

2015 Test beam Run Control

Generated by Doxygen 1.8.9.1

Tue Apr 21 2015 11:56:34

Contents

1	Hierarchical Index	1
1.1	Class Hierarchy	1
2	Data Structure Index	3
2.1	Data Structures	3
3	Data Structure Documentation	5
3.1	Client Class Reference	5
3.1.1	Detailed Description	6
3.1.2	Constructor & Destructor Documentation	7
3.1.2.1	Client	7
3.1.2.2	Client	7
3.1.2.3	~Client	7
3.1.3	Member Function Documentation	7
3.1.3.1	Connect	7
3.1.3.2	Disconnect	7
3.1.3.3	GetType	7
3.1.3.4	ParseMessage	7
3.1.3.5	Receive	7
3.1.3.6	Send	7
3.2	Exception Class Reference	8
3.2.1	Detailed Description	8
3.2.2	Constructor & Destructor Documentation	8
3.2.2.1	Exception	8
3.2.2.2	Exception	8
3.2.2.3	~Exception	8
3.2.3	Member Function Documentation	9
3.2.3.1	Description	9
3.2.3.2	Dump	9
3.2.3.3	ErrorNumber	9
3.2.3.4	From	10
3.2.3.5	Type	10

3.2.3.6	TypeString	10
3.3	file_header_t Struct Reference	11
3.3.1	Detailed Description	11
3.3.2	Field Documentation	12
3.3.2.1	config	12
3.3.2.2	magic	12
3.3.2.3	run_id	12
3.3.2.4	spill_id	12
3.4	FPGAHandler Class Reference	12
3.4.1	Detailed Description	13
3.4.2	Constructor & Destructor Documentation	14
3.4.2.1	FPGAHandler	14
3.4.2.2	~FPGAHandler	14
3.4.3	Member Function Documentation	14
3.4.3.1	GetConfiguration	14
3.4.3.2	GetFilename	14
3.4.3.3	GetType	14
3.4.3.4	OpenFile	14
3.4.3.5	ReadBuffer	14
3.4.3.6	SetConfiguration	14
3.5	HTTPMessage Class Reference	14
3.5.1	Detailed Description	15
3.5.2	Constructor & Destructor Documentation	16
3.5.2.1	HTTPMessage	16
3.5.2.2	HTTPMessage	16
3.5.3	Member Function Documentation	16
3.5.3.1	Decode	17
3.5.3.2	Dump	17
3.5.3.3	Encode	17
3.5.3.4	GetKey	17
3.6	ListenerInfo Struct Reference	17
3.6.1	Detailed Description	17
3.6.2	Field Documentation	18
3.6.2.1	name	18
3.6.2.2	type	18
3.7	Message Class Reference	18
3.7.1	Detailed Description	19
3.7.2	Constructor & Destructor Documentation	19
3.7.2.1	Message	19
3.7.2.2	Message	19

3.7.2.3	Message	19
3.7.2.4	~Message	19
3.7.3	Member Function Documentation	19
3.7.3.1	Dump	19
3.7.3.2	GetKey	19
3.7.3.3	GetString	19
3.7.3.4	IsFromWeb	20
3.7.4	Field Documentation	20
3.7.4.1	fString	20
3.8	Messenger Class Reference	20
3.8.1	Detailed Description	21
3.8.2	Constructor & Destructor Documentation	21
3.8.2.1	Messenger	21
3.8.2.2	Messenger	21
3.8.2.3	~Messenger	21
3.8.3	Member Function Documentation	21
3.8.3.1	Broadcast	21
3.8.3.2	Connect	21
3.8.3.3	Disconnect	22
3.8.3.4	GetType	22
3.8.3.5	Receive	22
3.8.3.6	Send	22
3.9	Socket Class Reference	22
3.9.1	Detailed Description	23
3.9.2	Constructor & Destructor Documentation	24
3.9.2.1	Socket	24
3.9.2.2	Socket	24
3.9.2.3	~Socket	24
3.9.3	Member Function Documentation	24
3.9.3.1	AcceptConnections	24
3.9.3.2	Bind	24
3.9.3.3	DumpConnected	24
3.9.3.4	FetchMessage	24
3.9.3.5	GetPort	24
3.9.3.6	GetSocketId	24
3.9.3.7	GetSocketType	25
3.9.3.8	IsWebSocket	25
3.9.3.9	Listen	25
3.9.3.10	PrepareConnection	25
3.9.3.11	SelectConnections	25

3.9.3.12	SendMessage	25
3.9.3.13	SetPort	26
3.9.3.14	SetSocketId	26
3.9.3.15	Start	26
3.9.3.16	Stop	26
3.9.4	Field Documentation	26
3.9.4.1	fBuffer	26
3.9.4.2	fMaster	26
3.9.4.3	fPort	26
3.9.4.4	fReadFds	26
3.9.4.5	fSocketsConnected	26
3.10	SocketMessage Class Reference	27
3.10.1	Detailed Description	28
3.10.2	Constructor & Destructor Documentation	28
3.10.2.1	SocketMessage	28
3.10.2.2	SocketMessage	28
3.10.2.3	SocketMessage	28
3.10.2.4	SocketMessage	28
3.10.2.5	SocketMessage	28
3.10.2.6	SocketMessage	29
3.10.2.7	SocketMessage	29
3.10.2.8	SocketMessage	29
3.10.2.9	SocketMessage	29
3.10.2.10	SocketMessage	30
3.10.2.11	SocketMessage	30
3.10.2.12	~SocketMessage	30
3.10.3	Member Function Documentation	30
3.10.3.1	Dump	30
3.10.3.2	GetIntValue	30
3.10.3.3	GetKey	30
3.10.3.4	GetString	31
3.10.3.5	GetValue	31
3.10.3.6	GetVectorValue	31
3.10.3.7	SetKeyValue	31
3.10.3.8	SetKeyValue	32
3.10.3.9	SetKeyValue	32
3.10.3.10	SetKeyValue	32
3.10.3.11	SetKeyValue	32
3.11	TDCConfiguration Class Reference	33
3.11.1	Detailed Description	34

3.11.2	Member Enumeration Documentation	35
3.11.2.1	DeadTime	35
3.11.2.2	EdgeResolution	35
3.11.2.3	EnabledError	35
3.11.2.4	WidthResolution	35
3.11.3	Constructor & Destructor Documentation	36
3.11.3.1	TDCConfiguration	36
3.11.3.2	~TDCConfiguration	36
3.11.4	Member Function Documentation	36
3.11.4.1	Dump	36
3.11.4.2	GetChannelOffset	36
3.11.4.3	GetDeadTime	36
3.11.4.4	GetDLLAdjustment	36
3.11.4.5	GetEdgeResolution	36
3.11.4.6	GetEdgesPairing	36
3.11.4.7	GetEnableError	36
3.11.4.8	GetLeadingMode	36
3.11.4.9	GetMaxEventSize	36
3.11.4.10	GetNumWords	36
3.11.4.11	GetRCAdjustment	36
3.11.4.12	GetRejectFIFOFull	36
3.11.4.13	GetTrailingMode	37
3.11.4.14	GetTriggerMatchingMode	37
3.11.4.15	GetWidthResolution	37
3.11.4.16	GetWord	37
3.11.4.17	SetAllChannelsOffset	37
3.11.4.18	SetAllTapsDLLAdjustment	37
3.11.4.19	SetChannelOffset	37
3.11.4.20	SetDeadTime	38
3.11.4.21	SetDLLAdjustment	38
3.11.4.22	SetEdgeResolution	38
3.11.4.23	SetEdgesPairing	38
3.11.4.24	SetEnableError	38
3.11.4.25	SetLeadingMode	38
3.11.4.26	SetMaxEventSize	38
3.11.4.27	SetRCAdjustment	38
3.11.4.28	SetRejectFIFOFull	38
3.11.4.29	SetTrailingMode	38
3.11.4.30	SetTriggerMatchingMode	38
3.11.4.31	SetWidthResolution	38

3.11.4.32 SetWord	38
3.12 TDCEvent Class Reference	39
3.12.1 Detailed Description	39
3.12.2 Member Enumeration Documentation	40
3.12.2.1 EventType	40
3.12.3 Constructor & Destructor Documentation	40
3.12.3.1 TDCEvent	40
3.12.3.2 ~TDCEvent	40
3.12.4 Member Function Documentation	40
3.12.4.1 GetBunchId	40
3.12.4.2 GetErrorFlags	40
3.12.4.3 GetEventId	41
3.12.4.4 GetLeadingTime	41
3.12.4.5 GetTDCId	41
3.12.4.6 GetTrailingTime	41
3.12.4.7 GetType	42
3.12.4.8 GetWidth	42
3.12.4.9 GetWordCount	42
Index	45

Chapter 1

Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

Exception	8
file_header_t	11
ListenerInfo	17
Message	18
HTTPMessage	14
SocketMessage	27
Socket	22
Client	5
FPGAHandler	12
Messenger	20
TDCCConfiguration	33
TDCEvent	39

