

Gooch & Housego



**High Power 2 Channel RF Driver:
For 2 Acousto-optic Q-Switches**

MQH0XX-YYDS3-ZZZ-2S

**Former Model Number:
390XX-YYDSZZZ-2CH-A**

Description:

The MQH0XX-YYDS3-ZZZ-2S is a High Power RF Driver with two RF outputs derived from one oscillator and is designed to drive two Q-Switches. There are two digital modulation control inputs: Fixed and Variable. These controls allow the customer to issue a pulse command of a "Fixed" pulse width, the duration determined by the Driver's pulse width control, settable by the customer, or issue a "Variable" pulse command, the duration determined by the input signal's pulse width. The output power of both channels are controlled by the analog input, where the mode of operation is defined by ZZZ = A05 normal analog mode, or R05 analog switched to full RF mode or a triggered RF Ramp Down mode where ZZZ = FPS first pulse suppression mode or PPK pre-pulse kill mode. The choices of Frequency (XX), Output Power (YY), and Power Control (ZZZ) option are "Factory Set" when ordered. The driver is supplied as a turnkey, air cooled rack mountable system box.

The product delivered will be manufactured to be compliant with EU Directive 2002/95/EC for Reduction of Hazardous Substance. The product will be manufactured to other standards upon customer request.

Key Features:

- 24, 27.12, 40.68, 68, or 80 MHz RF Frequency (XX)
- 0.01% Quartz Stabilized
- Up to 50 watts RF power output (YY) per channel
- Two TTL Digital Modulation Inputs: fixed and variable pulse width.
- Up to 100 kHz Pulse Rate.
- Analogue Modulation or Triggered RF Ramp Down Mode (ZZZ)
- Fault Protection on Low Power, High Power, and High VSWR
- Operates on 100 to 240 VAC 50/60 Hz

Applications:

- RF Driver for two Acousto-Optic Q-Switch Devices used to spoil the "Q" of a CW laser so as to output an intense pulse of light.
- Used in industrial, medical, or military applications.

For More Information, Contact: sales@goochandhousego.com www.goochandhousego.com

As part of our policy of continuous product improvement we reserve the right to change specifications at any time.

MQH0XX-YYDS3-ZZZ-2S
SPECIFICATIONS

PARAMETER:	SPECIFICATION:
Number of Channels	2 Outputs (RF Power Split from One Oscillator.)
Output Frequency is " <u>Factory Set When Ordered</u> "	XX = 24, 27, 41, 68, or 80 Where RF Frequency = 24.00, 27.12, 40.68, 68.00, 80.00 MHz \pm 0.01%
Spurious Levels:	-50 dBc maximum
Harmonic Distortion	-30 dBc maximum
Digital Modulation Inputs: Fixed Mod In Variable Mod In	<u>Modulation Common to Both Outputs.</u> TTL Levels, Triggered on TTL Rising Edge. Pulse Width Applied >50 ns. TTL Levels TTL HIGH = RF Off
Extinction Ratio:	35 dB minimum
RF Rise Time 10% to 90%	500 ns maximum
RF Fall Time: 90% to 10%	100 ns maximum
Modulation Repetition Rates:	1 Hz to 100 kHz for Fixed Modulation DC to 100 kHz for Variable Modulation
Fixed Modulation Output Pulse Width Adjustment Range:	1 to 14 μ s, Customer Adjustable
Available Pulse Control Options:	ZZZ = Mode <u>Modulation Common to Both Outputs</u>
Pulse Control Mode is " <u>Factory Set When Ordered</u> ".	FPS = First Pulse Suppression See Figure 2 PPK = Pre Pulse Kill See Figure 3 A05 = Analog Control See Figure 4 R05 = RF switched to Analog Control See Figure 5 ___ = Digital Modulation Only See Figure 6
FPS Trigger / Analog input for Pulse Suppression.	Units Configured with FPS, PPK: TTL Levels, Triggered on TTL Rising Edge. Units Configured with A05, R05: 0 to 5 volts Analog.
*RF Output Power Per Channel " <u>Factory Set When Ordered</u> " YY = 50 watts nominal for 24, 27, and 41 MHz units <u>Both Outputs Must Have 50 ohm Load.</u>	Adjustable from 12 to 50 watts. *25 watts nominal for 68, and 80 MHz units, Adjustable from 12 to 25 watts.
Output Impedance:	50 ohms nominal
Shutter Output:	0.3 sec delay. Opens on fault. Capable of Sinking 1 amp at 28 volts Maximum.
Power Requirements	100 to 240 VAC @ 50 / 60 Hz Fused @ 5 amps
<u>MAXIMUM RATINGS:</u>	
Supply Voltage:	264 volts AC
Power Output:	No DC Feedback Allowed
Case Operating Temperature:	+10°C to +55°C
Storage Temperature:	-20°C to +85°C

CONNECTORS & MECHANICAL:

RF Output Connector:	BNC Female (2X)
Modulation Input Connectors:	BNC Female (3X)
Thermostat Connection to Q-Switch	BNC Female (2X)
Shutter Connector:	BNC Female
Power Connector:	3 pin IEC Panel Mount EMI Filtered

FAULT INDICATORS:

	<u>Located on Front Panel.</u>
Low Power	Faults after 0.3 second, power below LP Set Point. Resets on power adjusted above Set Point.
High Power	Faults when power above HP Set Point. Reset required after removing fault.
Over Temp	Faults on open Thermostat. "Thermo in" 1 and / or 2 Resets on closed Thermostat. (Q-Switch below set temperature)
High VSWR	Faults when reflected power above VSWR Set Point. Reset required after removing fault.
Fault Reset Button:	<u>Located on back panel.</u>

ADJUSTMENTS:

