



Multi-Chip Module

IR Multi-Mode SemiNex Lasers
10,15,20,25 and 50 watt versions
Bundled or Single Core fiber options

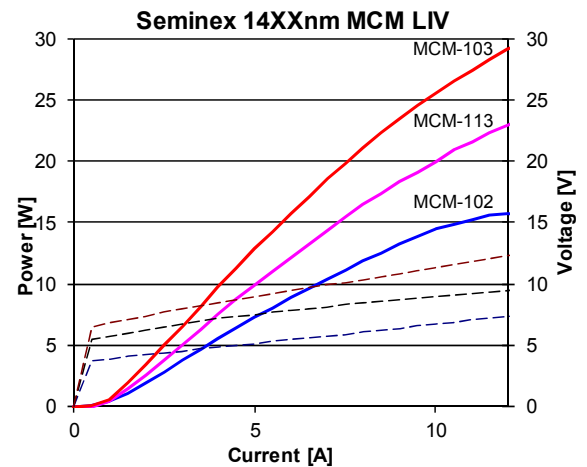
Features

- 1470, 1532, 1550 standard wavelengths
- Custom Wavelengths Available
- Red Aiming Beam Available

Applications

- Medical
- Military
- Thermal Processing
- DPSS Pump Lasers

SemiNex delivers the highest available power at infrared wavelengths between 13xx and 17xx nm. When necessary we will further optimize the design of our InP laser chips to meet our customers' specific optical and electrical performance needs. Diodes, bars and packages are tested to meet customer and market performance demands. Typical results and packaging options are shown. Contact SemiNex for additional details or to discuss your specific requirements



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1470 nm Multi Chip Modules

	Symbol	MCM-101	MCM-102	MCM-113	MCM-103	MCM-104	Units
Optical							
Center Wavelength	λ_c	1465	1475	1475	1475	1490	nm (± 20)
Output power (CW)	P_o	10	15	20	25	30	W
Spectral Width	$\Delta\lambda$	10	15	15	15	15	nm
Slope Efficiency	η_o	1.6	1.6	1.2	2.8	2.8	W/A
Electrical							
Power Conversion Eff.	η	0.22	0.19	0.22	0.2	0.2	%
Threshold Current	I_{th}	0.7	0.7	0.7	0.7	0.7	A
Operating Current	I_{op}	7.5	11	10	10.5	10.5	A
Operating Voltage	V_{op}	6	7	9	11.3	11.3	V
Series Resistance	R_s	0.30	0.30	0.40	0.50	0.50	Ohm
Lead Soldering Temp.	$^{\circ}\text{C}$	250	250	250	250	250	C
Optical Fiber							
Bundled Fiber Outer Dia.		375	375	375	375	375	μm
Optical Fiber NA		0.22	0.22	0.22	0.22	0.22	
Fiber length		1.5	1.5	1.5	1.5	1.5	m
Fiber Termination		SMA905	SMA905	SMA905	SMA905	SMA905	
Aiming Beam							
Standard/Optional		Standard	Standard	Standard	Optional	Optional	
Output Power	P_a	>2	>2	>2	Contact	Contact	mW
Wavelength	λ_a	650 +/- 10	650 +/- 10	650 +/- 10	for details.	for details.	nm

Specified values are rated at a constant heat sink temperature of 20°C

- All MCM units contain monitor photodetectors to monitor lasing operation •
- Custom wavelengths available •

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1532 nm Multi Chip Modules

	Symbol	MCM-114	MCM-115	MCM-105	Units
Optical					
Center Wavelength	λ_c	1545	1545	1550	nm (± 20)
Output power (CW)	P_o	10	15	20	W
Spectral Width	$\Delta\lambda$	10	10	15	nm
Slope Efficiency	η_o	1.2	1.7	2.2	W/A
Electrical					
Power Conversion Eff.	η	0.2	0.2	0.18	%
Threshold Current	I_{th}	0.7	0.7	0.7	A
Operating Current	I_{op}	9	9	10.5	A
Operating Voltage	V_{op}	6	9	10.7	V
Series Resistance	R_s	0.30	0.40	0.50	Ohm
Lead Soldering Temp.	$^{\circ}\text{C}$	250	250	250	$^{\circ}\text{C}$
Optical Fiber					
Bundled Fiber Outer Dia.		375	375	375	μm
Optical Fiber NA		0.22	0.22	0.22	
Fiber length		1.5	1.5	1.5	m
Fiber Termination		SMA905	SMA905	SMA905	
Aiming Beam					
Standard/Optional		Standard	Standard	Optional	
Output Power	P_a	>2	>2	Contact	mW
Wavelength	λ_a	650 +/- 10	650 +/- 10	for details.	nm

