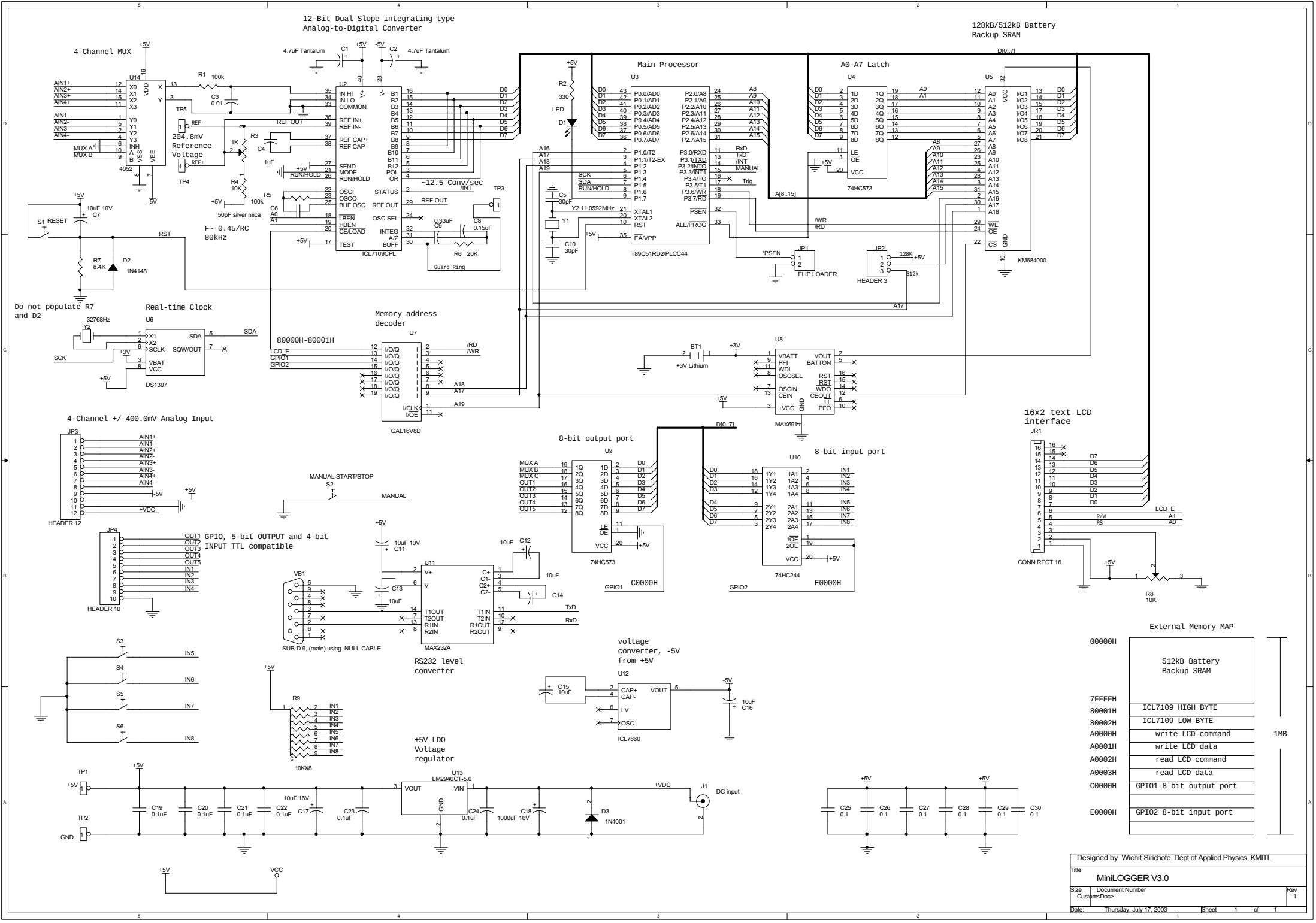
12-Bit Dual-Slope integrating type
Analog-to-Digital Converter
4-Channel MUX
U14
4052
AIN1+
AIN2+
AIN3+
AIN4+
AIN1-
AIN2-
AIN3-
AIN4-
MUX A
MUX B
R1 100k
C3 0.01
TP5
204.8mV
Reference
Voltage
TP4
R3 1K
C4 1uF
R4 10K
R5 100k
50pF silver mica
C6
F~ 0.45/RC
80kHz
4.7uF Tantalum
C1
C2
U2
ICL7109CPL
IN HI
IN LO
COMMON
REF IN+
REF IN-
REF CAP+
REF CAP-
SEND
MODE
RUN/HOLD
OSCI
OSCO
BUF OSC
LBEN
HBEN
CE/LOAD
TEST
STATUS
REF OUT
OSC SEL
INTEG
A/Z
BUFF
POL
OR
~12.5 Conv/sec
/INT
TP3
C8 0.15uF
C9 0.33uF
R6 20K
Guard Ring
D0
D1
D2
D3
D4
D5
D6
D7
Main Processor
U3
T89C51RD2/PLCC44
P0.0/AD0
P0.1/AD1
P0.2/AD2
P0.3/AD3
P0.4/AD4
P0.5/AD5
P0.6/AD6
P0.7/AD7
P1.0/T2
P1.1/T2-EX
P1.2
P1.3
P1.4
P1.5
P1.6
P1.7
XTAL1
XTAL2
RST
EA/VPP
P2.0/A8
P2.1/A9
P2.2/A10
P2.3/A11
P2.4/A12
P2.5/A13
P2.6/A14
P2.7/A15
P3.0/RXD
P3.1/TXD
P3.2/INT0
P3.3/INT1
P3.4/T0
P3.5/T1
P3.6/WR
P3.7/RD
PSEN
ALE/PROG
RxD
TxD
/INT
MANUAL
Trig
SCK
SDA
RUN/HOLD
R2 330
LED
D1
C5 30pF
Y2 11.0592MHz
Y1
C10 30pF
A16
A17
A18
A19
*PSEN
JP1
FLIP LOADER
/WR
/RD
128K
512k
JP2
HEADER 3
128kB/512kB Battery
Backup SRAM
D[0..7]
A0-A7 Latch
U4
74HC573
LE
OE
VCC
A[8..15]
U5
KM684000
A0
A1
A8
A9
A10
A11
A12
A13
A14
A15
WE
OE
CS
GND
S1 RESET
RST
10uF 10V
C7
R7 8.4K
D2 1N4148
Do not populate R7
and D2
Real-time Clock
U6
DS1307
32768Hz
Y2
X1
X2
SCLK
SQW/OUT
VBAT
VCC
SDA
SCK
Memory address
decoder
U7
GAL16V8D
80000H-80001H
LCD_E
GPIO1
