GENERAL

This specification applies to the TEAC MT-01N Micro-streamer: Mini Data Cartridge Unit (hereinafter, referred to as an MTU). Table 1 shows the general specifications of the MTU.

Model	MT-01N-000	MT-01N-001
TEAC part number	19305090-00	19305090-01
Safety standards (approved)	UL 1950 CSA No.950 TÜV EN60950	
Tape used (mini data cartridge)	DC2100 (62.5m, 205ft long) or equivalent. DC2155 (93.7m, 307.5ft long) or equivalent. (Reference) 1. Tape width: 6.274 ± 0.013mm (0.247 ± 0.0005 in) 2. Coercive force: 550Oe (44,000 A/m)	
Form factor	3.5-inch (1-inch high)	
Front bezel color	Black	Light gray
Indicator LED color	Amber	
Recording density	18,000ftpi (708.66ftpmm)	
Data density	14,400bpi (566.93bpmm)	
Formatted data capacity*1	Nominal 100M bytes when the DC2100 is used. Nominal 155M bytes when the DC2155 is used.	
Backup time	Approx. 16 minutes when the DC2100 is used. Approx. 24 minutes when the DC2155 is used.	
Tape speed	80ips (2,032mm/sec)	
Power supplies	DC +5V, DC +12V	
Interface	In compliance with SCSI (ANSI X3.131-1986)	
Parity strap setting at delivery	Short S3 (Perform parity check)	
SCSI ID strap setting at delivery	SCSI ID = 0	
Terminator	Provided	

Note: *1 The formatted capacity is not necessarily guaranteed on any condition. The data capacity given may not be achieved depending on the operating methods and operating conditions.

(Table 1) General specifications

CONSTRUCTION

External Construction

(1) Height : 25.4mm (1.00 in), Nom.

(2) Width : 101.6mm (4.00 in), Max.

(3) Depth : 145.0mm (5.71 in), Nom.

(4) Weight : Approx. 390g (Approx. 0.86 lbs)

(5) Direction of installation: As mentioned below.

(a) The cartridge may be inserted horizontally from the front. However, the orientation (inverted horizontal posture) with the indicator positioned on the right side is not permitted.

(b) The cartridge may be inserted vertically from the front.