Chapter 2

Data Structure Index

2.1 Data Structures

Here are the data structures with brief descriptions:

Client	Base client object for the socket	5
Exception	A simple exception handler	8
file_header_t	Header to the output files	11
FPGAHandler	Driver for timing detectors' FPGA readout	12
HTTPMessage	Message to be transmitted through a WebSocket protocol	14
ListenerInfo	Information on a socket's listener	17
Message	Base socket message type	18
Messenger	Base master object for the socket	20
Socket	Base socket object from which clients/master from a socket inherit	22
SocketMessage	Socket-passed message type	27
TDCConfiguration	Setup word to be sent to the HPTDC chip	33
TDCEvent	HPTDC event parser	39

Chapter 3

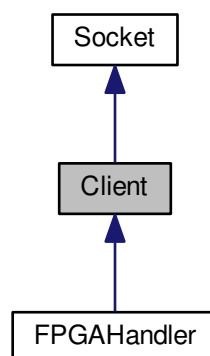
Data Structure Documentation

3.1 Client Class Reference

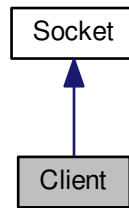
Base client object for the socket.

```
#include <Client.h>
```

Inheritance diagram for Client:



Collaboration diagram for Client:



Public Member Functions

- **Client** ()
General void client constructor.
- **Client** (int port)
Bind a socket client to a given port.
- virtual **~Client** ()
- bool **Connect** ()
Bind this client to the socket.
- void **Disconnect** ()
Unbind this client from the socket.
- void **Send** (const **Message** &m) const
Send a message to the master through the socket.
- void **Receive** ()
Receive a socket message from the master.
- virtual void **ParseMessage** (const **SocketMessage** &m)
*Parse a **SocketMessage** received from the master.*
- virtual SocketType **GetType** () const
***Socket** actor type retrieval method.*

Additional Inherited Members

3.1.1 Detailed Description

Base client object for the socket.

Client object used by the server to send/receive commands from the messenger/broadcaster.

Author

Laurent Forthomme laurent.forthomme@cern.ch

Date

24 Mar 2015

3.1.2 Constructor & Destructor Documentation

3.1.2.1 `Client::Client ()` `[inline]`

General void client constructor.

3.1.2.2 `Client::Client (int port)`

Bind a socket client to a given port.

3.1.2.3 `virtual Client::~~Client ()` `[virtual]`

3.1.3 Member Function Documentation

3.1.3.1 `bool Client::Connect ()`

Bind this client to the socket.

3.1.3.2 `void Client::Disconnect ()`

Unbind this client from the socket.

3.1.3.3 `virtual SocketType Client::GetType () const` `[inline]`, `[virtual]`

[Socket](#) actor type retrieval method.

Reimplemented in [FPGAHandler](#).

3.1.3.4 `virtual void Client::ParseMessage (const SocketMessage & m)` `[inline]`, `[virtual]`

Parse a [SocketMessage](#) received from the master.

3.1.3.5 `void Client::Receive ()`

Receive a socket message from the master.

3.1.3.6 `void Client::Send (const Message & m) const` `[inline]`

Send a message to the master through the socket.

Here is the call graph for this function:



The documentation for this class was generated from the following file:

- `include/Client.h`

3.2 Exception Class Reference

A simple exception handler.

```
#include <Exception.h>
```

Public Member Functions

- [Exception](#) (const char *from, std::string desc, ExceptionType type=Undefined, const int id=0)
- [Exception](#) (const char *from, const char *desc, ExceptionType type=Undefined, const int id=0)
- [~Exception](#) ()
- std::string [From](#) () const
- int [ErrorNumber](#) () const
- std::string [Description](#) () const
- ExceptionType [Type](#) () const
- std::string [TypeString](#) () const
- void [Dump](#) (std::ostream &os=std::cerr) const

3.2.1 Detailed Description

A simple exception handler.

Author

Laurent Forthomme laurent.forthomme@cern.ch

Date

24 Mar 2015

3.2.2 Constructor & Destructor Documentation

3.2.2.1 `Exception::Exception (const char * from, std::string desc, ExceptionType type = Undefined, const int id = 0)`
[inline]

3.2.2.2 `Exception::Exception (const char * from, const char * desc, ExceptionType type = Undefined, const int id = 0)`
[inline]

3.2.2.3 `Exception::~~Exception ()` [inline]

Here is the call graph for this function:



3.2.3 Member Function Documentation

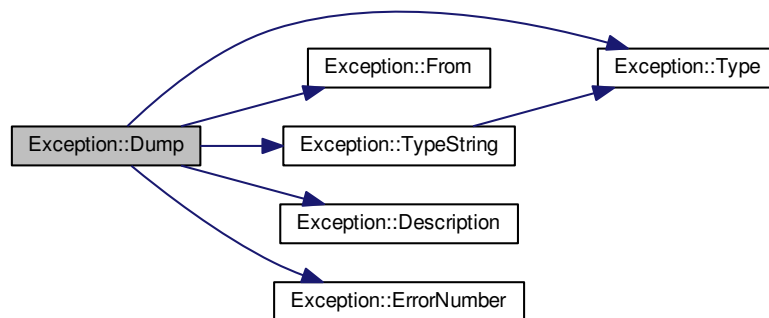
3.2.3.1 `std::string Exception::Description () const [inline]`

Here is the caller graph for this function:



3.2.3.2 `void Exception::Dump (std::ostream & os = std::cerr) const [inline]`

Here is the call graph for this function:



3.2.3.3 `int Exception::ErrorNumber () const [inline]`

Here is the caller graph for this function:



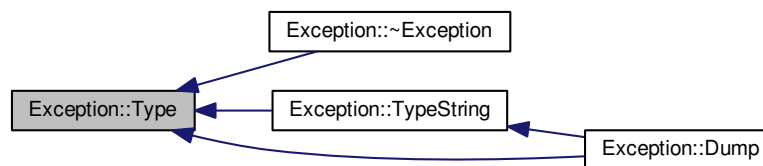
3.2.3.4 `std::string Exception::From () const` `[inline]`

Here is the caller graph for this function:



3.2.3.5 `ExceptionType Exception::Type () const` `[inline]`

Here is the caller graph for this function:



3.2.3.6 `std::string Exception::TypeString () const` `[inline]`

Here is the call graph for this function:



Here is the caller graph for this function:



The documentation for this class was generated from the following file:

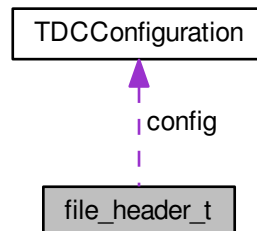
- include/Exception.h

3.3 file_header_t Struct Reference

Header to the output files.

```
#include <FPGAHandler.h>
```

Collaboration diagram for file_header_t:



Data Fields

- uint32_t [magic](#)
- uint32_t [run_id](#)
- uint32_t [spill_id](#)
- [TDCCConfiguration](#) [config](#)

3.3.1 Detailed Description

Header to the output files.

General header to store in each collected data file for offline readout. It enable any reader to retrieve the run/spill number, as well as the HPTDC configuration during data collection.

Author

Laurent Forthomme laurent.forthomme@cern.ch

Date

14 Apr 2015

3.3.2 Field Documentation

3.3.2.1 `TDCCConfiguration file_header_t::config`

3.3.2.2 `uint32_t file_header_t::magic`

3.3.2.3 `uint32_t file_header_t::run_id`

3.3.2.4 `uint32_t file_header_t::spill_id`

The documentation for this struct was generated from the following file:

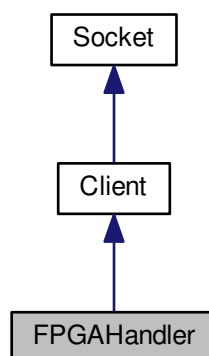
- `include/FPGAHandler.h`

3.4 FPGAHandler Class Reference

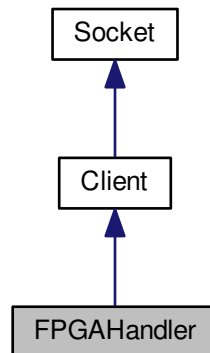
Driver for timing detectors' FPGA readout.

```
#include <FPGAHandler.h>
```

Inheritance diagram for FPGAHandler:



Collaboration diagram for FPGAHandler:



Public Member Functions

- [FPGAHandler](#) (int port, const char *dev)
Bind to a FPGA through the USB protocol, and to the socket.
- virtual [~FPGAHandler](#) ()
- void [OpenFile](#) ()
Open an output file to store header/HPTDC events.
- std::string [GetFilename](#) () const
Retrieve the file name used to store data collected from the FPGA.
- void [SetConfiguration](#) (const [TDCCConfiguration](#) &c)
Submit the HPTDC setup word as a [TDCCConfiguration](#) object.
- [TDCCConfiguration](#) [GetConfiguration](#) ()
Retrieve the HPTDC setup word as a [TDCCConfiguration](#) object.
- void [ReadBuffer](#) ()
- SocketType [GetType](#) () const
[Socket](#) actor type retrieval method.

