

# PLM101-1M

**PLM101-1M : PLASTIC FIBER OPTIC LINK**  
**PLT101 : TRANSMITTER MODULE**  
**PLR101 : RECEIVER MODULE**

NEPOC Series

**DESCRIPTION**

PLM101-1M includes a transmitter module (PLT101), receiver module (PLR101), and a plastic fiber optic cable (1 meter).

Transmitter module incorporates a 660 nm LED and a LED driver. Receiver module incorporates an integrated photo detector and wide bandwidth dc amplifier. Plastic fiber optic cable (1 mm core) is terminated in snap-in plastic connectors.

The combination of PLT101 and PLR101 has guaranteed performance over -20 to 70 degrees centigrade from DC to 6 Mb/s (NRZ) up to 5 meters.

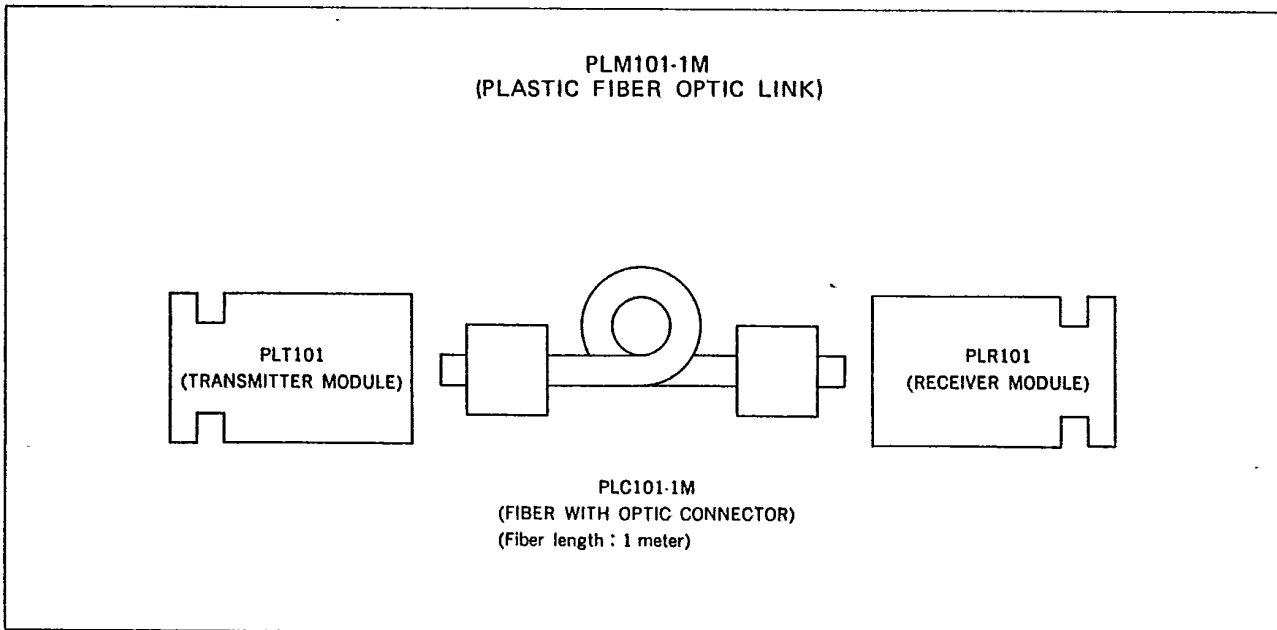
**FEATURES**

- Small Package
- Snap-in Connector
- TTL Compatible Output Level
- DC to 6 Mb/s (NRZ) Data Rate
- Single +5 V Power Supply
- Low Power Dissipation

**APPLICATION**

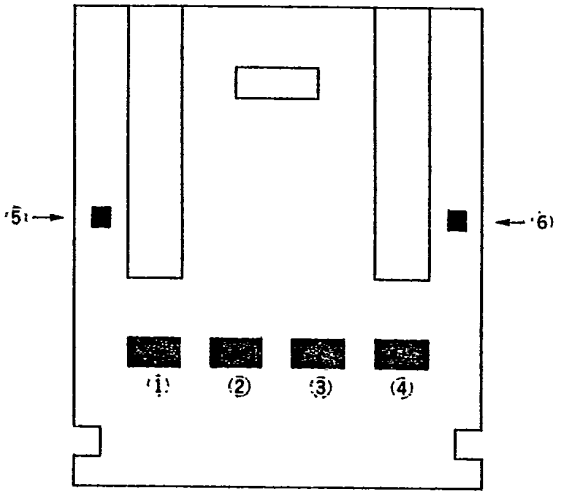
- Local Area Networks
- Computer to Peripheral Links
- Digital Audio Interface
- Factory Data Highways

