2.2 Specifications

2.2.1 Transmitter

Table 2-6 ME522A Transmitter Specifications

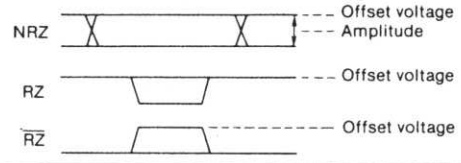
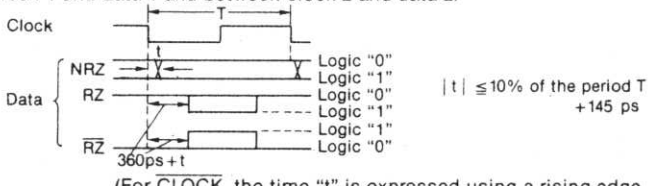
Clock	Internal	Frequency range : 1.000MHz to 700.000MHz in steps of 1kHz Accuracy : Within $\pm 2 \times 10^{-6}$. After 30 minutes operation Frequency memory : 9 frequencies
	External	Frequency range : 1MHz to 700MHz Input level : 0.8 to 1.2Vp-p Input waveform : 1MHz to 10MHz: Rectangular waves 10MHz to 700MHz: Sinusoidal or rectangular waves Impedance : 75Ω Connector : BNC
Patterns	Pseudo-random patterns (PRBS)	7 stages, 10 stages, 15 stages,* 23 stages* (*According to CCITT Rec. O.151)
	Programmable patterns	3 patterns (A, B, C) with a word length of 8 to 2048 bits in steps of 8 bits. When the initial switch is set, patterns with mark ratio of 1/2, 1/4, and 1/8 are set for A, B, and C automatically.
	Alternate patterns	8-bit programmable patterns D and E
	Isolated patterns	1/1 to 1/64 (1/m: one mark ("1") in a pattern of m bits)
	Logic inversion	Logic inversion is possible for all of the above patterns.
	Gate	Gating by external signal is possible for all of the above patterns.
Unipolar output	Operation frequency	1MHz to 700MHz
	Clock 1, data 1	Waveform : Clock: RZ* (*Duty: Within 45 to 55% with internal clock) Data: NRZ, RZ,* $\overline{\text{RZ}}$* Amplitude : 1 to 3V in steps of 0.05V (However, display is made in steps of 0.1V) Also, ECL. (ECL: when connected to −2V via 50Ω or 75Ω) Offset : −1 to +4V in steps of 0.05V. (However, display is made in steps of 0.1V) Also ECL. (ECL: when connected to −2V via 50Ω or 75Ω) Level accuracy : Voltage and offset within the larger one of set value ±10% or ±0.15V 
	Clock 2, data 2	Waveform : Clock: RZ (Duty: Within 45 to 55% with internal clock) Data: NRZ Level : Within 0/−1V ±0.1V
	Phase, logic	Clock 1 : Switching is possible between CLOCK and $\overline{\text{CLOCK}}$ Between data 1 and data 2: PRBS pattern: About 1/2 period Other patterns: Same phase Between clock 1 and data 1 and between clock 2 and data 2:  (For $\overline{\text{CLOCK}}$, the time "t" is expressed using a rising edge as the reference)
	Load	Switching between 50Ω and 75Ω is possible (But clock 1, 2 and data 1, 2, 3 are coupled)
	Connector	BNC
CMI output	Operation frequency	1MHz to 150MHz
	Number of outputs	4 (DATA 3 on the front panel, DATA 4 to 6 on the rear panel. Same phase.)
	Level	Within 1 ±0.1Vp-p
	Load	Data 3: Switching between 50Ω and 75Ω is possible Data 4 to 6: 75Ω
	Connector	BNC

Table 2-6 ME522A Transmitter Specifications (Continued)

Error insertion	Error	Bit error
	Internal	Ratio : 2×10^{-3}, 2×10^{-4}, 2×10^{-5}, 2×10^{-6}, 2×10^{-7}, single
	External input	Operation frequency : DC to 1/40 of the clock frequency Level : TTL Connector : BNC
Other input and output	Alternate signal input	Operation frequcny : DC to 5MHz Level, connector: : TTL (Low: Output of pattern D; High: Output of pattern E), BNC
	Gate signal input	Operation frequency : DC to 1/4 of the clock frequency Level, termination, connector: Within 0/−1V ±0.1V (0V: Signal through; −1V: Signal inhibit), 75Ω, BNC
	Clock sync output	Level, termination, connector: 0.3 to 1Vp-p (AC coupled), 50Ω, BNC
	Pattern sync output	Level, termination, connector: 0.3 to 1Vp-p (at 700MHz, AC coupled), 50Ω, BNC
Remote control	Interface control	GP-IB (Standard equipment, IEEE Std. 488-1978), RS-232C (Option)
	Control	Setting is possible for all switches except the power switch
Power		AC **V ±10%, (max. 250V), 50/60Hz, max. 280VA (when the unit is not installed), max. 330VA (when the unit is installed)
Dimensions and weight		222H, 426W, 450D mm; max. 28kg (when the unit is not installed), max. 33kg (when the unit is installed)
Ambient temperature, rated range of use		0 to 50°C

