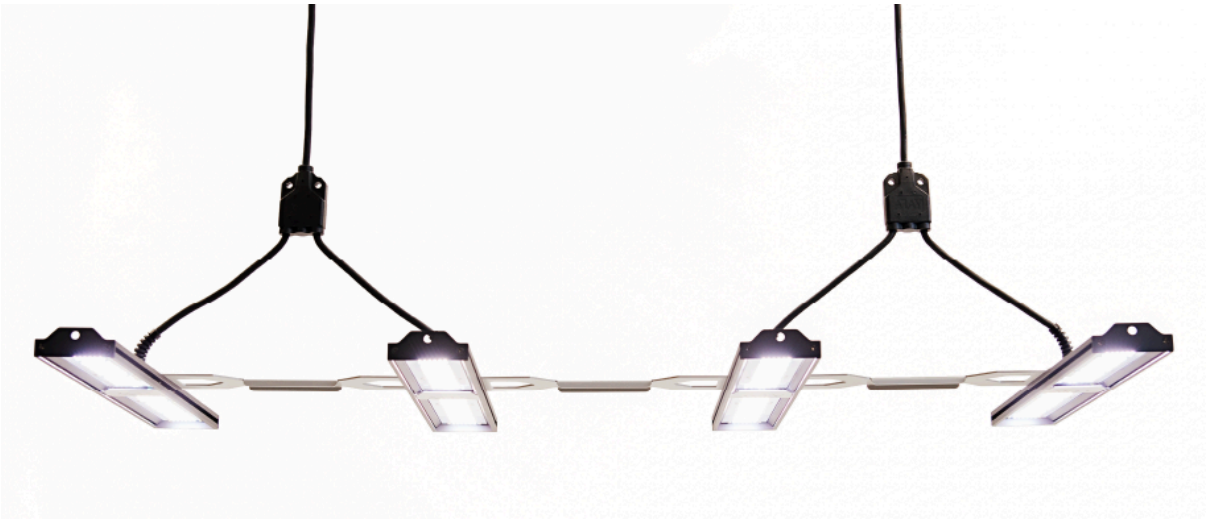
MIGRO ARAY



Instruction manual and datasheet

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STOP – Please read all these instructions carefully especially the safety section before unboxing and assembling

Safety

Please read this manual thoroughly before assembling and installing the MIGRO grow lights system

Please retain this manual for reference for the lifetime for the product

The MIGRO system limits the voltage in the grow room to 96Vdc and has built in protection for overcurrent, shorts or overheating. However, to minimise any remaining risk please switch the power off while installing and adjusting the MIGRO system. If the mains plug needs to be changed to suit your power socket only a qualified person should carry out this work, in accordance with your local codes.
The MIGRO system will operate on a supply voltage ranging from 100V to 277V AC and from 50 to 60Hz frequency. Any other supply voltage will damage the lighting system.
The grow light and the cabling from the LED driver to the grow light is IP66 rated and can be used in a wet area. The mains power plug is not IP rated for a wet area and should be located in a dry area outside of the grow room. If the cable insulation or glands are damaged switch off the system immediately and return to us for repair.

The MIGRO grow light has a highly efficient and passive cooling heatsink. In order to function correctly air must be able to flow freely across the fins of the heatsink. Do not cover the grow light and restrict the airflow across the heatsink under any circumstances. This will result in heat build up which may damage the grow light and/or cause a fire.
Do not put the grow light down on any surface when the light is on. The light intensity and radiated heat may damage the surface.

The light intensity from each MIGRO grow light is very high. If you look directly at the light source from less than 20cm or 9” away the intensity is equivalent to the sun. To protect your eyes do not look directly at the light source when less than 60cm or 2 feet away.

ARAY 2, 3 & 4 setup instructions

Connect the LED bars together with the connector brackets provided. Centre the bracket along the length of the LED bar (line it up with the Cable gland) and screw in place using the allen key provided.

Attach the ratchet hangers to the grow light at the cable splitter splitter.

ARAY 2 & 3

Attach 2 x ratchet hangers to each light fixture

ARAY 4

Attach the 2 x clips to each cable splitter and attach a single ratchet hanger to each cable

ARAY 4X4 and 5X5

Unfold the grow light carefully and rest on a flat clean surface with the LEDs facing down.