Additional Inherited Members

3.4.1 Detailed Description

Driver for timing detectors' FPGA readout.

Main driver for a homebrew FPGA designed for the timing detectors' HPTDC chip readout.

Author

Laurent Forthomme laurent.forthomme@cern.ch

Date

14 Apr 2015

3.4.2 Constructor & Destructor Documentation

3.4.2.1 FPGAHandler::FPGAHandler (int *port*, const char * *dev*)

Bind to a FPGA through the USB protocol, and to the socket.

3.4.2.2 virtual FPGAHandler::~~FPGAHandler () [virtual]

3.4.3 Member Function Documentation

3.4.3.1 TDCConfiguration FPGAHandler::GetConfiguration () [inline]

Retrieve the HPTDC setup word as a [TDCConfiguration](#) object.

3.4.3.2 std::string FPGAHandler::GetFilename () const [inline]

Retrieve the file name used to store data collected from the FPGA.

3.4.3.3 SocketType FPGAHandler::GetType () const [inline],[virtual]

[Socket](#) actor type retrieval method.

Reimplemented from [Client](#).

3.4.3.4 void FPGAHandler::OpenFile ()

Open an output file to store header/HPTDC events.

3.4.3.5 void FPGAHandler::ReadBuffer ()

3.4.3.6 void FPGAHandler::SetConfiguration (const TDCConfiguration & *c*) [inline]

Submit the HPTDC setup word as a [TDCConfiguration](#) object.

The documentation for this class was generated from the following file:

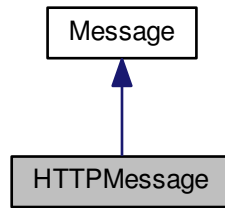
- include/FPGAHandler.h

3.5 HTTPMessage Class Reference

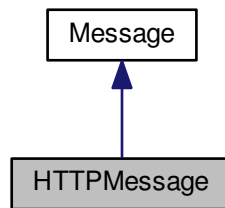
[Message](#) to be transmitted through a WebSocket protocol.

```
#include <HTTPMessage.h>
```

Inheritance diagram for HTTPMessage:



Collaboration diagram for HTTPMessage:



Public Member Functions

- [HTTPMessage](#) (WebSocket *ws, [Message](#) m, MessageAction a)
- [HTTPMessage](#) (WebSocket *ws, const char *msg, MessageAction a)
- void [Decode](#) ()
- void [Encode](#) ()
- MessageKey [GetKey](#) () const
- void [Dump](#) (std::ostream &os=std::cout) const

Additional Inherited Members

3.5.1 Detailed Description

[Message](#) to be transmitted through a WebSocket protocol.

Type of message compatible to the transmission through a WebSocket protocol. It enables a direct conversion of standards from any socket message format used elsewhere in this code using the *MessageAction* statement.

Author

Laurent Forthomme laurent.forthomme@cern.ch

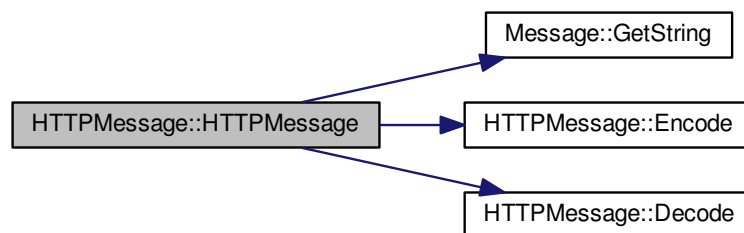
Date

1 Apr 2015

3.5.2 Constructor & Destructor Documentation

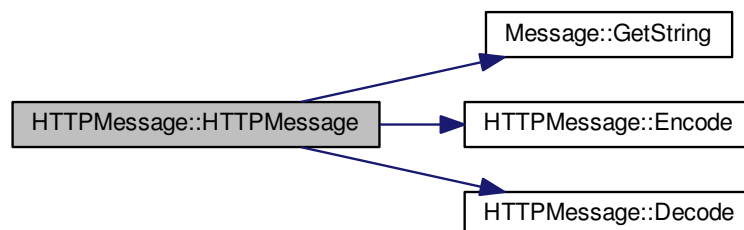
3.5.2.1 HTTPMessage::HTTPMessage (WebSocket * *ws*, Message *m*, MessageAction *a*) [inline]

Here is the call graph for this function:



3.5.2.2 HTTPMessage::HTTPMessage (WebSocket * *ws*, const char * *msg*, MessageAction *a*) [inline]

Here is the call graph for this function:



3.5.3 Member Function Documentation

3.5.3.1 void HTTPMessage::Decode () [inline]

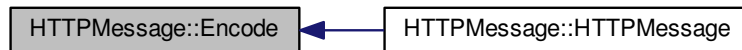
Here is the caller graph for this function:



3.5.3.2 void HTTPMessage::Dump (std::ostream & os = std::cout) const [inline]

3.5.3.3 void HTTPMessage::Encode () [inline]

Here is the caller graph for this function:



3.5.3.4 MessageKey HTTPMessage::GetKey () const [inline]

The documentation for this class was generated from the following file:

- include/HTTPMessage.h

3.6 ListenerInfo Struct Reference

Information on a socket's listener.

```
#include <Messenger.h>
```

Data Fields

- std::string [name](#)
- SocketType [type](#)

3.6.1 Detailed Description

Information on a socket's listener.

Structure handling its name and type for any listener/client to be used in the socket management parts of this code.

3.6.2 Field Documentation

3.6.2.1 `std::string ListenerInfo::name`

3.6.2.2 `SocketType ListenerInfo::type`

The documentation for this struct was generated from the following file:

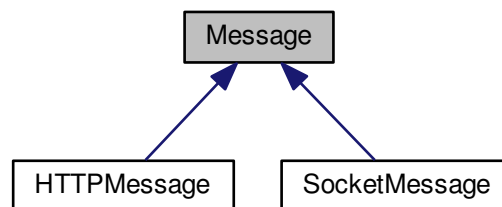
- `include/Messenger.h`

3.7 Message Class Reference

Base socket message type.

```
#include <Message.h>
```

Inheritance diagram for Message:



Public Member Functions

- [Message](#) ()
Void message constructor.
- [Message](#) (const char *msg)
Construct a message from a string.
- [Message](#) (std::string msg)
Construct a message from a string.
- virtual [~Message](#) ()
- MessageKey [GetKey](#) () const
Placeholder for the MessageKey retrieval method.
- std::string [GetString](#) () const
Retrieve the string carried by this message as a whole.
- bool [IsFromWeb](#) () const
Extract from any message its potential arrival from a WebSocket protocol.
- void [Dump](#) (std::ostream &os=std::cout) const

Protected Attributes

- std::string [fString](#)

3.7.1 Detailed Description

Base socket message type.

Base handler for messages to be transmitted through the socket

Author

Laurent Forthomme laurent.forthomme@cern.ch

Date

6 Apr 2015

3.7.2 Constructor & Destructor Documentation

3.7.2.1 `Message::Message ()` `[inline]`

Void message constructor.

3.7.2.2 `Message::Message (const char * msg)` `[inline]`

Construct a message from a string.

3.7.2.3 `Message::Message (std::string msg)` `[inline]`

Construct a message from a string.

3.7.2.4 `virtual Message::~~Message ()` `[inline]`, `[virtual]`

3.7.3 Member Function Documentation

3.7.3.1 `void Message::Dump (std::ostream & os = std::cout) const` `[inline]`

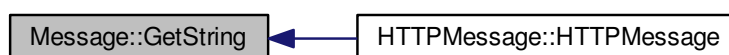
3.7.3.2 `MessageKey Message::GetKey () const` `[inline]`

Placeholder for the MessageKey retrieval method.

3.7.3.3 `std::string Message::GetString () const` `[inline]`

Retrieve the string carried by this message as a whole.

Here is the caller graph for this function:



3.7.3.4 `bool Message::IsFromWeb () const [inline]`

Extract from any message its potential arrival from a WebSocket protocol.

3.7.4 Field Documentation

3.7.4.1 `std::string Message::fString [protected]`

The documentation for this class was generated from the following file:

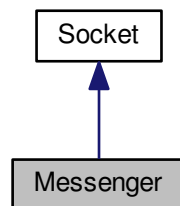
- `include/Message.h`

3.8 Messenger Class Reference

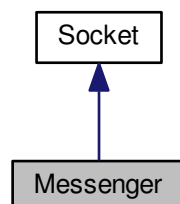
Base master object for the socket.

```
#include <Messenger.h>
```

Inheritance diagram for Messenger:



Collaboration diagram for Messenger:



Public Member Functions

- [Messenger \(\)](#)

- [Messenger](#) (int port)
- [~Messenger](#) ()
- bool [Connect](#) ()
Connect the master.
- void [Disconnect](#) ()
Remove the master.
- void [Send](#) (const [Message](#) &m, int sid) const
Send any type of message to any client.
- void [Receive](#) ()
Handle a message reception from a client.
- void [Broadcast](#) (const [Message](#) &m) const
Emit a message to all clients connected through the socket.
- SocketType [GetType](#) () const
Socket actor type retrieval method.

