MCCD: Eight output START trigger / master clock source

Ideal for operating multiple MCS8As with synchronous START and common master clock source

Versions available with internal ovenized 10MHz clock or Cs atomic clock

The MCCD is a 8 output fast pulse driver with 60 ps rise time and a 8 output clock driver (TTL) with internal reference clock or ext input.

Description

The Model MCCD is a fast pulse distributor intended to be used with multiple MCS8A modules. It is also a very good general-purpose pulse generator when multiple synchronized jitter-free signals are required. It expands one common START signal to several synchronous starting MCS8A units. The introduced additional time jitter is typical less than 0.075 ps rms.
Output rise / fall time is 60 ps.
The minimum pulse width is 90 ps. It can operate up to 6 GHz periodic signal frequency.

In addition there is a synchronous clock source at the rear panel. It can supply up to 8 MCS8A units with a common clock for synchronous operation of multiple MCS8A, providing up to 64 synchronized channels. It has a clock input (TTL 3.3V,10 to 120 MHz) to be distributed to the connected MCS8As. Termination can be 50 Ohm or 3 kOhm. AC or DC coupling is selectable.

If no input signal is connected, the internal 10 MHz clock source is fed to the output connectors. The internal quartz oscillator can be replaced by an oven-stabilized oscillator (option MCCDOVX) or a highly stable Cs atomic clock (option MCCDATOM). Also there is an optional binary divider (32 bit), which can reduce the external clock in binary steps. Divider factor is set by internal jumpers.

Performance

FRONT PANEL:
Sync START:
One input (neg. signals)
8 synchronous outputs
with time skew less than 20 ps.
Propagation delay: ~1.4 ns
Pulse jitter: 0.075 ps rms (typ.)

REAR PANEL:
Sync master clock:
One input (pos. signal, TTL)
8 synchronous TTL (3.3 V) outputs.

Specifications

FRONT PANEL:
TRG Input: 1x SMA connector,
Zin = 50 Ohm, 0->0.25V nom.
0V...-1.5V maximum input voltage range,
Threshold: -0.125V fixed
Don't apply pos. voltage!
TRG outputs: 8 x SMA connector, outputs FAST NIM (CML) pulses
(neg.: 0V -> -0.4V) into 50 Ohm,
Z_{out} = 50 Ohm, backterminated.

REAR PANEL:
Reference clock in: BNC connector, TTL compatible, 10 MHz,
input frequency: <120 MHz,
optional 50 Ohm terminated (int. Jumper)
optional AC- coupled (int. Jumper)
Master clock out: (8x)
BNC connector,
TTL compatible, 0...3.3V, rise time: 1ns
Power connector: 5.5 x 2.1 mm DC connector (center positive)

REFERENCE CLOCK:
10 MHz crystal oscillator (10ppm)
MCCDOVX option
10 MHz ovenized crystal oscillator, frequency stability: 0.03 ppm @ 0°C to +50°C
MCCDATOM option 10 MHz Cs atomic clock
Short-term stability (Allan Deviation) of 3.0×10^{-10} at τ = 1 sec, typical long term aging of $<9 \times 10^{-10}$/month, and maximum frequency change of $\pm 5 \times 10^{-10}$ over an operating temperature range of –10 °C to 70 °C.
Power requirements: 12V DC / 0.5A

Operating Temperature Range: 0°C to +50°C

Physical: aluminum case,
275mm x 260mm x 48mm, 1.8 kg

Shipping case: 500mm x 400mm x 200mm, 7 kg

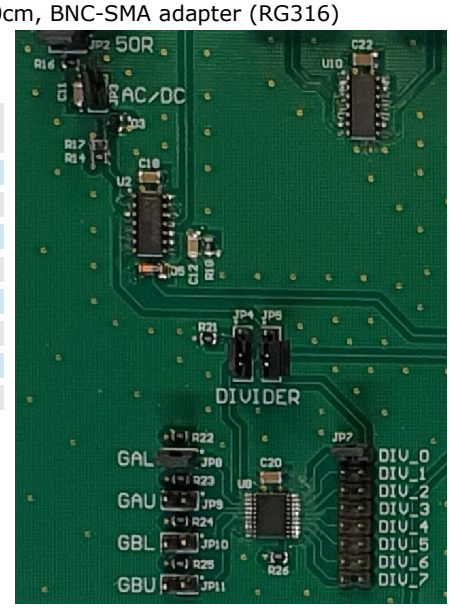
Accessories:
- External power supply: IN: 90 - 264 V AC
  Out: 12 V DC (enclosed)
- Handbook

Hardware options:
- **MCCDOVX** option: Oven controlled oscillator
- **MCCDATOM** option: 10 MHz Cs atomic clock
- **MCCDDIV** option: internal 32bit binary didvider
- **MSET1** Set of cables: 8xRG316 SMA-SMA, 30cm
- **MSET2** Set of cables: 8xRG316 BNC-BNC, 50cm
- **MSET3** Set of cables: 8xRG316 BNC-BNC,100cm
- **MSET4** Set of cables: 1xSMA 1m, 8xSMA 20cm, 8xBNC 50cm, BNC-SMA adapter (RG316)

Examples of divider settings

Jumper 7 setting	Jumper 8 GAL active	Jumper 9 GAU active	Jumper 10 GBL active	Jumper 11 GBU active
DIV_0	5,000,000.0	19,531.250	76.294	0.298
DIV_1	2,500,000.0	9,765.625	38.127	0.149
DIV_2	1,250,000.0	4,882.813	19.073	0.075
DIV_3	625,000.0	2,441.406	9.573	0.037
DIV_4	312,500.0	1,220.703	4.768	0.019
DIV_5	156,250.0	610.352	2.625	0.009
DIV_6	78,125.0	305.176	1.192	0.005
DIV_7	39,062.5	152.588	0.596	0.002

Divider Frequency in Hz for an input frequency of 10 MHz



Order Information

Model	Description	Order
MCCD	8-fold pulse driver + master clock source with 8 synchronous outputs	MCCD
MCCDOVX	Option: oven controlled ref.oscillator (higher stability)	MCCDOVX
MCCDATOM	Option: Cs atomic clock (highest stability)	MCCDATOM
MCCDDIV	Option: internal divider	MCCDDIV
MSET1	Set of cables: 8xRG316 SMA-SMA, 30 cm	MSET1
MSET2	Set of cables: 8xRG316 BNC-BNC, 50 cm	MSET2
MSET3	Set of cables: 8xRG316 BNC-BNC,100 cm	MSET3
MSET4	Set of cables: 1xSMA 1 m, 8xSMA 20 cm, 8xBNC 50 cm, BNC-SMA adapter	MSET4