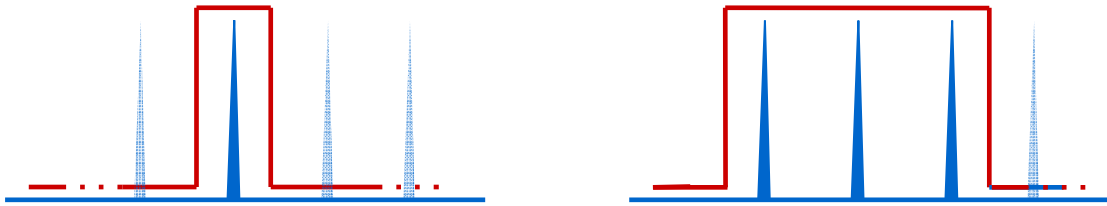


PPKAc250-xx

Synchronized RF driver for fast Pulse Pickers MT250xx



Product Overview

These drivers have been designed in order to offer the highest possible performances in high speed Pulse Picking applications. They aim to push down prices for OEM users, whilst retaining the highest achievable specifications.

For high repetition rate lasers such as 80MHz, the rise time of the AOM is in the same order of magnitude as the period between two pulses. As the repetition rate increases, it becomes increasingly more difficult to retain a high extinction ratio between consecutive pulses, whilst maximising the total efficiency and pulse to pulse stability. Generally, when the extinction ratio of consecutive pulse is correctly adjusted, the pulse to pulse stability decreases to the point where the system is not usable for most of the applications.

The availability of this innovative synchronised driver from AA OPTO-ELECTRONIC provides a completely new solution to solve this problem, which is dedicated to their MT250 series of high speed pulse pickers. In this driver, all generated signals are phase locked on to the laser clock reference, in order to get the best possible stability from the pulse to pulse response of the Bragg cell.

It allows the user to choose any repetition rate he or she requires, by dividing the Reference Clock frequency of the laser oscillator by any integer from 2 to 1024, or select multiples pulses (N) up to 1024, under the form N/M.

The driver's internal CPU and fast digital circuit uses FPGAs, which allows users to change and store different working parameters for the pulse picker such as pulse delay, window gate duration, repetition rate and RF power, through a remote control (LCD display) or via the RS232/USB protocol. A fast external analogue modulation input allows the user to vary the efficiency/power of the device in real time. A Trig input allows user to drive the system randomly.

This system is perfectly adapted to fibre pigtailed pulse pickers, but is equally suitable for use with AA's range of free space devices.

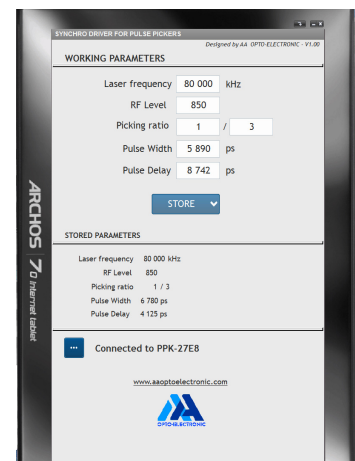
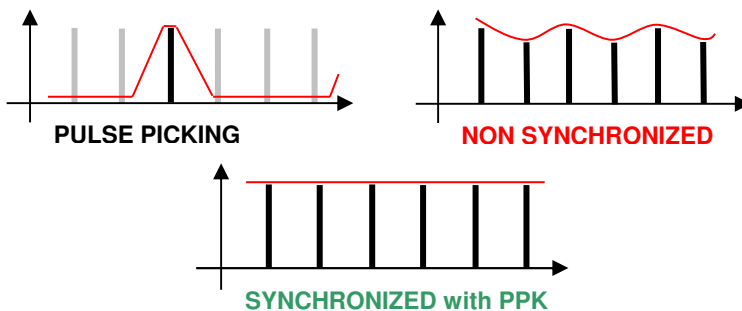


ANDROID



Features

- High stability system with Pulse to Pulse Stability contribution <0.5%
- Dedicated to 80 MHz repetition rate lasers
- Input reference clock from Laser
- With Built-in High accuracy signal generator
- Including Digital delay and window gate adjustments
- Consecutive pulse extinction ration (CPER) optimisation
- Remote control, USB, RS32 communication for set up
- RoHS compliant



