SyRen/Sabertooth Packet Serial Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

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SyRen/Sabertooth Packet Serial Library for Arduino
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Sabertooth Class Reference

Controls a Sabertooth or SyRen motor driver running in Packet Serial mode. More...
# Public Member Functions

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Static Public Member Functions

```
static void autobaud (SabertoothStream &port, boolean dontWait=false)
```
Detailed Description

Controls a Sabertooth or SyRen motor driver running in Packet Serial mode.

Examples:
  2. Settings/MinVoltage/MinVoltage.ino,
  2. Settings/Persistent/BaudRate/BaudRate.ino,
  2. Settings/Persistent/Deadband/Deadband.ino,
  2. Settings/Persistent/MaxVoltage/MaxVoltage.ino,
  2. Settings/Persistent/Ramping/Ramping.ino,
  2. Settings/SerialTimeout/SerialTimeout.ino,
  3. Advanced/SharedLine/SharedLine.ino, and
  3. Advanced/SoftwareSerial/SoftwareSerial.ino.
Constructor & Destructor Documentation

Sabertooth::Sabertooth ( byte address )

Initializes a new instance of the Sabertooth class. The driver address is set to the value given, and the Arduino TX serial port is used.

Parameters

  address The driver address.

Sabertooth::Sabertooth ( byte address, SabertoothStream & port )

Initializes a new instance of the Sabertooth class. The driver address is set to the value given, and the specified serial port is used.

Parameters

  address The driver address.
  port The port to use.
Member Function Documentation

byte Sabertooth::address ( ) const

Gets the driver address.

**Returns**
The driver address.

void
Sabertooth::autobaud ( boolean dontWait = false ) const

Sends the autobaud character.

**Parameters**

* dontWait If false, a delay is added to give the driver time to start up.

**Examples:**


void
Sabertooth::autobaud ( SabertoothStream & port, boolean dontWait = false )

Sends the autobaud character.
**Parameters**

- **port**  The port to use.
- **dontWait**  If false, a delay is added to give the driver time to set up.

```cpp
void Sabertooth::command ( byte command,
                           byte value
                     ) const
```

Sends a packet serial command to the motor driver.

**Parameters**

- **command**  The number of the command.
- **value**  The command's value.

```cpp
void Sabertooth::drive ( int power ) const
```

Sets the driving power.

**Parameters**

- **power**  The power, between -127 and 127.

```cpp
void Sabertooth::motor ( int power ) const
```

Sets the power of motor 1.

**Parameters**

- **power**  The power, between -127 and 127.
Examples:


```cpp
void Sabertooth::motor ( byte motor, int power ) const
```

Sets the power of the specified motor.

**Parameters**

- **motor** The motor number, 1 or 2.
- **power** The power, between -127 and 127.

```cpp
SabertoothStream& Sabertooth::port ( ) const
```

Gets the serial port.

**Returns**

- The serial port.

```cpp
void Sabertooth::setBaudRate ( long baudRate ) const
```

Sets the baud rate. Baud rate is stored in EEPROM, so changes persist between power cycles.

**Parameters**

- **baudRate** The baud rate. This can be 2400, 9600, 19200, 38400, or on some drivers 115200.
void Sabertooth::setDeadband ( byte value ) const

Sets the deadband. Deadband is stored in EEPROM, so changes persist between power cycles.

Parameters

value The deadband value. Motor powers in the range \([-\text{deadband}, \text{deadband}]\) will be considered in the deadband, and will not prevent the driver from entering nor cause the driver to leave an idle brake state. 0 resets to the default, which is 3.

void Sabertooth::setMaxVoltage ( byte value ) const

Sets the maximum voltage. Maximum voltage is stored in EEPROM, so changes persist between power cycles.

Parameters

value The voltage. The units of this value are driver-specific and are specified in the Packet Serial chapter of the driver's user manual.

void Sabertooth::setMinVoltage ( byte value ) const

Sets the minimum voltage.