Attach the hanging clips to each end.
Attach a hanging ratchet to each end and raise the light into position.

LED Driver mounting

Caution: Do not run 2 led bars only from the larger power ARAY 4, 8 & 12 driver. The LEDs will be overpowered and will be damaged. Only run 4 bars with the splitter cable.

You can daisy chain the power cable for up to three of the ARAY 3 and ARAY 4 LED drivers. Do not exceed this amount or the power cables will overheat.

Hang the LED driver using the S hook or Carabiner clip. You can also fix the LED drive to the wall using the fixing points provided.

LED Driver power connection

The LED driver is soft start so there is no spike in current in start up. This means you can use a domestic power or timer switch with suitable current rating, no special power switches required.

Up to 3 ARAY 2, ARAY 3 and ARAY 4 LED drivers can be daisy chained for power. Do not exceed 3 x LED drivers on one circuit.

Dimmer adjustment - ARAY 2,3,4, 4X4 & 5X5

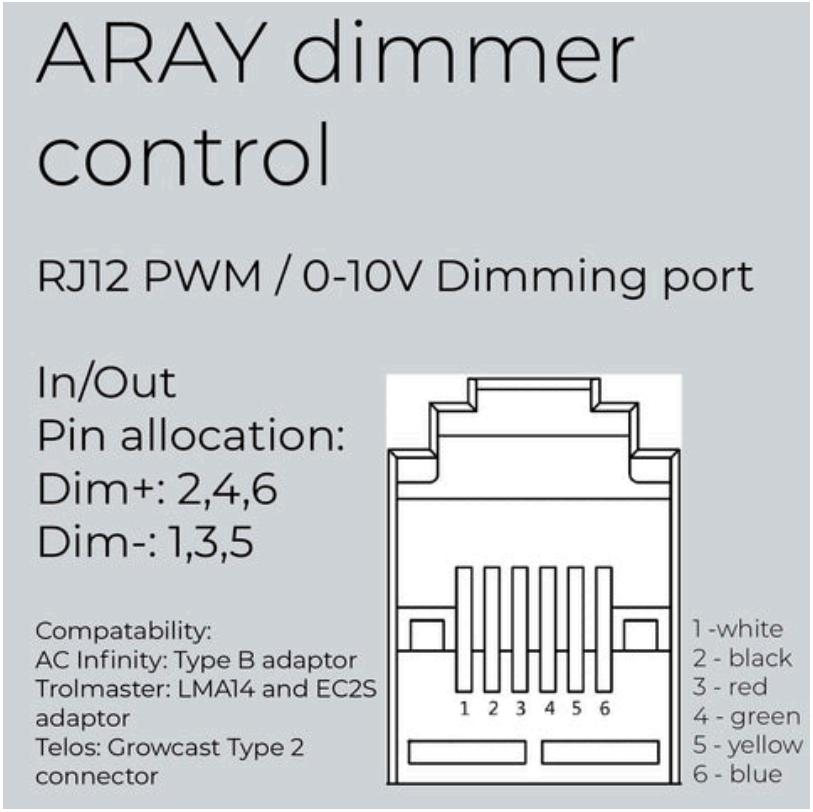
Adjust the Light intensity using the dimmer control on the LED driver. Set the dimmer switch to ON or Local to enable the on board dimmer control. Set the Dimmer switch to Off/Remote to operate from an external dimmer signal.

Stage	**Seedlings**		**Vegetative**		**Flowering**	
Week	**1 to 2**		**week 3 to flowering**		**12 hour cycle**	
	Hanging height	**Dimmer setting**	**Hanging height**	**Dimmer setting**	**Hanging height**	**Dimmer setting**
ARAY 1	14" or 35cm	80%	14" or 35cm	100%	14" or 35cm	100%
ARAY 2	10" or 25cm	40%	8" or 20cm	60% to 100%	6" or 18cm	100%
ARAY 3	15" or 38cm	40%	16" or 40cm	60% to 100%	11" or 28cm	100%
ARAY 4	14" or 35cm	40%	20" or 50cm	60% to 100%	10" or 25cm	100%
ARAY 4X4	12" or 30cm	40%	12" or 30cm	60% to 100%	12" or 30cm	100%
ARAY 5X5	12" or 30cm	40%	12" or 30cm	60% to 100%	12" or 30cm	100%

After initial setup check them after a few hours. Look for signs of plant stress; curled leave tips, yellowing leaf tips etc. If you see these signs reduce dimmer by 1/5 turn and monitor.