Additional Inherited Members

3.8.1 Detailed Description

Base master object for the socket.

Messenger/broadcaster object used by the server to send/receive commands from the clients/listeners.

Author

Laurent Forthomme laurent.forthomme@cern.ch

Date

23 Mar 2015

3.8.2 Constructor & Destructor Documentation

3.8.2.1 [Messenger::Messenger](#) ()

3.8.2.2 [Messenger::Messenger](#) (int *port*)

3.8.2.3 [Messenger::~~Messenger](#) ()

3.8.3 Member Function Documentation

3.8.3.1 void [Messenger::Broadcast](#) (const [Message](#) & *m*) const

Emit a message to all clients connected through the socket.

Parameters

in	<i>m</i>	Message to transmit
----	----------	-------------------------------------

3.8.3.2 bool [Messenger::Connect](#) ()

Connect the master.

Connect this master to the socket for clients to be able to bind.

3.8.3.3 void Messenger::Disconnect ()

Remove the master.

Remove this master from the socket, thus disconnecting automatically the clients connected.

3.8.3.4 SocketType Messenger::GetType () const [inline]

[Socket](#) actor type retrieval method.

3.8.3.5 void Messenger::Receive ()

Handle a message reception from a client.

3.8.3.6 void Messenger::Send (const Message & m, int sid) const [inline]

Send any type of message to any client.

Parameters

in	<i>m</i>	Message to transmit
in	<i>sid</i>	Unique identifier of the client on this socket

The documentation for this class was generated from the following file:

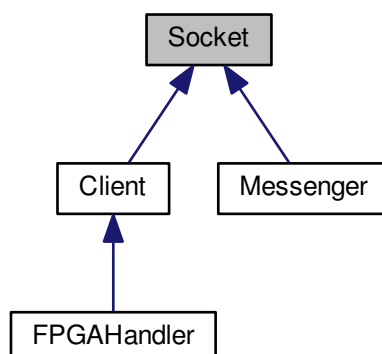
- include/Messenger.h

3.9 Socket Class Reference

Base socket object from which clients/master from a socket inherit.

```
#include <Socket.h>
```

Inheritance diagram for Socket:



Public Member Functions

- [Socket](#) ()
- [Socket](#) (int port)
- virtual [~Socket](#) ()
- void [SetPort](#) (int port)
- int [GetPort](#) () const
Retrieve the port used for this socket.
- void [AcceptConnections](#) ([Socket](#) &socket)
Accept connection from a client.
- void [SelectConnections](#) ()
- void [SetSocketId](#) (int sid)
- int [GetSocketId](#) () const
- SocketType [GetSocketType](#) (int sid) const
- bool [IsWebSocket](#) (int sid) const
- void [DumpConnected](#) () const

Protected Member Functions

- bool [Start](#) ()
Start the socket.
- void [Stop](#) ()
Terminates the socket and all attached communications.
- void [Bind](#) ()
Bind a name to a socket.
- void [PrepareConnection](#) ()
- void [Listen](#) (int maxconn)
Listen to incoming messages.
- void [SendMessage](#) ([Message](#) message, int id=-1) const
Send a message on a socket.
- [Message](#) [FetchMessage](#) (int id=-1) const
Receive a message from a socket.

Protected Attributes

- int [fPort](#)
- char [fBuffer](#) [MAX_WORD_LENGTH]
- SocketCollection [fSocketsConnected](#)
- fd_set [fMaster](#)
Master file descriptor list.
- fd_set [fReadFds](#)
Temp file descriptor list for select()

3.9.1 Detailed Description

Base socket object from which clients/master from a socket inherit.

General object providing all useful method to connect/bind/send/receive information through system sockets.

Author

Laurent Forthomme laurent.forthomme@cern.ch

Date

23 Mar 2015

3.9.2 Constructor & Destructor Documentation

3.9.2.1 `Socket::Socket ()` `[inline]`**3.9.2.2** `Socket::Socket (int port)`**3.9.2.3** `virtual Socket::~~Socket ()` `[virtual]`

3.9.3 Member Function Documentation

3.9.3.1 `void Socket::AcceptConnections (Socket & socket)`

Accept connection from a client.

Set the socket to accept connections any client transmitting through the socket

Parameters

<code>in, out</code>	<code><i>socket</i></code>	Master/client object to enable on the socket
----------------------	----------------------------	--

3.9.3.2 `void Socket::Bind ()` `[protected]`

Bind a name to a socket.

Returns

Success of the operation

3.9.3.3 `void Socket::DumpConnected ()` `const`**3.9.3.4** `Message Socket::FetchMessage (int id = -1)` `const` `[protected]`

Receive a message from a socket.

ReturnsReceived message as a `std::string`**3.9.3.5** `int Socket::GetPort ()` `const` `[inline]`

Retrieve the port used for this socket.

3.9.3.6 `int Socket::GetSocketId ()` `const` `[inline]`

3.9.3.7 SocketType Socket::GetSocketType (int *sid*) const [inline]

Here is the caller graph for this function:



3.9.3.8 bool Socket::IsWebSocket (int *sid*) const [inline]

Here is the call graph for this function:



3.9.3.9 void Socket::Listen (int *maxconn*) [protected]

Listen to incoming messages.

Set the socket to listen to any message coming from outside

3.9.3.10 void Socket::PrepareConnection () [protected]

3.9.3.11 void Socket::SelectConnections ()

Register all open file descriptors to read their communication through the socket

3.9.3.12 void Socket::SendMessage (Message *message*, int *id* = -1) const [protected]

Send a message on a socket.

Here is the caller graph for this function:



3.9.3.13 `void Socket::SetPort (int port) [inline]`

3.9.3.14 `void Socket::SetSocketId (int sid) [inline]`

3.9.3.15 `bool Socket::Start () [protected]`

Start the socket.

Launch all mandatory operations to set the socket to be used

Returns

Success of the operation

3.9.3.16 `void Socket::Stop () [protected]`

Terminates the socket and all attached communications.

3.9.4 Field Documentation

3.9.4.1 `char Socket::fBuffer[MAX_WORD_LENGTH] [protected]`

3.9.4.2 `fd_set Socket::fMaster [protected]`

Master file descriptor list.

3.9.4.3 `int Socket::fPort [protected]`

3.9.4.4 `fd_set Socket::fReadFds [protected]`

Temp file descriptor list for select()

3.9.4.5 `SocketCollection Socket::fSocketsConnected [protected]`

The documentation for this class was generated from the following file:

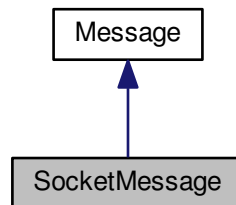
- include/Socket.h

3.10 SocketMessage Class Reference

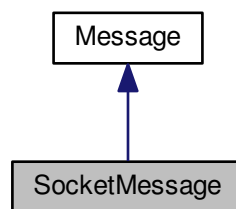
Socket-passed message type.

```
#include <SocketMessage.h>
```

Inheritance diagram for SocketMessage:



Collaboration diagram for SocketMessage:



Public Member Functions

- [SocketMessage](#) ()
- [SocketMessage](#) (const [Message](#) &msg)
- [SocketMessage](#) (const char *msg_s)
- [SocketMessage](#) (std::string msg_s)
- [SocketMessage](#) (MessageKey key)
- [SocketMessage](#) (MessageKey key, const char *value)
- [SocketMessage](#) (MessageKey key, std::string value)
- [SocketMessage](#) (MessageKey key, const int value)
- [SocketMessage](#) (MessageKey key, const float value)
- [SocketMessage](#) (MessageKey key, const double value)
- [SocketMessage](#) (MessageMap msg_m)
- [~SocketMessage](#) ()
- void [SetKeyValue](#) (MessageKey key, std::string value)

Send a string-valued message.

- void [SetKeyValue](#) (MessageKey key, const char *value)
- void [SetKeyValue](#) (MessageKey key, int int_value)
Send an integer-valued message.
- void [SetKeyValue](#) (MessageKey key, float float_value)
Send an float-valued message.
- void [SetKeyValue](#) (MessageKey key, double double_value)
Send an double-valued message.
- std::string [GetString](#) () const
- MessageKey [GetKey](#) () const
- std::string [GetValue](#) () const
- int [GetIntValue](#) () const
- VectorValue [GetVectorValue](#) () const
- void [Dump](#) (std::ostream &os=std::cout) const

Additional Inherited Members

3.10.1 Detailed Description

Socket-passed message type.