	<u>Located Inside Unit Through Hole in Module Cover Except Where Noted:</u>
RF Power Level Adjustment	Adjusts the output RF Power. <u>Located Through Hole in Back Panel.</u>
LP Set Point	Adjusts the minimum power threshold. If the module's output goes below this set value, the low power warning light will turn on, but the driver will continue to output power. This is a warning, not a true fault condition.
HP Set Point	Adjusts the maximum power threshold for the module. If the output rises above this threshold, the module will cease output until it is reset.
VSWR Set Point	Adjusts the module's tolerance for a mismatched load connected to RF Out. If a mismatch is detected, the driver will cease outputting power until reset.
Pulse Width	Adjusts the length of time the driver outputs no RF energy after receiving a " Fixed Mod in" trigger. 1 μ s to 14 μ s. <u>Located Through Hole in Back Panel.</u>

The following adjustment is not used on units configured with FPS or PPK:

Threshold	Sets the point below which the analog voltage is ignored and the system output is shut off.
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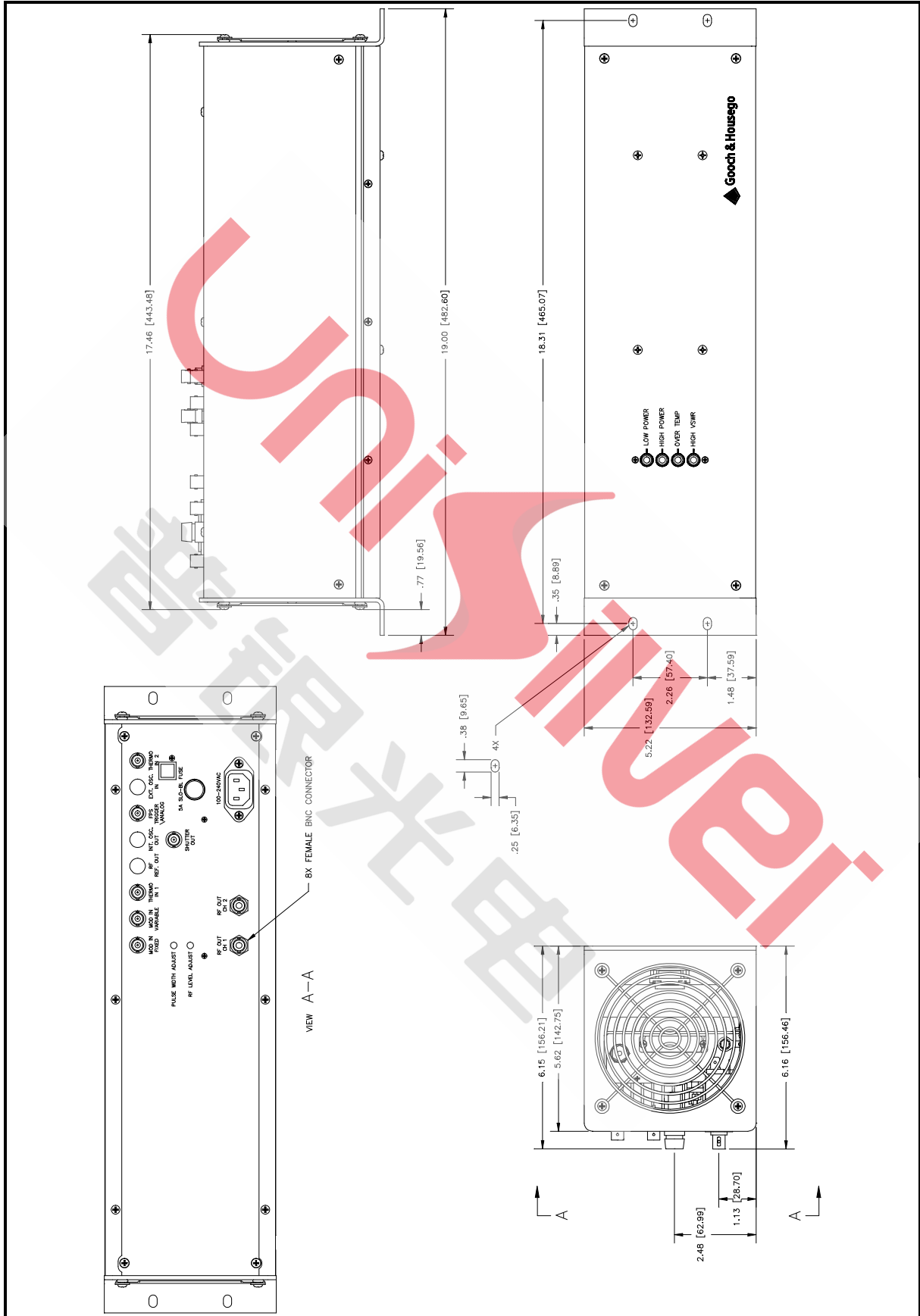
The following adjustments are not used on units configured with Analog Input (A05, R05):

FPS Start	Adjusts the initial power level of the first pulse.
FPS Slope	Adjusts how quickly the RF pulses return to their normal level after the FPS has been triggered. 20 μ s to 300 μ s.
FPS Window	Adjusts the duration of the suppression pulse cycle. 20 μ s to 300 μ s.