External controller connection

You can connect to any external 0-10V analog or PWM controller with RJ11 or RJ12 connectors with the following pin configuration



PAR charts

ARAY 2 +RED PPFD MAP in 2x2 Tent

Average PAR 800 µmols/m²/sec
Even light distribution
System efficiency 2.38 µmols/watt

PAR Meter: Apogee MQ-620

Seedling Distance: 10" (26cm) Brightness: 40%

202	216	213	204
245	252	255	256
245	250	254	254
201	206	212	204

Vegetative Distance: 8" (20cm) Brightness: 80%

406	419	430	404
511	528	523	538
520	510	524	528
402	430	425	401

Flowering Distance: 6" (16cm) Brightness: 100%

640	668	645	646
950	937	910	955
955	927	922	961
653	644	648	638

ARAY 3 +RED PPFD MAP in 3x3 Tent

Average PAR 708 µmols/m²/sec
Even light distribution
System efficiency 2.29 µmols/watt

PAR Meter: Apogee MQ-620

Seedling Distance: 15" (38cm) Brightness: 40%

177	194	200	197	182	150
207	236	251	246	221	189
227	254	271	266	237	204
234	251	270	265	239	197
206	229	243	239	215	186
170	187	186	186	179	162

Vegetative Distance: 16" (40cm) Brightness: 80%

377	420	435	436	411	366
438	498	543	537	493	438
490	543	591	589	542	464
492	534	589	587	541	467
439	483	532	537	495	435
367	400	403	435	418	386

Flowering Distance: 11" (28cm) Brightness: 100%

450	546	576	568	532	453
600	823	879	872	808	604
650	896	970	973	904	630
658	902	972	972	903	634
614	805	878	851	829	610
455	530	558	578	543	457

PAR Meter: Apogee MQ-620

ARAY 4 +RED PPFD MAP in 2x4 Tent

Average PAR 813 µmols/m²/sec
Even light distribution
System efficiency 2.34 µmols/watt

Seedling Distance: 14" (35cm) Brightness: 40%

220	228	230	232	232	228	218	214
244	245	254	256	259	255	242	239
237	239	249	251	254	252	241	241
209	210	215	217	227	214	209	208

Vegetative Distance: 20" (50cm) Brightness: 80%

496	530	558	556	551	547	515	483
523	541	580	585	576	564	536	500
511	552	596	589	579	565	540	511
490	517	550	518	510	506	516	480

Flowering Distance: 10" (25cm) Brightness: 100%

734	690	726	718	710	712	688	740
930	874	914	926	926	932	878	933
911	868	918	914	910	932	880	936
737	690	715	720	700	715	687	743

ARAY 4x4 PPFD MAP in 4x4 Tent

Average PAR 871 µmols/m²/sec
Even light distribution
System efficiency 2.7 umols/watt

PAR Meter: Apogee MQ-620

Distance: 12" (30cm) Brightness: 100%

657	840	912	926	949	918	855	677
736	1007	1098	1081	1069	1060	966	750
730	996	1083	1070	1053	1045	953	730
660	835	935	936	922	907	820	650
673	866	960	956	944	916	838	634
756	991	1121	1099	1077	1070	984	726
763	1017	1132	1097	1067	1072	975	758
680	871	933	930	938	911	843	676

Distance: 12" (30cm) Brightness: 40%

263	336	365	370	380	367	342	271
294	403	439	432	428	424	386	300
292	398	433	428	421	418	381	292
264	334	374	374	369	363	328	260
269	346	384	382	378	366	335	254
302	396	448	440	431	428	394	290
305	407	453	439	427	429	390	303
272	348	373	372	376	364	337	270