Specified values are rated at a constant heat sink temperature of 20°C

- All MCM units contain monitor photodetectors to monitor lasing operation •
- Custom wavelengths available •

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1550 nm Multi Chip Modules

	Symbol	MCM-106	MCM-107	MCM-119	MCM-108	Units
Optical						
Center Wavelength	λ_c	1555	1555	1560	1560	nm (± 20)
Output power (CW)	P_o	10	15	20	20	W
Spectral Width	$\Delta\lambda$	10	10	15	15	nm
Slope Efficiency	η_o	1.2	1.7	2.1	2.1	W/A
Electrical						
Power Conversion Eff.	η	0.19	0.2	0.19	0.19	%
Threshold Current	I_{th}	0.7	0.7	0.7	0.7	A
Operating Current	I_{op}	9	9	10.5	10.5	A
Operating Voltage	V_{op}	6	9	10.7	10.7	V
Series Resistance	R_s	0.30	0.40	0.50	0.50	Ohm
Lead Soldering Temp.	$^{\circ}\text{C}$	250	250	250	250	$^{\circ}\text{C}$
Optical Fiber						
Bundled Fiber Outer Dia.		375	375	375	375	μm
Optical Fiber NA		0.22	0.22	0.22	0.22	
Fiber length		1.5	1.5	1.5	1.5	m
Fiber Termination		SMA905	SMA905	SMA905	SMA905	
Aiming Beam						
Standard/Optional		Standard	Standard	Standard	No	
Output Power	P_a	>2	>2	>2		mW
Wavelength	λ_a	650 +/- 10	650 +/- 10	650 +/- 10		nm

Specified values are rated at a constant heat sink temperature of 20°C

- All MCM units contain monitor photodetectors to monitor lasing operation •
- Custom wavelengths available •

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High Brightness Modules

Red Aiming Beam Included

	Symbol	MCM-121*	MCM-118	MCM-117	MCM-116	MCM-120	Units
Optical							
Center Wavelength	λ_c	1295	1315	1480	1570	1650	nm (± 20)
Output power (CW)	P_o	24	24	16	15	12	W
Spectral Width	$\Delta\lambda$	15	15	15	15	15	nm
Slope Efficiency	η_o	1.8	1.8	1.6	1.1	1	W/A
Optical Fiber Core Dia.		200	200	200	200	200	μm
Optical Fiber NA		0.22	0.22	0.22	0.22	0.22	
Photodiode Current	I_m	1.25	1.25	1.25	1.25	1.25	mA
Electrical							
Power conversion Eff.	η	19	19	14	11	8.80	%
Threshold Current	I_{th}	0.7	0.7	0.7	0.7	0.7	A
Operating Current	I_{op}	12.5	12.5	11	13	13	A
Operating Voltage	V_{op}	10.5	10.5	10	10.6	10.6	V
Series Resistance	R_s	0.40	0.40	0.40	0.40	0.40	Ohm
Lead Soldering Temp.	$^{\circ}\text{C}$	250	250	250	250	250	$^{\circ}\text{C}$
Aiming Beam							
Output Power	P_a	>2	>2	>2	>2	>2	mW
Wavelength	λ_a	650 +/- 10	650 +/- 10	650 +/- 10	650 +/- 10	650 +/- 10	nm