Author

Laurent Forthomme laurent.forthomme@cern.ch

Date

26 Mar 2015

3.10.2 Constructor & Destructor Documentation

3.10.2.1 [SocketMessage::SocketMessage \(\)](#) [inline]

3.10.2.2 [SocketMessage::SocketMessage \(const Message & msg \)](#) [inline]

3.10.2.3 [SocketMessage::SocketMessage \(const char * msg_s \)](#) [inline]

3.10.2.4 [SocketMessage::SocketMessage \(std::string msg_s \)](#) [inline]

3.10.2.5 [SocketMessage::SocketMessage \(MessageKey key \)](#) [inline]

Here is the call graph for this function:



3.10.2.6 SocketMessage::SocketMessage (MessageKey *key*, const char * *value*) [inline]

Here is the call graph for this function:



3.10.2.7 SocketMessage::SocketMessage (MessageKey *key*, std::string *value*) [inline]

Here is the call graph for this function:



3.10.2.8 SocketMessage::SocketMessage (MessageKey *key*, const int *value*) [inline]

Here is the call graph for this function:



3.10.2.9 SocketMessage::SocketMessage (MessageKey *key*, const float *value*) [inline]

Here is the call graph for this function:



3.10.2.10 `SocketMessage::SocketMessage (MessageKey key, const double value)` [inline]

Here is the call graph for this function:



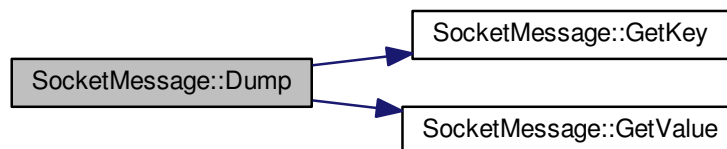
3.10.2.11 `SocketMessage::SocketMessage (MessageMap msg_m)` [inline]

3.10.2.12 `SocketMessage::~~SocketMessage ()` [inline]

3.10.3 Member Function Documentation

3.10.3.1 `void SocketMessage::Dump (std::ostream & os = std::cout) const` [inline]

Here is the call graph for this function:



3.10.3.2 `int SocketMessage::GetIntValue () const` [inline]

3.10.3.3 `MessageKey SocketMessage::GetKey () const` [inline]

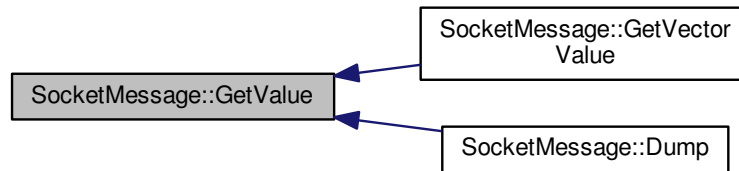
Here is the caller graph for this function:



3.10.3.4 `std::string SocketMessage::GetString () const` `[inline]`

3.10.3.5 `std::string SocketMessage::GetValue () const` `[inline]`

Here is the caller graph for this function:



3.10.3.6 `VectorValue SocketMessage::GetVectorValue () const` `[inline]`

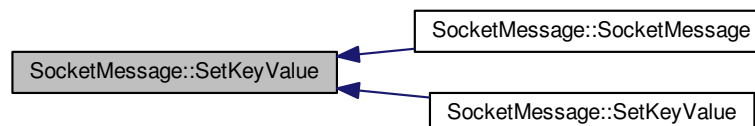
Here is the call graph for this function:



3.10.3.7 `void SocketMessage::SetKeyValue (MessageKey key, std::string value)` `[inline]`

Send a string-valued message.

Here is the caller graph for this function:



3.10.3.8 `void SocketMessage::SetKeyValue (MessageKey key, const char * value)` `[inline]`

Here is the call graph for this function:



3.10.3.9 `void SocketMessage::SetKeyValue (MessageKey key, int int_value)` `[inline]`

Send an integer-valued message.

Here is the call graph for this function:



3.10.3.10 `void SocketMessage::SetKeyValue (MessageKey key, float float_value)` `[inline]`

Send an float-valued message.

Here is the call graph for this function:



3.10.3.11 `void SocketMessage::SetKeyValue (MessageKey key, double double_value)` `[inline]`

Send an double-valued message.

Here is the call graph for this function:



The documentation for this class was generated from the following file:

- include/SocketMessage.h

3.11 TDCConfiguration Class Reference

Setup word to be sent to the HPTDC chip.

```
#include <TDCConfiguration.h>
```

Public Types

- enum `EdgeResolution` {
`E_100ps` =0, `E_200ps`, `E_400ps`, `E_800ps`,
`E_1p6ns`, `E_3p12ns`, `E_6p25ns`, `E_12p5ns` }
- enum `DeadTime` { `DT_5ns` =0, `DT_10ns`, `DT_30ns`, `DT_100ns` }
- enum `WidthResolution` {
`W_100ps` =0, `W_200ps`, `W_400ps`, `W_800ps`,
`W_1p6ns`, `W_3p2ns`, `W_6p25ns`, `W_12p5ns`,
`W_25ns`, `W_50ns`, `W_100ns`, `W_200ns`,
`W_400ns`, `W_800ns` }
- enum `EnabledError` {
`VernierError` =0x1, `CoarseError` =0x2, `ChannelSelectError` =0x4, `L1BufferParityError` =0x8,
`TriggerFIFOParityError` =0x10, `TriggerMatchingError` =0x20, `ReadoutFIFOParityError` =0x40, `ReadoutStateError` =0x80,
`SetupParityError` =0x100, `ControlParityError` =0x200, `JTAGInstructionParityError` =0x400 }

Public Member Functions

- `TDCConfiguration` ()
- virtual `~TDCConfiguration` ()
- void `SetWord` (const unsigned int i, const word_t word)
Set one single word in the configuration.
- word_t `GetWord` (const unsigned int i) const
Retrieve one single word from the configuration.
- uint8_t `GetNumWords` () const
Number of words in the configuration.
- void `SetEnableError` (const uint16_t &err)
- uint16_t `GetEnableError` () const
- void `SetEdgeResolution` (const `EdgeResolution` r)
- `EdgeResolution` `GetEdgeResolution` () const
- void `SetMaxEventSize` (unsigned int sz)

- Set the maximum number of hits per event.*

 - uint8_t [GetMaxEventSize](#) () const

Extract the maximum number of hits per event.

 - void [SetRejectFIFOFull](#) (bool rej=true)

Reject hits when readout FIFO full.

 - bool [GetRejectFIFOFull](#) () const

Are hits rejected when readout FIFO is full?

 - void [SetChannelOffset](#) (int channel, uint16_t offset)
 - uint16_t [GetChannelOffset](#) (int channel) const
 - void [SetAllChannelsOffset](#) (uint16_t offset)
 - void [SetDLLAdjustment](#) (int tap, uint8_t adj)

Set the DLL taps adjustments with a resolution of ~ 10 ps.

 - uint8_t [GetDLLAdjustment](#) (int tap) const
 - void [SetAllTapsDLLAdjustment](#) (uint8_t adj)
 - void [SetRCAdjustment](#) (int tap, uint8_t adj)
 - uint8_t [GetRCAdjustment](#) (int tap)
 - void [SetWidthResolution](#) (const [WidthResolution](#) r)
 - [WidthResolution](#) [GetWidthResolution](#) () const
 - void [SetDeadTime](#) (const [DeadTime](#) dt)
 - [DeadTime](#) [GetDeadTime](#) () const
 - void [SetLeadingMode](#) (const bool lead=true)

Enable the detection of leading edges.

 - bool [GetLeadingMode](#) () const

Extract the status for the detection of leading edges.

 - void [SetTrailingMode](#) (const bool trail=true)

Enable/disable the detection of trailing edges.

 - bool [GetTrailingMode](#) () const

Extract the status for the detection of trailing edges.

 - void [SetTriggerMatchingMode](#) (const bool trig=true)
 - bool [GetTriggerMatchingMode](#) () const
 - void [SetEdgesPairing](#) (const bool pair=true)
 - bool [GetEdgesPairing](#) () const
 - void [Dump](#) (int verb=1, std::ostream &os=std::cout) const

3.11.1 Detailed Description

Setup word to be sent to the HPTDC chip.

