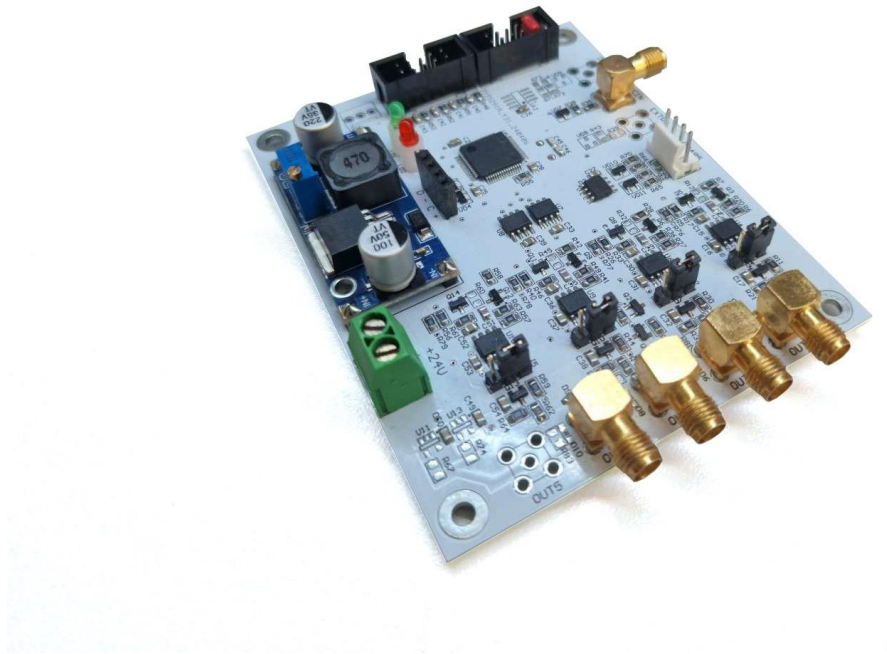


ICMSG-100-5 Digital Pulse/Delay Generator

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ICMSG-100-5 Digital Pulse/Delay Generator DATASHEET



1 Fig. ICMSG-100-5 Digital Pulse/Delay generator board

Overview

The ICMSG-100-5 Digital Pulse/Delay generator is a four-channel device designed for synchronizing various equipment, with its primary application in scientific and technological industry (for example – laser photonics).

Key features:

1. Frequency Range:

- The ICMSG-100-5 Digital Pulse/Delay generator operates within a frequency range of 1 Hz to 100 Hz.

2. Output Signal:

- The output signal is a 5V CMOS waveform (with a possible range of 5V to 20V upon request).
- It exhibits high noise immunity and has a jitter of less than 1 ns.

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3. Compact Design and Low Power Consumption:

- The ICMSG-100-5 Digital Pulse/Delay generator boasts small dimensions and consumes approximately 150 mA of power from 24V DC.
- Its compact form factor makes it suitable for various applications.

4. RS485 Interface:

- The Digital Pulse/Delay generator features a convenient RS-485 interface for communication.
- An RS-485 USB Type B converter is available upon request.

5. Individual Channel Configuration:

- The standout feature of the ICMSG-100-5 Digital Pulse/Delay generator is the ability to independently configure each of its four channels.

Note that there's a version called CCMMSG-100-5 without individual channel configuration, where all channels operate at the same frequency.

User-Controlled Parameters

Users can manage the following parameters:

1. Frequency:

- Set the frequency within the range of 1 Hz to 100 Hz.

2. Channel Activation/Deactivation:

- Enable or disable each channel individually without affecting others.

3. Individual Pulse Delay and Duration:

- Configure individual pulse delays and durations (up to 900 microseconds with a 1-microsecond step).

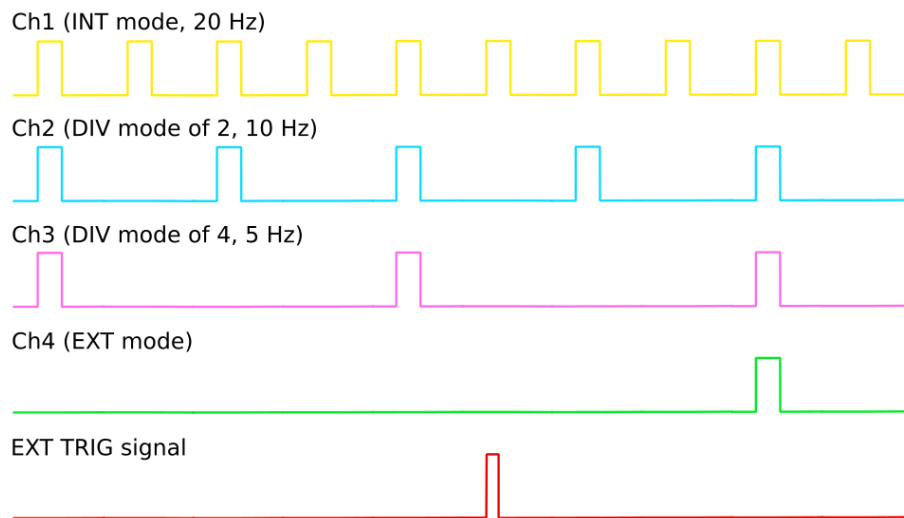
4. Operating Modes for Each Channel:

- **Internal Generation Mode:**
 - The channel generates signals at a specified overall frequency.
- **External Trigger Mode (5V Trigger or Software):**
 - The channel waits for an external trigger and emits a synchronized pulse at the set frequency.
 - Users can define a prohibition time (1 to 10,000 seconds) after triggering, during which the channel remains blocked.
 - Other channels can continue operating during inhibition time.
 - Individual (software) and global triggers (5V external signal or software) are available.
- **Signal Division Mode:**
 - Channels can generate signals with skips, emitting only every n^{th} signal (n ranging from 2 to 65,000).
 - This allows achieving virtually any divided frequency on a specific channel.

Example Scenario

1. Set the overall frequency to 20 Hz.
2. Configure the channels as follows:
 - **Channel 1:** Internal generation mode (20 Hz)
 - **Channel 2:** Division by 2 (10 Hz, skipping every second signal)
 - **Channel 3:** Division by 4 (5 Hz, emitting every fourth signal)
 - **Channel 4:** External trigger mode (waits for an external trigger, shots synchronized with other channels)

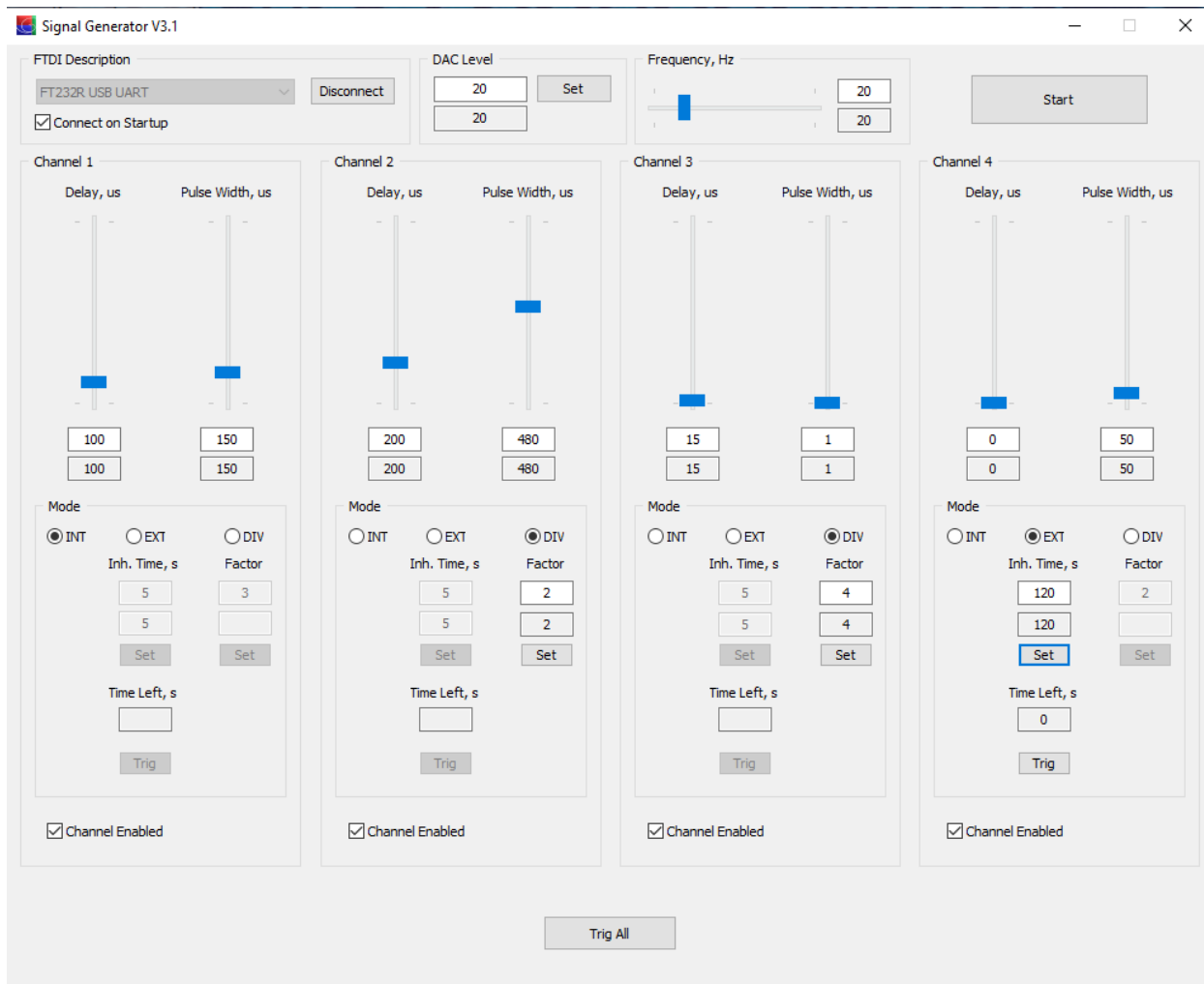
Remember that each channel retains its individual delays and pulse durations.