GPIO2
/RD
/WR
I/CLK
I/OE
U8
MAX691
BT1
+3V Lithium
VBATT
PFI
WDI
OSCSEL
OSCIN
CEIN
+VCC
VOUT
BATTON
RST
WDO
CEOUT
LL
PFO
4-Channel +/-400.0mV Analog Input
JP3
HEADER 12
+VDC
MANUAL START/STOP
S2
MANUAL
8-bit output port
U9
74HC573
MUX A
MUX B
MUX C
OUT1
OUT2
OUT3
OUT4
OUT5
GPIO1
C0000H
8-bit input port
U10
74HC244
GPIO2
E0000H
IN1
IN2
IN3
IN4
IN5
IN6
IN7
IN8
16x2 text LCD
interface
JR1
CONN RECT 16
R/W
RS
R8
10K
JP4
HEADER 10
GPIO, 5-bit OUTPUT and 4-bit
INPUT TTL compatible
VB1
SUB-D 9, (male) using NULL CABLE
U11
MAX232A
V+
V-
C+
C1-
C2+
C2-
T1OUT
T2OUT
R1IN
R2IN
T1IN
T2IN
R1OUT
R2OUT
TxD
RxD
C11 10uF 10V
C12 10uF
C13 10uF
C14 10uF
RS232 level
converter
S3
S4
S5
S6
R9
10KX8
voltage
converter, -5V
from +5V
U12
ICL7660
CAP+
CAP-
LV
OSC
VOUT
C15 10uF
C16 10uF
+5V LDO
Voltage
regulator
U13
LM2940CT-5.0
VIN
TP1
TP2
GND
C19 0.1uF
C20 0.1uF
C21 0.1uF
C22 0.1uF
C17 10uF 16V
C23 0.1uF
C24 0.1uF
C18 1000uF 16V
D3 1N4001
J1
DC input
C25 0.1
C26 0.1
C27 0.1
C28 0.1
C29 0.1
C30 0.1
External Memory MAP
00000H
512kB Battery
Backup SRAM
7FFFFH
80001H
ICL7109 HIGH BYTE
80002H
ICL7109 LOW BYTE
A0000H
write LCD command
A0001H
write LCD data
A0002H
read LCD command
A0003H
read LCD data
C0000H
GPIO1 8-bit output port
E0000H
GPIO2 8-bit input port
1MB
Designed by Wichit Sirichote, Dept.of Applied Physics, KMITL
Title
MiniLOGGER V3.0
Size
Document Number
Custom<Doc>
Rev
1
Date: Thursday, July 17, 2003
Sheet 1 of 1