Specified values are rated at a constant heat sink temperature of 20°C

**Best Effort*

No Red Aiming Beam

	Symbol	MCM-122*	MCM-123	MCM-124	MCM-125	MCM-126	Units
Optical							
Center Wavelength	λ_c	1295	1315	1375	1480	1570	nm (± 20)
Output power (CW)	P_o	28	28	28	18.5	17.5	watts
Spectral Width	$\Delta\lambda$	15	15	15	15	15	nm
Slope Efficiency	η_o	2	2	2	1.8	1.3	W/A
Optical Fiber Core Dia.		200	200	200	200	200	μm
Optical Fiber NA		0.22	0.22	0.22	0.22	0.22	
Photodiode Current	I_m	1.25	1.25	1.25	1.25	1.25	mA
Electrical							
Power conversion Eff.	η	19	19	19	14	11	%
Threshold Current	I_{th}	0.7	0.7	0.7	0.7	0.7	A
Operating Current	I_{op}	12.5	12.5	12.5	11	13	A
Operating Voltage	V_{op}	11.5	11.5	11.5	11	11.5	V
Series Resistance	R_s	0.40	0.40	0.40	0.40	0.40	ohm
Lead Soldering Temp.	$^{\circ}\text{C}$	250	250	250	250	250	$^{\circ}\text{C}$

Specified values are rated at a constant heat sink temperature of 20°C

**Best Effort*

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High Brightness Modules

Red Aiming Beam Included

	Symbol	MCM-128*	MCM-129	MCM-130	MCM-131	MCM-132	Units
Optical							
Center Wavelength	λ_c	1295	1315	1375	1480	1565	nm (± 20)
Output power (CW)	P_o	62	62	62	43	36	watts
Spectral Width	$\Delta\lambda$	15	15	15	15	15	nm 3dB
Slope Efficiency	η_o	4.6	4.6	4.6	3.6	2.7	W/A
Optical Fiber Core Dia.		400	400	400	400	400	μm
Optical Fiber NA		0.22	0.22	0.22	0.22	0.22	
Photodiode Current	I_m	1.25	1.25	1.25	1.25	1.25	mA
Electrical							
Power conversion Eff.	η	21	21	21	15	12.00	%
Threshold Current	I_{th}	0.7	0.7	0.7	0.7	0.7	A
Operating Current	I_{op}	12.5	12.5	12.5	12.5	13.50	A
Operating Voltage	V_{op}	24	24	24	23.5	23.5	V
Series Resistance	R_s	0.8	0.8	0.8	0.7	0.7	ohm
Lead Soldering Temp.	$^{\circ}\text{C}$	250	250	250	250	250	$^{\circ}\text{C}$
Aiming Beam							
Output Power	P_a	>2	>2	>2	>2	>2	mW
Wavelength	λ_a	650 +/- 10	650 +/- 10	650 +/- 10	650 +/- 10	650 +/- 10	nm

Specified values are rated at a constant heat sink temperature of 20°C

**Best Effort*

No Red Aiming Beam

	Symbol	MCM-133*	MCM-134	MCM-135	MCM-136	MCM-137	Units
Optical							
Center Wavelength	λ_c	1295	1315	1375	1480	1565	nm (± 20)
Output power (CW)	P_o	62	62	62	43	36	watts
Spectral Width	$\Delta\lambda$	15	15	15	15	15	nm 3dB
Slope Efficiency	η_o	4.6	4.6	4.6	3.6	2.7	W/A
Optical Fiber Core Dia.		400	400	400	400	400	μm
Optical Fiber NA		0.22	0.22	0.22	0.22	0.22	
Photodiode Current	I_m	1.25	1.25	1.25	1.25	1.25	mA
Electrical							
Power conversion Eff.	η	21	21	21	15	12.00	%
Threshold Current	I_{th}	0.7	0.7	0.7	0.7	0.7	A
Operating Current	I_{op}	12.5	12.5	12.5	12.5	13.50	A
Operating Voltage	V_{op}	24	24	24	23.5	23.5	V
Series Resistance	R_s	0.8	0.8	0.8	0.7	0.7	ohm
Lead Soldering Temp.	$^{\circ}\text{C}$	250	250	250	250	250	$^{\circ}\text{C}$

Specified values are rated at a constant heat sink temperature of 20°C

**Best Effort*

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Accessories and Options

Single core multimode SemiNex patch cable 550um core with 600um cladding



The single core multimode SemiNex patch cable offers a solution to bundled fiber multi-chip modules. Both ends are terminated with a SMA-905 connector and are AR coated for maximum performance. Contact SemiNex for additional details or to discuss your application.