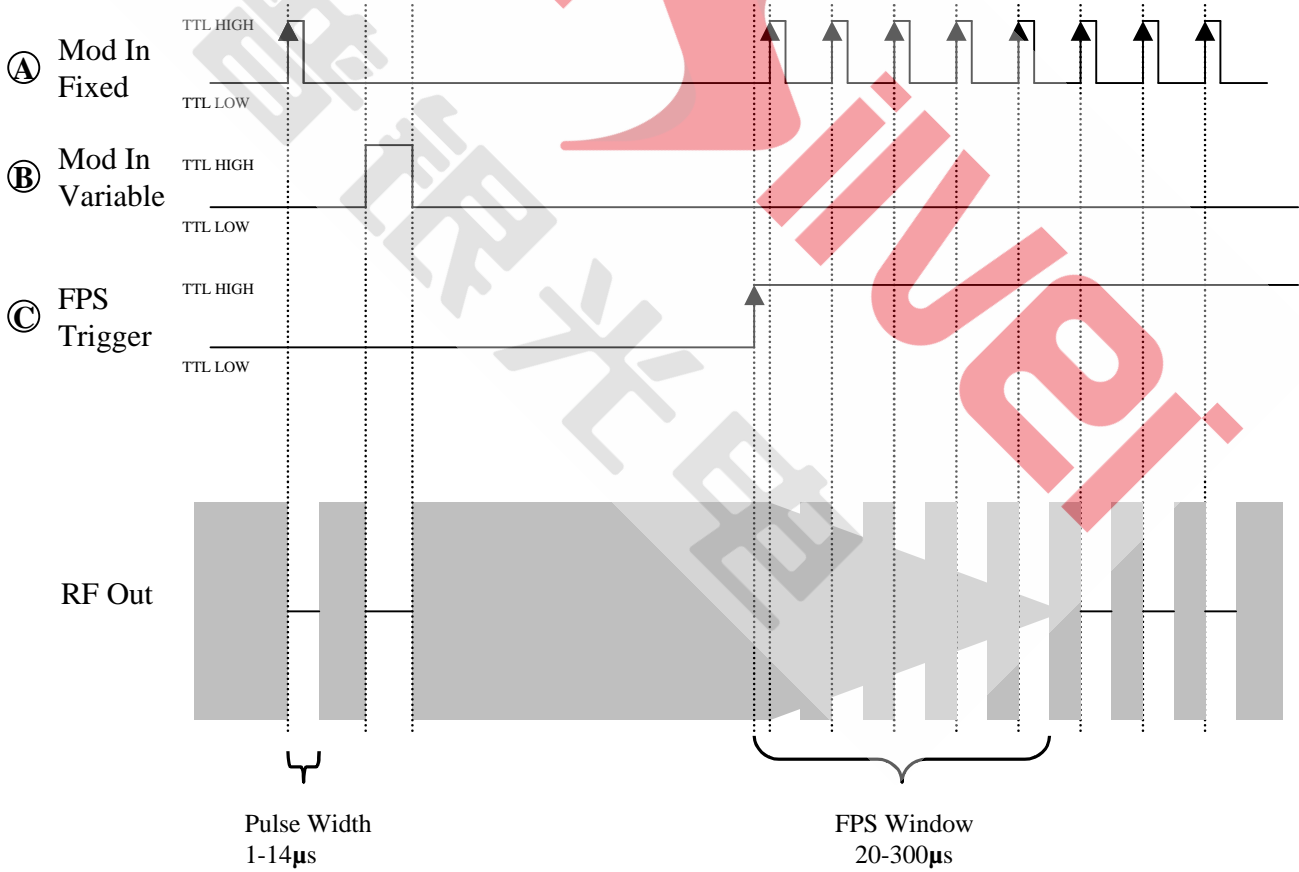
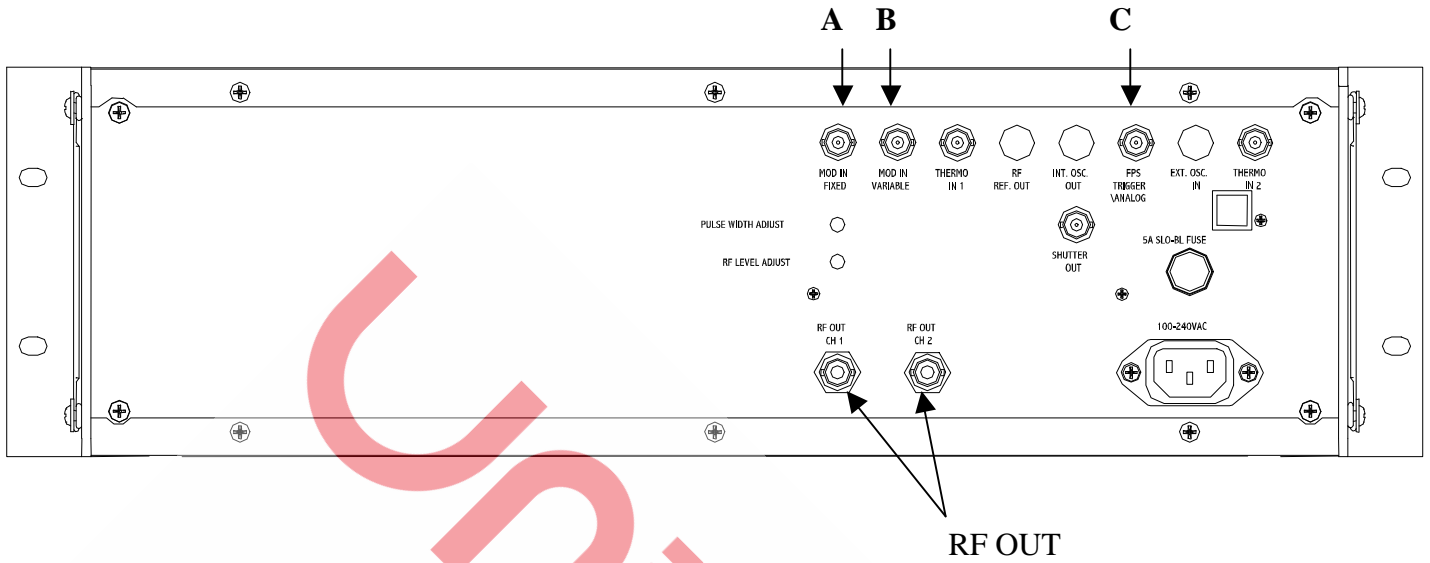
RELATED DOCUMENTS:

Pulse Suppression Modes:	FPS	PPK	A05	R05	___ Digital Mod. Only
Outline Drawing:	53D2295	53D2295	53D2295	53D2295	53D2295
Operating Manual:	51A19373	51A19374	51A19375	51A19375	

