

# LASER->USBDAQ communication

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## 1. Introduction

This Document outlines the communication between the Laser TestStand Software written in Labview and the Software controlling MAPS USB\_DAQ written in C++. The communication is realized using TCP/IP by sending fixed-size messages via an Ethernet connection

## 2. Network Setup

As already been stated, it was decided to use the TCP/IP protocol for the communication between the two software packages. The default port to be used is 15000 (well above the 1024 privileged port limitation), but can also be configured to any port beyond 1024. In order to be free of endian-ness problems and to make the LabView implementation easier, it was decided to use strings.

## 3. Configurable Parameters

- Laser Intensity (0-100) 3 bytes
- Laser position x (-1000 - 1000) 5 bytes
- Laser position y x (-1000 - 1000) 5 bytes
- Shutter size x (0-100) 3 bytes
- Shutter size y (0-100) 3 bytes
- Laser Fire Mode 1 byte
  - Single pulse 1
  - Continuous 2
  - Burst 3
  - Laser Repetition Rate (0-50) 2 bytes
  - Laser Burst pulses (0-100) 3 bytes
  - Laser Software Version 10 bytes

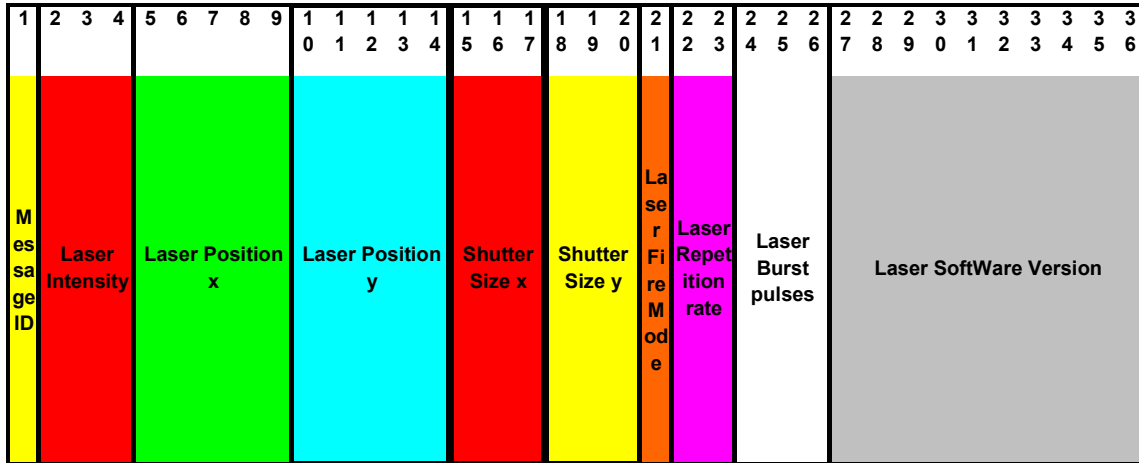
## 4. Message types and sizes

All messages have a unique message ID, that specifies the message type, up to know 9 messages are supported. The total length of a message is 36 bytes. The format of a single message is shown below.

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The following Message ID's have been allocated so far

Message ID	Message Type
1	SetConfiguration
2	GetConfiguration
3	FireLaser
4	Reserved
5	Reserved
6	Reserved
7	Reserved
8	Reserved
9	Reserved

#### 4.1 SetConfiguration Message

This message has the ID 1, the last ten bytes are empty as the Software Version is a ReadOnly Variable

#### 4.2 GetConfiguration Message

This message has the ID 2, this is the version only the first byte matters to tell the Software to read back all values and put them into a Message and send them back

#### 4.3 FireLaser Message

This message has the ID 3, only the first byte matters, all others can be neglected and should be filled with spaces