Technical Specifications



→Reference Input Signal from Laser

LASER Repetition Rate RR in [75-85] MHz – Level TTL/50 Ohms (On request=Peak Voltage max 5 Volts, min 50mV, duty cycle in [10-90%], nom 50 Ohms), SMA Connector, T_{RR} = Time between 2 Laser pulses = $1/RR$ – SMA connector

→Reference Output Signals from Driver

LSSO: Shaped Analog 0-2V/50 Ohms reference Output – Laser repetition Rate – SMA connector [75-85MHz]

CPSO: Shaped Analog 0-2V/50 Ohms trig Output – AOM control signal – SMA connector

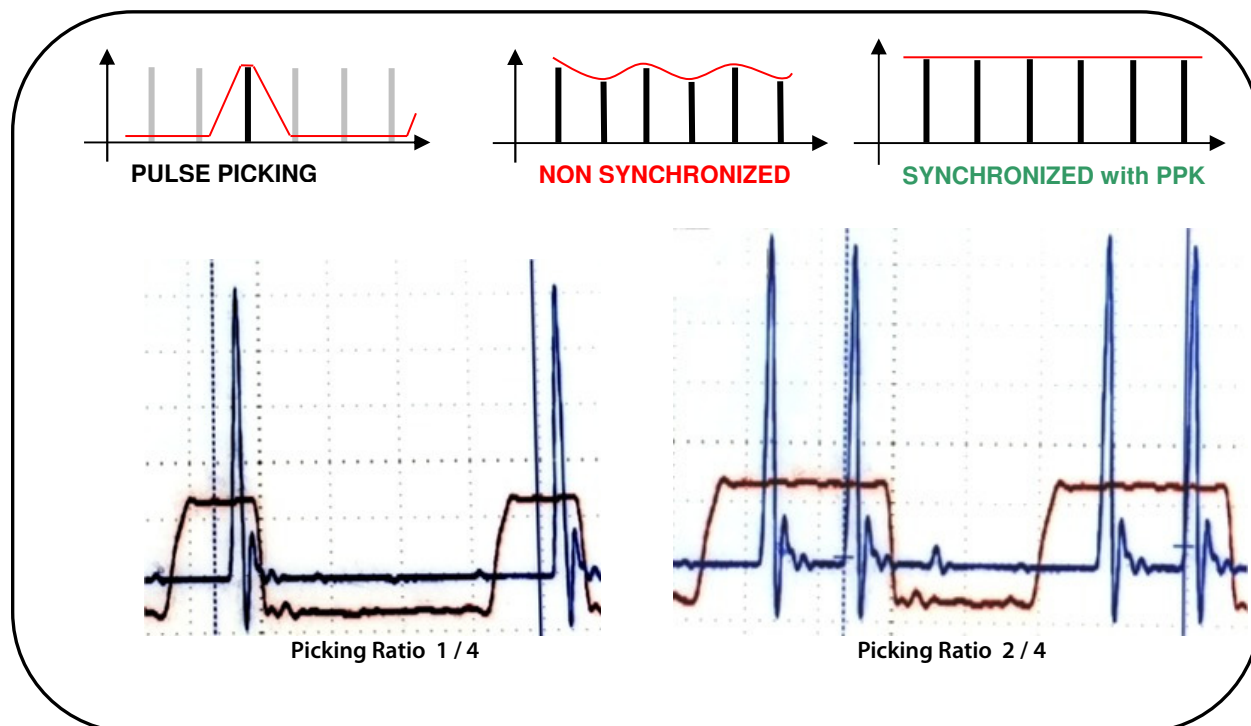
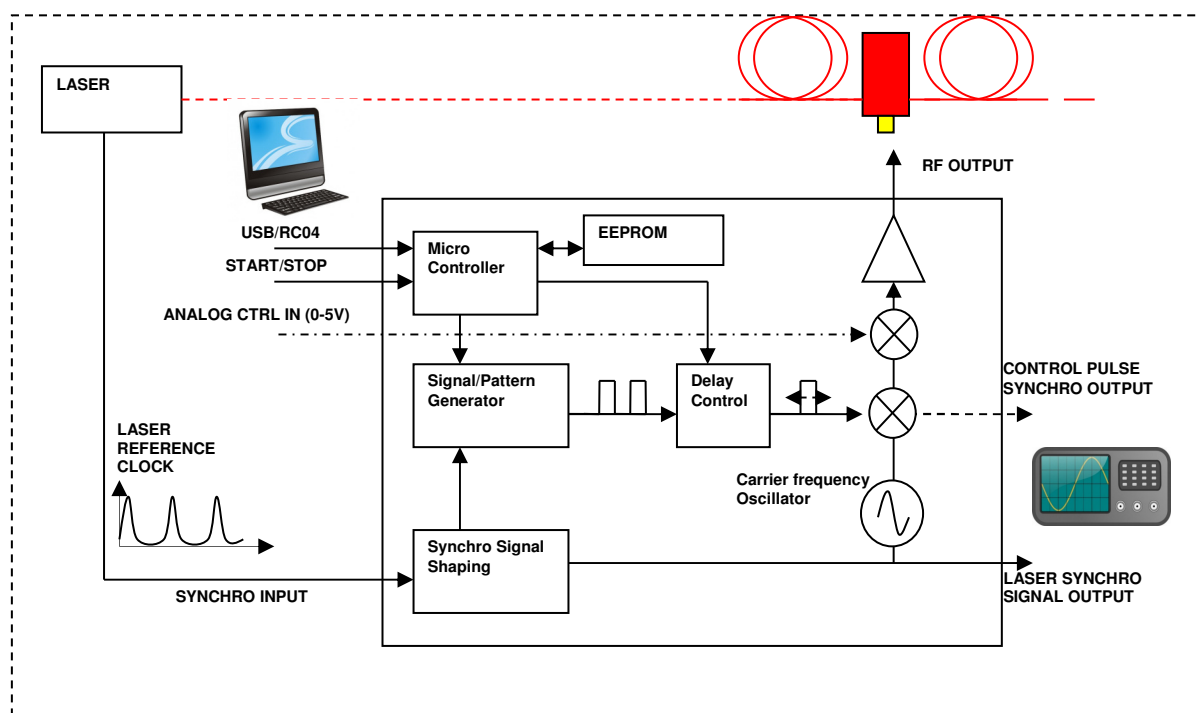
Internal Pulse generator – Picking control