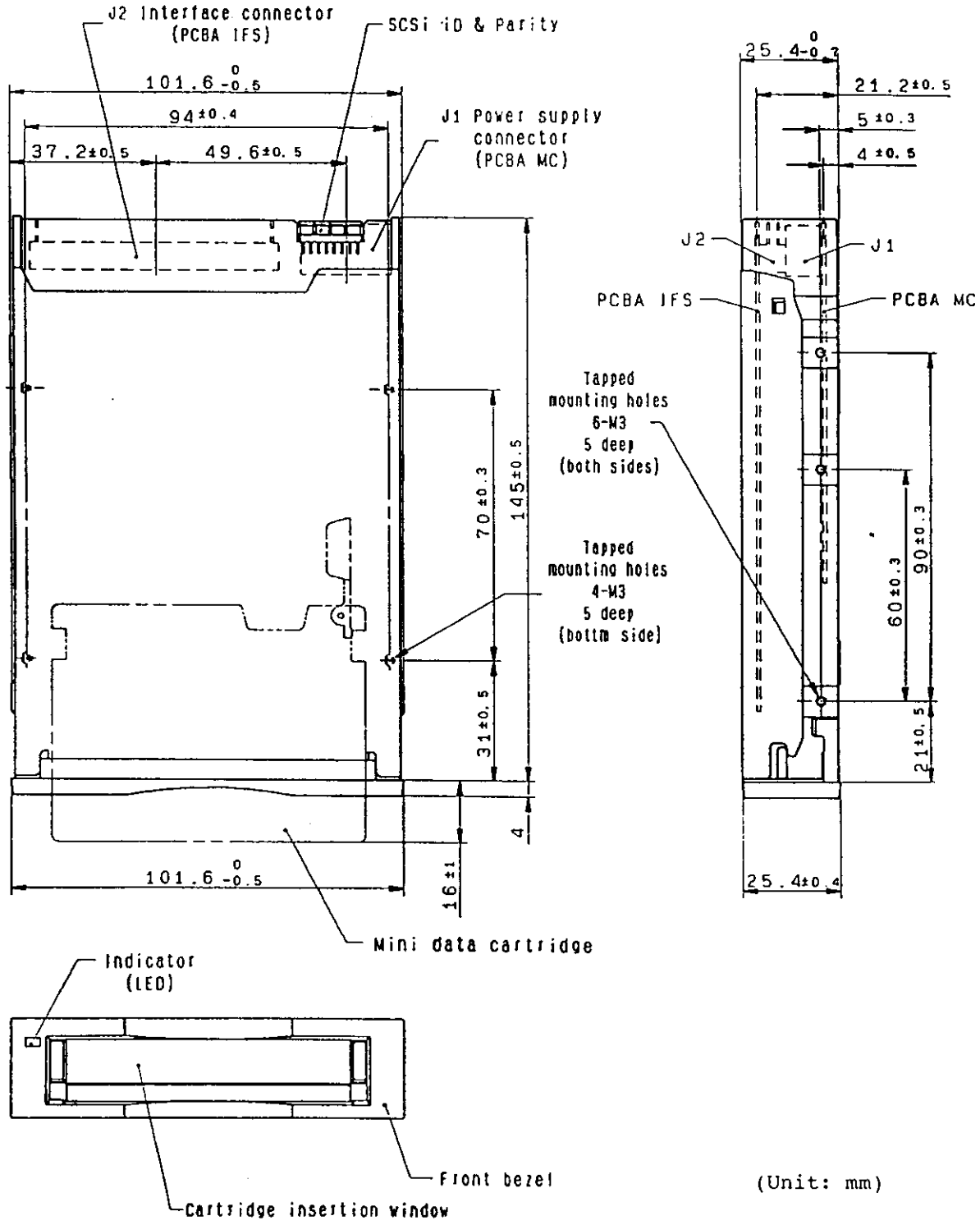
(c) In case of (a) and (b), the front bezel side can be tilted to upward and downward maximum 15 degrees.

(6) Mounting method : The drive is mounted with screws through the mounting holes at the sides and bottom. Refer to Fig.1 for the positions of the mounting holes.

(7) Color of front bezel : Refer to Table 1.

(8) Indicator LED color : Refer to Table 1.

(9) External view : Refer to Fig.1.



(Fig.1) MTU external view

ENVIRONMENTAL CONDITIONS

Item		Conditions
Ambient temperature	In operation	10 ~ 45°C (50 ~ 113°F)
	During storage or transportation	-22 ~ 60°C (-8 ~ 140°F)
Temperature gradient	In operation	6°C (10.8°F) or less per hour (non-condensing)
	During storage or transportation	30°C (54°F) or less per hour (non-condensing)
Relative humidity	In operation	20 ~ 80% (non-condensing) Maximum wet-bulb temperature; 26°C (79°F)
	During storage	10 ~ 90% (non-condensing) Maximum wet-bulb temperature; 40°C (104°F)
	During transportation	10 ~ 90% (non-condensing) Maximum wet-bulb temperature; 45°C (113°F)
Vibration	In operation	1.0G or less (10 ~ 100Hz, sweeps at 1 oct/min.) 0.5G or less (100 ~ 600Hz, sweeps at 1 oct/min.)
	Non-operating or during transportation	2G or less (10 ~ 100Hz, sweeps at 1/4 oct/min.)
Shocks	In operation	5G (11msec, half sine wave) or less
	Non-operating or during transportation	70G (11msec, half sine wave) or less, Single shock
Transport conditions		The general rule level I of the appropriate package goods test method in JIS-Z0200 is satisfied, when specified packing case is used. When a long period (48 hours or more) is required for transportation such as by ship, storage environmental conditions should be applied.

(Table 4) Environmental conditions

OPERATIONAL CHARACTERISTICS

Tape Drive System Operational Characteristics

(1) Tape speed : 80ips (2,032mm/sec)

(2) Long-term speed variation
(LSV) : $^{+3}_{-8}$ %

(3) Instantaneous speed
variation (ISV) : ±4%

(4) Maximum rewinding time
(a) DC2100 (205ft long) : 37sec, Max.
(b) DC2155 (307.5ft long): 55sec, Max.