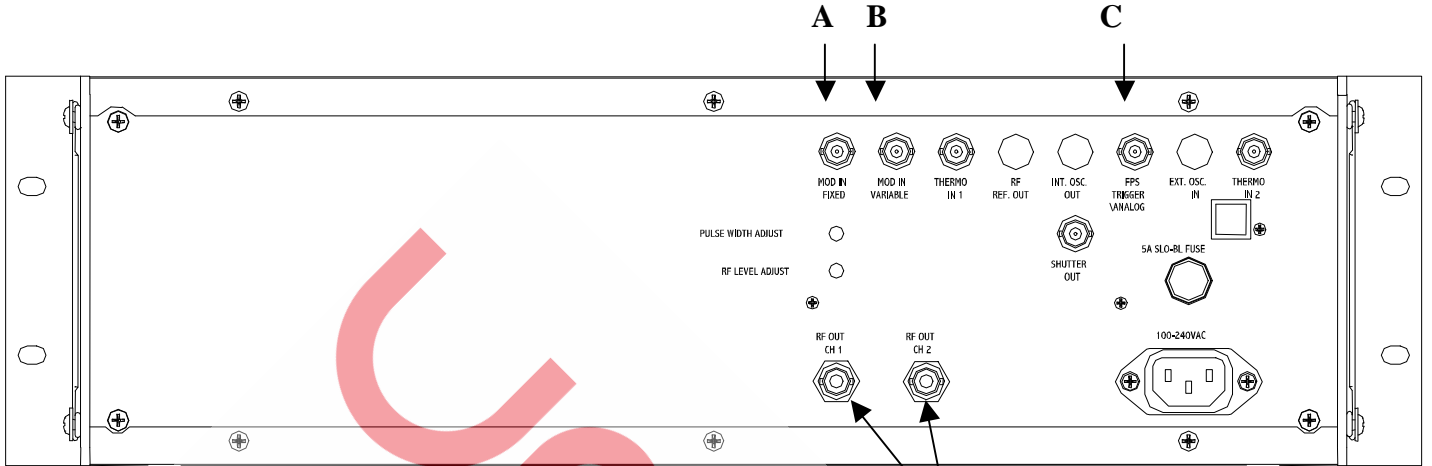
Figure 1



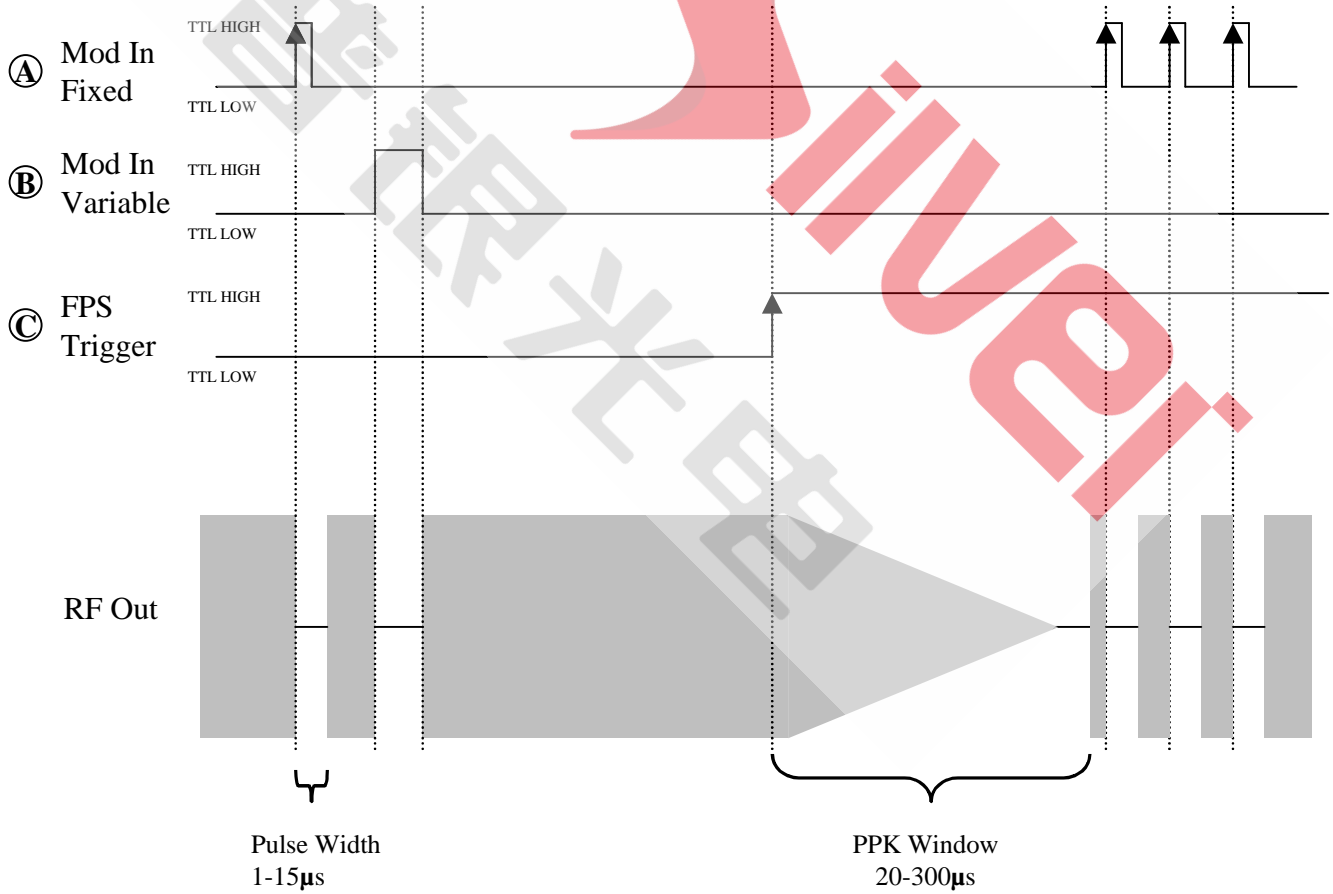
**390XX-YYDSFPS-2CH-A (HIGH POWER) First Pulse Suppression Control
Connection and Control Diagrams**