Distance: 12" (30cm) Brightness: 60%

394	504	547	556	569	551	513	406
442	604	659	649	641	636	580	450
438	598	650	642	632	627	572	438
396	501	561	562	553	544	492	390
404	520	576	574	566	550	503	380
454	595	673	659	646	642	590	436
458	610	679	658	640	643	585	455
408	523	560	558	563	547	506	406

Distance: 12" (30cm) Brightness: 80%

526	672	730	741	759	734	684	542
589	806	878	865	855	848	773	600
584	797	866	856	842	836	762	584
528	668	748	749	738	726	656	520
538	693	768	765	756	733	670	507
605	793	897	879	862	856	787	581
610	814	906	878	854	868	780	606
544	697	746	744	750	729	674	541

ARAY 5x5 PPFD MAP in 5x5 Tent

Average PAR 836 µmols/m²/sec
Even light distribution
System efficiency 2.7 umols/watt

PAR Meter: Apogee MQ-620

Distance: 12" (30cm) Brightness: 100%

389	495	571	578	540	538	565	564	469	373
539	778	938	928	814	821	942	933	748	501
654	1003	1232	1212	1042	1058	1224	1219	968	607
669	990	1210	1204	1048	1054	1202	1196	968	630
641	918	1126	1124	990	995	1120	1111	892	602
625	896	1098	1105	978	976	1097	1097	891	599
625	926	1138	1137	992	995	1135	1130	990	597
615	922	1143	1140	978	982	1130	1135	900	572
509	704	867	873	766	774	880	865	696	470
363	442	540	555	508	527	561	550	470	355

Distance: 12" (30cm) Brightness: 40%

219	266	310	311	300	301	300	292	258	214
254	359	445	447	429	426	424	424	340	253
301	442	571	570	530	529	533	536	426	296
308	445	583	586	548	535	547	547	428	292
273	394	506	516	480	486	486	478	386	269
278	377	482	502	478	469	474	458	377	274
304	422	550	557	528	515	520	520	414	302
291	418	549	558	522	509	530	527	415	303
265	349	449	461	428	426	438	433	349	263
214	267	313	307	288	304	297	298	259	217

Distance: 12" (30cm) Brightness: 60%

219	266	310	311	300	301	300	292	259	214
254	359	445	447	429	426	424	424	340	253
301	442	571	570	530	529	533	536	426	296
308	445	583	586	548	535	547	547	428	292
273	394	506	516	480	486	486	478	386	269
278	377	482	502	478	469	474	458	377	274
304	422	550	557	528	515	520	520	414	302
291	418	549	558	522	509	530	527	415	303
265	349	449	461	428	426	438	433	349	263
214	267	313	307	288	304	297	298	259	217

Distance: 12" (30cm) Brightness: 80%

329	400	466	466	449	452	451	439	387	320
380	535	668	671	643	634	635	636	510	379
451	662	856	854	796	775	799	804	640	445
461	668	874	879	821	802	820	820	643	437
469	591	758	773	736	726	730	717	578	403
418	565	723	753	717	704	711	688	566	411
456	622	824	835	793	770	780	780	622	454
436	626	824	838	793	763	784	780	622	466
398	523	673	692	643	630	657	660	523	394
320	400	469	460	446	466	446	448	389	326

MIGRO ARAY

ARAY 1
100% power | 65W

60cm x 40cm / 2ft x 1,5ft | Hanging height: 35cm (14in)

Reflective Mylar walls

428	473	482	442
438	501	513	464
	ARAY 1		
437	493	513	474
420	466	485	452

Average PPFD: 468 µmol/m²/sec

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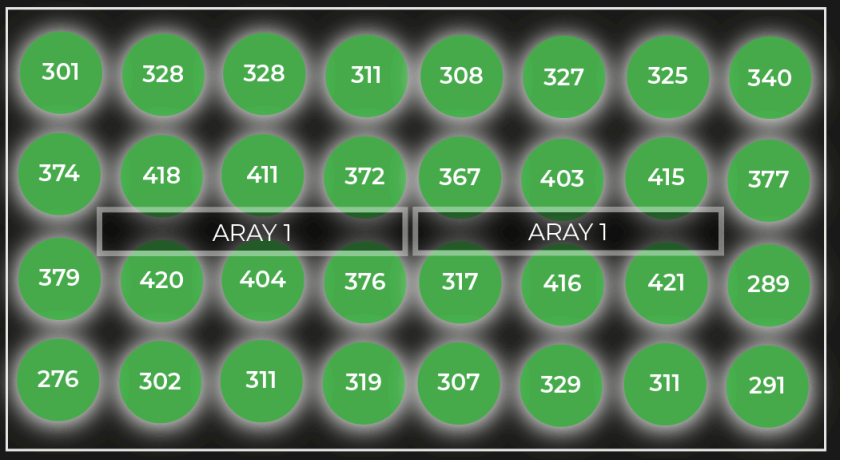
MIGRO ARAY