**CONSTRUCTION OF PLM 101-1M**



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**PIN CONNECTIONS (Bottom View)**

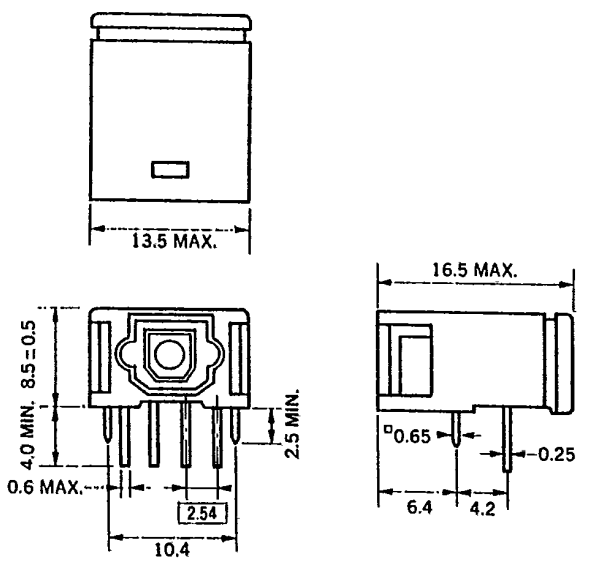


PLT101 (TRANSMITTER MODULE)	
①	INPUT
②	VCC
③	CURRENT CONTROL
④	GND
⑤	NC
⑥	NC

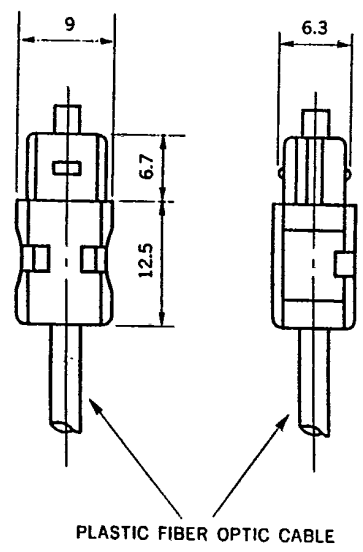
PLR101 (RECEIVER MODULE)	
①	Cathode
②	VCC
③	GND
④	OUTPUT
⑤	NC
⑥	NC

**PACKAGE DIMENSIONS (Unit: mm)**

**TRANSMITTER MODULE  
RECEIVER MODULE**



**OPTIC CONNECTOR**



ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

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(1) PLT101 (TRANSMITTER MODULE)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	$V_{CC}$	-0.5 to +7	V
Input Voltage	$V_{in}$	-0.5 to +5.5	V
Operating Temperature	$T_{opt}$	-20 to +70	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40 to +80	$^\circ\text{C}$
Lead Soldering Temp.	$T_{sol}$	260 (Time $\leq$ 10 s)	$^\circ\text{C}$

(2) PLR101 (RECEIVER MODULE)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	$V_{CC}$	-0.7 to +7	V
Low Level Output Current	$I_{OL}$	20	mA
High Level Output Current	$I_{OH}$	-1	mA
Operating Temperature	$T_{opt}$	-20 to +70	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-40 to +80	$^\circ\text{C}$
Lead Soldering Temp.	$T_{sol}$	260 (Time $\leq$ 10 s)	$^\circ\text{C}$

(3) PLC101-1M (FIBER WITH OPTIC CONNECTOR)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Tensile Force	Cable	$T_F$	5 (50)	kgf(N)
	Cable/Connector	$T_{CF}$	2 (20)	kgf(N)
Bend Radius		$r$	25 (MIN.)	mm
Operating Temperature		$T_{opt}$	-20 to +70	$^\circ\text{C}$
Storage Temperature		$T_{stg}$	-40 to +70	$^\circ\text{C}$

TRUTH TABLE (POSITIVE LOGIC)