2 Fig. Example scenario output time diagram

ICMSG-100-5 Digital Pulse/Delay Generator

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3 Fig. User GUI software window

SPECIFICATIONS

	ICMSG-100-5	CCMSG-100-5
Power source	24 V DC	
Current	~150 mA	
Frequency*	1 to 100 Hz	
Frequency resolution	1 Hz	
Pulse width	1 to 900 μ s	
Pulse width resolution	1 μ s	
Pulse delay	1 to 900 μ s	
Pulse delay resolution	1 μ s	
Number of channels	4	

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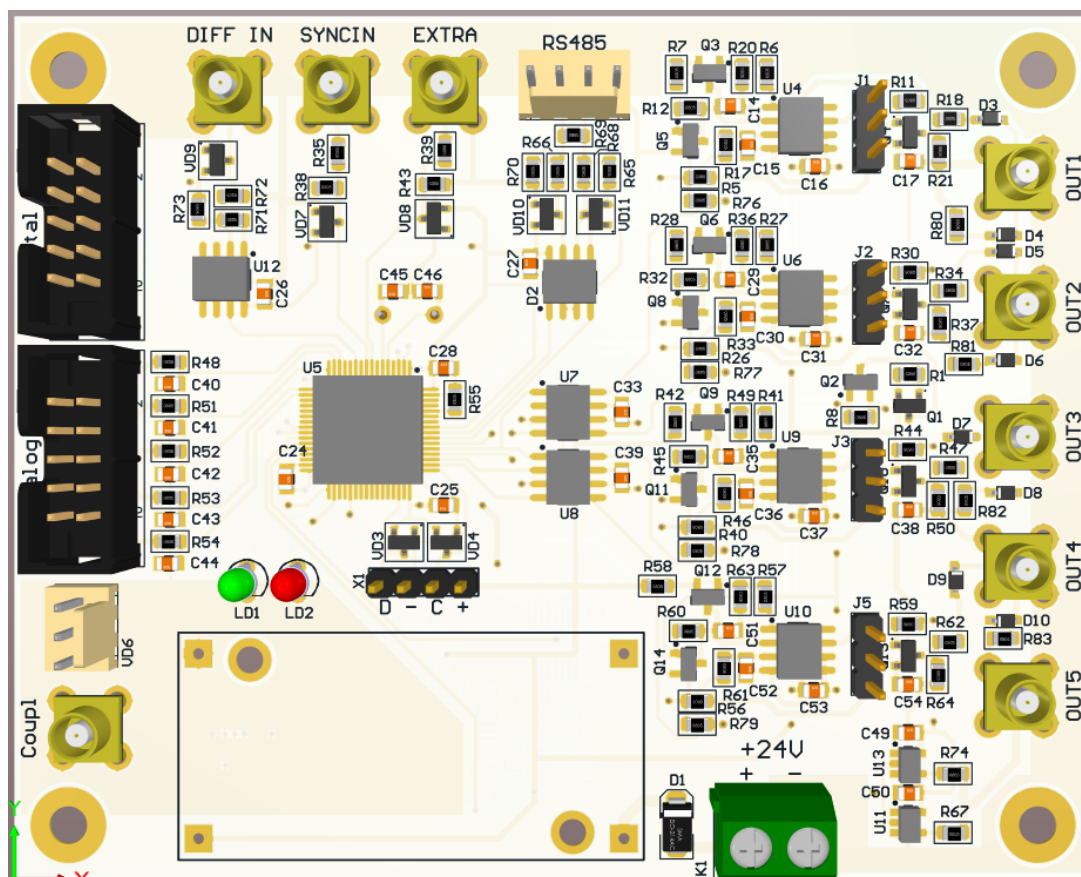
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Output signal type	CMOS (TTL compatible)	
Output level	5 V (5-20 V upon request)	
Output connector	SMA (BNC in option with case)	
Signal jitter	≤ 1 nS	
Channel modes	Each channel individually: INT; DIV (2 to 65000); EXT with inhibit time option, external 5 V signal or from software	INT or EXT modes only, EXT by external trig signal
Interface	RS-485 (RS-485 to USB adapter available upon request or with case option)	
Additional functions	Interlock connector (NC), physical start button, state indicator LED, user GUI software	

*Other repetition rates can be available upon request.



4 Fig. ICMSG-100-5 Digital Pulse/Delay generator board 3D model (TOP view)

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5 Fig. RS-485 connector pinout



6 Fig. Digital In connector pin numbering

Digital IN pinout:

Pin:	Function:
1, 3, 5, 7, 9	GND
2	Interlock (+3.3 V pull up)
4	Start button illumination (+3.3 V when generator is started, 0 V - stopped)
6	Start button input
8	External state indicator LED
10	Reserved