2 x ARAY 1

100% power | 130W

120cm x 60cm / 4ft x 2ft | Hanging height: 45cm (14in)

Reflective Mylar walls



Average PPFD: 349 µmol/m²/sec

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MIGRO ARAY

2 x ARAY 1

100% power | 130W

90cm x 60cm / 3ft x 2ft | Hanging height: 35cm (14in)

Reflective Mylar walls

Average PPFD: 449 µmol/m²/sec

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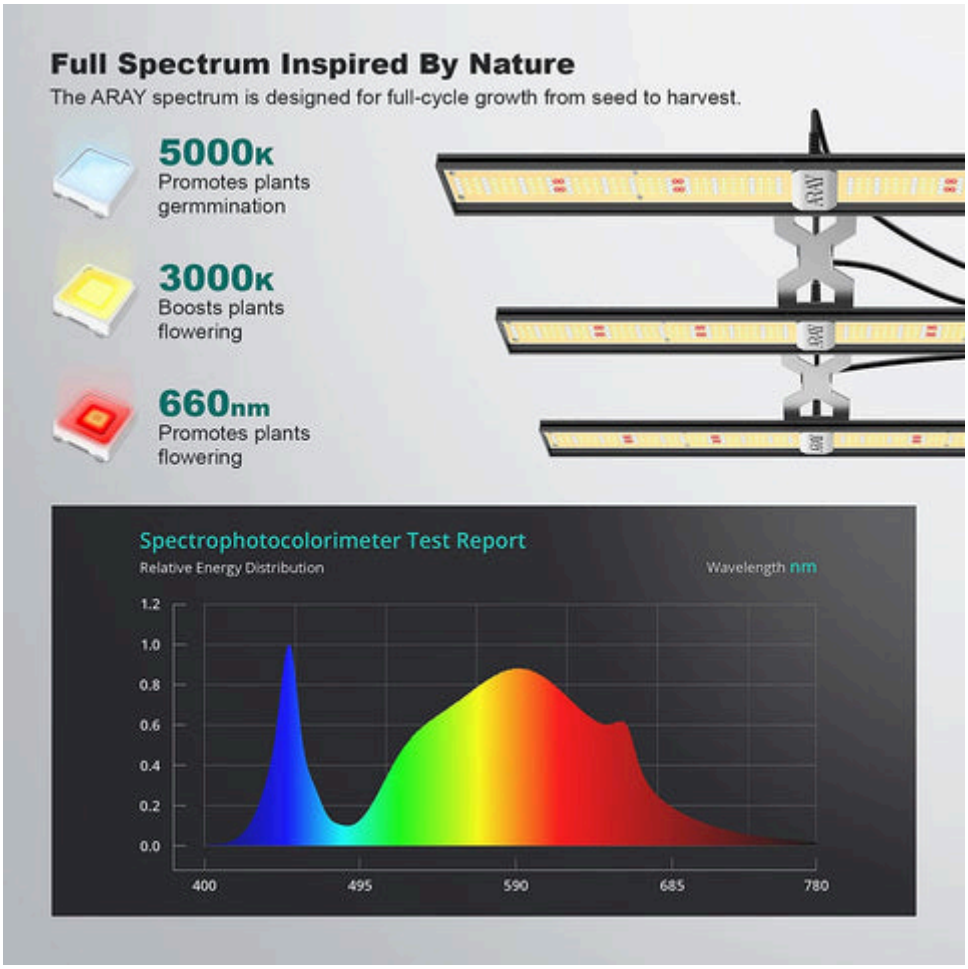
Light Spectrum