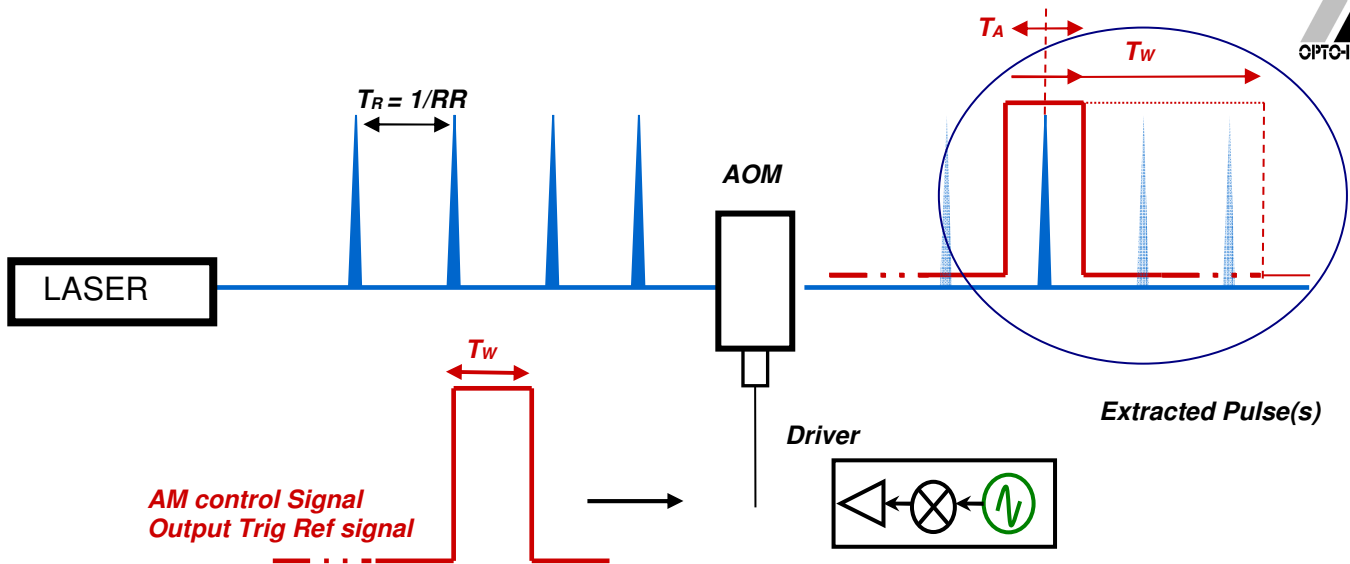
Number of picked pulses	N / M, N pulses picked out of M pulses, N in [1-1022], M in [2-1023]
Optical window gate duration	T_w , Adjustable as: $T_w = N * T_{RR} + T_A$ T_A =Time Adjust in [0-39ns] by steps < 100ps
Pulse Delay time	T_D , Adjustable in [0-39]ns by steps <100ps
Start/Stop control	SSTI: E/D, Enable/Disable digital signal TTL level (1=OFF), TRIG INPUT Response time nom 10ns

