Arduino Serial Messaging Library

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Member SerialMessage::parseSerialData ()

: error handling: illegal payloads is now handled by char position (G2 -> 02, 2G -> 20, GG -> 00), requires hextodec reimplementation (when HEX_DEC_ERROR=0)

2 Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

3 File Index

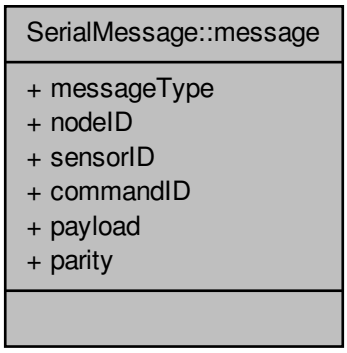
3.1 File List

Here is a list of all files with brief descriptions:

4 Class Documentation

4.1 SerialMessage::message Struct Reference

Collaboration diagram for SerialMessage::message:



Public Attributes

- uint8_t messageType
- uint8_t nodeID
- uint8_t sensorID
- uint8_t commandID
- uint8_t payload
- uint8_t parity

4.1.1 Detailed Description

Definition at line 65 of file SerialMessage.h.

4.1.2 Member Data Documentation

4.1.2.1 uint8_t SerialMessage::message::commandID

Definition at line 70 of file SerialMessage.h.

Referenced by SerialMessage::getCommandID(), SerialMessage::parseSerialData(), SerialMessage::printInfo(), and SerialMessage::SerialMessage().

4.1.2.2 uint8_t SerialMessage::message::messageType

Definition at line 67 of file SerialMessage.h.

Referenced by SerialMessage::parseSerialData(), SerialMessage::printInfo(), and SerialMessage::SerialMessage().

4.1.2.3 uint8_t SerialMessage::message::nodeID

Definition at line 68 of file SerialMessage.h.

Referenced by SerialMessage::parseSerialData(), SerialMessage::printInfo(), and SerialMessage::SerialMessage().

4.1.2.4 uint8_t SerialMessage::message::parity

Definition at line 72 of file SerialMessage.h.

Referenced by SerialMessage::checkParity(), SerialMessage::parseSerialData(), SerialMessage::printInfo(), and SerialMessage::SerialMessage().

4.1.2.5 uint8_t SerialMessage::message::payload

Definition at line 71 of file SerialMessage.h.

Referenced by SerialMessage::getPayload(), SerialMessage::parseSerialData(), SerialMessage::printInfo(), and SerialMessage::SerialMessage().

4.1.2.6 uint8_t SerialMessage::message::sensorID

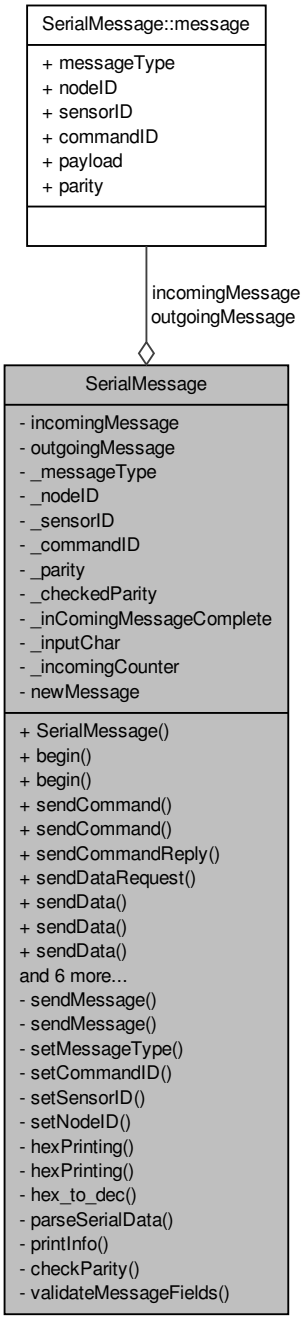
Definition at line 69 of file SerialMessage.h.

Referenced by SerialMessage::parseSerialData(), SerialMessage::printInfo(), and SerialMessage::SerialMessage().