Input	TRANSMITTER MODULE	Output (RECEIVER MODULE)
H	LED ON	H
L	LED OFF	L

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**ELECTRICAL/OPTICAL CHARACTERISTICS ( $T_a = T_{opt}$ ,  $V_{CC} = 5 V$ )**

**(1) PLM101-1M (LINK: Fiber Length = 1 meter)**

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Data Rate	-	-	-	6	Mb/s	NRZ, $T_a = 25^\circ C$
Propagation Delay Time (Low to High)	$t_{PLH}$ *1)	-	-	250	ns	APF = 1 m *2), $T_a = 25^\circ C$
Propagation Delay Time (High to Low)	$t_{PHL}$ *1)	-	-	250	ns	APF = 1 m, $T_a = 25^\circ C$
Pulse Width Distortion	$\Delta t_w$	-	-	$\pm 30$	ns	PW = 165 ns, Duty Cycle 50 %, $T_a = 25^\circ C$

\*1) Between Input of PLT101 and Output of PLR101  
\*2) APF: Plastic Fiber Optic Cable

**(2) PLT101 (TRANSMITTER MODULE)**

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Supply Current	$I_{CC}$	-	15	25	mA	$R_L = 8.2 k\Omega$ *3)
High Level Input Current	$I_{IH}$	-	-	100	$\mu A$	$V_{CC} = 5.25 V$ , $V_{IH} = 2.7 V$ , $R_L = 8.2 k\Omega$
Low Level Input Current	$I_{IL}$	-	-	-400	$\mu A$	$V_{CC} = 5.25 V$ , $V_{IL} = 0.4 V$ , $R_L = 8.2 k\Omega$
High Level Input Voltage	$V_{IH}$	2.0	-	-	V	$R_L = 8.2 k\Omega$
Low Level Input Voltage	$V_{IL}$	-	-	0.8	V	$R_L = 8.2 k\Omega$
Peak Emission Wavelength	$\lambda_p$	-	660	-	nm	$I_F = 20 mA$ , $R_L = 8.2 k\Omega$ , $T_a = 25^\circ C$
Transmitter Output Power	$P_f$	-21	-	-11	dBm	APF = 1 m, $R_L = 8.2 k\Omega$ , $T_a = 25^\circ C$ *4)
Transmission Distance		0.2	-	5	m	With PLR101 and APF, $R_L = 8.2 k\Omega$ , $T_a = 25^\circ C$

\*3)  $R_L$  (Resistance for control of LED current) is connected from pin 2 to pin 3.  
\*4) It is able to change the Transmitter Output Level ( $P_f$ ) by Resistance ( $R_L$ ) Variation.

