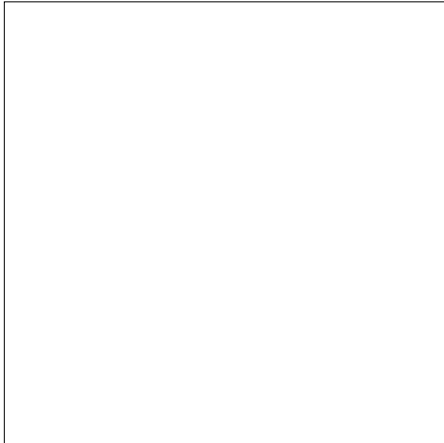




80C31 Microcontroller with Parallel I/O SNAP 551™



Features

- ✓ Small, low power 8051-family controller
- ✓ 32 parallel I/O lines
- ✓ Serial port RS232 and RS485
- ✓ 32K CMOS RAM included
- ✓ Accepts up to 64K RAM, 64K EPROM
- ✓ Battery-backed clock option
- ✓ On-board BASIC option
- ✓ C compilers available
- ✓ Async comm and PID loop control libraries available

The SNAP 551 Microcontroller provides a complete, ready-to-use 8051-family controller on a 3" x 5" PC card. The controller is ideal for embedding into OEM equipment, for implementing small to medium sized end applications, and as a platform for prototyping 8051-family designs.

The standard SNAP 551 comes with the 80C31 CPU, a ROMless, CMOS version of the popular 8051 processor. Alternative processors avail-

able include the 80C32 with an additional timer and interrupt, and the 8052 with a built-in BASIC interpreter. CMOS logic is used throughout the SNAP 551 for low power consumption and cooler operating temperatures. Reliability is enhanced with provisions for battery-backing on-board CMOS RAM, power-fail interrupt capability, and a watchdog timer system to monitor proper system operation. A real-time clock option provides clock and calendar functions.

Software Support

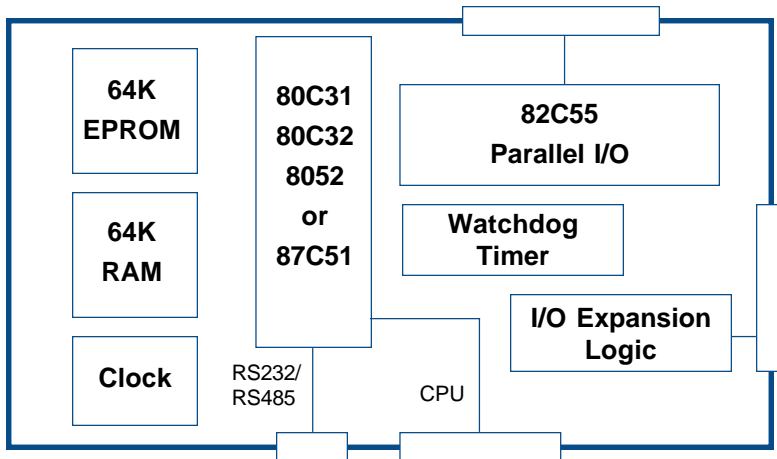
Comm library, CommBLOK-51™
PID loop library, PidBLOK-51™
C compilers
BASIC interpreter, compiler
[Items above in Section 6]

Compatible Hardware

LCD and keypad, LCDKBD1
RS485 comm, TB1485
[Items above in Section 4]
Power system, PS1000
[Item above in Section 5]
Custom

Mounting/Packaging

Standoffs, Snaptrack™, DIN rails
[Items above in Section 5]
Custom



Technical Details:

SNAP 551 is available with a choice of 3 CPU devices, 80C31, 80C32, or 8052 with built-in BASIC interpreter.

SNAP 551 includes a wealth of I/O points and expansion capabilities. 80C31 processor ports are available at a 26-pin connector. An 82C55 device is included to add 24 parallel lines which are available at a 26-pin I/O connector. An optional I/O expansion connector of 34-pins implements an expansion bus with 80C31 address/data ports and "off-board" read and write signals, interrupts, and timer signals.

Serial communication is fully supported in RS232 mode. RS485 support can be added as an option. Two 80C31 I/O pins can be used to implement CTS/RTS modem control lines in RS232 mode. The RTS line can alternatively be used to enable/disable the RS485 transmitter for multi-drop operation if the RS485 option is used.