4.2 SerialMessage Class Reference

```
#include <SerialMessage.h>
```

Collaboration diagram for SerialMessage:



Classes

- struct message

Public Member Functions

- SerialMessage ()

SerialMessage.cpp - Library for sending sensor data messages over UART. For more information: variable declaration, changelog,... see SerialMessage.h

- void begin ()

  Begin using default settings:
- void begin (long speed, uint8_t nodeID)

  Begin using custom settings
- void sendCommand (uint8_t commandID, uint8_t payload)

  Send a single command
- void sendCommand (uint8_t payload)

  Send a single command, reuses commandID from previous messages
- void sendCommandReply (uint8_t commandID, uint8_t payload)

  Send a reply to a command
- void sendDataRequest (uint8_t sensorID, uint8_t payload)

  Request a single data value
- void sendData (uint8_t sensorID, uint8_t payload)

  Send a single data value
- void sendData (uint8_t sensorID, int16_t payload)

  Send a single data value
- void sendData (uint8_t payload)

  Send a single 8-bit data value (Arduino 'byte' type), reuses sensorID from previous messages
- void sendData (int16_t payload)

  Send a single 16-bit data value (Arduino 'int' type), reuses sensorID from previous messages
- void sendDataArrayRequest (uint8_t arrayID, uint8_t length)

  Request an array of data values
- void sendDataArray (uint8_t *dataArray, uint8_t length)

  Send multiple data samples in one message by passing an array and its length
- boolean readSerialData ()

  Set readSerialData
- uint8_t getCommandID ()

  Get commandID
- uint8_t getPayload ()

  Get getPayload

Private Member Functions

- void sendMessage (uint8_t &payload)

  Send out the actual 8-bit data message (called from other 'send' functions)
- void sendMessage (int16_t &payload)

  Send out the actual 16-bit data message (called from other 'send' functions)
- void setMessageType (uint8_t type)

  Set message type
- void setCommandID (uint8_t &commandID)

  Set commandID
- void setSensorID (uint8_t &sensorID)

  Set sensorID
- void setNodeID (uint8_t &nodeID)

  Set nodeID
- void hexPrinting (uint8_t &data)

  HexPrinting: helper function to print data with a constant field width (2 hex values)
- void hexPrinting (int16_t &data)

  HexPrinting: helper function to print data with a constant field width (2 hex values)

- uint8_t hex_to_dec (uint8_t in)
- boolean parseSerialData ()

  Set parseSerialData
- void printInfo ()

  printInfo:
- boolean checkParity ()

  Check parity
- boolean validateMessageFields ()

  Check if all the field in the message have acceptable value : implement this

Private Attributes

- struct SerialMessage::message incomingMessage
- struct SerialMessage::message outgoingMessage
- uint8_t _messageType
- uint8_t _nodeID
- uint8_t _sensorID
- uint8_t _commandID
- uint8_t _parity
- uint8_t _checkedParity
- boolean _inComingMessageComplete
- char _inputChar [20]
- uint8_t _incomingCounter
- boolean newMessage

4.2.1 Detailed Description

Definition at line 38 of file SerialMessage.h.

4.2.2 Constructor & Destructor Documentation

4.2.2.1 SerialMessage::SerialMessage ( )

SerialMessage.cpp - Library for sending sensor data messages over UART. For more information: variable declaration, changelog,... see SerialMessage.h

Constructor

Definition at line 31 of file SerialMessage.cpp.

4.2.3 Member Function Documentation

4.2.3.1 void SerialMessage::begin ( )

Begin using default settings:

- speed: 115200 baud
- nodeID: 0

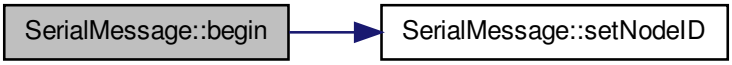
Definition at line 49 of file SerialMessage.cpp.

4.2.3.2 void SerialMessage::begin (long *speed,* uint8_t *nodeID*)

Begin using custom settings

Definition at line 57 of file SerialMessage.cpp.