(5) Repositioning time
(a) Write (TRACK 00) : Approx. 4sec
(b) Write
(other than TRACK 00): Approx. 2.5sec
(c) Read : Approx. 2.5sec

Control Characteristics

(1) Average data transfer rate to tape
(a) Write : 122.5k bytes/sec (in streaming operation)
(b) Read : 122.5k bytes/sec (in streaming operation)

(2) Block length on tape : 512 bytes (fixed)

(3) Buffer memory
(a) Write : 53,248 bytes (104 blocks)
(b) Read : 59,904 bytes (117 blocks)

(4) Retry count at write : Max. 15 times

(5) Retry count at read : Max. 16 times

Interface Part

(1) Interface : In compliance with SCSI (ANSI X3.131-1986) Level 2

(2) Maximum data transfer rate (for host)

(a) Write : 530k bytes/sec

(b) Read : 530k bytes/sec

Reliability

(1) Mean time between failures (MTBF) : 20,000 POH or more

(2) Mean time to repair (MTTR) : 30 min or less

(3) Error rate

(a) Soft error : Once per 10^7 bits

(b) Hard error : Once per 10^{13} bits

MINI DATA CARTRIDGE USED

The Mini Data Cartridge DC2100/DC2155 (hereinafter, referred to as cartridge or tape) uses a cartridge mutually approved between the purchaser of this MTU and TEAC.

Note: The cartridge for use with this MTU need not be preformatted.

OPTIONS

Table 2 shows the options related to this MTU.

Product/model name	TEAC P/N	Remarks
Mini data cartridge DC2100	19800250-00	62.5m, 205ft long (Manufactured upon receipt of orders)
Mini data cartridge DC2155	19800260-00	93.7m, 307.5ft long (Product which is supplied from stock)
Specifications	10530639-00	
Interface instruction	10131399-00	
Instruction manual		
Maintenance manual		

(Table 2) Options

RECORDING FORMAT

This MTU has two track configurations, one of which can be selected according to the application.

(1) Single partition access (SPA) mode
This SPA mode refers to normal operating mode and treats the 29 tracks from track 00 to track 28 as a single continuous data track.

(2) Double partition access (DPA) mode
In this DPA mode, only track 28 is treated as an independent directory track and other tracks (tracks 00 to 27) are treated as a single continuous data track as in the SPA mode.

Recording Methods

(1) Data modulation method: 4-5 conversion GCR, refer to Table 6.

(2) Recording method : Double-density NRZI

(3) Recording form : Single track serpentine serial recording

(4) Recording density : 18,000ftpi (708.66ftpmm)

(5) Data density : 14,400bpi (566.93bpmm)

(6) Average data density : Nominal 12,249bpi

(7) Estimated data capacity
For the nominal data capacity, refer to Table 1. Table 5 shows the calculated data capacity under special conditions.

GENERAL

This specification applies to the TEAC MT-01F Micro-streamer: Mini Data Cartridge Unit (hereinafter, referred to as an MTU). Table 1 shows the general specifications of the MTU.

Model	MT-01F-000	MT-01F-001	MT-01F-002	MT-01F-003
TEAC part number	19305100-00	19305100-01	19305100-02	19305100-03
Safety standards	UL 1950 CSA No.950 TÜV EN60950			
Tape used (mini data cartridge)	3M DC2555 (295ft, 89.9m) or equivalent. (Reference) 1. Coercive force: 900 Oe (112,000 A/m) 2. Tape width: 0.247 ± 0.0005 in (6.27 ± 0.013mm)			
Form factor	3.5-inch (1-inch height)			
Front bezel color	Black	Light gray	Dark gray	Platinum white
Indicator LED color	Amber			
Recording format	In compliance with QIC-555M (40 tracks)			
Readable format	QIC-555M			
	155M bytes (MT-01N)			
Recording density	50,800ftpi (2,000 ftpmm)			
Data density	40,640bpi (1,600 bpmm)			
Formatted data capacity*1	555M bytes (nominal)			
Backup time	Approx. 43 minutes			
Tape speed	60ips (1,524mm/sec) and 80ips (2,032mm/sec)			
Power supplies	+5 VDC, +12 VDC			
Interface	In compliance with SCSI-Ⅱ			
Parity strap setting at delivery	Short S3 (Perform parity check)			
SCSI ID strap setting at delivery	SCSI=0			
Terminator	Provided			

Note: *1 The formatted capacity is not necessarily guaranteed on any condition. The data capacity given may not be achieved, depending on the operating methods and conditions.