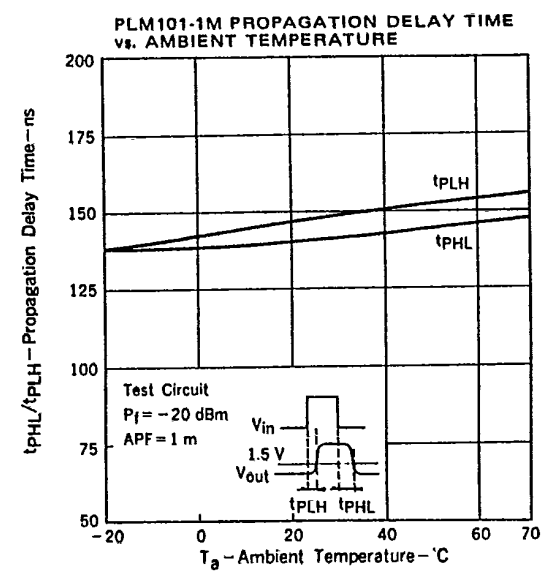
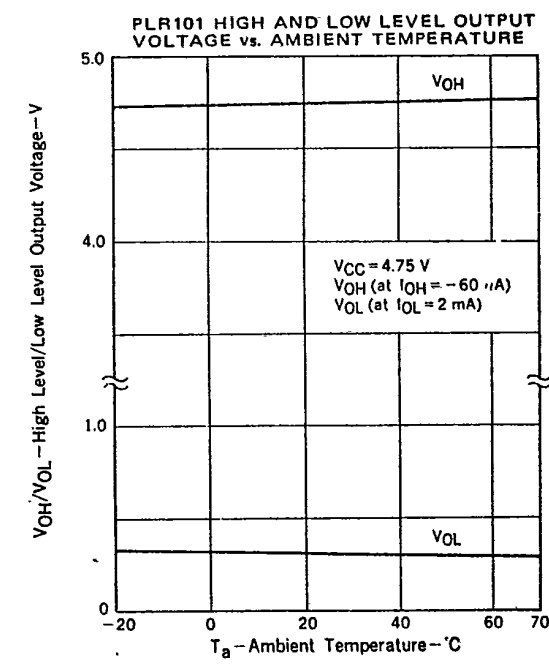
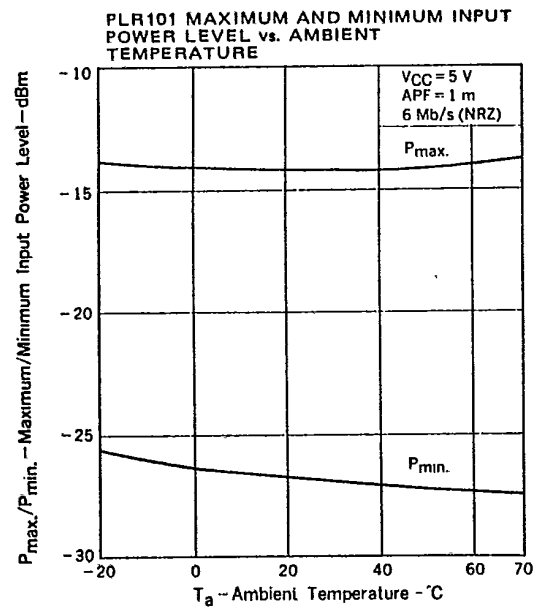
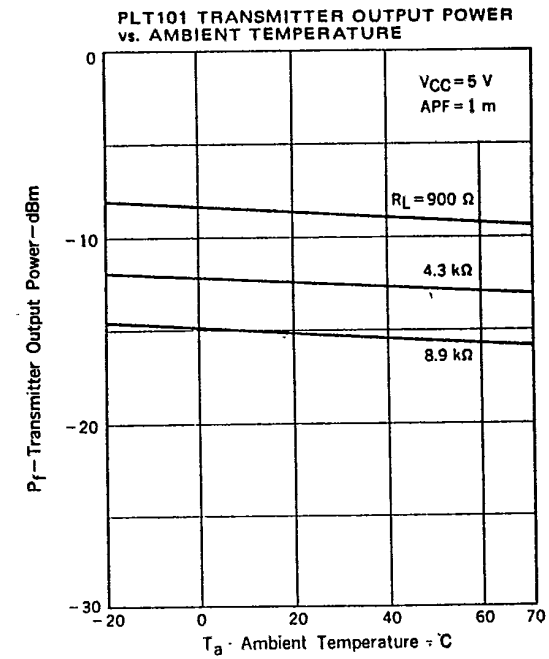
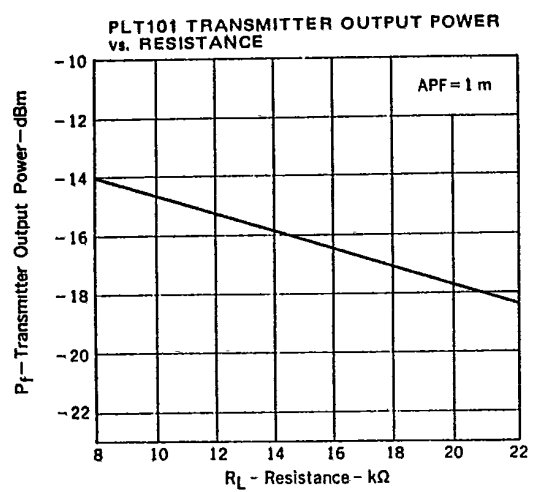
**(3) PLR101 (RECEIVER MODULE)**

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS
Supply Current	$I_{CC}$	-	25	40	mA	
High Level Output Voltage	$V_{OH}$	4.4	-	-	V	$V_{CC} = 4.75 V$ , $I_{OH} = 60 \mu A$
Low Level Output Voltage	$V_{OL}$	-	-	0.5	V	$V_{CC} = 4.75 V$ , $I_{OL} = 2 mA$
Maximum Input Power Level	$P_{max.}$	-14.5	-	-	dBm	APF = 1 m, 6 Mb/s (NRZ), $T_a = 25^\circ C$
Minimum Input Power Level	$P_{min.}$	-	-	-24	dBm	APF = 1 m, 6 Mb/s (NRZ), $T_a = 25^\circ C$
Rise Time	$t_r$	-	50	100	ns	$P_f = -20 dBm$ , $T_a = 25^\circ C$
Fall Time	$t_f$	-	20	70	ns	APF = 1 m, $T_a = 25^\circ C$
Transmission Distance		0.2	-	5	m	With PLT101 and APF, $R_L = 8.2 k\Omega$ , $T_a = 25^\circ C$