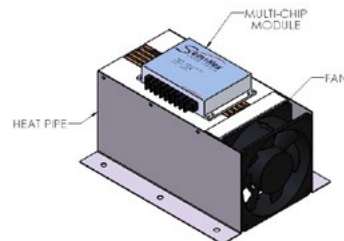
	FBR-101	FBR-102	Units
General			
Core Diameter	550	550	μm
Cladding Diameter	600	600	μm
Fiber Length	1.5	3	m
Termination Type	SMA-905	SMA-905	
Optical			
Numerical Aperture	0.22	0.22	NA
AR Coating	1470, 1532, 1550	1470, 1532, 1550	nm

Integrated Cooling System

SemiNex offers our high power multi-chip module with an integrated cooling solution. The ICS will extract up to 200 watts of thermal heat. This compact cooling system can be easily integrated with your existing controls and laser driver to reduce design time required to manage heat.

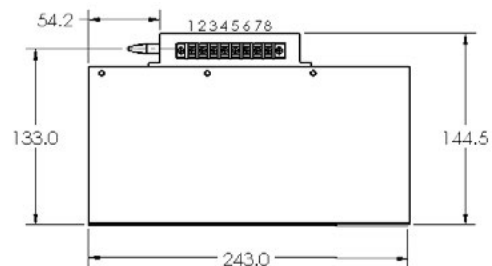
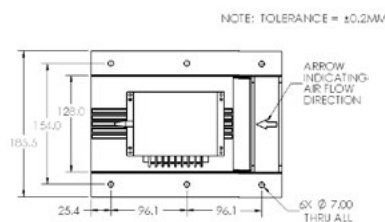
Part Number ICS-101

	Symbol	Typical	Units
Electrical - Fan			
Operating Current	I_{op}	2	A
Operating Voltage	V_{op}	12	V
Air Flow Discharge Area	A_{dis}	≥144	cm ²



FAN CHARACTERISTICS:

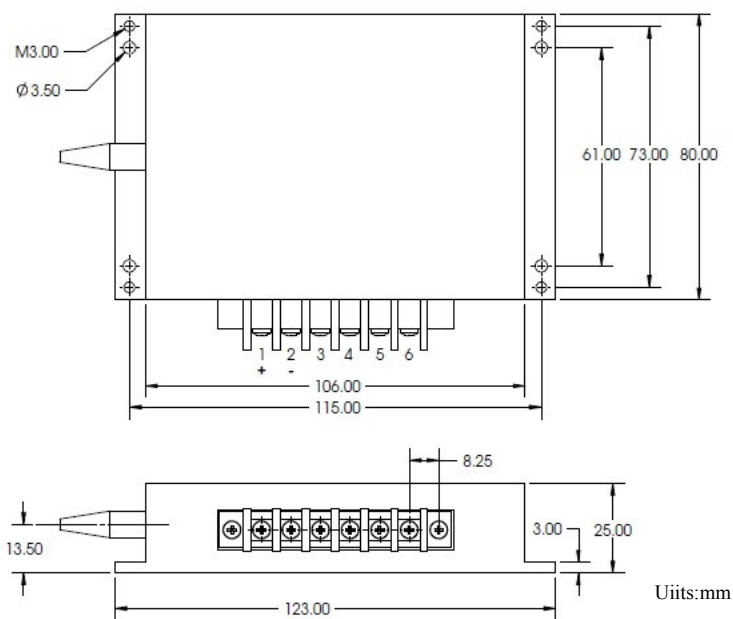
CONNECTOR: NONE
LEAD WIRE: 24 AWG, 30CM LENGTH
WIRE 1: BLACK (-)
WIRE 2: RED (+)
WIRE 3: YELLOW (MONITOR)



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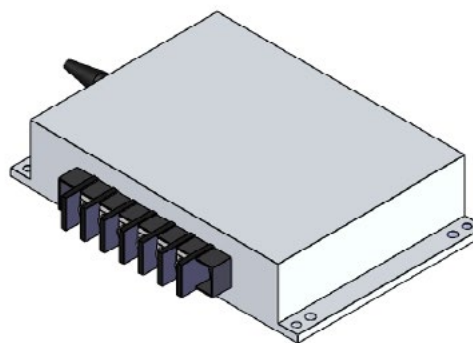
Physical Characteristics—Fiber Bundled