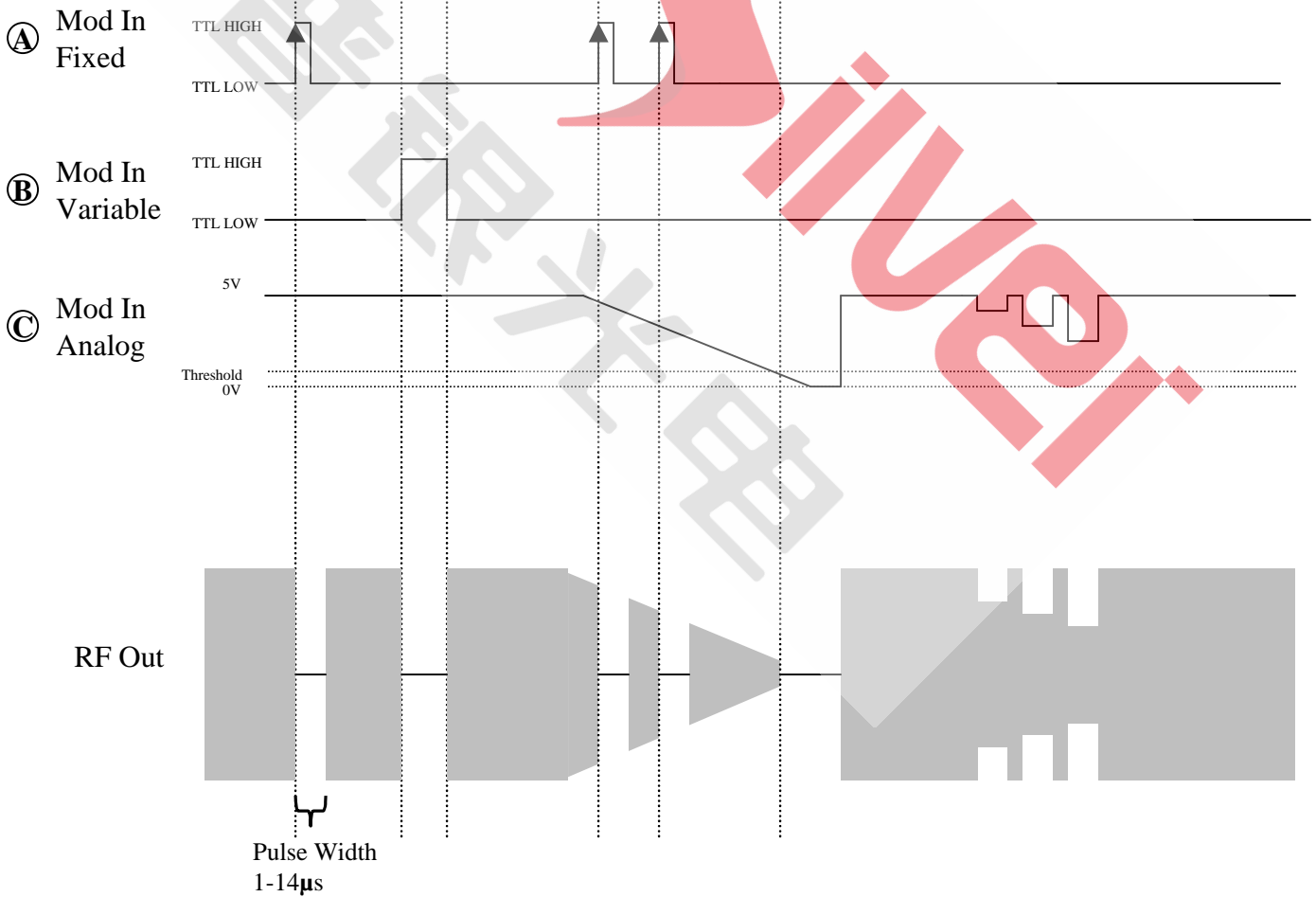
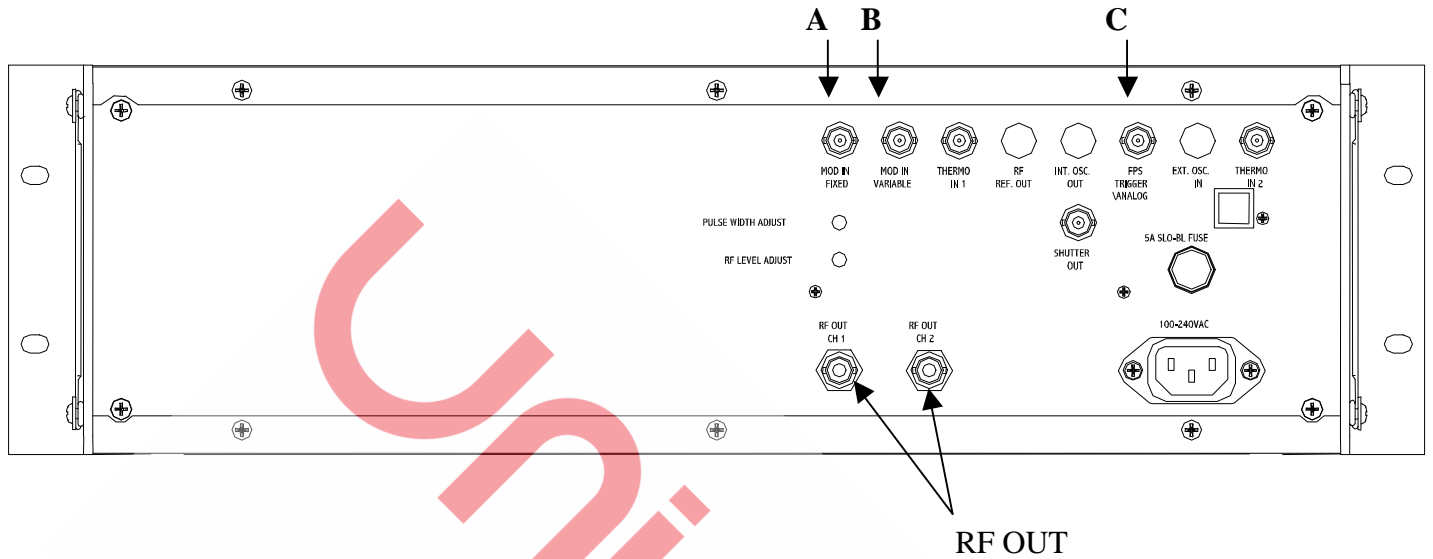
**390XX-YYDSPPK-2CH-A (HIGH POWER) Pre-Pulse Kill Control
Connection and Control Diagrams**