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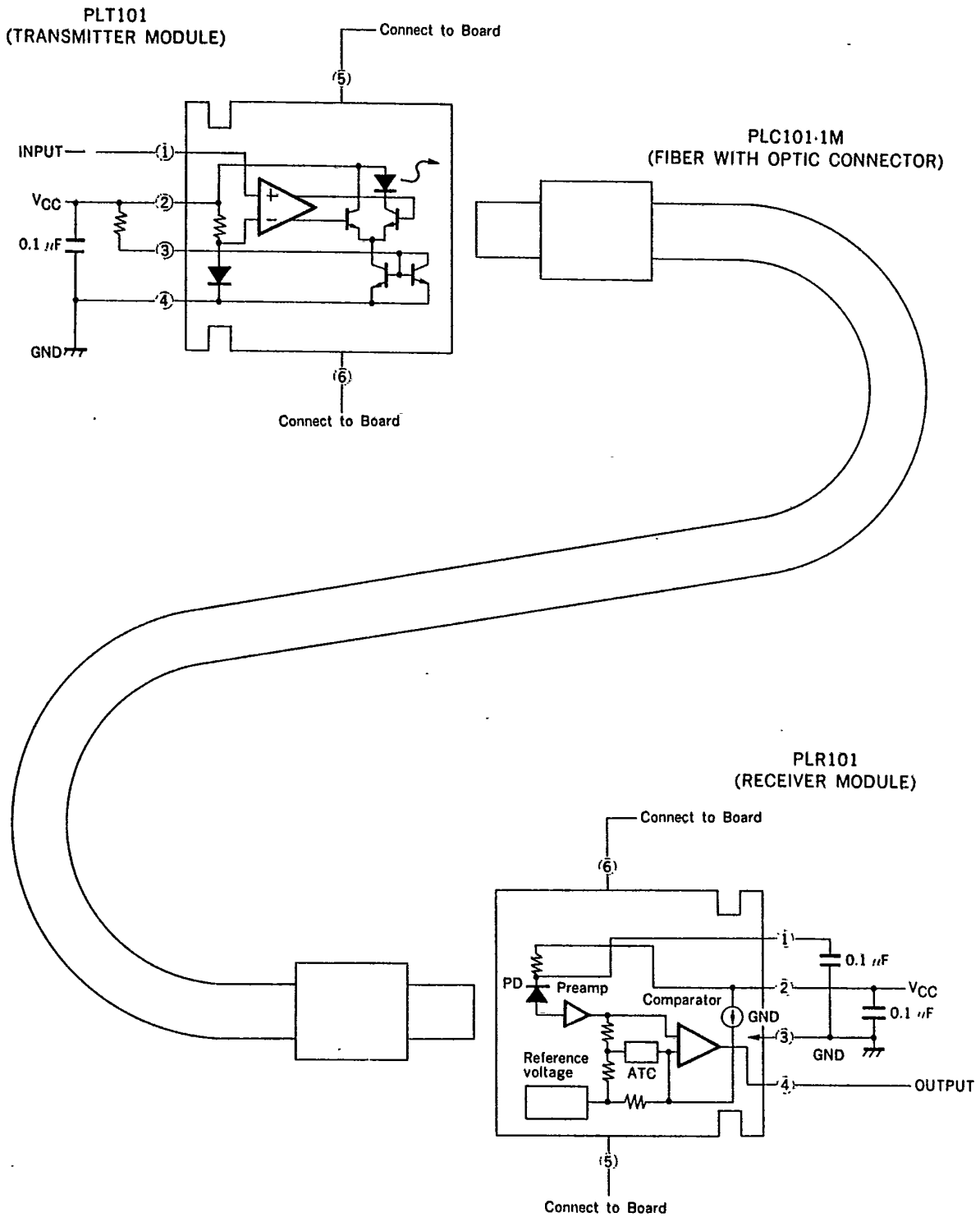
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TYPICAL CHARACTERISTIC ( $T_a = 25^\circ\text{C}$ )