PIN Callout:

1. LASER ANODE (+)
2. LASER CATHODE (-)
3. ACTIVITY DETECTOR (+)
4. ACTIVITY DETECTOR (-)
5. AIMING BEAM (+5V)
6. AIMING BEAM (GND)

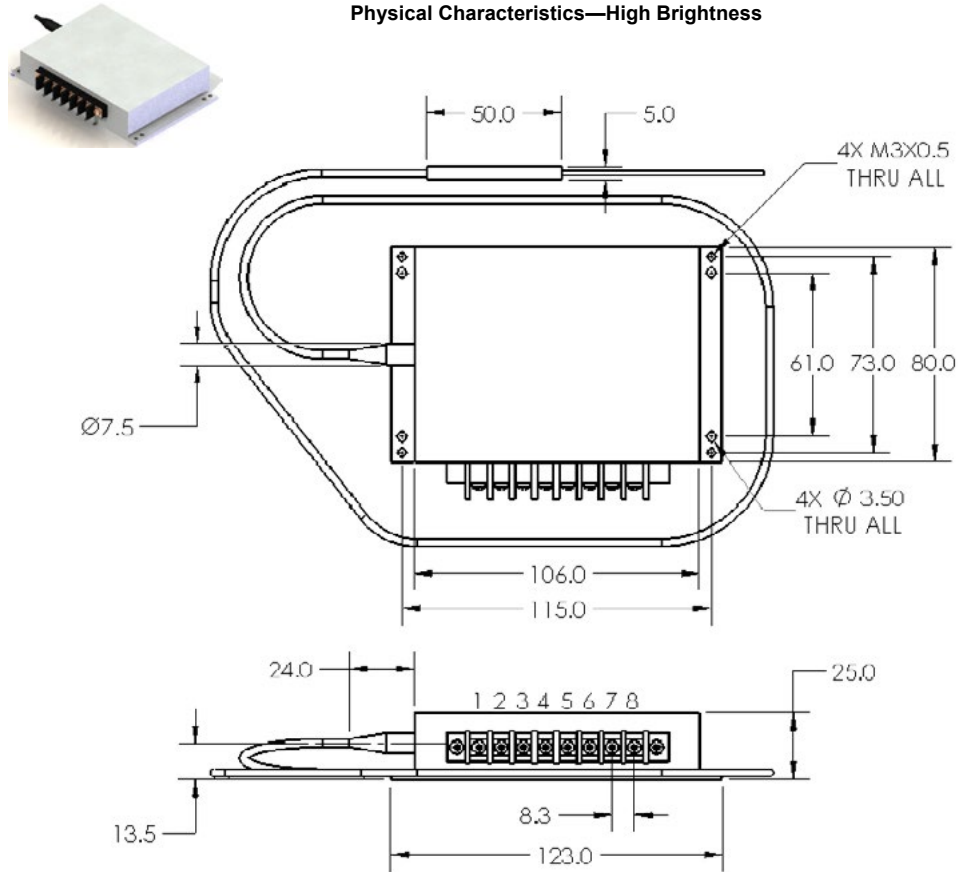
For Reference Only
REFER TO DOCUMENTATION
SUBMITTED WITH PRODUCT FOR
ACTUAL PIN CALLOUTS.



MCM mass: 550g

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Physical Characteristics—High Brightness



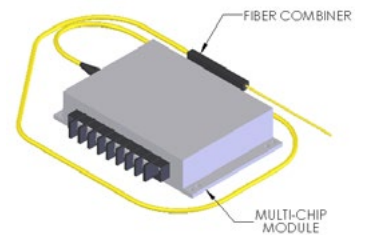
NOTES:

1. LONG TERM BEND RADIUS, INPUT FIBERS = 25mm
2. LONG TERM BEND RADIUS, OUTPUT FIBER = 28mm
3. FIBER SHOULD EXIT COMBINER STRAIGHT FOR A MIN LENGTH OF 10mm