Here is the call graph for this function:



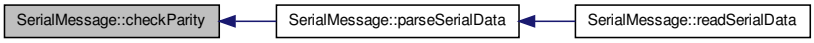
4.2.3.3 boolean SerialMessage::checkParity ( ) [private]

Check parity

Definition at line 396 of file SerialMessage.cpp.

Referenced by parseSerialData().

Here is the caller graph for this function:



4.2.3.4 uint8_t SerialMessage::getCommandID ( )

Get commandID

Definition at line 416 of file SerialMessage.cpp.

4.2.3.5 uint8_t SerialMessage::getPayload ( )

Get getPayload

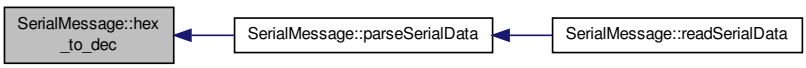
Definition at line 424 of file SerialMessage.cpp.

4.2.3.6 uint8_t SerialMessage::hex_to_dec (uint8_t *in*) [private]

Definition at line 362 of file SerialMessage.cpp.

Referenced by parseSerialData().

Here is the caller graph for this function:



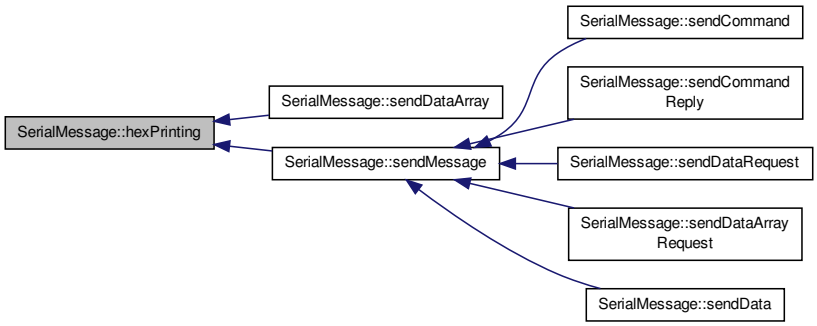
4.2.3.7 void SerialMessage::hexPrinting (uint8_t & *data*) [private]

HexPrinting: helper function to print data with a constant field width (2 hex values)

Definition at line 243 of file SerialMessage.cpp.

Referenced by sendDataArray(), and sendMessage().

Here is the caller graph for this function:



4.2.3.8 void SerialMessage::hexPrinting (int16_t & *data*) [private]

HexPrinting: helper function to print data with a constant field width (2 hex values)

Definition at line 254 of file SerialMessage.cpp.

4.2.3.9 boolean SerialMessage::parseSerialData ( ) [private]

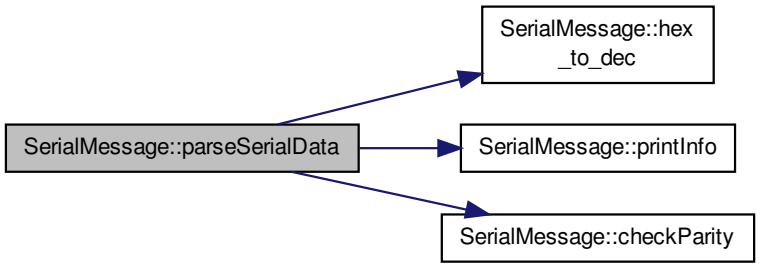
Set parseSerialData

Todo : error handling: illegal payloads is now handled by char position (G2 -> 02, 2G -> 20, GG -> 00), requires hextodec reimplementation (when HEX_DEC_ERROR=0)

Definition at line 311 of file SerialMessage.cpp.

Referenced by readSerialData().

Here is the call graph for this function:



Here is the caller graph for this function:

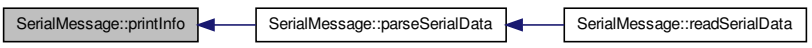
4.2.3.10 void SerialMessage::printInfo ( ) [private]

printInfo:

Definition at line 373 of file SerialMessage.cpp.

Referenced by parseSerialData().

