

TCC100P

TIME CODE to PARALLEL BCD

INTERFACE



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Masterclock shall not be liable for errors contained here-in or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

See important limited warranty information starting on page 2.

LIMITED WARRANTY

This Masterclock, Inc. (hereinafter Masterclock) product warranty extends to the original purchaser.

Masterclock warrants the TCC100P against defects in materials and workmanship for a period of one year from date of sale. If Masterclock receives notice of such defects during the warranty period, Masterclock will, at its option, either repair or replace products that prove to be defective.

Should Masterclock be unable to repair or replace the product within a reasonable amount of time, the customer's alternate remedy shall be a refund of the purchase price upon return of the product to Masterclock. This warranty gives the customer specific legal rights. Other rights, which vary from state to state or province to province, may be available.

EXCLUSIONS

The above warranty shall not apply to defects resulting from improper or inadequate maintenance by the customer, customer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product or improper site preparation and maintenance (if applicable).

WARRANTY LIMITATIONS

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EXCLUSIVE REMEDIES

THE REMEDIES PROVIDED HEREIN ARE THE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL MASTERCLOCK BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON CONTRACT, TORT, OR ANY OTHER LEGAL THEORY.

In any state or province which does not allow the foregoing exclusion or limitation of incidental or consequential damages, the customer may have other remedies.

INTRODUCTION

The TCC100P is a SMPTE or IRIG-B time code decoder that can synchronize time on a Utah Scientific MC500 video switcher or any other device that can accept parallel BCD time input. The TCC100P features:

- SMPTE (30, 25, and 24 frames/second) and IRIG-B (modulated) time code decoding
- Automatic time code level gain control
- Optional “time valid” strobe signal
- Optional negative logic BCD time output

CONFIGURATION

The TCC100P is configured for operation via a 4 switch DIP labeled SW1 located on the PC board inside the enclosure. To access the switch remove the screws from the rear of the TCC100P then grasp the rear panel of the assembly to remove the PC board from the case.

A SW1 switch in the OFF or OPEN position indicates an option is OFF.

Use SW1-1 to configure the TCC100P to decode the desired time code type.

SW1-1 OFF (default) - SMPTE time code decoding (automatic detect)
SW1-1 ON - IRIG-B time code decoding

Use SW1-2 to configure the TCC100P to activate a strobe signal when time is valid on the DB-25 parallel BCD time output. The MC500 does not require a strobe signal to synchronize to the TCC100P. However, if your MC500 was previously modified to time synchronize at a strobe signal you may require this option. The TCC100P strobe signal is a 5us wide positive-going pulse. The leading edge of the pulse indicates “time valid.”

SW1-2 OFF (default) - “Time Valid” strobe disabled
SW1-2 ON - “Time Valid” strobe enabled

Use SW1-3 to configure the TCC100P to invert all BCD time data bits on the parallel output. The MC500 does not require this option enabled. However, if your MC500 was previously modified to accept negative-logic BCD time data input you may require this option.

SW1-3 OFF (default) - Normal parallel BCD time output
SW1-3 ON - Inverted parallel BCD time output

SW1-4 is reserved. This switch should be left in the OFF/OPEN position.

SW1-4 - *reserved*

INSTALLATION

POWER SUPPLY

Apply power by inserting the PS module into an appropriate AC power source and the power connector into the male socket on the rear of the unit. The TCC100P requires a nominal power supply voltage of 12 VDC. Power consumption is approximately 2.5 watts.

INPUT CONNECTIONS

Connect TC to the BNC connector on the rear of the TCC100P. The input has an input impedance of >10K ohm. Signal levels between -20dB and +20dB (600 Ohm) are accepted by the TCC100P that will automatically calibrate to incoming time code signal level.

TIME CODE INPUT LEVEL

The male DB-25 connector on the rear of the TCC100P provides parallel BCD time output. The DB-25 pin-out is 1:1 pin-matched with the pin-out requirement of the MC500 time synchronization input (J5). A standard 1:1 pin-matched cable, not exceeding 25 feet in length, may be used to connect the devices. See Appendix A for pin-out description of TCC100P / MC500 cable connection.

OPERATION

On power up the TCC100P will flash the front-panel LED twice then the LED will enter a steady-off state. When time code is first applied the unit will internally calibrate itself to the time code signal level. This may take up to 10 to 60 seconds. After achieving a stable calibration the unit will turn the front-panel LED steady-on. This indicates that valid time code signal is being received.

Time update frequency

When the front-panel LED is steady-on the TCC100P will update BCD time on the parallel output once/second.

Consult Appendix B - Troubleshooting if the TCC100P is not synchronizing the MC500 as expected.

HARDWARE SERVICE

You may return your TCC100P to Masterclock for repair service. Please contact the factory for return authorization before returning the unit. When you return your TCC100P for service, you must prepay all shipping charges, duty, and taxes. Except for products returned by the customer from another country, Masterclock will pay for return shipment of products to the customer.

