

Laser Industry Association

Specification of

CO₂/YAG Laser Standard Interface

Standardisation Request / Draft / **not yet standardised!**

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Copyright

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Document history

11/2020	Initial version, draft

Scope

This document describes a standard interface to be used for CO₂ and/or YAG laser types. It contains the full hardware interface description including the pinout of used connectors.

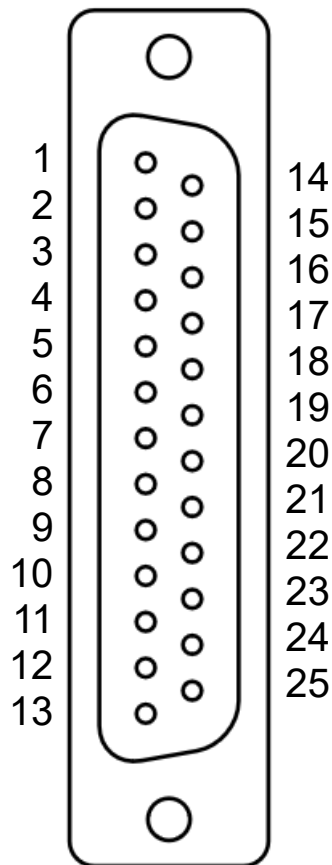
Features

The CO₂/YAG laser interface connector described here contains all signals required for operating such laser types in one standard connector and provides the following features:

- Standardised pinout which guarantees interconnectivity between lasers and control cards
- Emergency stop input
- Separate lines for low- and high-active signals

Description

The CO₂/YAG laser interface connector is a female D-SUB25 connector with the following pinout:



Pin	Name	Description
1	NC	Do not connect, reserved for future use
2	NC	Do not connect, reserved for future use
3	GND	Ground
4	Emergency	Emergency input, laser has to be turned off when input is open or GND, operation is allowed on high-signal only, TTL signal
5	GND	Ground
6	GND	Ground
7	NC	Do not connect, reserved for future use

8	GND	Ground
9	A0	Analogue output for frequency control, 0..5 V range
10	GND	Ground
11	GND	Ground
12	LaserModulationL	Laser on/off, low-active TTL signal (inverted to pin 24)
13	PWM+	PWM/Tickle/Q-Switch, positive side of a differential signal, paired with pin 25, to be connected with core of a coaxial cable
14	NC	Do not connect, reserved for future use
15	NC	Do not connect, reserved for future use
16	NC	Do not connect, reserved for future use
17	GND	Ground
18	GND	Ground
19	GND	Ground
20	FPK	First Pulse Killer, suppression pulse for first, high-energy pulse(s), TTL signal
21	A1	Analogue output for power control, 0..10 V range
22	PWM	PWM/Tickle/Q-Switch, TTL signal
23	Pilot	Pilot laser output, TTL signal
24	LaserModulationH	Laser on/off, high-active TTL signal (inverted to pin 12)
25	PWM-	PWM/Tickle/Q-Switch, negative side of a differential signal, paired with pin 25, to be connected with shield of a coaxial cable

Power control can be done via

- PWM/PWM+/PWM- signals (pulse-width modulation, the higher the duty cycle is, the higher is the power output)
- analogue signals A0/A1 (the higher the analogue control voltage is, the higher is the output power)

A data source (controller) has to provide all the signals mentioned above in order let the data sink (laser) choose from.

A data sink does not need to accept all the signals listed above, it is free to choose to use the required signals only. The documentation of the data sink should clearly describe which of the signals are used.

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