(Table 1) General specifications

CONSTRUCTION

External Construction

(1) Height : 25.4mm (1.00 in), Nom.

(2) Width : 101.6mm (4.00 in), Max.

(3) Depth : 145.0mm (5.71 in), Nom.

(4) Weight : Approx. 370g (Approx. 0.816 lbs)

(5) Direction of installation: As mentioned below.

(a) The cartridge may be inserted horizontally from the front. However, the orientation (inverted horizontal posture) with the indicator positioned on the right side is not permitted.

(b) The cartridge may be inserted vertically from the front.

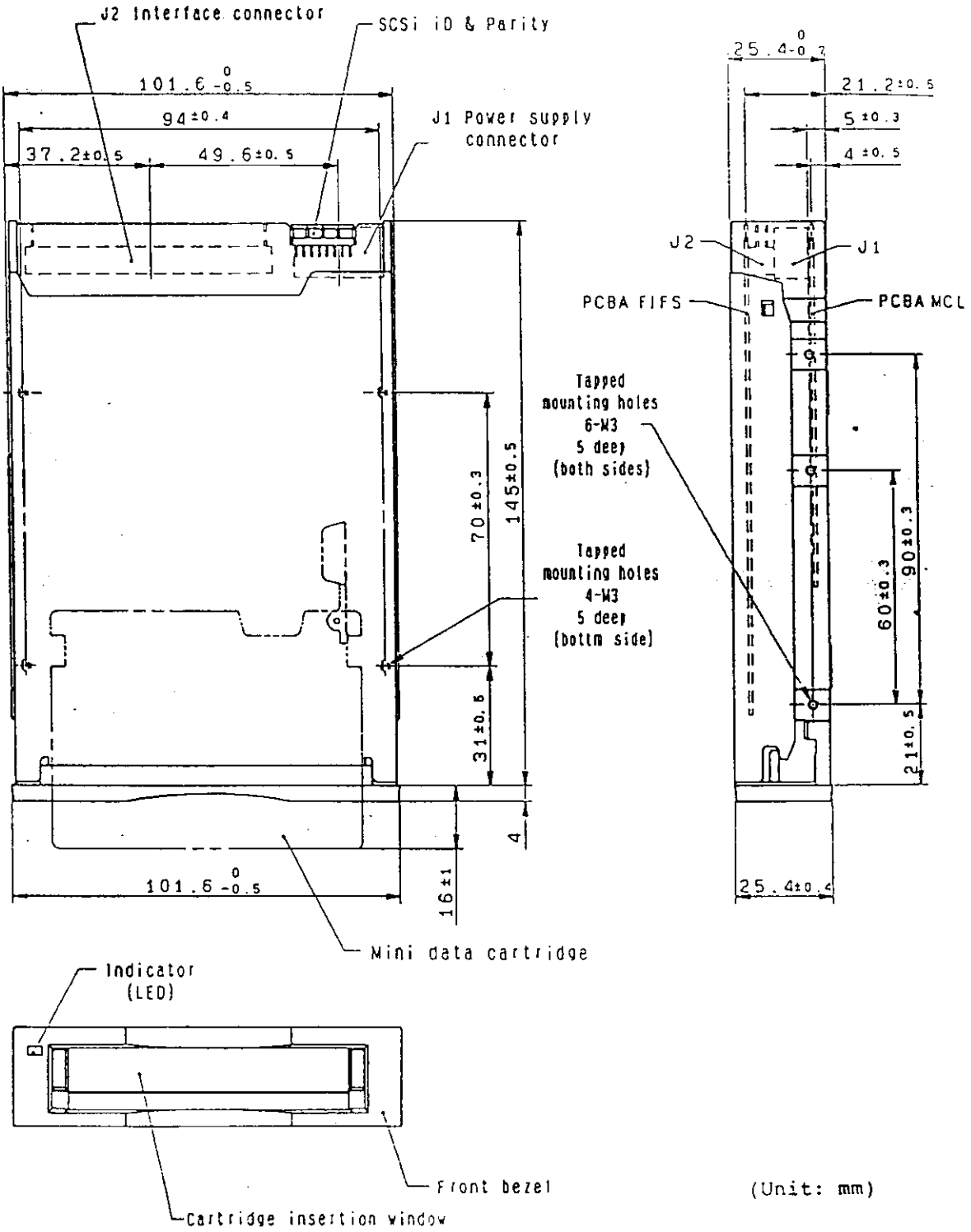
(c) In case of (a) and (b), the front bezel side can be tilted to upward and downward maximum 15 degrees.

