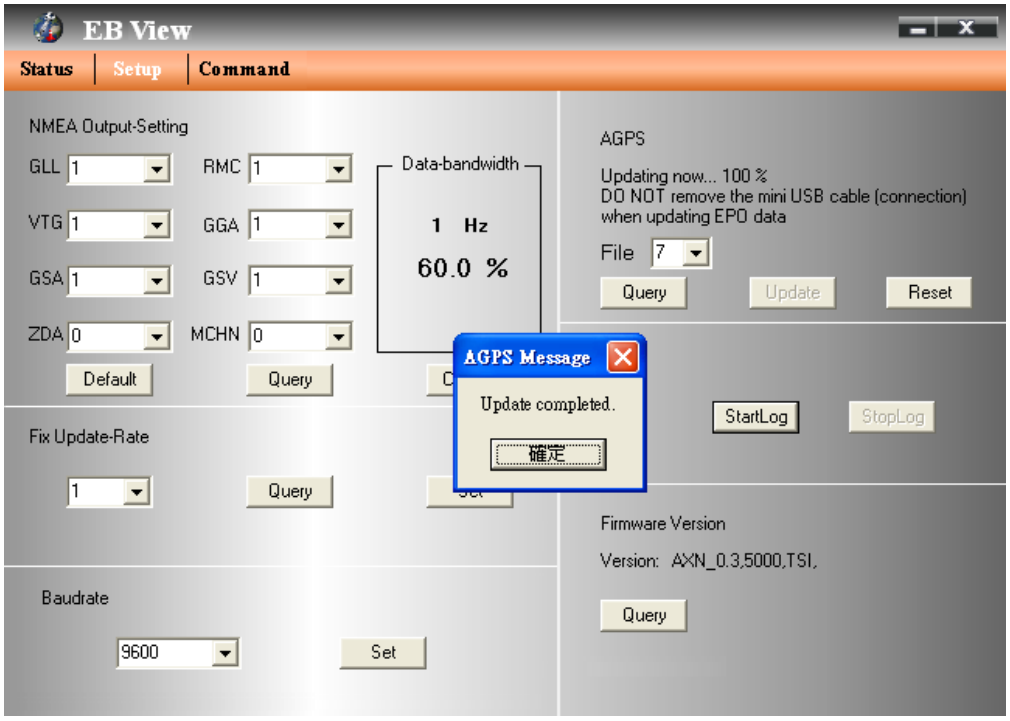
3.2. Update AGPS

Step1. Make sure you have network available for accessing the internet.

Step2. Connect EB-500 evaluation board to PC and then open EB View to establish the communication.

Step3. Go to “Setup” page

Step4. Click “Update” button under AGPS to update the AGPS data. The program will connect to the AGPS server and download the data automatically. You can also check the valid time of AGPS by clicking Query. Clear AGPS data by clicking Reset.



Note: AGPS has 7 or 14 days time limited it was depend by your select file.

4. Connector Definition

Pin#	Signal Name	Type	Description
1	RX1	I	GPS RX1
2	TX1	O	PPS TX1
3	PPS	O	PPS
4	TX0	O	GPS TX0
5	RX0	I	GPS RX0
6	GND	P	Ground
7	GPI0[3]	I/O*	General input / output
8	GPS status	O	GPS status, blink when GPS has position fix
9	GPIO[12]	I/O*	General input / output
10	V28D	P	Digital power indicator, 2.8V±2% test point
11	NC	I	NC
12	V_RTC_3V3	P	RTC power 3.0~4.2V Quiescent current 1.5uA max
13	VIN_3V3	P	Power Supply 3.0~4.2V DC
14	GPIO[7]	I/O*	General input / output
15	GPIO[8]	I/O*	General input / output
16	GPIO[2]	I/O*	General input / output
17	GND	P	Ground
18	NC	NC	NC
19	V28A	P	Analog power indicator, 2.8V±2% test point
20	GND	P	Ground
21	RF Input	I	Antenna port, L1, 1575.42MHz, 50ohm DC O/P: 2.8V Current≦ 25mA
22	GND	P	Ground

Note1: (P→Power), (I→Input), (O→Output), (I/O*→Input or Output, Open if not used)

Note2:

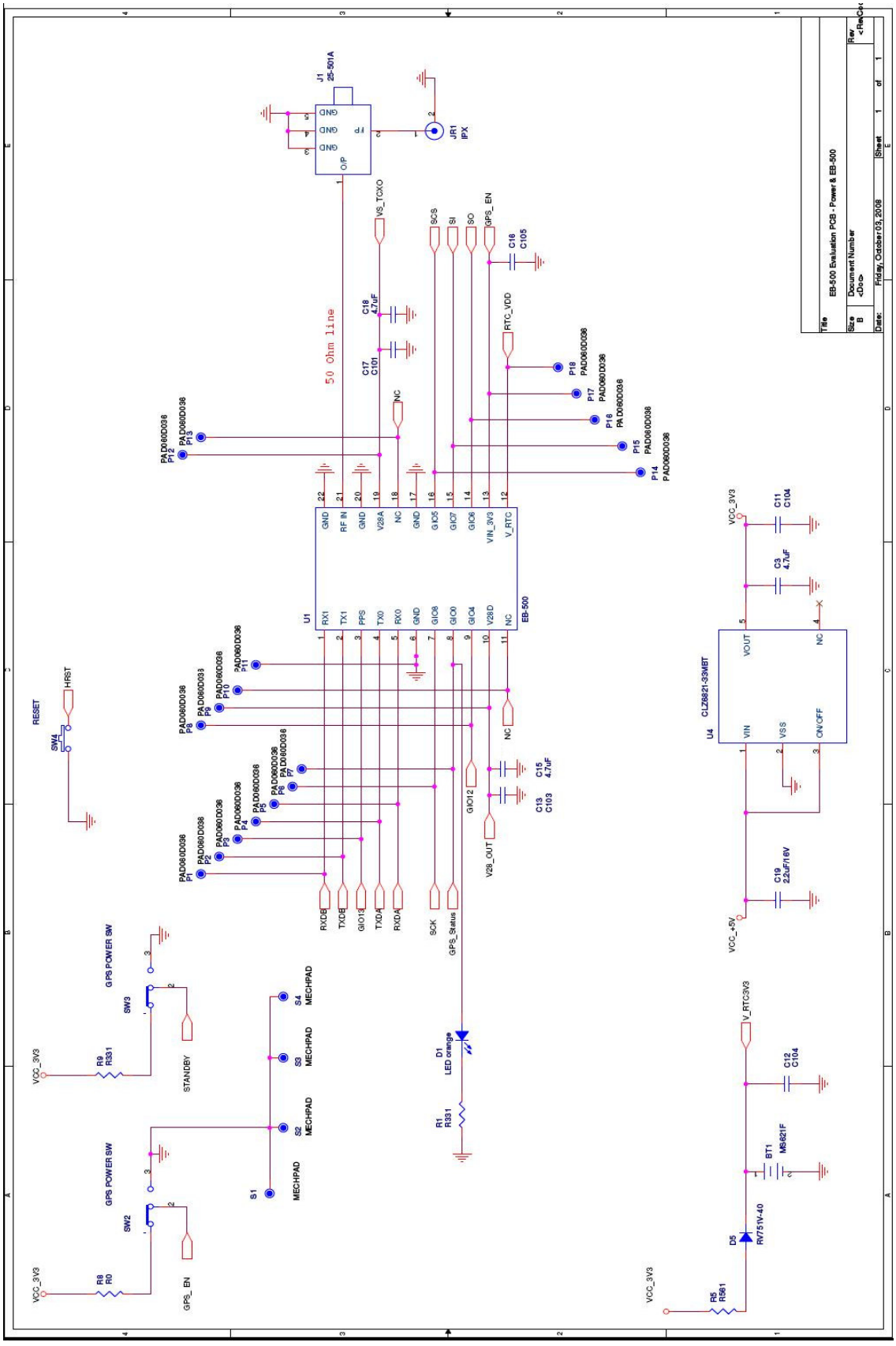
1. GIO current output

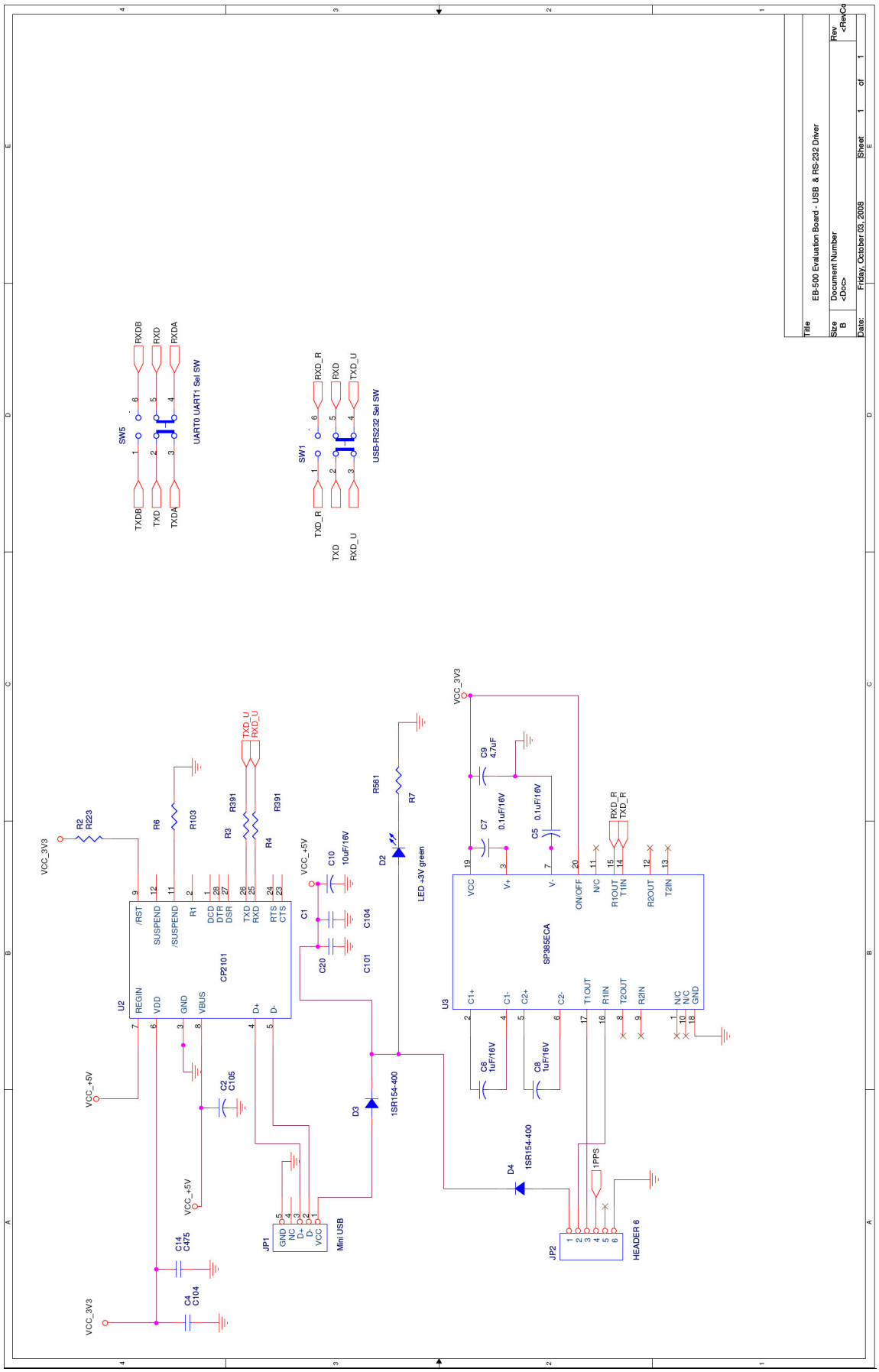
Default	4mA
Max	16mA

2. GIO voltage

V_{IL}	-0.3~0.8V
V_{IH}	2.0~3.6V
V_{OL}	-0.3~0.4V
V_{OH}	-2.4~0.7VDD

5. Evaluation Board Schematics




Title
EB-500 Evaluation Board - USB & RS-232 Driver
Size
B
Document Number
<Doc>
Rev
<RevCo
Date:
Friday, October 03, 2008
Sheet
1
of
1
SW5
RXDB
RXD
RXDA
TXDB
TXD
TXDA
UART0 UART1 Sel SW
SW1
RXD_R
RXD
TXD_U
TXD_R
TXD
RXD_U
USB-RS232 Sel SW
VCC_3V3
R2
R223
R6
R103
R3
R391
R4
R391
TXD_U
RXD_U
U2
CP2101
/RST
REGIN
VDD
GND
VBUS
SUSPEND
/SUSPEND
R1
DCD
DTR
DSR
TXD
RXD
RTS
CTS
D+
D-
VCC_+5V
C10
10uF/16V
C1
C20
C104
C101
R561
R7
D2
LED +3V green
D3
1SR154-400
C2
C105
C14
C475
C4
C104
JP1
Mini USB
GND
NC
D+
D-
VCC
U3
SP385ECA
VCC
V+
V-
ON/OFF
N/C
R1OUT
T1IN
R2OUT
T2IN
C1+
C1-
C2+
C2-
T1OUT
R1IN
T2OUT
R2IN
N/C
N/C
GND
C9
4.7uF
C7
0.1uF/16V
C5
0.1uF/16V
C8
1uF/16V
C8
1uF/16V
RXD_R
TXD_R
D4
1SR154-400
1PPS
JP2
HEADER 6

Contact Information

Transystem Inc.
No.1-2 Li-Hsin Rd. 1,
Science-Based Industrial Park,
Hsinchu 300, Taiwan, R.O.C.
Tel: +886.3.578.0393 / Fax: +886.3.578.4111
www.transystem.com.tw/
sales@transystem.com.tw