Here is the caller graph for this function:

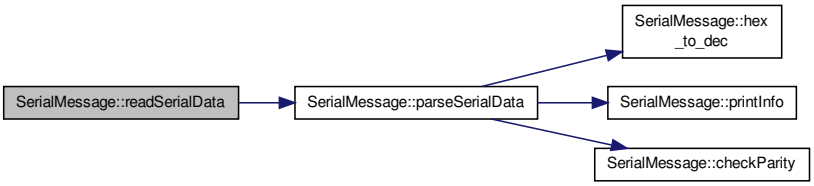


4.2.3.11 boolean SerialMessage::readSerialData ( )

Set readSerialData

Definition at line 287 of file SerialMessage.cpp.

Here is the call graph for this function:

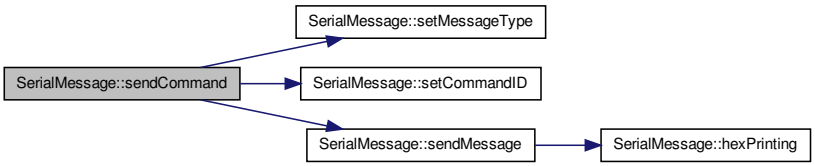


4.2.3.12 void SerialMessage::sendCommand (uint8_t *commandID,* uint8_t *payload*)

Send a single command

Definition at line 66 of file SerialMessage.cpp.

Here is the call graph for this function:

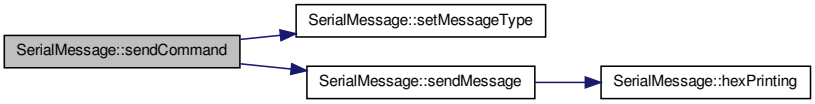


4.2.3.13 void SerialMessage::sendCommand (uint8_t *payload*)

Send a single command, reuses commandID from previous messages

Definition at line 76 of file SerialMessage.cpp.

Here is the call graph for this function:

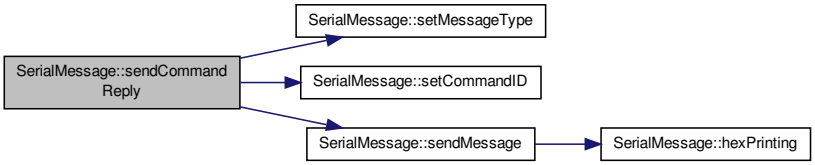


4.2.3.14 void SerialMessage::sendCommandReply (uint8_t *commandID,* uint8_t *payload*)

Send a reply to a command

Definition at line 85 of file SerialMessage.cpp.

Here is the call graph for this function:

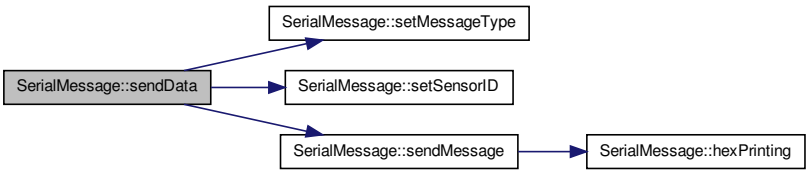


4.2.3.15 void SerialMessage::sendData (uint8_t *sensorID,* uint8_t *payload*)

Send a single data value

Definition at line 115 of file SerialMessage.cpp.

Here is the call graph for this function:

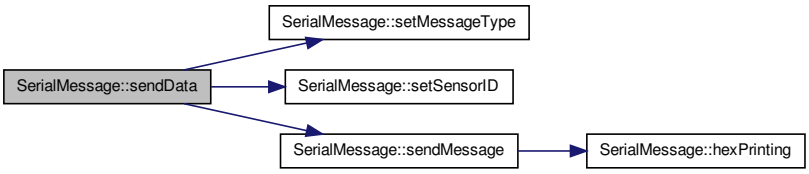


4.2.3.16 void SerialMessage::sendData (uint8_t *sensorID,* int16_t *payload*)

Send a single data value

Definition at line 125 of file SerialMessage.cpp.

Here is the call graph for this function:



4.2.3.17 void SerialMessage::sendData (uint8_t *payload*)

Send a single 8-bit data value (Arduino 'byte' type), reuses sensorID from previous messages

Definition at line 135 of file SerialMessage.cpp.