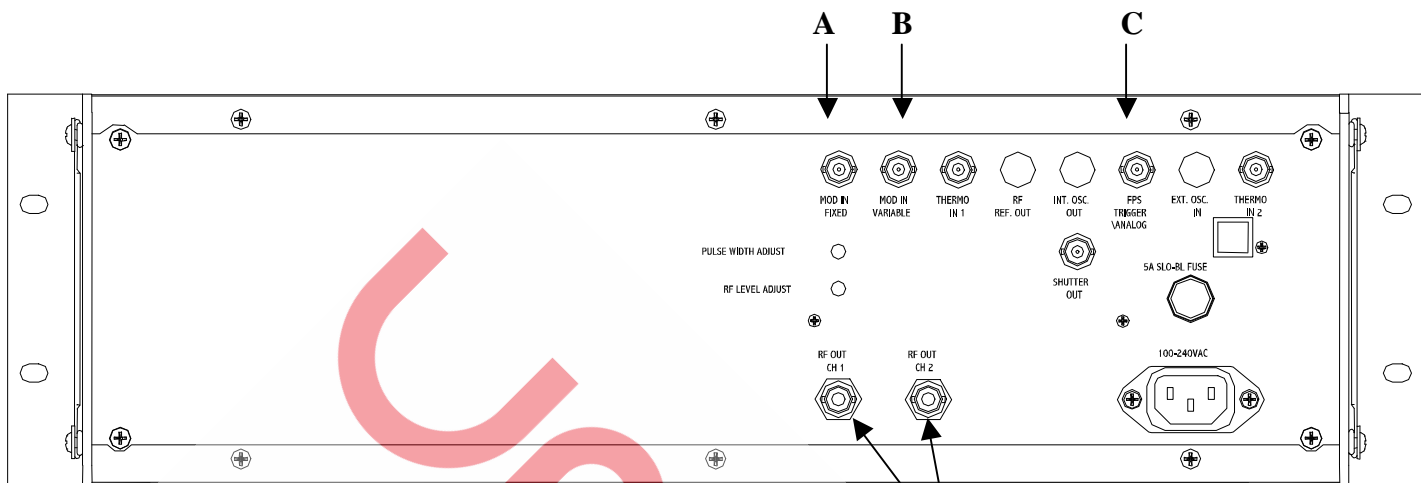
RF OUT



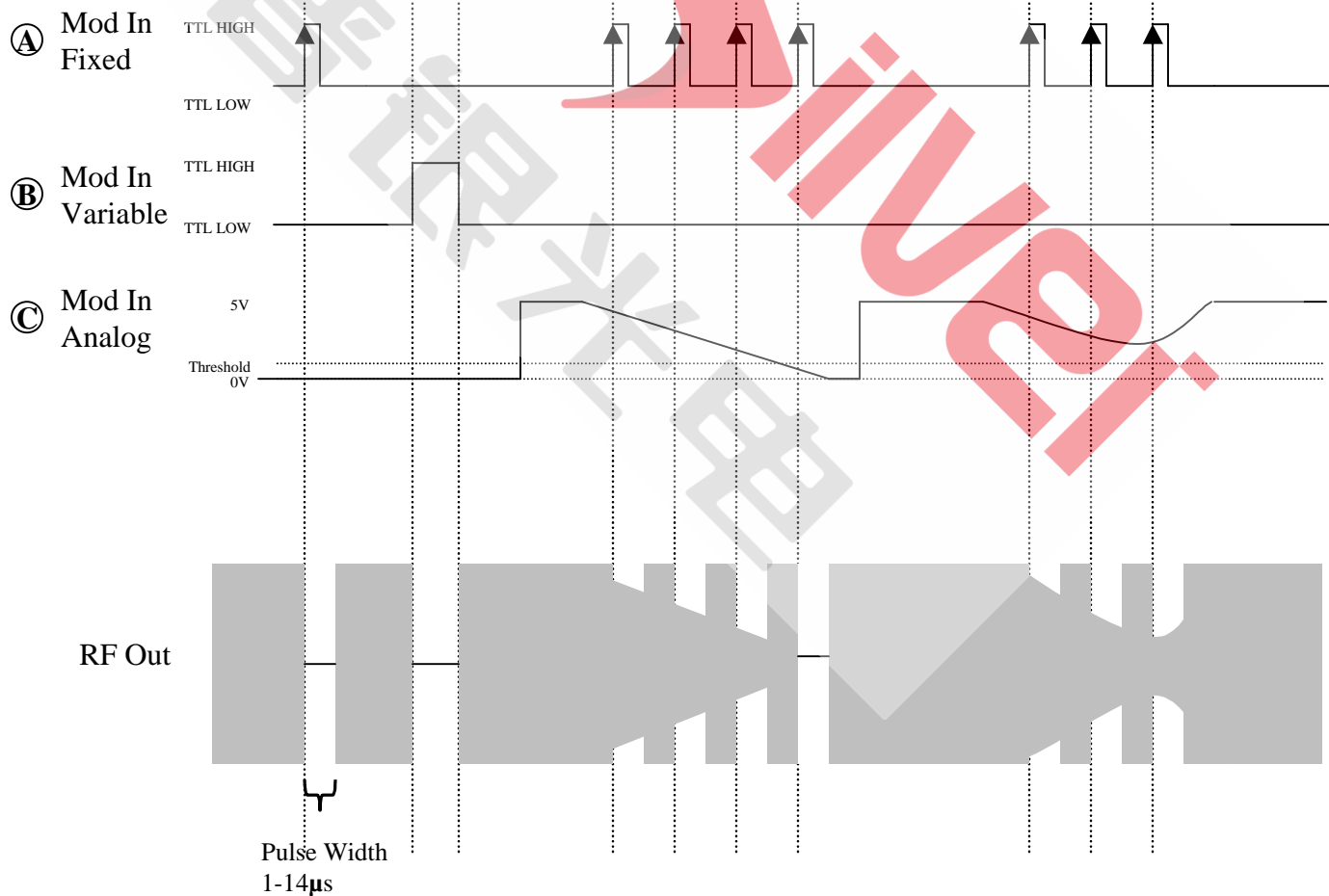
390XX-YYDSA05-2CH-A (HIGH POWER) Analog 5 Volt Control
Connection and Control Diagrams