Parameters

value The voltage. The units of this value are driver-specific and are specified in the Packet Serial chapter of the driver's user manual.
void Sabertooth::setRamping (byte value) const

Sets the ramping. Ramping is stored in EEPROM, so changes persist between power cycles.

**Parameters**

- **value** The ramping value. Consult the user manual for possible values.

void Sabertooth::setTimeout (int milliseconds) const

Sets the serial timeout.

**Parameters**

- **milliseconds** The maximum time in milliseconds between packets. If this time is exceeded, the driver will stop the motors. This value is rounded up to the nearest 100 milliseconds. This library assumes the command value is in units of 100 milliseconds. This is true for most drivers, but not all. Check the packet serial chapter of the driver's user manual to make sure.

void Sabertooth::stop ( ) const

Stops.
void Sabertooth::turn ( int power ) const

Sets the turning power.

Parameters

power The power, between -127 and 127.
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### Class Index

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**Sabertooth**

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SyRen/Sabertooth Packet Serial Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

Here is a list of all documented class members with links to the class documentation for each member:

- address() : Sabertooth
- autobaud() : Sabertooth
- command() : Sabertooth
- drive() : Sabertooth
- motor() : Sabertooth
- port() : Sabertooth
- Sabertooth() : Sabertooth
- setBaudRate() : Sabertooth
- setDeadband() : Sabertooth
- setMaxVoltage() : Sabertooth
- setMinVoltage() : Sabertooth
- setRamping() : Sabertooth
- setTimeout() : Sabertooth
- stop() : Sabertooth
- turn() : Sabertooth
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- `address()` : [Sabertooth](#)
- `autobaud()` : [Sabertooth](#)
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- `motor()` : [Sabertooth](#)
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File List

Here is a list of all documented files with brief descriptions:

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SyRen/Sabertooth Packet Serial
Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

Sabertooth.h

/*
Arduino Library for SyRen/Sabertooth Packet Serial
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http://www.dimensionengineering.com/arduino

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RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT,
NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THIS SOFTWARE.
*/

#ifndef Sabertooth_h
#define Sabertooth_h

#if defined(ARDUINO) && ARDUINO >= 100
#include <Arduino.h>
typedef Stream SabertoothStream;
#else
#include <WProgram.h>
typedef Print SabertoothStream;
#endif

#if defined(USBCON)
#define SabertoothTXPinSerial Serial1 // Arduino Leonardo has TX->1 on Serial1, not Serial.
#else
#define SabertoothTXPinSerial Serial
#endif
#define SyRenTXPinSerial SabertoothTXPinSerial

class Sabertooth
{
public:

Sabertooth(byte address);

Sabertooth(byte address, SabertoothStream& port);

public:

inline byte address() const { return _address; }
}
inline SabertoothStream& port() const {
    return _port;
}

void autobaud(boolean dontWait = false) const;

static void autobaud(SabertoothStream& port, boolean dontWait = false);

void command(byte command, byte value) const;

public:

void motor(int power) const;

void motor(byte motor, int power) const;

void drive(int power) const;

void turn(int power) const;

void stop() const;

public:

void setMinVoltage(byte value) const;

void setMaxVoltage(byte value) const;

void setBaudRate(long baudRate) const;

void setDeadband(byte value) const;

void setRamping(byte value) const;

void setTimeout(int milliseconds) const;
private:
void throttleCommand(byte command, int power) const;

private:
const byte _address;
SabertoothStream& _port;
};

#endif
SyRen/Sabertooth Packet Serial Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

Examples

Here is a list of all examples:

- 1.Basics/Jolty/Jolty.ino
- 1.Basics/Sweep/Sweep.ino
- 1.Basics/TankStyleSweep/TankStyleSweep.ino
- 2.Settings/MinVoltage/MinVoltage.ino
- 2.Settings/Persistent/BaudRate/BaudRate.ino
- 2.Settings/Persistent/Deadband/Deadband.ino
- 2.Settings/Persistent/MaxVoltage/MaxVoltage.ino
- 2.Settings/Persistent/Ramping/Ramping.ino
- 2.Settings/SerialTimeout/SerialTimeout.ino
- 3.Advanced/SharedLine/SharedLine.ino
- 3.Advanced/SoftwareSerial/SoftwareSerial.ino
SyRen/Sabertooth Packet Serial
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Control your SyRen or Sabertooth with reliable Packet Serial.

