



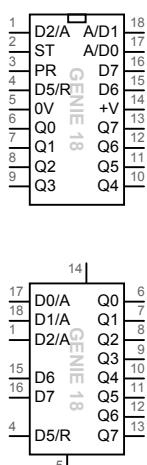
Capabilities

The following table outlines the capabilities of this GENIE device:

| Type | GENIE |
|-----------------------|-------------------|
| Version | 2 |
| Signals | |
| Pins | 18 |
| Analogue inputs | 3 |
| ADC resolution | 8 bits |
| Digital inputs | 6 |
| Digital outputs | 9 |
| Features | |
| Parallel processing | Yes |
| Plug and play | Yes |
| Debug live | Yes |
| Device control | Yes |
| Sensor calibration | Yes |
| RTTTL music | Yes |
| 16 channel MIDI music | Yes |
| Sound effects | Yes |
| PWM outputs | 8 |
| Servo motor control | 8 |
| Infra-red control | Yes |
| 1-Wire® and I2C | Yes |
| Ultrasonic sensing | Yes |
| Events and interrupts | Yes |
| 1-second clock | Yes |
| Programming | |
| Program memory | 10 K bytes |
| Variables | 26 (A-Z) |
| Data (array) memory | 256 |
| EEPROM locations | 16 |
| Program start limit | 16 |
| Subroutine limit | No limit |
| Call stack limit | 32 |
| Electrical | |
| PICmicro® device | 16F1847 |
| Power supply | 1.8-5.5V |
| Pin current limit | 25mA |
| Total current limit | 150mA |

Component

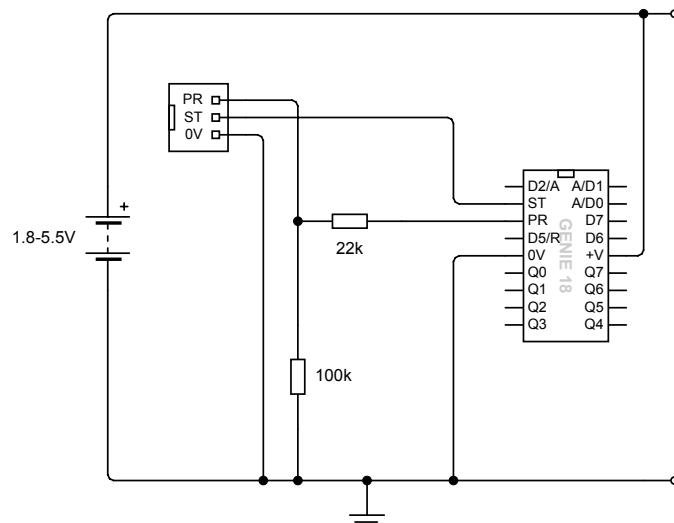
The GENIE 18 microcontroller has 18 legs (known as pins) and these are used as follows (a simplified view is also shown):



| Pin | Description |
|-----|---------------------------------------|
| 1 | Analogue input A2 or digital input D2 |
| 2 | Status output (ST) |
| 3 | Programming input (PR) |
| 4 | Digital input D5 or (optional) reset |
| 5 | Ground (zero volt) supply voltage |
| 6 | Digital output Q0 |
| 7 | Digital output Q1 |
| 8 | Digital output Q2 |
| 9 | Digital output Q3 |
| 10 | Digital output Q4 |
| 11 | Digital output Q5 |
| 12 | Digital output Q6 |
| 13 | Digital output Q7 |
| 14 | Power supply voltage (1.8-5.5V only) |
| 15 | Digital input D6 |
| 16 | Digital input D7 |
| 17 | Analogue input A0 or digital input D0 |
| 18 | Analogue input A1 or digital input D1 |

Circuit

The required circuit for a GENIE 18 is shown below. It includes a download socket and two resistors. See also 'Reset' overleaf.





Notes

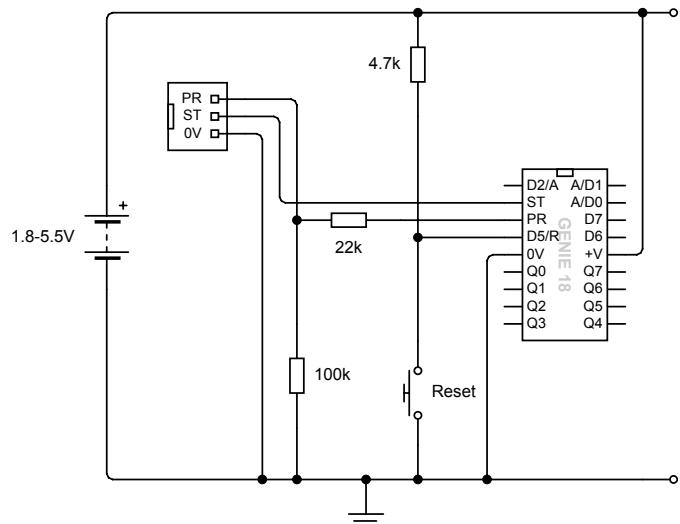
Reset

Pin 4 can be configured to be either an external reset pin or digital input G3. When configured as a reset pin, the microcontroller will reset whenever that pin goes low.

The recommended minimum circuit including a reset switch is shown on the right.

You can configure the reset pin by choosing the **Advanced** option in the **Program Settings** window and then clicking on **Reset**.

The GENIE 18 microcontroller has the reset option enabled by default for compatibility with (version 1) GENIE E18 devices.



Turbo

The GENIE 18 microcontroller can operate at two different speeds: normal and turbo. In turbo mode, the internal oscillator within the microcontroller will be run at a faster (32 MHz rate), whereas in the normal speed mode, the oscillator will be at 16 MHz. Note that one consequence of running in turbo speed mode is that the minimum device supply voltage increases from 1.8V to 2.5V.

You can enable turbo speed mode by choosing the **Advanced** option in the **Program Settings** window and then clicking on **Turbo**.