Here is the call graph for this function:

4.2.3.18 void SerialMessage::sendData (int16_t *payload*)

Send a single 16-bit data value (Arduino 'int' type), reuses sensorID from previous messages

Definition at line 144 of file SerialMessage.cpp.

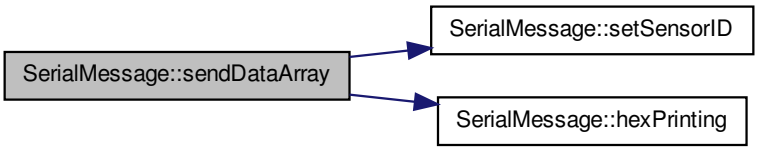
Here is the call graph for this function:

4.2.3.19 void SerialMessage::sendDataArray (uint8_t * *dataArray*, uint8_t *length*)

Send multiple data samples in one message by passing an array and its length

Definition at line 203 of file SerialMessage.cpp.

Here is the call graph for this function:

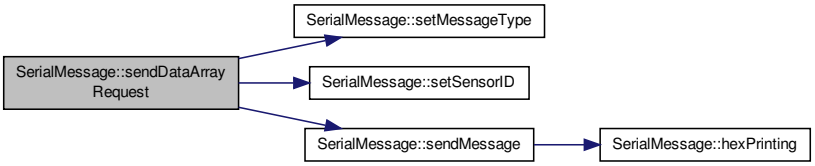


4.2.3.20 void SerialMessage::sendDataArrayRequest (uint8_t *arrayID*, uint8_t *payload*)

Request an array of data values

Definition at line 105 of file SerialMessage.cpp.

Here is the call graph for this function:

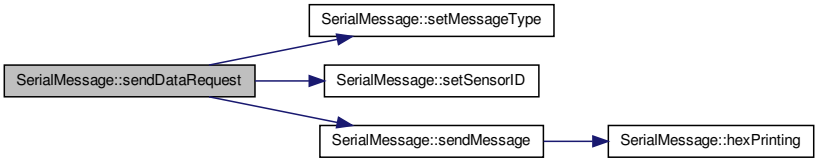


4.2.3.21 void SerialMessage::sendDataRequest (uint8_t *sensorID*, uint8_t *payload*)

Request a single data value

Definition at line 95 of file SerialMessage.cpp.

Here is the call graph for this function:



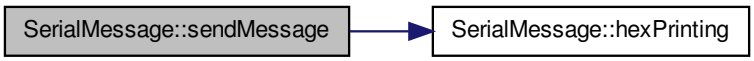
4.2.3.22 void SerialMessage::sendMessage (uint8_t & *payload*) [private]

Send out the actual 8-bit data message (called from other 'send' functions)

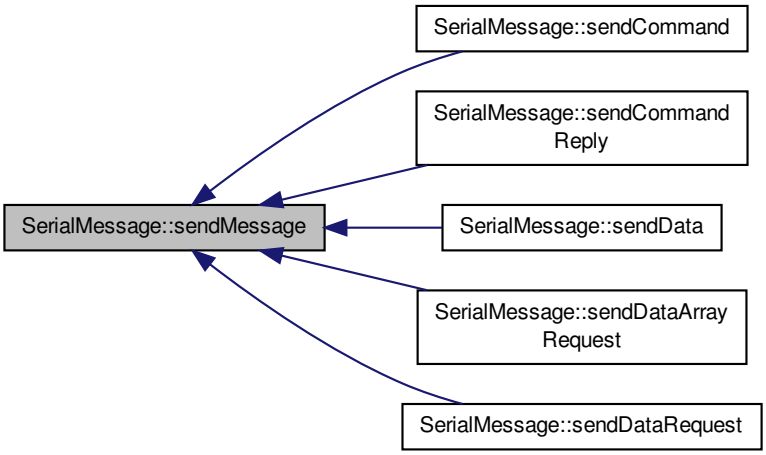
Definition at line 153 of file SerialMessage.cpp.

Referenced by sendCommand(), sendCommandReply(), sendData(), sendDataArrayRequest(), and sendDataRequest().