(6) Mounting method : The drive is mounted with screws through the mounting holes at the sides and bottom. Refer to Fig.1 for the positions of the mounting holes.

(7) Color of front bezel : Refer to Table 1.

(8) Indicator LED color : Refer to Table 1.

(9) External view : Refer to Fig.1.



(Fig.1) MTU external view

ENVIRONMENTAL CONDITIONS

Item		Conditions
Ambient temperature	In operation	5 ~ 45°C (41 ~ 113°F)
	During storage or transportation	-22 ~ 60°C (-8 ~ 140°F)
Temperature gradient	In operation	6°C (10.8°F) or less per hour (non-condensing)
	During storage or transportation	30°C (54°F) or less per hour (non-condensing)
Relative humidity	In operation	20 ~ 80% (non-condensing) Maximum wet-bulb temperature; 26°C (79°F)
	During storage	10 ~ 90% (non-condensing) Maximum wet-bulb temperature; 40°C (104°F)
	During transportation	10 ~ 90% (non-condensing) Maximum wet-bulb temperature; 45°C (113°F)
Vibration	In operation	1.0G or less (10 ~ 100Hz, sweeps at 1 oct/min.) 0.5G or less (100 ~ 600Hz, sweeps at 1 oct/min.)
	Non-operating or during transportation	2G or less (10 ~ 100Hz, sweeps at 1/4 oct/min.)
Shocks	In operation	5G (11msec, half sine wave) or less
	Non-operating or during transportation	70G (11msec, half sine wave) or less, Single shock
Transport conditions		The general rule level I of the appropriate package goods test method in JIS-Z0200 is satisfied, when specified packing case is used. When a long period (48 hours or more) is required for transportation such as by ship, storage environmental conditions should be applied.

(Table 4) Environmental conditions

OPERATIONAL CHARACTERISTICS

Tape Drive System Operational Characteristics

(1) Tape speed
- (a) QIC-555M write/read : 60ips
- (b) 155M byte read (MT-01N format) : 80ips
- (c) Rewind : 80ips

(2) Long-term speed variation (LSV) : $^{+3}_{-8}$ %

(3) Instantaneous speed variation (ISV) : ±4%

(4) Maximum rewinding time (with DC2555) : 53sec, Max.

(5) Repositioning time (with DC2555):
- (a) Write (when the write command has temporarily terminated with buffer empty) : Approx. 3.8sec
- (b) Read : Approx. 2.4sec

Control Characteristics

(1) Write/read format
- (a) Write/read : In compliance with QIC-555M (40 tracks)
- (b) Read only : 155M bytes (MT-01N format) (29 tracks)

(2) Average data transfer rate to tape
- (a) QIC-555M write/read : 251.7k bytes/sec (in streaming operation)
- (b) 155M bytes read (MT-01N format) : 122.5k bytes/sec (in streaming operation)

(3) Amount of data in a block (on tape) :1,024 bytes (fixed)

(4) Buffer memory

(a) Write : 470k bytes (940 blocks)

(b) Read : 474k bytes (948 blocks)

(5) Retry count at write : Max. 16 times

(6) Retry count at read : Max. 16 times

Interface Part

(1) Interface : In compliance with SCSI-Ⅱ

(2) Maximum data transfer rate (for host)