A second output only RS232 port can be configured for printer-output if the 8052 BASIC option is used. (Please refer to the SNAP 651 Microcontroller if your application requires more than one serial port.)

Two 32-pin memory sockets are included on the SNAP 551. The first supports up to 64K of EPROM or flash EPROM, the second supports up to 64K of CMOS static RAM, which can be battery-backed. On-board programming of flash EPROMs is supported, allowing simple field program updates without removing any memory devices. The SNAP 551 ships with 32K CMOS RAM memory installed, additional memory is optional.

Program development can be done in on-board BASIC, compiled BASIC, compiled C, or 8051 assembly language. Micro/sys supplies many development aids for SNAP 551, including compilers, assemblers, software libraries, and hardware mounting kits.

Specifications:

Mechanical:

- 3.0" x 5.0" x 0.6"
- Mounting holes (0.13" dia.) in four corners, in 0.25" from edges
- Mount on standoffs, in Snaptrack, or in DIN rail

Power Requirements:

- Requires +5V \pm 5% at 95mA
- On-board programming of flash EPROM requires +12V \pm 5% at 30mA
- Off-board battery (optional) 6V at 50 μ A, can be common PC type battery pack connected through power connector

Environmental:

- 0° - 70°C operating
- 40° - +85°C storage
- 5%-95% relative humidity, non-condensing

Processor:

- 80C31, 11MHz clock standard
- Six interrupts (2 hardware), 2 counter/timers, 8-bit I/O port, expansion ports

- 16MHz option for higher performance
- 80C32 option adds additional timer and interrupt
- 8052 option includes built-in BASIC interpreter, RS232 printer output

Memory:

- 32K CMOS RAM installed
- Socket for program code accepts 27C256 for 32K, or 27C512 for 64K EPROM
- Contact factory for current flash EPROM device support
- RAM socket can accept 128K RAM (64K usable), and can be battery backed

Parallel I/O:

- 32 lines total, some have alternate uses as interrupt or timer signals
- 24 lines from 82C55 - sink 2.4mA, source 2.4mA
- 8 lines from 80C31 - sink 1.6mA, source 0.08mA

CPU Signal Connector			
Signal	Pin	Pin	Signal
P1.7	1	2	P1.6
P1.5	3	4	P1.4
P1.3	5	6	P1.2
P1.1	7	8	P2.7
P2.6	9	10	P2.5
P2.4	11	12	P2.3
P2.2	13	14	P2.1
P2.0	15	16	P3.1
P3.0	17	18	BASIC RS232 LPT
GND	19	20	
GND	21	22	
GND	23	24	
GND	25	26	

Parallel I/O Connector			
Signal	Pin	Pin	Signal
VCC	1	2	PIO_A4
PIO_A3	3	4	PIO_A5
PIO_A2	5	6	PIO_A6
PIO_A1	7	8	PIO_A7
PIO_A0	9	10	PIO_C7
PIO_C6	11	12	PIO_C5
PIO_C4	13	14	PIO_C0
PIO_C1	15	16	PIO_C2
PIO_C3	17	18	PIO_B7
PIO_B6	19	20	PIO_B5
PIO_B4	21	22	PIO_B3
PIO_B2	23	24	PIO_B1
PIO_B0	25	26	GND

Power Connector		
Pin	Direction	Signal
1	I	VCC
2	I	V_BATT
3	--	GND
4	I	+12V
5	I	*PB_RESET
6	O	*FLASH_EN
7		

CPU Serial Port Connector		
Pin	Direction	Signal
1		
2		
3	I	RXD
4	O	RTS
5	O	TXD
6	I	CTS
7		
8		
9	---	GND
10		

Serial Ports:

- Internal 80C31 serial port, RS232
- Baud rates from 110 - 19,200
- RTS/CTS supported
- RS485 option available, RTS can be used to enable transmitter
- 8052 BASIC version supports RS232 printer output

Watchdog Timer:

- Program must strobe watchdog every 1.6 seconds or reset will be issued
- Enable/disable jumper