Here is the call graph for this function:



Here is the caller graph for this function:



4.2.3.23 void SerialMessage::sendMessage (int16_t & *payload*) [private]

Send out the actual 16-bit data message (called from other 'send' functions)

Definition at line 178 of file SerialMessage.cpp.

Here is the call graph for this function:

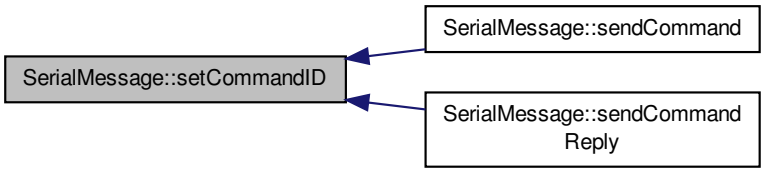
4.2.3.24 void SerialMessage::setCommandID (uint8_t & *commandID*) [private]

Set commandID

Definition at line 227 of file SerialMessage.cpp.

Referenced by sendCommand(), and sendCommandReply().

Here is the caller graph for this function:



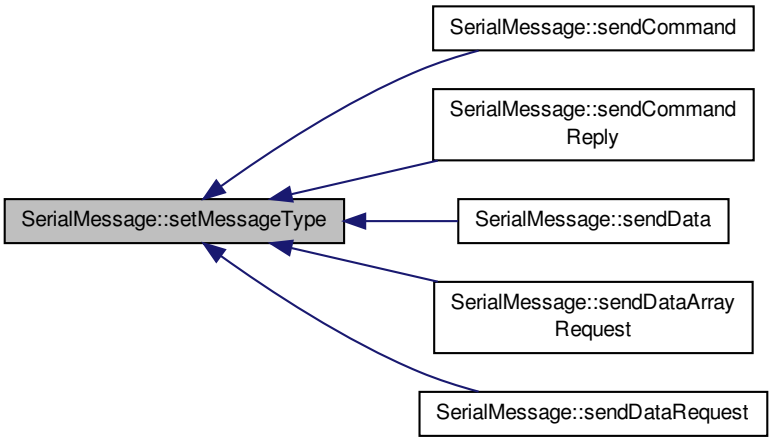
4.2.3.25 void SerialMessage::setMessageType (uint8_t *type*) [private]

Set message type

Definition at line 235 of file SerialMessage.cpp.

Referenced by sendCommand(), sendCommandReply(), sendData(), sendDataArrayRequest(), and sendDataRequest().

Here is the caller graph for this function:



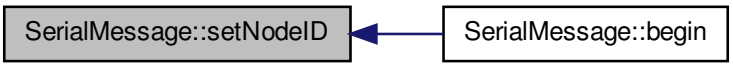
4.2.3.26 void SerialMessage::setNodeID (uint8_t & *nodeID*) [private]

Set nodeID

Definition at line 271 of file SerialMessage.cpp.

Referenced by begin().

Here is the caller graph for this function:



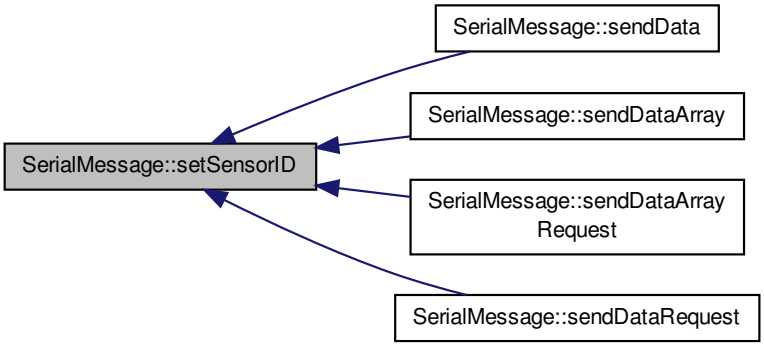
4.2.3.27 void SerialMessage::setSensorID (uint8_t & *sensorID*) [private]

Set sensorID

Definition at line 279 of file SerialMessage.cpp.