Object handling the configuration word provided by/to the HPTDC chip

Author

Laurent Forthomme laurent.forthomme@cern.ch

Date

16 Apr 2015

3.11.2 Member Enumeration Documentation

3.11.2.1 enum TDCCConfiguration::DeadTime

Enumerator

DT_5ns
DT_10ns
DT_30ns
DT_100ns

3.11.2.2 enum TDCCConfiguration::EdgeResolution

Enumerator

E_100ps
E_200ps
E_400ps
E_800ps
E_1p6ns
E_3p12ns
E_6p25ns
E_12p5ns

3.11.2.3 enum TDCCConfiguration::EnabledError

Enumerator

VernierError
CoarseError
ChannelSelectError
L1BufferParityError
TriggerFIFOParityError
TriggerMatchingError
ReadoutFIFOParityError
ReadoutStateError
SetupParityError
ControlParityError
JTAGInstructionParityError

3.11.2.4 enum TDCCConfiguration::WidthResolution

Enumerator

W_100ps
W_200ps
W_400ps
W_800ps
W_1p6ns

W_3p2ns
W_6p25ns
W_12p5ns
W_25ns
W_50ns
W_100ns
W_200ns
W_400ns
W_800ns

3.11.3 Constructor & Destructor Documentation

3.11.3.1 `TDCConfiguration::TDCConfiguration ()`

3.11.3.2 `virtual TDCConfiguration::~~TDCConfiguration ()` `[inline]`, `[virtual]`

3.11.4 Member Function Documentation

3.11.4.1 `void TDCConfiguration::Dump (int verb = 1, std::ostream & os = std::cout) const`

3.11.4.2 `uint16_t TDCConfiguration::GetChannelOffset (int channel) const` `[inline]`

3.11.4.3 `DeadTime TDCConfiguration::GetDeadTime () const` `[inline]`

3.11.4.4 `uint8_t TDCConfiguration::GetDLLAdjustment (int tap) const` `[inline]`

3.11.4.5 `EdgeResolution TDCConfiguration::GetEdgeResolution () const` `[inline]`

3.11.4.6 `bool TDCConfiguration::GetEdgesPairing () const` `[inline]`

3.11.4.7 `uint16_t TDCConfiguration::GetEnableError () const` `[inline]`

3.11.4.8 `bool TDCConfiguration::GetLeadingMode () const` `[inline]`

Extract the status for the detection of leading edges.

3.11.4.9 `uint8_t TDCConfiguration::GetMaxEventSize () const` `[inline]`

Extract the maximum number of hits per event.

3.11.4.10 `uint8_t TDCConfiguration::GetNumWords () const` `[inline]`

Number of words in the configuration.

Return the number of words making up the full configuration word.

3.11.4.11 `uint8_t TDCConfiguration::GetRCAdjustment (int tap)` `[inline]`

3.11.4.12 `bool TDCConfiguration::GetRejectFIFOFull () const` `[inline]`

Are hits rejected when readout FIFO is full?

Extract whether or not hits are rejected once FIFO is full.

3.11.4.13 `bool TDCCConfiguration::GetTrailingMode () const` `[inline]`

Extract the status for the detection of trailing edges.

3.11.4.14 `bool TDCCConfiguration::GetTriggerMatchingMode () const` `[inline]`

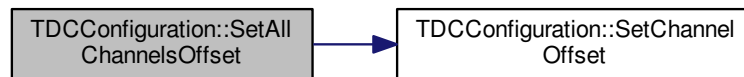
3.11.4.15 `WidthResolution TDCCConfiguration::GetWidthResolution () const` `[inline]`

3.11.4.16 `word_t TDCCConfiguration::GetWord (const unsigned int i) const` `[inline]`

Retrieve one single word from the configuration.

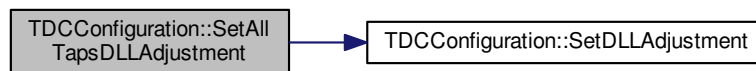
3.11.4.17 `void TDCCConfiguration::SetAllChannelsOffset (uint16_t offset)` `[inline]`

Here is the call graph for this function:



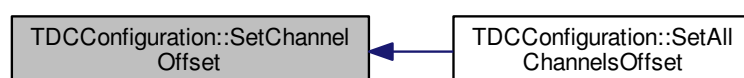
3.11.4.18 `void TDCCConfiguration::SetAllTapsDLLAdjustment (uint8_t adj)` `[inline]`

Here is the call graph for this function:



3.11.4.19 `void TDCCConfiguration::SetChannelOffset (int channel, uint16_t offset)` `[inline]`

Here is the caller graph for this function:

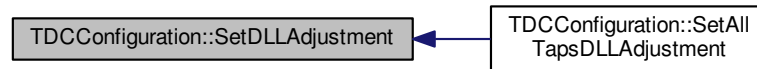


3.11.4.20 void TDCConfiguration::SetDeadTime (const DeadTime *dt*) [inline]

3.11.4.21 void TDCConfiguration::SetDLLAdjustment (int *tap*, uint8_t *adj*) [inline]

Set the DLL taps adjustments with a resolution of ~ 10 ps.

Here is the caller graph for this function:



3.11.4.22 void TDCConfiguration::SetEdgeResolution (const EdgeResolution *r*) [inline]

3.11.4.23 void TDCConfiguration::SetEdgesPairing (const bool *pair* = true) [inline]

3.11.4.24 void TDCConfiguration::SetEnableError (const uint16_t & *err*) [inline]

3.11.4.25 void TDCConfiguration::SetLeadingMode (const bool *lead* = true) [inline]

Enable the detection of leading edges.

3.11.4.26 void TDCConfiguration::SetMaxEventSize (unsigned int *sz*) [inline]

Set the maximum number of hits per event.

Set the maximum number of hits that can be recorded for each event. It is always rounded to the next power of 2 (in the range 0-128), and if bigger than 128 then set to unlimited.

3.11.4.27 void TDCConfiguration::SetRCAdjustment (int *tap*, uint8_t *adj*) [inline]

3.11.4.28 void TDCConfiguration::SetRejectFIFOFull (bool *rej* = true) [inline]

Reject hits when readout FIFO full.

Set whether or not hits are rejected once FIFO is full.

3.11.4.29 void TDCConfiguration::SetTrailingMode (const bool *trail* = true) [inline]

Enable/disable the detection of trailing edges.

3.11.4.30 void TDCConfiguration::SetTriggerMatchingMode (const bool *trig* = true) [inline]

3.11.4.31 void TDCConfiguration::SetWidthResolution (const WidthResolution *r*) [inline]

3.11.4.32 void TDCConfiguration::SetWord (const unsigned int *i*, const word_t *word*) [inline]

Set one single word in the configuration.

The documentation for this class was generated from the following file:

- `include/TDCConfiguration.h`

3.12 TDCEvent Class Reference

HPTDC event parser.

```
#include <TDCEvent.h>
```

Public Types

- enum `EventType` {
`Invalid` = -1, `GroupHeader` = 0, `GroupTrailer`, `TDCHeader`,
`TDCTrailer`, `LeadingEdge`, `TrailingEdge`, `Error`,
`Debug` }

Public Member Functions

- `TDCEvent` (const uint32_t &word)
- virtual `~TDCEvent` ()
- `EventType` `GetType` () const
Type of packet read out from the TDC.
- unsigned int `GetTDCId` () const
Programmed identifier of master TDC.
- uint16_t `GetEventId` () const
Event identifier from event counter.
- uint16_t `GetWordCount` () const
Total number of words in event (including headers and trailers)
- uint16_t `GetBunchId` () const
Bunch identifier of trigger (or trigger time tag)
- uint32_t `GetLeadingTime` (bool pair=false) const
Leading edge measurement in programmed time resolution.
- uint8_t `GetWidth` () const
Width of pulse in programmed time resolution.
- uint32_t `GetTrailingTime` () const
Trailing edge measurement in programmed time resolution.
- uint16_t `GetErrorFlags` () const
Return error flags if an error condition has been detected.

3.12.1 Detailed Description

HPTDC event parser.

Object enabling to decipher any measurement/error/debug event returned by the HPTDC chip

Author

Laurent Forthomme laurent.forthomme@cern.ch

Date

20 Apr 2015

3.12.2 Member Enumeration Documentation

3.12.2.1 enum TDCEvent::EventType

Enumerator

Invalid
GroupHeader
GroupTrailer
TDCHeader
TDCTrailer
LeadingEdge
TrailingEdge
Error
Debug

3.12.3 Constructor & Destructor Documentation

3.12.3.1 TDCEvent::TDCEvent (const uint32_t & word) [inline]

3.12.3.2 virtual TDCEvent::~~TDCEvent () [inline],[virtual]

3.12.4 Member Function Documentation

3.12.4.1 uint16_t TDCEvent::GetBunchId () const [inline]

Bunch identifier of trigger (or trigger time tag)

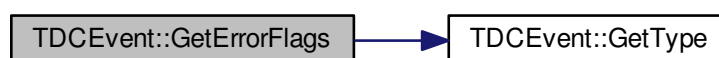
Here is the call graph for this function:



3.12.4.2 uint16_t TDCEvent::GetErrorFlags () const [inline]

Return error flags if an error condition has been detected.

Here is the call graph for this function:



3.12.4.3 uint16_t TDCEvent::GetEventId () const [inline]

Event identifier from event counter.