### 1. Basics/Jolty/Jolty.ino

Goes in one direction, stops, and then goes in the other direction.

```cpp
// Jolty Sample for Packet Serial
// Copyright (c) 2012 Dimension Engineering LLC
// See license.txt for license details.

#include <Sabertooth.h>

Sabertooth ST(128); // The Sabertooth is on address 128. We'll name its object ST.
// If you've set up your Sabertooth on a different address, of course change
// that here. For how to configure address, etc. see the DIP Switch Wizard for
// Sabertooth -
// http://www.dimensionengineering.com/datasheets/SabertoothDIPWizard/start.htm
// SyRen -
// http://www.dimensionengineering.com/datasheets/SyrenDIPWizard/start.htm
// Be sure to select Packetized Serial Mode for use with this library.

// On that note, you can use this library for SyRen just as easily.
// The diff-drive commands (drive, turn) do not
work on a SyRen, of course, but it will respond correctly

// if you command motor 1 to do something
  (ST.motor(1, ...)), just like a Sabertooth.

// In this sample, hardware serial TX connects to S1.
// See the SoftwareSerial example in 3.Advanced for how to use other pins.

void setup()
{
  SabertoothTXPinSerial.begin(9600); // 9600 is the default baud rate for Sabertooth packet serial.
  ST.autobaud(); // Send the autobaud command to the Sabertooth controller(s).
  // NOTE: *Not all* Sabertooth controllers need this command.
  //       It doesn't hurt anything, but V2 controllers use an
  //       EEPROM setting (changeable with the function setBaudRate) to set
  //       the baud rate instead of detecting with autobaud.
  //       If you have a 2x12, 2x25 V2, 2x60 or
  //       SyRen 50, you can remove
  //       the autobaud line and save yourself two
  //       seconds of startup delay.
}

void loop()
{
  ST.motor(1, 127);   // Go forward at full power.
  delay(2000);        // Wait 2 seconds.
  ST.motor(1, 0);     // Stop.
  delay(2000);        // Wait 2 seconds.
ST.motor(1, -127); // Reverse at full power.
delay(2000);       // Wait 2 seconds.
ST.motor(1, 0);    // Stop.
delay(2000);
SyRen/Sabertooth Packet Serial Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

1. Basics/Sweep/Sweep.ino

Sweeps from full reverse to full forward and then from full forward to full reverse.

```cpp
// Sweep Sample for Packet Serial
// Copyright (c) 2012 Dimension Engineering LLC
// See license.txt for license details.

#include <Sabertooth.h>

Sabertooth ST(128); // The Sabertooth is on address 128. We'll name its object ST.

// If you've set up your Sabertooth on a different address, of course change
// that here. For how to configure address, etc. see the DIP Switch Wizard for
// Sabertooth -
// http://www.dimensionengineering.com/datasheets/SabertoothDIPWizard/start.htm
// SyRen -
// http://www.dimensionengineering.com/datasheets/SyrenDIPWizard/start.htm

// Be sure to select Packetized Serial Mode for use with this library.