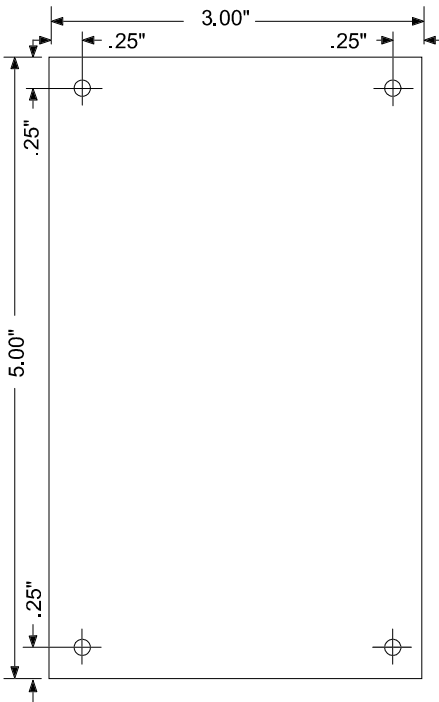
Real-time Clock Option:

- Uses 3 parallel port lines of 80C31
- Provides hours, minutes, seconds, day of week, date, month, and year
- Can use off-board or on-board battery

External Connections:

- Power: 7-pin header, cable supplied
- Serial port: 10-pin header, mating connector Ansley 609-1001M
- Parallel ports: 26-pin header, mating connector Ansley 609-2601M
- CPU signals: 26-pin header, mating connector Ansley 609-2601M
- I/O Expansion: 34-pin header (if 551OPT4 ordered), mating connector Ansley 609-3401M

Expansion Connector					
Direction	Signal	Pin	Pin	Signal	Direction
	VCC	1	2	VCC	
O	A6	3	4	A5	O
O	A4	5	6	A3	O
O	A2	7	8	A1	O
O	A0	9	10	GND	
	GND	11	12	AD7	I/O
I/O	AD6	13	14	AD5	I/O
I/O	AD4	15	16	AD3	I/O
I/O	AD2	17	18	AD1	I/O
I/O	AD0	19	20	*RESET	O
I	T0	21	22	T1	I
I	*INT0	23	24	*INT1	I
I/O	USER2	25	26	USER3	I/O
I/O	USER0	27	28	USER1	I/O
	GND	29	30	*OFFB	O
O	*RD	31	32	*WR	O
	GND	33	34	T2	I



551OPT4 Expansion connector installed
 551OPT5 RS485 support option
 551OPT10 Total 64K CMOS RAM installed
 551OPT11 Autorun BASIC program from battery-backed CMOS RAM (SNAP551-3 only)

LCDKBD1-51 LCD and keypad interface
 TB1485-2 RS485 terminator board
 TB5001 50-terminal breakout board
 CA4020 RS232 cable, CPU port to 9-pin male D (PC-AT pinout)
 CA5045 Cable to TB5001 from Parallel I/O or CPU connector (26-cond)
 CA5046 Cable to TB500 from expansion connector (34-cond)
 CA5051 Cable to LCDKBD1-51
 CA5052 Cable to TB1485-2
 EPROM64 Blank 64K EPROM (27C512) installed
 STDOFF01 Mounting kit, 4 nylon standoffs and screws
 SNAP3-5 Mounting kit, 5" Snaptrack
 SNAP3-5D Mounting kit, adapts SNAP 551 to 5" length of DIN rail

Ordering Information:

SNAP 551-1 80C31 Microcontroller, 11MHz
 SNAP 551-2 80C32 Microcontroller, 11MHz
 SNAP 551-3 8052 BASIC Language Microcomputer, 11MHz
 SNAP 551-4 87C51 Microcontroller, 11MHz

Options:

551OPT1-X 16MHz operation option (X must be same as SNAP551-X)
 551OPT2 Real-time clock option
 551OPT3 On-board battery option

Software:

CommBLOK-51 Async comm C library
 PidBLOK-51 PID control loop C library
 MC/C51 MCC 8051 C
 MD/BASIKIT MDL 8052 BASIC IDE
 SY/B52MAN BASIC-52 User's Manual
 SY/BCI51 Systronix BASIC Compiler

SNAP 551, SNAP 651 trademark Micro/sys
 CommBLOK-51, PidBLOK-51 trademark Drumlin
 Snaptrack trademark Augat