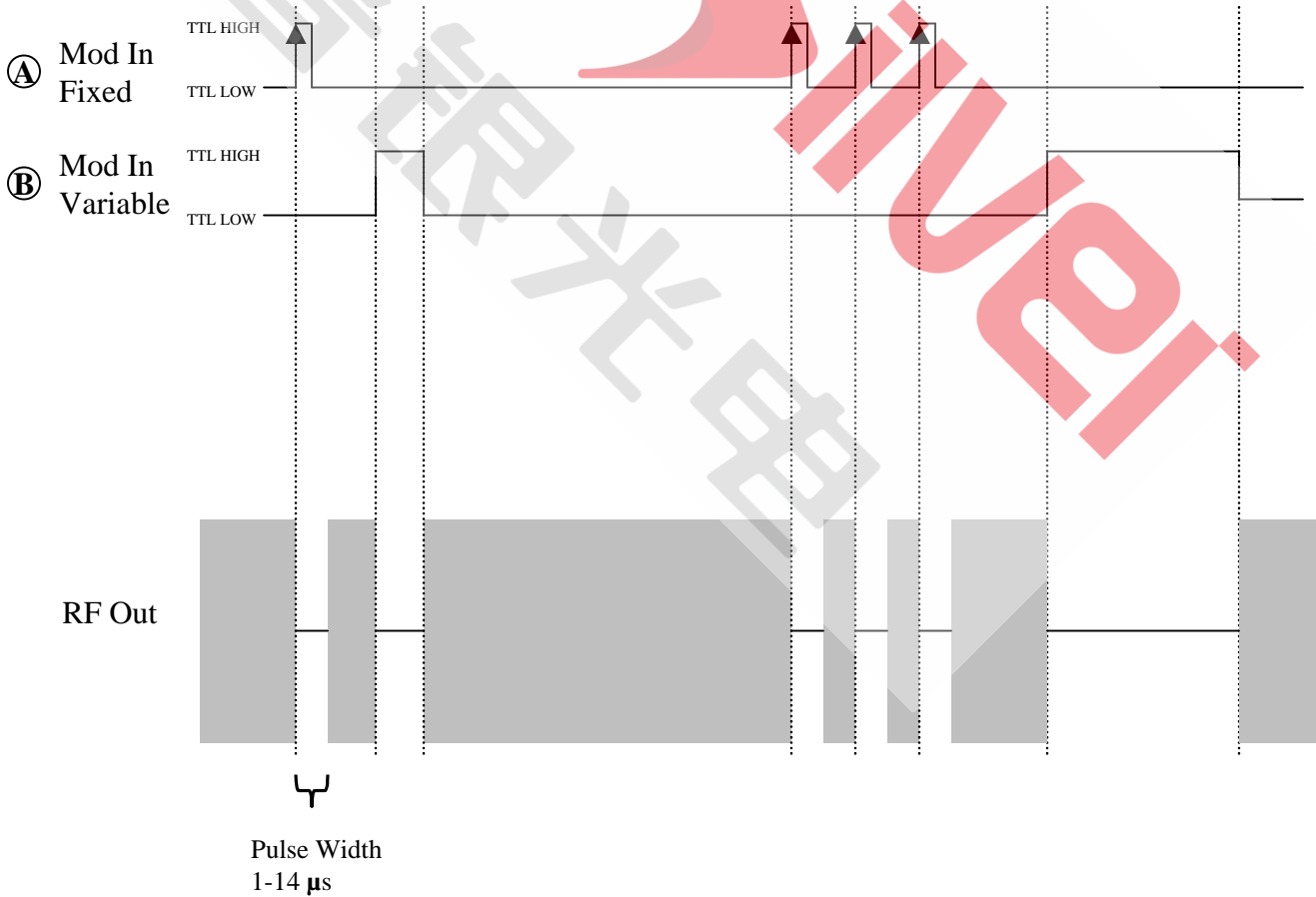
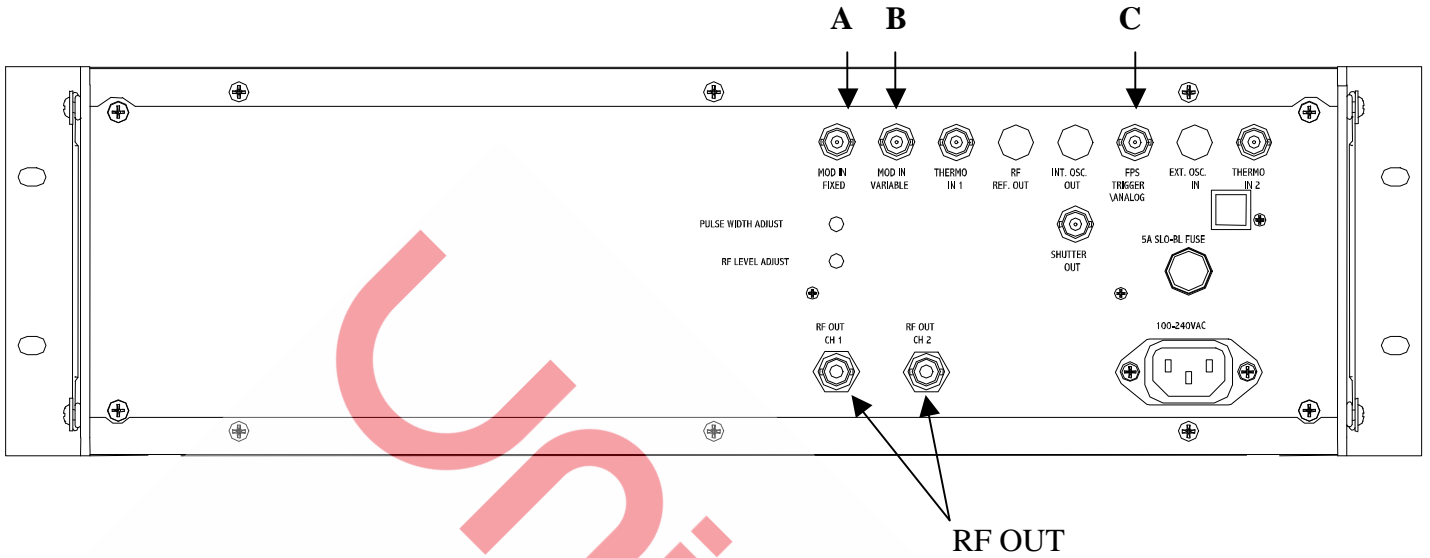
390XX-YYDSR05-2CH-A (HIGH POWER) RF Switched to Analog 5 Volt Control
Connection and Control Diagrams