// On that note, you can use this library for SyRen just as easily.
// The diff-drive commands (drive, turn) do not
```
work on a SyRen, of course, but it will respond correctly

// if you command motor 1 to do something
  (ST.motor(1, ...)), just like a Sabertooth.

// In this sample, hardware serial TX connects to S1.
// See the SoftwareSerial example in 3.Advanced for how to use other pins.

void setup()
{
  SabertoothTXPinSerial.begin(9600); // 9600 is the default baud rate for Sabertooth packet serial.
  ST.autobaud(); // Send the autobaud command to the Sabertooth controller(s).
  // NOTE: *Not all* Sabertooth controllers need this command.
  // It doesn't hurt anything, but V2 controllers use an
  // EEPROM setting (changeable with the function setBaudRate) to set
  // the baud rate instead of detecting with autobaud.
  //
  // If you have a 2x12, 2x25 V2, 2x60 or SyRen 50, you can remove
  // the autobaud line and save yourself two seconds of startup delay.
}

void loop()
{
  int power;

  // Ramp motor 1 from -127 to 127 (full reverse to full forward),
  // waiting 20 ms (1/50th of a second) per value.
for (power = -127; power <= 127; power++)
{
    ST.motor(1, power);
    delay(20);
}

// Now go back the way we came.
for (power = 127; power >= -127; power --)
{
    ST.motor(1, power); // Tip for SyRen users:
    Typing ST.motor(power) does the same thing as
    ST.motor(1, power).
    delay(20); //
    Since SyRen doesn't have a motor 2, this
    alternative can save you typing.
}
SyRen/Sabertooth Packet Serial
Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

1. Basics/TankStyleSweep/TankStyleSweep.ino

Sweeps various ranges in mixed (rover) mode.

// Tank-Style Sweep Sample for Packet Serial
// Copyright (c) 2012 Dimension Engineering LLC
// See license.txt for license details.

#include <Sabertooth.h>

// Mixed mode is for tank-style diff-drive robots.

Sabertooth ST(128); // The Sabertooth is on address 128. We'll name its object ST.
// If you've set up your Sabertooth on a different address, of course change
// that here. For how to configure address, etc. see the DIP Switch Wizard for
// Sabertooth -
// http://www.dimensionengineering.com/datasheets/SabertoothDIPWizard/start.htm
// SyRen -
// http://www.dimensionengineering.com/datasheets/SyrenDIPWizard/start.htm
// Be sure to select Packetized Serial Mode for use with this library.

// This sample uses the mixed mode (diff-drive) commands, which require two motors
// and hence do not work on a SyRen.
// In this sample, hardware serial TX connects to S1.
// See the SoftwareSerial example in 3.Advanced for how to use other pins.

void setup()
{
    SabertoothTXPinSerial.begin(9600); // 9600 is the default baud rate for Sabertooth packet serial.
    ST.autobaud(); // Send the autobaud command to the Sabertooth controller(s).
    // NOTE: *Not all* Sabertooth controllers need this command.
    // It doesn't hurt anything, but V2 controllers use an
    // EEPROM setting (changeable with the function setBaudRate) to set
    // the baud rate instead of detecting with autobaud.
    //
    // If you have a 2x12, 2x25 V2, 2x60 or SyRen 50, you can remove
    // the autobaud line and save yourself two seconds of startup delay.

    ST.drive(0); // The Sabertooth won't act on mixed mode packet serial commands until
    ST.turn(0); // it has received power levels for BOTH throttle and turning, since it
    // mixes the two together to get diff-drive power levels for both motors.
}

// The SLOW ramp here is turning, and the FAST ramp is throttle.
// If that's the opposite of what you're seeing, swap M2A and M2B.
void loop()
{
    int power;

    // Don't turn. Ramp from going backwards to going forwards, waiting 20 ms (1/50th of a second) per value.
    for (power = -127; power <= 127; power ++)
    {
        ST.drive(power);
        delay(20);
    }

    // Now, let's use a power level of 20 (out of 127) forward.
    // This way, our turning will have a radius.
    ST.drive(20);

    // Ramp turning from full left to full right SLOWLY by waiting 50 ms (1/20th of a second) per value.
    for (power = -127; power <= 127; power ++)
    {
        ST.turn(power);
        delay(50);
    }

    // Now stop turning, and stop driving.
    ST.turn(0);
    ST.drive(0);

    // Wait a bit. This is so you can catch your robot if you want to. :-)
    delay(5000);
}
SyRen/Sabertooth Packet Serial Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

### 2. Settings/MinVoltage/MinVoltage.ino

Sets the minimum voltage.