2.2.2 Receiver

Table 2-7 ME522A Receiver Specifications

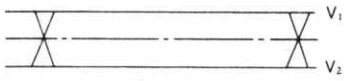
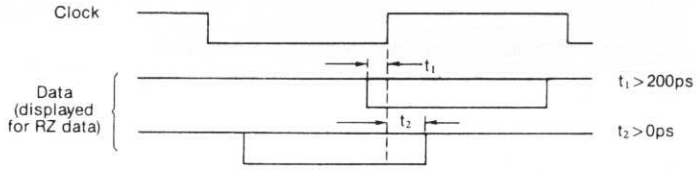
Unipolar input	Operation frequency	1MHz to 700MHz
	Clock, data	Waveform : Clock: RZ* (*Duty: Within 45 to 55%) Data: NRZ, RZ,* $\overline{RZ}$* Amplitude : 1 to 3V, ECL Offset : −1 to +4V, ECL Threshold voltage (data): −2.5 to +3.5V in steps of 0.05V. (However, display in steps of 0.1V)  Threshold voltage = $\frac{V_1+V_2}{2}$ Phase adjustment (clock): Switching between CLOCK and $\overline{CLOCK}$ and adjustment for ±500ps in steps of 100ps are possible. Phase relation between clock and data: After the phase adjustment described above; For NRZ data: freely selectable For RZ or $\overline{RZ}$ data: limited as follows  (For $\overline{CLOCK}$, the time "t" is expressed using a falling edge as the reference) Termination : Connection via 50Ω or 75Ω (Switch selection, clock and data are coupled) to earth (other than ECL) or −2V (ECL) Connector : BNC
CMI input	Operation frequency	Within 139.264MHz ±14kHz
	Level	Within 1 ±0.1Vp-p
	Termination	50Ω or 75Ω (Switch selection)
	Connector	BNC
Patterns	Pseudo-random patterns (PRBS)	7 stages, 10 stages, 15 stages,* 23 stages* (*According to CCITT Rec. O.151)
	Programmable patterns	3 patterns (A, B, C) with a word length of 8 to 2048 bits in steps of 8 bits. With the initial switch setting, patterns with mark ratio of 1/2, 1/4, and 1/8 are set for A, B, and C.
	Isolated patterns	1/1 to 1/64 (1/m: One mark ("1") in a pattern of m bits)
	Logic inversion	Logic inversion is possible for all of the above patterns.
Measurement	Error detection and measurement	Bit errors (bit by bit comparison). All of the following measuring items are executed simultaneously. Display of the measuring values during measurement is possible (in intervals of 1 second).
	Measuring items and display range	Error rate : 0.0E−16 (0.0×10^{-16}) to 1.0E−0 (1) Number of errors : 0 to 99999 to 9.9E 16 (9.9×10^{16}) Error interval : Switching is possible between the intervals of 0.01 sec, 0.1 sec, and 1 sec. Switching is possible between synchronous mode and asynchronous mode 0 to 99999 to 9.9E 16 (9.9×10^{16}) Error free interval : 0.0000% to 100% Frequency : 1.000MHz to 700.000MHz. Error: Within ±(20ppm+1kHz) Voltage : 0.0 to 20.0V. Error: Within ±(2% +0.2V)
	Lamp indication	Power failure (lighting at the time of power supply recovery), signal loss,* pattern sync loss,* AIS,* error, gating (the lamps marked by *also are available with memory).
	Buzzer	Buzzing at the time of signal loss, pattern sync loss, AIS, and error. Buzzing can be switched ON and OFF.

Table 2-7 ME522A Receiver Specifications (Continued)

Measuring mode, real time clock	Measuring mode	Switching is possible between repeat, single, and untimed (manual).
	Measuring time	Time : 1 sec to 99 days, 23 hrs, 59 min, 59 sec in steps of 1 sec. Number of clock pulses: 10^7 to 10^{15} bits in steps of 1 digit Display : Display of the remaining measuring time and the elapsed time is possible. (Also possible when the measuring period is the number of clock pulses.)
	Real time clock	Year : Month : Day : Hour : Minute : Second Error : Within 4 sec. per day
Other input and output	Voltage input	0 to 20V or 0 to −20V
	Status input	Level, connector : TTL, BNC
	Alarm output	Normal: Open between 2 terminals. Abnromal (Power failure, signal loss, pattern sync loss, AIS): Short-circuit between 2 terminals. Terminal rating: DC 100V, 0.5A or less.
Printer	Printing method	Thermal
	Printing letter	Max. 20 characters/line
	Printing contents	Measured values (intermediate and final values), error occurrence, alarm status, threshold error interval, threshold error free interval, error performance data, time.
	Manual printing	Possible
Remote control	Interface	GP-IB (Standard equipment, IEEE Std. 488-1978), RS-232C (Option)
	Control	Setting is possible for all switches except the power switch. Transmission of measuring values is possible.
Power		AC **V ±10%, (max. 250V), 50/60Hz, max. 200VA (when the unit is not installed); max. 250VA (when the unit is installed).
Dimensions and weight		222H, 426W, 450D mm; max. 22kg (when the unit is not installed); max. 27kg (when the unit is installed).
Ambient temperature, rated range of use		0 to 50°C