PIN CALLOUT: (FOR REFERENCE ONLY, REFER TO DOCUMENTATION SUBMITTED WITH PRODUCT FOR ACTUAL PIN CALLOUTS)

1. LASER ANODE (+)
2. LASER CATHODE (-)
3. ACTIVITY DETECTOR (N)
4. ACTIVITY DETECTOR (P)
5. AIMING BEAM (+5V) (OPTIONAL)
6. AIMING BEAM (-) (OPTIONAL)
7. THERMISTOR (OPTIONAL)
8. THERMISTOR (OPTIONAL)

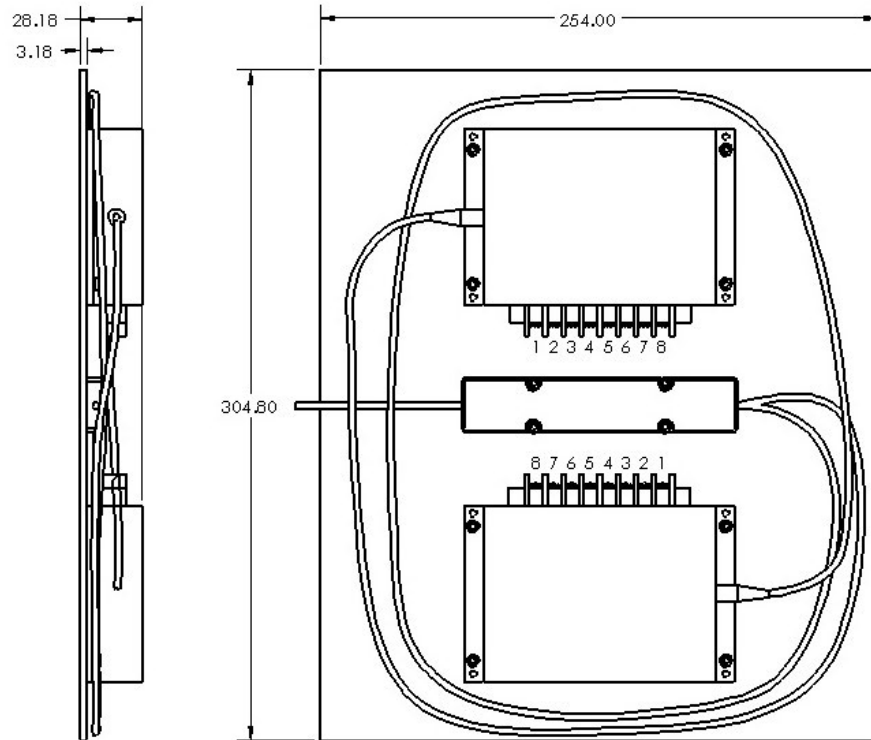
MCM mass: 550g



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Physical Characteristics—50 watt

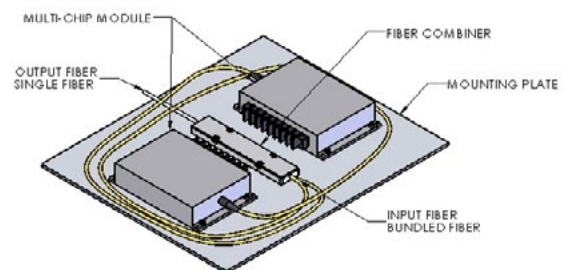


NOTES:

1. LONG TERM BEND RADIUS.
INPUT FIBERS = 25mm
2. LONG TERM BEND RADIUS.
OUTPUT FIBER = 28mm
3. FIBER SHOULD EXIT COMBINER STRAIGHT
FOR A MIN LENGTH OF 10mm

PIN CALLOUT: (FOR REFERENCE
ONLY, REFER TO DOCUMENTATION
SUBMITTED WITH PRODUCT FOR
ACTUAL PIN CALLOUTS)

1. LASER ANODE (+)
2. LASER CATHODE (-)
3. ACTIVITY DETECTOR (N)
4. ACTIVITY DETECTOR (P)
5. AIMING BEAM (+5V) (OPTIONAL)
6. AIMING BEAM (-) (OPTIONAL)
7. THERMISTOR (OPTIONAL)
8. THERMISTOR (OPTIONAL)



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