Parameters set-up

Method of control	RC04 (Remote control, Android), USB, RS232
Adjustable parameters by user	N, M, TW, TD, Max RF power level, Store
Store	Parameters stored in EEPROM, Automatic reload of stored parameters
Intrinsic Pulse to pulse stability	% Nominal contribution < 0.5%, Overall stability limited by laser stability
Carrier frequency	MHz Typ 250, Adapted to laser/AO device
Power supply	VDC 24 - Option : 110-230VAC
Output RF Power	W 1.8W max (on request 1-20W)
Rise time / Fall time	ns < 3, Internal pulse generator
Modulation input control / External	V ACI: Analog 0-5Volts/1KOhms - Rise/Fall time nom 10ns, Dynamic 40dB
Extinction ratio	dB >50 (internal pulse generator)
Output impedance	Ω 50
V.S.W.R.	< 1.5/1
Input connectors	DB15
Output connectors	Ω SMA, RF power
Size	mm ³ 207 x 99 x 26.1, Option 110-230VAC: Rack 19", 1U
Weight	kg Nom 0.6, Option 110-230VAC: 4 kgs
Heat Exchange	Conduction through baseplate, Option 110-230VAC: standalone
Operating temperature	°C 10 – 40 -Attention, for best stability of the system, it is recommended to operate in a +/- 1 °C environment
Maximum Case temperature	°C 50