```c
// Set Minimum Voltage Sample for Packet Serial
// Copyright (c) 2012 Dimension Engineering LLC
// See license.txt for license details.

// The values in this sample are specifically for the Sabertooth 2x25, and may
// not have the same effect on other models.
#include <Sabertooth.h>
Sabertooth ST(128);

void setup()
{
    SabertoothTXPinSerial.begin(9600);
    ST.autobaud();

    // This setting does not persist between power cycles.
    // See the Packet Serial section of the documentation for what values to use
    // for the minimum voltage command. It may vary between Sabertooth models
    // (2x25, 2x60, etc.).
    //
    // On a Sabertooth 2x25, the value is (Desired Volts - 6) X 5.
```
// So, in this sample, we'll make the low battery
cutoff 12V: (12 - 6) x 5 = 30.
ST.setMinVoltage(30);

void loop()
{
    ST.motor(1, 50);
    delay(5000);

    ST.motor(1, -50);
    delay(5000);
}
SyRen/Sabertooth Packet Serial Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

### 2. Settings/Persistent/BaudRate/BaudRate.ino

Changes the Packet Serial baud rate.

**WARNING:** This sample makes changes that will persist between restarts.

```cpp
// Set Baud Rate Sample for Packet Serial
// Copyright (c) 2012 Dimension Engineering LLC
// See license.txt for license details.

// WARNING: This sample makes changes that will persist between restarts.
// NOTE: The setBaudRate function will only have an effect on V2 controllers (2x12, 2x25 V2, 2x60, SyRen 50).
// Earlier controllers automatically detect the baud rate you choose in Serial.begin when you call the autobaud function. Autobaud was replaced in V2 controllers for reliability in the event that the Sabertooth lost power.

#include <Sabertooth.h>

Sabertooth ST(128);

void setup()
{
    // This sample will tell the Sabertooth *at 9600
```
baud* to *switch to 2400 baud*.
// Keep in mind you must send the command to change the baud rate *at the baud rate
// the Sabertooth is listening at* (factory default is 9600). After that, if it works,
// you will be able to communicate using the new baud rate.

// Options are:
// 2400
// 9600
// 19200
// 38400
// 115200 (only supported by some devices such as 2X60 -- check the device's datasheet)

// WARNING: The Sabertooth remembers this command between restarts.
// To change your Sabertooth back to its default, you must *be at the baud rate you've set the Sabertooth to*, and then call
ST.setBaudRate(9600)
SabertoothTXPinSerial.begin(9600);
ST.setBaudRate(2400);
SabertoothTXPinSerial.end();

// OK, we're at 2400. Let's talk to the Sabertooth at that speed.
SabertoothTXPinSerial.begin(2400);

void loop()
{
    ST.drive(0);
    ST.turn(20);
    delay(2000);
    ST.turn(-20);
delay(2000);
}
SyRen/Sabertooth Packet Serial
Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

2. Settings/Persistent/Deadband/Deadband.ino

Modifies the deadband.

WARNING: This sample makes changes that will persist between restarts.

```
// Set Deadband Sample for Packet Serial
// Copyright (c) 2012 Dimension Engineering LLC
// See license.txt for license details.

// WARNING: This sample makes changes that will persist between restarts AND in all modes.
#include <Sabertooth.h>

Sabertooth ST(128);

void setup()
{
    SabertoothTXPinSerial.begin(9600);
    ST.autobaud();

    // This makes the deadband from -20 to 20 (of 127).
    // If your commands for a motor stay entirely within the deadband for more than a second, the motor driver will stop the motor.
    // WARNING: The Sabertooth remembers this command between restarts AND in all modes.
    // To change your Sabertooth back to its default,
```
call ST.setDeadband(0)
ST.setDeadband(20);
}

void loop()
{
    // 50 is greater than 20, so the motor moves.
    ST.motor(1, 50);
    delay(5000);

    // 10 is NOT, so the motor does not move.
    ST.motor(1, 10);
    delay(5000);
}
SyRen/Sabertooth Packet Serial Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

2. Settings/Persistent/MaxVoltage/MaxVoltage.ino

Modifies the maximum voltage.

WARNING: This sample makes changes that will persist between restarts.