APPENDIX A - TCC100P/UTAH SCIENTIFIC PINOUTS

TCC100P		MC500 (J5)	
Pin	Description	Pin	Description
1	Minute Tens (1)	1	Minute Tens (1)
2	Minute Units (8)	2	Minute Units (8)
3	Minute Units (4)	3	Minute Units (4)
4	Minute Units (2)	4	Minute Units (2)
5	Minute Units (1)	5	Minute Units (1)
6	<i>No connection</i>	6	<i>No connection</i>
7	Second Tens (4)	7	Second Tens (4)
8	Second Tens (2)	8	Second Tens (2)
9	Second Tens (1)	9	Second Tens (1)
10	Second Units (8)	10	Second Units (8)
11	Second Units (4)	11	Second Units (4)
12	Second Units (2)	12	Second Units (2)
13	Second Units (1)	13	Second Units (1)
14	COMMON (GROUND)	14	COMMON (GROUND)
15	STROBE	15	STROBE
16	<i>No connection</i>	16	<i>No connection</i>
17	Hour Tens (2)	17	Hour Tens (2)
18	Hour Tens (1)	18	Hour Tens (1)
19	Hour Units (8)	19	Hour Units (8)
20	Hour Units (4)	20	Hour Units (4)
21	Hour Units (2)	21	Hour Units (2)
22	Hour Units (1)	22	Hour Units (1)
23	<i>No connection</i>	23	<i>No connection</i>
24	Minute Tens (4)	24	Minute Tens (4)
25	Minute Tens (2)	25	Minute Tens (2)

APPENDIX B - TROUBLESHOOTING

If the following troubleshooting steps do not solve a problem you are experiencing contact Masterclock, Inc., technical support.

Problem #1: I have applied time code to the TCC100P but the front-panel LED is not steady-on.

The TCC100P does not recognize valid time code.

- Allow at least 60 seconds for the TCC100P to calibrate itself to incoming time code.
- Verify that time code signal level is between -20dB and +20dB. The TCC100P cannot process signal levels outside this range.
- Verify that cable connecting the TCC100P to time code source is a good cable.
- Verify that a ground loop does not exist between TCC100P and time code source.
- Verify that the time code source is generating time code.
- Verify that TCC100P is configured for the time code type desired (SW1-1).

Problem #2: My MC500 is not being synchronized by the TCC100P.

- If the TCC100P front-panel LED is not steady-on jump to *Problem #1*.
- Verify that there exists a 1:1 pin-matched connection between the TCC100P and the MC500 J5 connector. The connection between the two devices should be as described in Appendix A.
- Verify that all 25 pins in the cable used to connect the two devices are actually connected and that the cable is not in excess of 25 feet in length.
- Verify that a ground loop does not exist between the TCC100P and the MC500.
- Your MC500 may require a strobe signal to accept time synchronization. Set SW1-2 in the ON/CLOSED position to see if unit accepts synchronization.
- Your MC500 may require inverted BCD inputs to accept time synchronization. Set SW1-3 in the ON/CLOSED position to see if unit accepts synchronization.

Problem #3: My MC500 is synchronized with bizarre or otherwise incorrect time information.

- Your MC500 may require a strobe signal to accept time synchronization. Set SW1-2 in the ON/CLOSED position to see if the problem is resolved.
- Your MC500 may require inverted BCD inputs to accept time synchronization. Set SW1-3 in the ON/CLOSED position to see if the problem is resolved.
- Your time code source may not be providing time information encoded to the time zone you expect. Confirm the time zone offset encoding with the individual or group responsible for in-house time code distribution. The TCC100P cannot offset time code for the purpose of time zone adjustments. Masterclock provides other products that can be used in conjunction with the TCC100P to accomplish this requirement.

SPECIFICATIONS

INPUT

Format:..... SMPTE - 24 - 25 or 30 fps or IRIG-B time code
Level: Range -20dB and +20dB (0 db/600 Ω) automatic level set
Impedance:..... > 10 K ohm
Connector:..... BNC

OUTPUT

Format:..... Parallel BCD
Level: TTL (5 VDC)
Impedance:..... High
Connector:..... DB-25

OUTPUT ACCURACY

Latency from incoming TC..... < 100 μ sec

POWER SUPPLY REQUIREMENTS

Input voltage 12 VDC
Input power connector 2 mm male
Power consumption - @ 12V approximately 200 ma (2.4 W)

PHYSICAL

Size: 1.5 x 4.1 x 5.5 in. (3.8 x 10.4 x 14 cm)
Weight 17 oz. (480 gr.) - approximately

OPERATING TEMPERATURE

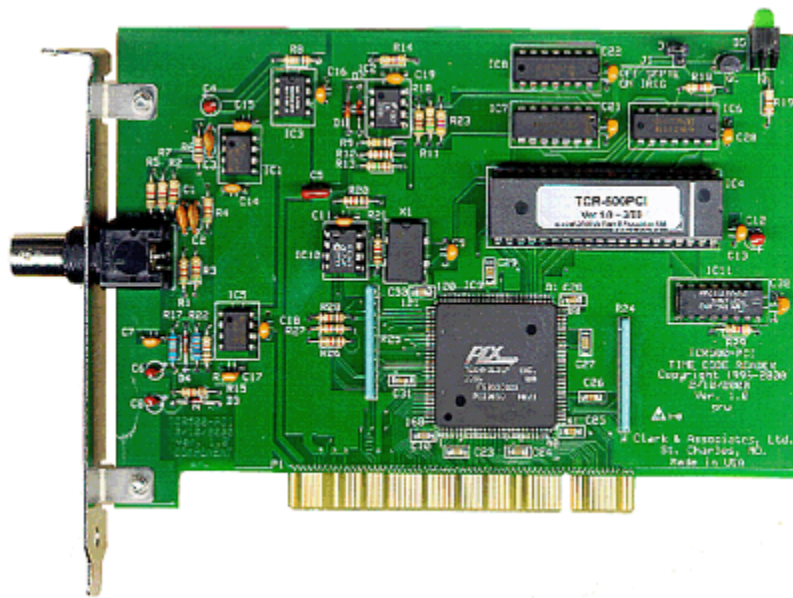
Temperature 0 to +70° C

OPTIONS

RACK MOUNT



TIME CODE READER CARD - TCR500



MASTER CLOCK GENERATOR GPS200 (FRONT & REAR VIEW)