Synoptics



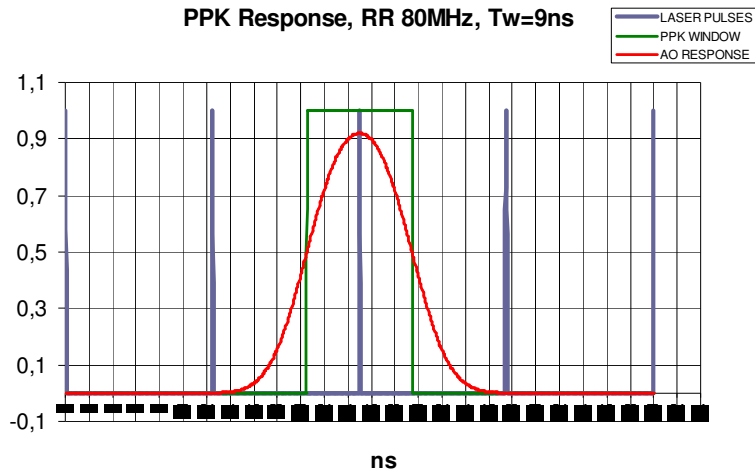


PIN connections

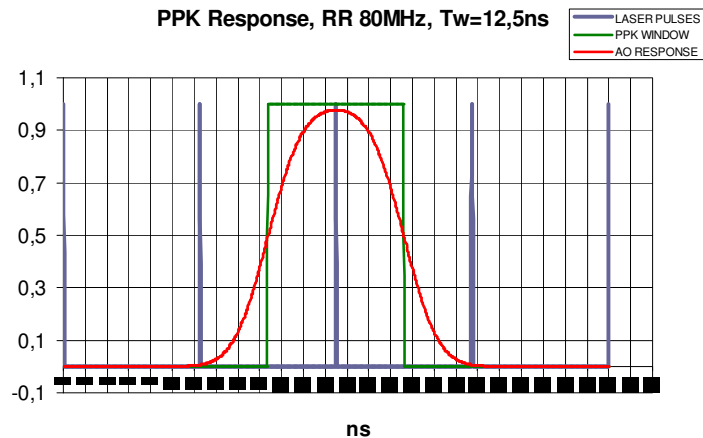
Pin 2: CONTROL PULSE SYNCHRO OUTPUT
 Pin 3: LASER SYNCHRO PULSE OUTPUT
 Pin 4: START & STOP TRIG INPUT
 Pin 7: ANALOG CONTROL INPUT

Pin 9, 10, 11: GROUND
 Pin 13, 14, 15: POWER SUPPLY (+24VDC)

PPK Response, RR 80MHz, Tw=9ns



PPK Response, RR 80MHz, Tw=12,5ns





Bluetooth®



The new remote control RC04 is based on a contactless protocole type bluetooth. This allows user to adjust and modify set up of the MPDS driver at any time, in any configuration, even when the system is embedded inside a box or a rack. Remote control is based on a tablet using Android protocole. A special App has been developed by AA OPTO-ELECTRONIC in order to modify the PPK parameters such as:

- Laser repetition rate
- Max RF power level
- Picking ratio
- Pulse delay
- Pulse width



USB – RS232 Software



The PPK driver can be controlled trough USB or RS232 (57600 bauds) communication from a computer. Parameters which can be adjusted are:

- Laser repetition rate
- Max RF power level
- Picking ratio
- Pulse delay
- Pulse width