```cpp
// Set Maximum Voltage Sample for Packet Serial
// Copyright (c) 2012 Dimension Engineering LLC
// See license.txt for license details.

// WARNING: This sample makes changes that will persist between restarts AND in all modes.
// The values in this sample are specifically for the Sabertooth 2x25, and may not have the same effect on other models.
#include <Sabertooth.h>
Sabertooth ST(128);

void setup()
{
    SabertoothTXPinSerial.begin(9600);
    ST.autobaud();

    // See the Packet Serial section of the documentation for what values to use
    // for the maximum voltage command. It may vary between Sabertooth models
```
// (2x25, 2x60, etc.).
//
// On a Sabertooth 2x25, the value is (Desired Volts) X 5.12.
// In this sample, we'll cap the max voltage before the motor driver does
// a hard brake at 14V. For a 12V ATX power supply this might be reasonable --
// at 16V they tend to shut off. Here, if the voltage climbs above
// 14V due to regenerative braking, the Sabertooth will go into hard brake instead.
// While this is occurring, the red Error LED will turn on.
//
// 14 X 5.12 = 71.68, so we'll go with 71, cutting off slightly below 14V.
//
// WARNING: This setting persists between power cycles.
//
// ST.setMaxVoltage(71);
//
void loop()
{
  ST.motor(1, 50);
  delay(5000);

  ST.motor(1, -50);
  delay(5000);
}
SyRen/Sabertooth Packet Serial Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

### 2. Settings/Persistent/Ramping/Ramping.ino

Modifies the ramp time.

**WARNING:** This sample makes changes that will persist between restarts.

```cpp
// Set Ramping Sample for Packet Serial
// Copyright (c) 2012 Dimension Engineering LLC
// See license.txt for license details.

// WARNING: This sample makes changes that will persist between restarts AND in all modes.
#include <Sabertooth.h>

Sabertooth ST(128);

void setup()
{
    SabertoothTXPinSerial.begin(9600);
    ST.autobaud();

    // See the Sabertooth 2x60 documentation for information on ramping values.
    // There are three ranges: 1-10 (Fast), 11-20 (Slow), and 21-80 (Intermediate).
    // The ramping value 14 used here sets a ramp time of 4 seconds for full
    // forward-to-full reverse.
}```
// 0 turns off ramping. Turning off ramping 
requires a power cycle.

//
// WARNING: The Sabertooth remembers this command 
between restarts AND in all modes.
// To change your Sabertooth back to its default, 
call ST.setRamping(0)
ST.setRamping(14);
}

void loop()
{
// Full forward, both motors.
   ST.motor(1, 127);
   ST.motor(2, 127);
   delay(5000);

// Full reverse
   ST.motor(1, -127);
   ST.motor(2, -127);
   delay(5000);
}
SyRen/Sabertooth Packet Serial Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

### 2. Settings/SerialTimeout/SerialTimeout.ino

Sets a serial timeout, and then delays to demonstrate its stopping behavior.

```c
// Set Serial Timeout Sample for Packet Serial
// Copyright (c) 2012 Dimension Engineering LLC
// See license.txt for license details.

#include <Sabertooth.h>

Sabertooth ST(128);

void setup()
{
    SabertoothTXPinSerial.begin(9600);
    ST.autobaud();

    // setTimeout rounds up to the nearest 100 milliseconds, so this 950 will actually be 1 second.
    // A value of 0 disables the serial timeout.
    ST setTimeout(950);
}

void loop()
{
    // Set motor 1 to reverse 20 (out of 127), and sleep for 5 seconds.
    // Notice how it cuts out after 1 second -- this
```
is the serial timeout in action.
// Since we configured it in setup() for 1 second,
  1 second without any new
// commands will cause the motors to stop.
ST.motor(1, -20);
delay(5000);