(a) Asynchronous transfer: 2M bytes/sec

(b) Synchronous transfer : 4M bytes/sec

(3) Amount of data in a block (SCSI command)

: 512 bytes

Reliability

(1) Mean time between failures

(MTBF) : 20,000 POH or more

(2) Mean time to repair

(MTTR) : 30 min or less

(3) Error rate

(a) QIC-555M format read

(1) Soft error rate : Less than once per 10^7 bits

(2) Hard error rate : Less than once per 10^{15} bits

(b) 155M byte formtat read (MT-01N)

(1) Soft error rate : Less than once per 10^7 bits

(2) Hard error rate : Less than once per 10^{12} bits

MINI DATA CARTRIDGE USED

(1) The Mini Data Cartridge 3M DC2555 or equivalent (hereinafter, referred to as cartridge or tape) uses a cartridge mutually approved between the purchaser of this MTU and TEAC.

Note: The cartridge to be used with this MTU need not be preformatted.

(2) If the unit is used for read only, the use of a tape (3M DC2155 or equivalent) written by the TEAC MT-01N (155M bytes) is also possible.

OPTIONS

Table 2 shows the options related to this MTU.

Product/model name	TEAC P/N	Remarks
Mini data cartridge 3M DC2555		Length: 295ft, 89.9m
Specifications	10530714-00	
Interface instruction		
Instruction manual	10131446-00	
Maintenance manual	D000575-00	

(Table 2) Options

RECORDING AREA ON TAPE

(1) Number of tracks

(a) SPA mode : 40 tracks

(b) DPA mode

i) Data track : 39 tracks

ii) Directory track : 1 track

(2) Track center line location

: Refer to Fig.2

(3) Track center line position

: Refer to Table 7

(4) Track pitch : 0.150mm (0.0059 in)

(5) Track width

(a) Write track width : 150 ±6.35μm (0.006 ±0.00025 in)

(b) Read track width : 76.4 ±6.35 μm (0.003 ±0.00025 in)

(6) Recording area on the tape

(a) SPA mode : Refer to Fig. 3A and Table 8

(b) DPA mode : Refer to Fig. 3B and Table 8

(7) Reference burst

(a) Two reference bursts, track 02 (foward direction) and track 19 (reverse direction), are recorded on the tape.

(b) Recording is performed at 50,800ftpi (2,000ftpmm).

(8) Dummy burst

(a) To further improve the quality of data to be recorded, a dummy burst is recorded on a particular track (where no data is recorded).

(b) The relevant tracks are a total of 10 even-numbered tracks (04, 06, 12, 14, 16, 24, 26, 32, 36 and 38) and a total of 10 odd-numbered tracks (07, 09, 11, 17, 19, 21, 29, 33, 35 and 37).

(c) Recording is performed at 50,800ftpi (2,000ftpmm).

Dimensions			Description
D No.	Min.	Max.	
D8	0 in (0mm)	180 in (4,572mm)	Between the beginning of dummy burst of the odd-numbered tracks and the beginning of preamble. The relevant tracks are 07, 09, 11, 17, 19, 21, 29, 33, 35 and 37.

(Table 8) Recording area on each track of the tape

FUNCTIONS OF INDICATOR AND STRAPS

Indicator

The indicator (LED) on the front bezel lights when either of the following conditions is satisfied.

(1) The PREVENT bit of the PREVENT/ALLOW MEDIA REMOVAL command is specified as 1 to the MTU, in which a cartridge has been inserted correctly.

(2) The inserted cartridge tape is running.

Parity Strap

S3 on the PCBA IFS is specified as a parity strap. (Refer to Fig.8)
If S3 is shorted by the plug, parity checking (odd parity) of the input data (DB0 ~ DB7) is performed by the MTU. If S3 is open, no parity checking is performed.

How to set SCSI ID

The SCSI ID is set by the straps of S0, S1 and S2. (Refer to Fig.8)
Table 19 shows the relationship between the states of the straps and SCSI ID.

SCSI ID No.	Straps		
	S2	S1	S0
0	0	0	0
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0
5	1	0	1
6	1	1	0
7	1	1	1

1: OPEN and 0: SHORT

(Table 19) How to set the SCSI ID