RF OUT



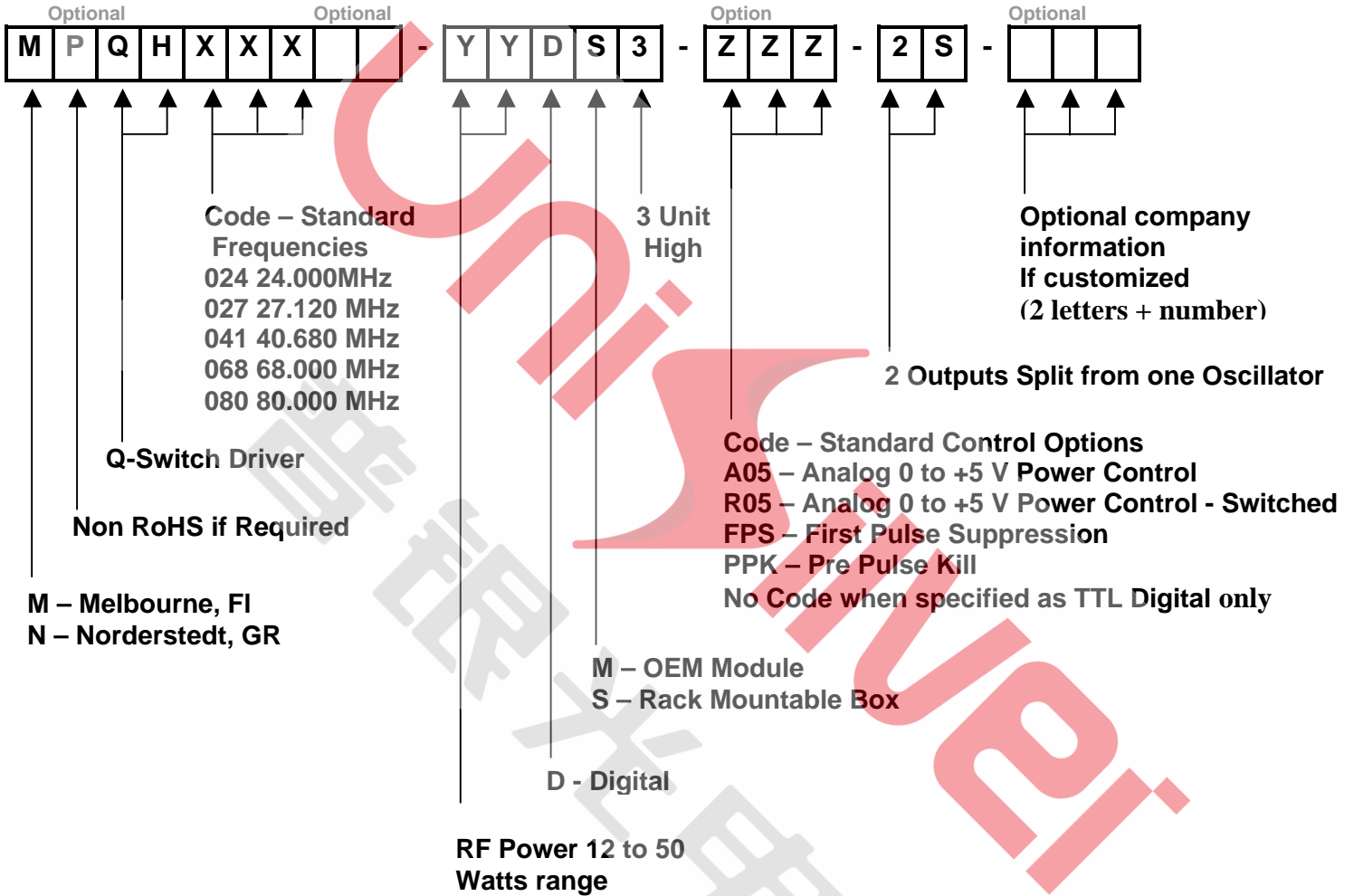
390XX-YYDS-2CH-A (HIGH POWER) Digital Control Only
Connection and Control Diagrams



Ordering Codes:

Example: MQH027-50DS3-A05-2S

A two channel 27 MHz RF Driver with two TTL Digital Modulation inputs (fixed and variable pulse width) and an analog input (A05) which enables control of the RF output power. Designed to Drive two AO Q-Switches requiring 50 watts RF Power or less per channel. Delivered as a RoHS compliant, turn key air cooled, rack mountable system box.


Technical Assistance & Customization

Our Engineering and Sales team are available to discuss your requirements and will assist you in selecting the most appropriate acousto-optic Q-Switch / Driver combination for your laser.