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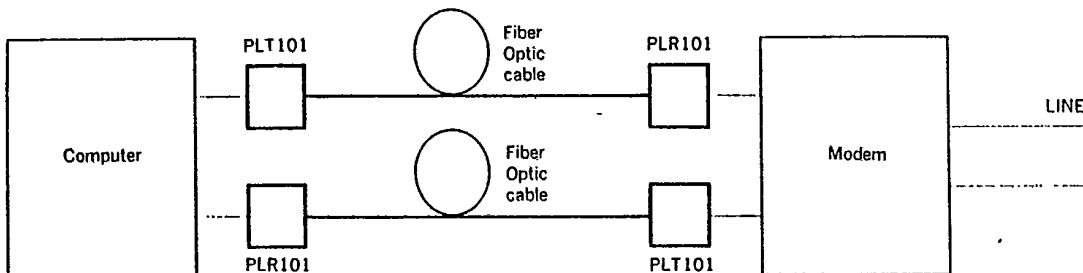
TYPICAL CIRCUIT CONFIGURATION



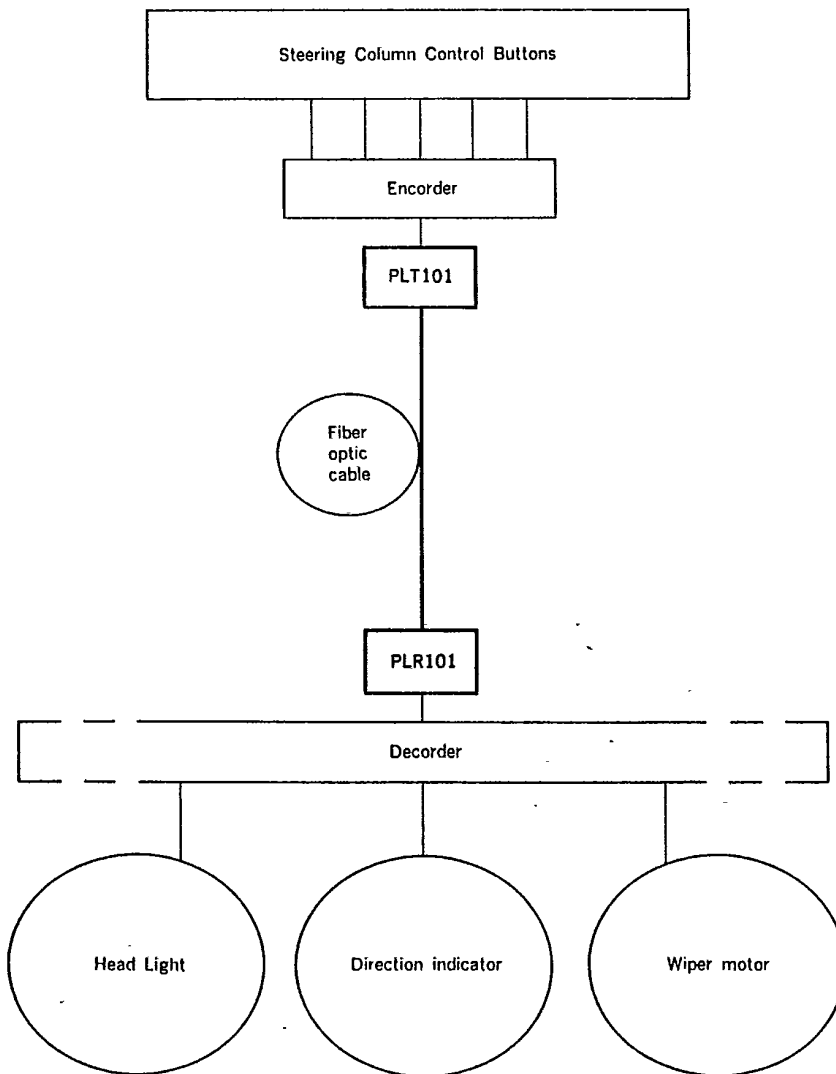
APPLICATIONS OF PLM101-M

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• COMPUTER (SECURE DATA COMMUNICATIONS)



• AUTOMOBILE (SECURE DATA COMMUNICATIONS)



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