Referenced by sendData(), sendDataArray(), sendDataArrayRequest(), and sendDataRequest().

Here is the caller graph for this function:



4.2.3.28 boolean SerialMessage::validateMessageFields ( ) [private]

Check if all the field in the message have acceptable value : implement this

Definition at line 347 of file SerialMessage.cpp.

4.2.4 Member Data Documentation

4.2.4.1 uint8_t SerialMessage::_checkedParity [private]

Definition at line 80 of file SerialMessage.h.

Referenced by checkParity(), parseSerialData(), and printInfo().

4.2.4.2 uint8_t SerialMessage::_commandID [private]

Definition at line 78 of file SerialMessage.h.

Referenced by sendMessage(), and setCommandID().

4.2.4.3 uint8_t SerialMessage::_incomingCounter [private]

Definition at line 84 of file SerialMessage.h.

Referenced by readSerialData(), and SerialMessage().

4.2.4.4 boolean SerialMessage::_inComingMessageComplete [private]

Definition at line 82 of file SerialMessage.h.

Referenced by SerialMessage().

4.2.4.5 char SerialMessage::_inputChar[20] [private]

Definition at line 83 of file SerialMessage.h.

Referenced by parseSerialData(), and readSerialData().

4.2.4.6 uint8_t SerialMessage::_messageType [private]

Definition at line 75 of file SerialMessage.h.

Referenced by sendDataArray(), sendMessage(), and setMessageType().

4.2.4.7 uint8_t SerialMessage::_nodeID [private]

Definition at line 76 of file SerialMessage.h.

Referenced by sendDataArray(), sendMessage(), and setNodeID().

4.2.4.8 uint8_t SerialMessage::_parity [private]

Definition at line 79 of file SerialMessage.h.

Referenced by sendDataArray(), and sendMessage().

4.2.4.9 uint8_t SerialMessage::_sensorID [private]

Definition at line 77 of file SerialMessage.h.

Referenced by sendDataArray(), sendMessage(), and setSensorID().

4.2.4.10 struct SerialMessage::message SerialMessage::incomingMessage [private]

Referenced by checkParity(), getCommandID(), getPayload(), parseSerialData(), printInfo(), and SerialMessage().

4.2.4.11 boolean SerialMessage::newMessage [private]

Definition at line 98 of file SerialMessage.h.

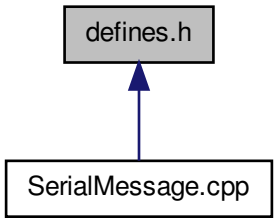
Referenced by parseSerialData(), readSerialData(), and SerialMessage().

4.2.4.12 struct SerialMessage::message SerialMessage::outgoingMessage [private]

5 File Documentation

5.1 defines.h File Reference

This graph shows which files directly or indirectly include this file:



Macros

- #define SERIAL_ASCII
- #define COMMAND 0x01
- #define COMMAND_REPLY 0x02
- #define DATA_REQUEST 0x11
- #define DATA_BYTE 0x12

- #define DATA_INT 0x13
- #define DATA_ARRAY_REQUEST 0x21
- #define DATA_ARRAY 0x22
- #define TEMPERATURE 0x10

  Sensor Types:
- #define HUMIDITY 0x11
- #define DISTANCE 0x30
- #define STOP_MOTOR_A 0x10

  Command IDs.
- #define START_MOTOR_A 0x11
- #define SET_SPEED_MOTOR_A 0x12
- #define BRAKE_MOTOR_A 0x13
- #define STOP_MOTOR_B 0x15
- #define START_MOTOR_B 0x16
- #define SET_SPEED_MOTOR_B 0x17
- #define BRAKE_MOTOR_B 0x18

5.1.1 Macro Definition Documentation

5.1.1.1 #define BRAKE_MOTOR_A 0x13

Definition at line 28 of file defines.h.

5.1.1.2 #define BRAKE_MOTOR_B 0x18

Definition at line 33 of file defines.h.

5.1.1.3 #define COMMAND 0x01

Definition at line 6 of file defines.h.

Referenced by SerialMessage::parseSerialData(), SerialMessage::sendCommand(), and SerialMessage::sendMessage().

