DTX1-4400P

Peanerd

Tiny controller in DIL16 format

DATA SHEET

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1. Overview

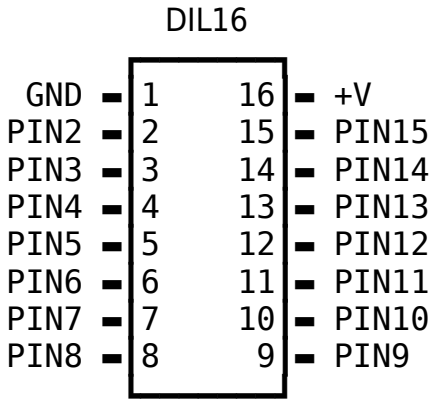
Feature Highlights

16-pin device in standard DIL16 package; easy for prototyping and final assembly
Low operation current at single 3.3V power supply
Powerful 32-bit ARM on board
Processor clock and RTC crystals on board
Up to 14 I/O ports
RoHS compliant

Typical Applications

- Hobby and academic projects
- Industrial automation

2. Pinout



Pinout Summary

Pin	Name	Type	Description
1	GND	P	Ground
2 ... 15	PIN2 ... PIN15	(any)	Program-controlled functional pins ***Refer to "Port Configurations"***
16	+V	P	Positive 3.3V power lead

Legend:
I – input with CMOS level
AI – analogue input
O – digital output
AO – analogue output
P – power pin

3. Electrical Parameters

ABSOLUTE MAXIMUM RATINGS:

Stresses beyond those listed under "absolute maximum ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under "recommended operating conditions" is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

parameter	min	typ	max	units
Voltage on +V with respect to GND	2.7	3.3	3.6	V
Voltage on all input and output interface pins	-0.3		3.6	V
Normal operation current		TBD		mA
Parameters of all other functional pins	According to function and IC manufacturer's recommendation			
Operating free-air temperature range	-20		+85	°C
Storage temperature range	-40		+90	°C

4. Port Configurations

Despite its low pin count DTX1-4400P's circuit is fully optimised to allow a number of different configurations for the MCU ports in order to maximise utilisation of the built-in peripherals.

Atmel's SAM4S datasheet document describes in Chapter 11.2 the possible choices of peripheral sub-systems connected to each of the MCU's pins. DTX1-4400P combines selected MCU ports into shared module pins.

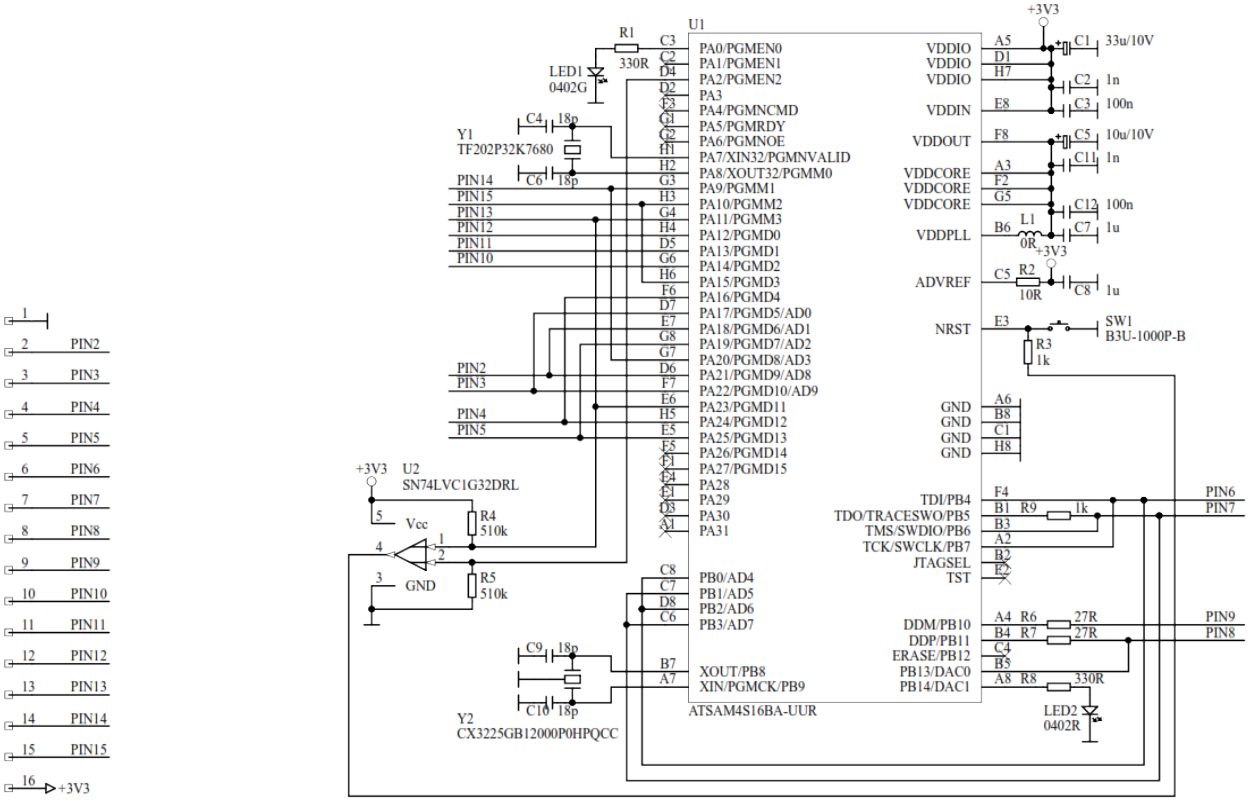
In order to let this model work properly, all the unused shared ports of the MCU must be held initialised as inputs or inactive open-drain outputs.

The following table lists the DTX1-4400P's internal MCU port connections.

DTX2-4400P Pin	MCU Port connections	Remark
2	PA18 + PA21	
3	PA17 + PA22	
4	PA16 + PA24	
5	PA19 + PA25	
6	PB0 + PB2 + PB4 + PB7	*SWD clock line when programming*
7	PB1 + PB3 + PB5 + PB6	*SWD data line when programming*
8	PB11 + PB13	*27ohm resistor in series to PB11 (DDP)*
9	PB10	*27ohm resistor in series to PB10 (DDM)*
10	PA14	
11	PA13	
12	PA12	
13	PA11 + PA23	*Weak pull-up resistor; low level along with low level on PA2 (default) triggers MCU reset; nRST when programming*
14	PA9 + PA20	
15	PA10 + PA15	
-	PA0	*Positive logic LED (green)*
-	PA2	*Weak pull-down resistor; output in high level disables triggering MCU reset actions from PIN13*
-	PB14	*Positive logic LED (red)*
-	PA7 and PA8	*32.768kHz RTC crystal*
-	PB8 and PB9	*12MHz main clock crystal*
-	PA1, PA3 ... PA6 PA26 ... PA31, PB12	*Not used; initialise as open-drain inactive output and keep it that way*

5. Internal Schematic

*Errata information concerning the earliest batch of boards **only** (black solder mask)*
1. SW1 does not reset the processor
2. SWD functionality is not available



6. Mechanical Parameters

Note: all dimensions are given in millimetres