Here is the call graph for this function:



3.12.4.4 uint32_t TDCEvent::GetLeadingTime (bool pair = false) const [inline]

Leading edge measurement in programmed time resolution.

Here is the call graph for this function:



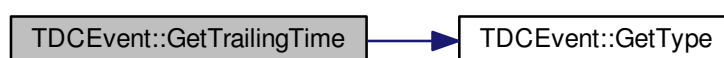
3.12.4.5 unsigned int TDCEvent::GetTDCId () const [inline]

Programmed identifier of master TDC.

3.12.4.6 uint32_t TDCEvent::GetTrailingTime () const [inline]

Trailing edge measurement in programmed time resolution.

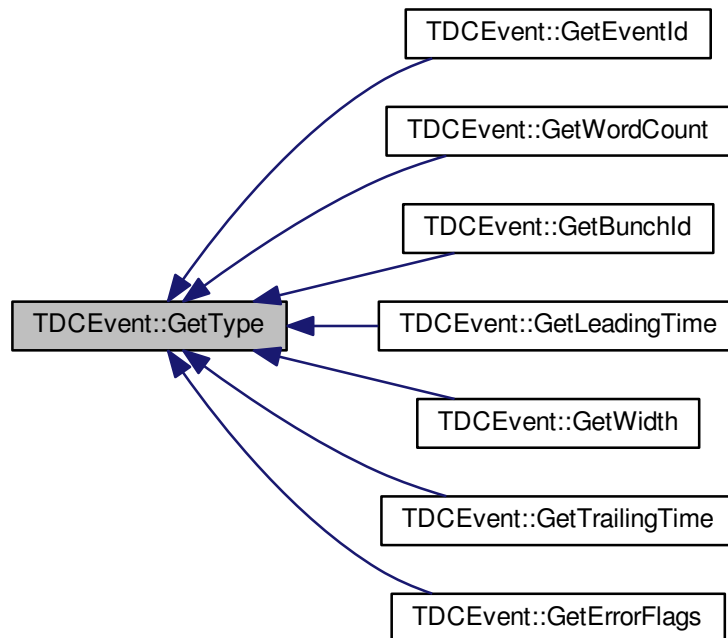
Here is the call graph for this function:



3.12.4.7 EventType TDCEvent::GetType () const [inline]

Type of packet read out from the TDC.

Here is the caller graph for this function:



3.12.4.8 uint8_t TDCEvent::GetWidth () const [inline]

Width of pulse in programmed time resolution.

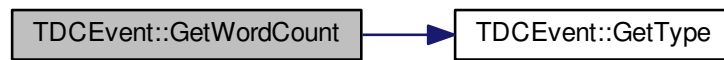
Here is the call graph for this function:



3.12.4.9 uint16_t TDCEvent::GetWordCount () const [inline]

Total number of words in event (including headers and trailers)

Here is the call graph for this function:



The documentation for this class was generated from the following file:

- `include/TDCEvent.h`

Index

- ~Client
 - Client, [7](#)
- ~Exception
 - Exception, [8](#)
- ~FPGAHandler
 - FPGAHandler, [14](#)
- ~Message
 - Message, [19](#)
- ~Messenger
 - Messenger, [21](#)
- ~Socket
 - Socket, [24](#)
- ~SocketMessage
 - SocketMessage, [30](#)
- ~TDCConfiguration
 - TDCConfiguration, [36](#)
- ~TDCEvent
 - TDCEvent, [40](#)
- AcceptConnections
 - Socket, [24](#)
- Bind
 - Socket, [24](#)
- Broadcast
 - Messenger, [21](#)
- ChannelSelectError
 - TDCConfiguration, [35](#)
- Client, [5](#)
 - ~Client, [7](#)
 - Client, [7](#)
 - Connect, [7](#)
 - Disconnect, [7](#)
 - GetType, [7](#)
 - ParseMessage, [7](#)
 - Receive, [7](#)
 - Send, [7](#)
- CoarseError
 - TDCConfiguration, [35](#)
- config
 - file_header_t, [12](#)
- Connect
 - Client, [7](#)
 - Messenger, [21](#)
- ControlParityError
 - TDCConfiguration, [35](#)
- DT_100ns
 - TDCConfiguration, [35](#)
- DT_10ns
 - TDCConfiguration, [35](#)
- DT_30ns
 - TDCConfiguration, [35](#)
- DT_5ns
 - TDCConfiguration, [35](#)
- DeadTime
 - TDCConfiguration, [35](#)
- Debug
 - TDCEvent, [40](#)
- Decode
 - HTTPMessage, [16](#)
- Description
 - Exception, [9](#)
- Disconnect
 - Client, [7](#)
 - Messenger, [21](#)
- Dump
 - Exception, [9](#)
 - HTTPMessage, [17](#)
 - Message, [19](#)
 - SocketMessage, [30](#)
 - TDCConfiguration, [36](#)
- DumpConnected
 - Socket, [24](#)
- E_100ps
 - TDCConfiguration, [35](#)
- E_12p5ns
 - TDCConfiguration, [35](#)
- E_1p6ns
 - TDCConfiguration, [35](#)
- E_200ps
 - TDCConfiguration, [35](#)
- E_3p12ns
 - TDCConfiguration, [35](#)
- E_400ps
 - TDCConfiguration, [35](#)
- E_6p25ns
 - TDCConfiguration, [35](#)
- E_800ps
 - TDCConfiguration, [35](#)
- EdgeResolution
 - TDCConfiguration, [35](#)
- EnabledError
 - TDCConfiguration, [35](#)
- Encode
 - HTTPMessage, [17](#)
- Error
 - TDCEvent, [40](#)

- ErrorNumber
 - Exception, 9
- EventType
 - TDCEvent, 40
- Exception, 8
 - ~Exception, 8
 - Description, 9
 - Dump, 9
 - ErrorNumber, 9
 - Exception, 8
 - From, 9
 - Type, 10
 - TypeString, 10
- fBuffer
 - Socket, 26
- fMaster
 - Socket, 26
- FPGAHandler, 12
 - ~FPGAHandler, 14
 - FPGAHandler, 14
 - GetConfiguration, 14
 - GetFilename, 14
 - GetType, 14
 - OpenFile, 14
 - ReadBuffer, 14
 - SetConfiguration, 14
- fPort
 - Socket, 26
- fReadFds
 - Socket, 26
- fSocketsConnected
 - Socket, 26
- fString
 - Message, 20
- FetchMessage
 - Socket, 24
- file_header_t, 11
 - config, 12
 - magic, 12
 - run_id, 12
 - spill_id, 12
- From
 - Exception, 9
- GetBunchId
 - TDCEvent, 40
- GetChannelOffset
 - TDCCConfiguration, 36
- GetConfiguration
 - FPGAHandler, 14
- GetDLLAdjustment
 - TDCCConfiguration, 36
- GetDeadTime
 - TDCCConfiguration, 36
- GetEdgeResolution
 - TDCCConfiguration, 36
- GetEdgesPairing
 - TDCCConfiguration, 36
- GetEnableError
 - TDCCConfiguration, 36
- GetErrorFlags
 - TDCEvent, 40
- GetEventId
 - TDCEvent, 41
- GetFilename
 - FPGAHandler, 14
- GetIntValue
 - SocketMessage, 30
- GetKey
 - HTTPMessage, 17
 - Message, 19
 - SocketMessage, 30
- GetLeadingMode
 - TDCCConfiguration, 36
- GetLeadingTime
 - TDCEvent, 41
- GetMaxEventSize
 - TDCCConfiguration, 36
- GetNumWords
 - TDCCConfiguration, 36
- GetPort
 - Socket, 24
- GetRCAdjustment
 - TDCCConfiguration, 36
- GetRejectFIFOFull
 - TDCCConfiguration, 36
- GetSocketId
 - Socket, 24
- GetSocketType
 - Socket, 24
- GetString
 - Message, 19
 - SocketMessage, 30
- GetTDCId
 - TDCEvent, 41
- GetTrailingMode
 - TDCCConfiguration, 36
- GetTrailingTime
 - TDCEvent, 41
- GetTriggerMatchingMode
 - TDCCConfiguration, 37
- GetType
 - Client, 7
 - FPGAHandler, 14
 - Messenger, 22
 - TDCEvent, 41
- GetValue
 - SocketMessage, 31
- GetVectorValue
 - SocketMessage, 31
- GetWidth
 - TDCEvent, 42
- GetWidthResolution
 - TDCCConfiguration, 37
- GetWord
 - TDCCConfiguration, 37