5.1.1.4 #define COMMAND_REPLY 0x02

Definition at line 7 of file defines.h.

Referenced by SerialMessage::parseSerialData(), SerialMessage::sendCommandReply(), and SerialMessage::sendMessage().

5.1.1.5 #define DATA_ARRAY 0x22

Definition at line 14 of file defines.h.

5.1.1.6 #define DATA_ARRAY_REQUEST 0x21

Definition at line 13 of file defines.h.

Referenced by SerialMessage::sendDataArrayRequest(), and SerialMessage::sendMessage().

5.1.1.7 #define DATA_BYTE 0x12

Definition at line 10 of file defines.h.

Referenced by SerialMessage::parseSerialData(), SerialMessage::sendData(), and SerialMessage::sendMessage().

5.1.1.8 #define DATA_INT 0x13

Definition at line 11 of file defines.h.

Referenced by SerialMessage::parseSerialData(), SerialMessage::sendData(), and SerialMessage::sendMessage().

5.1.1.9 #define DATA_REQUEST 0x11

Definition at line 9 of file defines.h.

Referenced by SerialMessage::parseSerialData(), SerialMessage::sendDataRequest(), and SerialMessage::sendMessage().

5.1.1.10 #define DISTANCE 0x30

Definition at line 21 of file defines.h.

5.1.1.11 #define HUMIDITY 0x11

Definition at line 19 of file defines.h.

5.1.1.12 #define SERIAL_ASCII

Definition at line 3 of file defines.h.

5.1.1.13 #define SET_SPEED_MOTOR_A 0x12

Definition at line 27 of file defines.h.

5.1.1.14 #define SET_SPEED_MOTOR_B 0x17

Definition at line 32 of file defines.h.

5.1.1.15 #define START_MOTOR_A 0x11

Definition at line 26 of file defines.h.

5.1.1.16 #define START_MOTOR_B 0x16

Definition at line 31 of file defines.h.

5.1.1.17 #define STOP_MOTOR_A 0x10

Command IDs.

Definition at line 25 of file defines.h.

5.1.1.18 #define STOP_MOTOR_B 0x15

Definition at line 30 of file defines.h.

5.1.1.19 #define TEMPERATURE 0x10

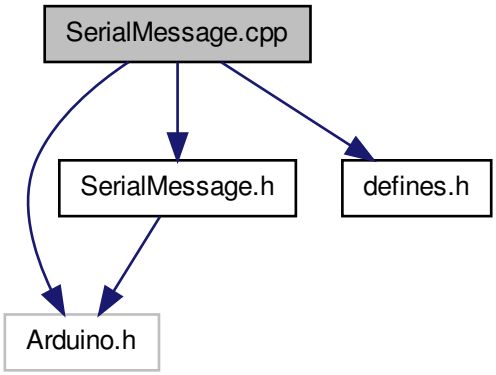
Sensor Types:

Definition at line 18 of file defines.h.

5.2 SerialMessage.cpp File Reference

```
#include <Arduino.h>
#include "SerialMessage.h"
#include "defines.h"
```

Include dependency graph for SerialMessage.cpp:



Macros

- #define HEX_DEC_ERROR 0

  Convert HEX to Decimal

5.2.1 Macro Definition Documentation

5.2.1.1 #define HEX_DEC_ERROR 0

Convert HEX to Decimal

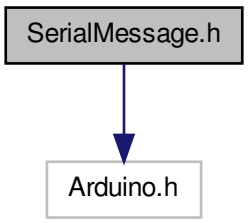
Definition at line 361 of file SerialMessage.cpp.

Referenced by SerialMessage::hex_to_dec().

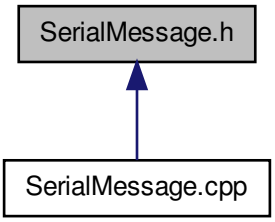
5.3 SerialMessage.h File Reference

```
#include <Arduino.h>
```

Include dependency graph for SerialMessage.h:



This graph shows which files directly or indirectly include this file:



Classes

- class SerialMessage
- struct SerialMessage::message

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