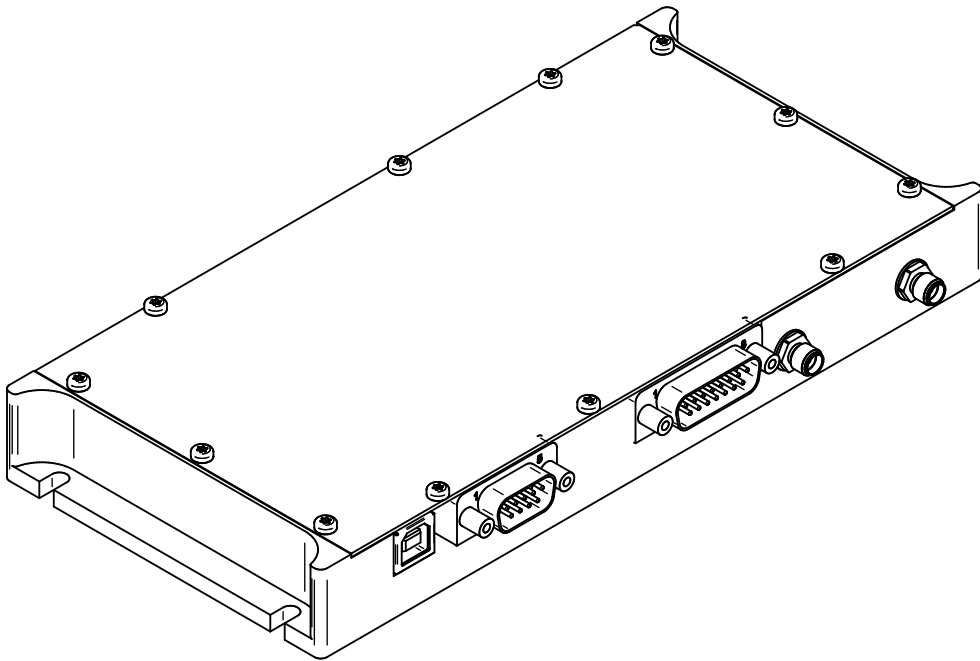
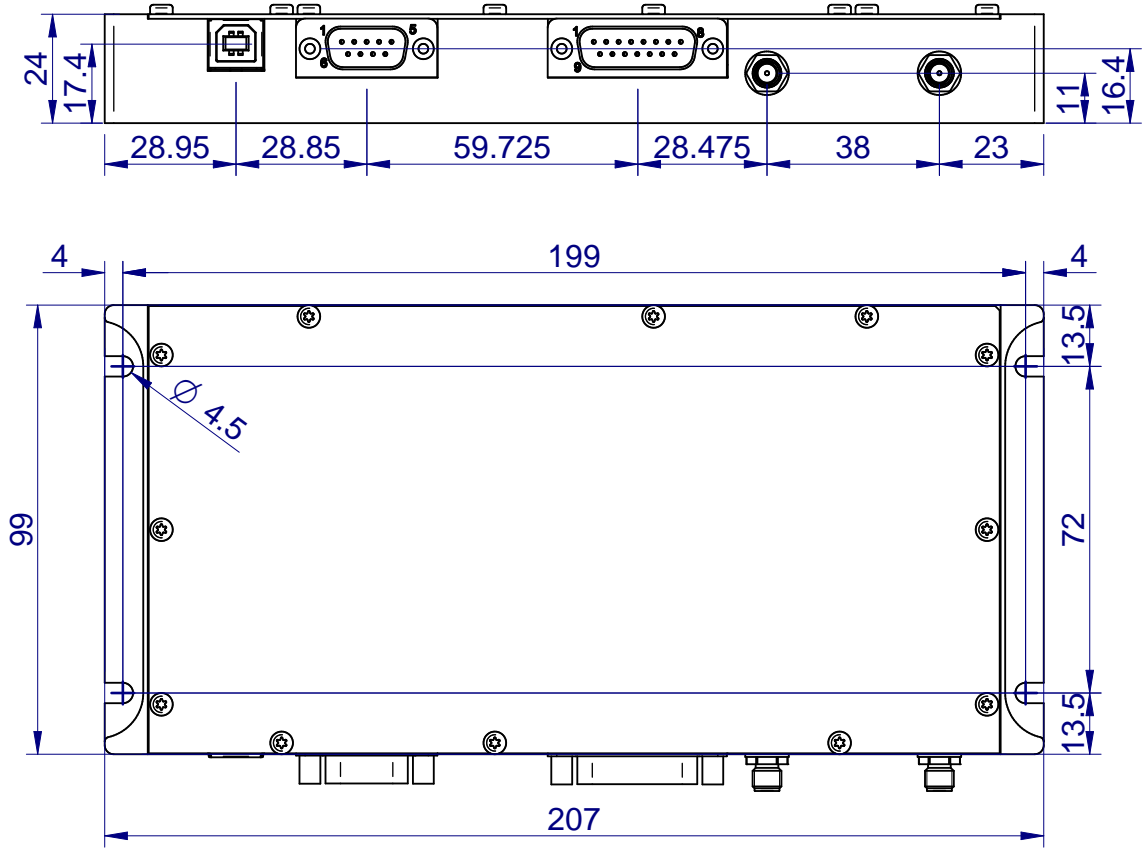
AA Opto-Electronic provides user with a fast protocole to be directly integrated in the user program. With only one command, one complete profile can be adjusted (Picking ratio, Delay, Duration). This allows user speed and smooth control with rapid interactions with the driver.

A SDK will be provide in order that user can create its own TPI (Third Party Interface) or GUI (Graphical User Interface).



ATTENTION: Performances of your driver is highly related to the quality of the input REFERENCE CLOCK signal.
 In case of a noisy REFERENCE signal, driver may have difficulties to perform a good synchronization of the signals and this may lead to some instability of the response.
 In case of instability, you can change the parameters adjustments in order to improve stability, or improve the reference clock signal.

Ce document est la propriété de AA-MCS et ne peut être communiqué sans son accord.



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				Vérif. Date:				
				Nom:	MOREAU C.			
				Dess. Date:	08/02/2016			
				Matière:				
				Traitement /Finition:				
				Titre: Dossier assemblage PPKA				
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