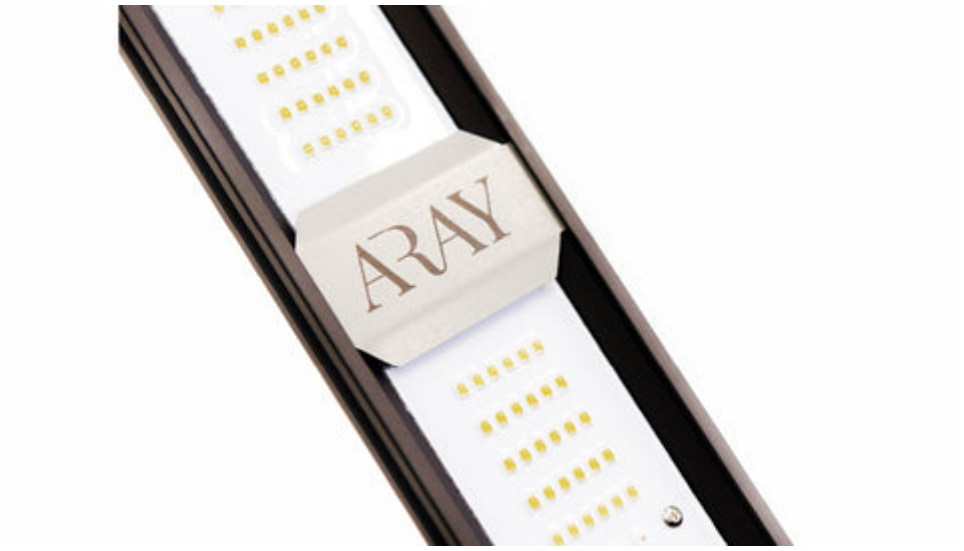


Hardware overview

LED bar

The small LEDs (surface mounted diodes, SMDs) are delicate and can be easily damaged.
Take care putting them down and during assembly.

The LEDs are protected from water and dust with a conformal coating so they can be wiped clean of dust and dirt.



LED driver

The LED driver is highly efficient and reliable constant current transformer and has inbuilt protection from:

- Output over voltage
- Over temperature
- Short circuit
- In the event of any of the above the driver will shut down. The driver will automatically restart if the conditions return to normal.

The driver and the mains plug connection should be located outside of the grow area in a dry and safe position with adequate ventilation.

The life of the LED driver is related to its operating temperature. Keeping it as cool as possible will extend its life.

The driver is dimmer controlled and has an inbuilt dial for adjusting the output from 20% to 100%.
Up to 15 drivers can be connected together in daisy chain connection for simultaneous dimming control.

Set the toggle switch on for master dimmer driver and off for slave dimmer drivers.

Airflow and ventilation

Whatever position the grow light is fixed always ensure there is adequate room for airflow around the heatsink to prevent heat buildup. There should be at least 5cm or 2” clearance on three sides of the heatsink.
The heatsink is a ‘fast flow’ passive heatsink allowing air to move quickly over the heatsink surface and remove the heat at a high rate.

Driver and Lamp operating temperature

Both the led bar heatsink and led driver both operate at about 25 deg. C or 45 F above ambient temperature. So at 25 degrees C or 77 F room temp the driver and heatsink will be about 50 deg. C or 122 F. This is perfectly normal and safe.
To minimise the temperature locate the driver down low at the air intake and have the out take moving air across the heatsink.
If the driver case temperature gets to 90 DegC or 195 F the output current will be reduced. If the temperature does not reduce then it powers off until temperatures have reduced.

Maintenance

The MIGRO grow light system requires almost no maintenance. In ordinary use the only maintenance required is to keep the heatsink and the led surface clean. This will ensure the cooling performance and light output are maintained, respectively.

To clean all of the components switch off the power and use warm water and soap with a damp cloth. Do not under any circumstances use a solvent, acid based or an abrasive cleaner on any of the components. Doing so may damage the finish of the product and the electrical and led coating

Typical Package contents:

Email: info@migrolight.com
Website: www.migrolight.com
Youtube: MIGRO channel – optimise your grow light setup

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