// Why do this?
// If the S1 wire gets cut for some reason, or if your program crashes,
// the Sabertooth will stop receiving commands from the Arduino.
// With a timeout, your robot will stop. So, it's a safety feature mostly.
SyRen/Sabertooth Packet Serial Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

3. Advanced/SharedLine/SharedLine.ino

Communicates with two Sabertooth motor drivers using a shared TX/S1 wire.

```cpp
// Shared Line Sample for Packet Serial
// Copyright (c) 2012 Dimension Engineering LLC
// See license.txt for license details.

#include <Sabertooth.h>

// Up to 8 Sabertooth/SyRen motor drivers can share the same S1 line.
// This sample uses three: address 128 and 129 on ST1[0] and ST1[2],
// and address 130 on ST2.
Sabertooth ST1[2] = { Sabertooth(128),
                     Sabertooth(129) };
Sabertooth ST2(130);

void setup()
{
    SabertoothTXPinSerial.begin(9600);
    Sabertooth::autobaud(SabertoothTXPinSerial); // Autobaud is for the whole serial line -- you don't need to do
    // it for each individual motor driver. This is the version of
    // the autobaud command that is not tied to a particular
```
void loop()
{
  // ST1[0] (address 128) has power 50 (of 127 max) on M1,
  // ST1[1] (address 129) has power 60 (of 127 max) on M2, and
  // ST2 (address 130) we'll do tank-style and have it drive 20 and turn right 50.
  // Do this for 5 seconds.
  ST1[0].motor(1, 50);
  ST1[1].motor(2, 60);
  ST2.drive(20);
  ST2.turn(50);
  delay(5000);

  // And now let's stop for 5 seconds, except address 130 -- we'll let it stop and turn left...
  ST1[0].motor(1, 0);
  ST1[1].motor(2, 0);
  ST2.drive(0);
  ST2.turn(-40);
  delay(5000);
}
SyRen/Sabertooth Packet Serial Library for Arduino
Control your SyRen or Sabertooth with reliable Packet Serial.

3. Advanced/SoftwareSerial/SoftwareSerial.ino

Uses a pin other than TX to connect to S1.

```cpp
// Software Serial Sample for Packet Serial
// Copyright (c) 2012 Dimension Engineering LLC
// See license.txt for license details.
#include <SoftwareSerial.h>
#include <Sabertooth.h>
SoftwareSerial SWSerial(NOT_A_PIN, 11); // RX on no pin (unused), TX on pin 11 (to S1).
Sabertooth ST(128, SWSerial); // Address 128, and use SWSerial as the serial port.

void setup()
{
  SWSerial.begin(9600);
  ST.autobaud();
}

void loop()
{
  int power;

  // Ramp from -127 to 127 (full reverse to full forward), waiting 20 ms (1/50th of a second) per value.
  for (power = -127; power <= 127; power ++)
```

{  
    ST.motor(1, power);
    delay(20);
}

// Now go back the way we came.
for (power = 127; power >= -127; power --)  
{  
    ST.motor(1, power);
    delay(20);
}  
}
SyRen/Sabertooth Packet Serial Library for Arduino

Control your SyRen or Sabertooth with reliable Packet Serial.

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### Sabertooth Member List

This is the complete list of members for Sabertooth, including all inherited members.

- `address() const`
- `autobaud(boolean dontWait=false) const`
- `autobaud(SabertoothStream &port, boolean dontWait=false)`
- `command(byte command, byte value) const`
- `drive(int power) const`
- `motor(int power) const`
- `motor(byte motor, int power) const`
- `port() const`
- `Sabertooth(byte address)`
- `Sabertooth(byte address, SabertoothStream &port)`
- `setBaudRate(long baudRate) const`
- `setDeadband(byte value) const`
- `setMaxVoltage(byte value) const`
- `setMinVoltage(byte value) const`
- `setRamping(byte value) const`
- `setTimeout(int milliseconds) const`
- `stop() const`
- `turn(int power) const`