- GetWordCount
 - TDCEvent, [42](#)
- GroupHeader
 - TDCEvent, [40](#)
- GroupTrailer
 - TDCEvent, [40](#)
- HTTPMessage, [14](#)
 - Decode, [16](#)
 - Dump, [17](#)
 - Encode, [17](#)
 - GetKey, [17](#)
 - HTTPMessage, [16](#)
- Invalid
 - TDCEvent, [40](#)
- IsFromWeb
 - Message, [19](#)
- IsWebSocket
 - Socket, [25](#)
- JTAGInstructionParityError
 - TDCConfiguration, [35](#)
- L1BufferParityError
 - TDCConfiguration, [35](#)
- LeadingEdge
 - TDCEvent, [40](#)
- Listen
 - Socket, [25](#)
- ListenerInfo, [17](#)
 - name, [18](#)
 - type, [18](#)
- magic
 - file_header_t, [12](#)
- Message, [18](#)
 - ~Message, [19](#)
 - Dump, [19](#)
 - fString, [20](#)
 - GetKey, [19](#)
 - GetString, [19](#)
 - IsFromWeb, [19](#)
 - Message, [19](#)
- Messenger, [20](#)
 - ~Messenger, [21](#)
 - Broadcast, [21](#)
 - Connect, [21](#)
 - Disconnect, [21](#)
 - GetType, [22](#)
 - Messenger, [21](#)
 - Receive, [22](#)
 - Send, [22](#)
- name
 - ListenerInfo, [18](#)
- OpenFile
 - FPGAHandler, [14](#)
- ParseMessage
 - Client, [7](#)
- PrepareConnection
 - Socket, [25](#)
- ReadBuffer
 - FPGAHandler, [14](#)
- ReadoutFIFOParityError
 - TDCConfiguration, [35](#)
- ReadoutStateError
 - TDCConfiguration, [35](#)
- Receive
 - Client, [7](#)
 - Messenger, [22](#)
- run_id
 - file_header_t, [12](#)
- SelectConnections
 - Socket, [25](#)
- Send
 - Client, [7](#)
 - Messenger, [22](#)
- SendMessage
 - Socket, [25](#)
- SetAllChannelsOffset
 - TDCConfiguration, [37](#)
- SetAllTapsDLLAdjustment
 - TDCConfiguration, [37](#)
- SetChannelOffset
 - TDCConfiguration, [37](#)
- SetConfiguration
 - FPGAHandler, [14](#)
- SetDLLAdjustment
 - TDCConfiguration, [38](#)
- SetDeadTime
 - TDCConfiguration, [37](#)
- SetEdgeResolution
 - TDCConfiguration, [38](#)
- SetEdgesPairing
 - TDCConfiguration, [38](#)
- SetEnableError
 - TDCConfiguration, [38](#)
- SetKeyValue
 - SocketMessage, [31](#), [32](#)
- SetLeadingMode
 - TDCConfiguration, [38](#)
- SetMaxEventSize
 - TDCConfiguration, [38](#)
- SetPort
 - Socket, [26](#)
- SetRCAdjustment
 - TDCConfiguration, [38](#)
- SetRejectFIFOFull
 - TDCConfiguration, [38](#)
- SetSocketId
 - Socket, [26](#)
- SetTrailingMode
 - TDCConfiguration, [38](#)
- SetTriggerMatchingMode

- TDCConfiguration, 38
- SetWidthResolution
 - TDCConfiguration, 38
- SetWord
 - TDCConfiguration, 38
- SetupParityError
 - TDCConfiguration, 35
- Socket, 22
 - ~Socket, 24
 - AcceptConnections, 24
 - Bind, 24
 - DumpConnected, 24
 - fBuffer, 26
 - fMaster, 26
 - fPort, 26
 - fReadFds, 26
 - fSocketsConnected, 26
 - FetchMessage, 24
 - GetPort, 24
 - GetSocketId, 24
 - GetSocketType, 24
 - IsWebSocket, 25
 - Listen, 25
 - PrepareConnection, 25
 - SelectConnections, 25
 - SendMessage, 25
 - SetPort, 26
 - SetSocketId, 26
 - Socket, 24
 - Start, 26
 - Stop, 26
- SocketMessage, 27
 - ~SocketMessage, 30
 - Dump, 30
 - GetIntValue, 30
 - GetKey, 30
 - GetString, 30
 - GetValue, 31
 - GetVectorValue, 31
 - SetKeyValue, 31, 32
 - SocketMessage, 28–30
- spill_id
 - file_header_t, 12
- Start
 - Socket, 26
- Stop
 - Socket, 26
- TDCConfiguration, 33
 - ~TDCConfiguration, 36
 - ChannelSelectError, 35
 - CoarseError, 35
 - ControlParityError, 35
 - DT_100ns, 35
 - DT_10ns, 35
 - DT_30ns, 35
 - DT_5ns, 35
 - DeadTime, 35
 - Dump, 36
 - E_100ps, 35
 - E_12p5ns, 35
 - E_1p6ns, 35
 - E_200ps, 35
 - E_3p12ns, 35
 - E_400ps, 35
 - E_6p25ns, 35
 - E_800ps, 35
 - EdgeResolution, 35
 - EnabledError, 35
 - GetChannelOffset, 36
 - GetDLLAdjustment, 36
 - GetDeadTime, 36
 - GetEdgeResolution, 36
 - GetEdgesPairing, 36
 - GetEnableError, 36
 - GetLeadingMode, 36
 - GetMaxEventSize, 36
 - GetNumWords, 36
 - GetRCAdjustment, 36
 - GetRejectFIFOFull, 36
 - GetTrailingMode, 36
 - GetTriggerMatchingMode, 37
 - GetWidthResolution, 37
 - GetWord, 37
 - JTAGInstructionParityError, 35
 - L1BufferParityError, 35
 - ReadoutFIFOParityError, 35
 - ReadoutStateError, 35
 - SetAllChannelsOffset, 37
 - SetAllTapsDLLAdjustment, 37
 - SetChannelOffset, 37
 - SetDLLAdjustment, 38
 - SetDeadTime, 37
 - SetEdgeResolution, 38
 - SetEdgesPairing, 38
 - SetEnableError, 38
 - SetLeadingMode, 38
 - SetMaxEventSize, 38
 - SetRCAdjustment, 38
 - SetRejectFIFOFull, 38
 - SetTrailingMode, 38
 - SetTriggerMatchingMode, 38
 - SetWidthResolution, 38
 - SetWord, 38
 - SetupParityError, 35
 - TDCConfiguration, 36
 - TriggerFIFOParityError, 35
 - TriggerMatchingError, 35
 - VernierError, 35
 - W_100ns, 36
 - W_100ps, 35
 - W_12p5ns, 36
 - W_1p6ns, 35
 - W_200ns, 36
 - W_200ps, 35
 - W_25ns, 36
 - W_3p2ns, 35

- W_400ns, [36](#)
- W_400ps, [35](#)
- W_50ns, [36](#)
- W_6p25ns, [36](#)
- W_800ns, [36](#)
- W_800ps, [35](#)
- WidthResolution, [35](#)
- TDCEvent, [39](#)
 - ~TDCEvent, [40](#)
 - Debug, [40](#)
 - Error, [40](#)
 - EventType, [40](#)
 - GetBunchId, [40](#)
 - GetErrorFlags, [40](#)
 - GetEventId, [41](#)
 - GetLeadingTime, [41](#)
 - GetTDCId, [41](#)
 - GetTrailingTime, [41](#)
 - GetType, [41](#)
 - GetWidth, [42](#)
 - GetWordCount, [42](#)
 - GroupHeader, [40](#)
 - GroupTrailer, [40](#)
 - Invalid, [40](#)
 - LeadingEdge, [40](#)
 - TDCEvent, [40](#)
 - TDCHeader, [40](#)
 - TDCTrailer, [40](#)
 - TrailingEdge, [40](#)
- TDCHeader
 - TDCEvent, [40](#)
- TDCTrailer
 - TDCEvent, [40](#)
- TrailingEdge
 - TDCEvent, [40](#)
- TriggerFIFOParityError
 - TDCConfiguration, [35](#)
- TriggerMatchingError
 - TDCConfiguration, [35](#)
- Type
 - Exception, [10](#)
- type
 - ListenerInfo, [18](#)
- TypeString
 - Exception, [10](#)
- VernierError
 - TDCConfiguration, [35](#)
- W_100ns
 - TDCConfiguration, [36](#)
- W_100ps
 - TDCConfiguration, [35](#)
- W_12p5ns
 - TDCConfiguration, [36](#)
- W_1p6ns
 - TDCConfiguration, [35](#)
- W_200ns
 - TDCConfiguration, [36](#)
- W_200ps
 - TDCConfiguration, [35](#)
- W_25ns
 - TDCConfiguration, [36](#)
- W_3p2ns
 - TDCConfiguration, [35](#)
- W_400ns
 - TDCConfiguration, [36](#)
- W_400ps
 - TDCConfiguration, [35](#)
- W_50ns
 - TDCConfiguration, [36](#)
- W_6p25ns
 - TDCConfiguration, [36](#)
- W_800ns
 - TDCConfiguration, [36](#)
- W_800ps
 - TDCConfiguration, [35](#)
- WidthResolution
 - TDCConfiguration, [35](#)