SP-401S SOLAR RUNWAY EDGE LIGHT

MEDIUM INTENSITY **YELLOW / RED**

Compliance:
ICAO Annex 14 Vol. I (8th. Edition, July 2018)
EASA CS-ADR-DSN
FAA AC

FEATURES

- Operates 365 days on solar energy
- 5-level protection against system failure
- 180 hrs of autonomy

APPLICATION

Bidirectional optics, designed for permanent usage at airports located in regions without access to electricity and with high photovoltaic potential.

TECHNICAL SPECIFICATIONS

Optics

- 800 cd (yellow) / 320 cd (red) light output (tested by accredited laboratory)
- Bidirectional type
- LED lifespan: 100.000 hrs
- Maximum power consumption: 9W
- NVG-compatible, Infrared LEDs (optional)
- Color: yellow / red
- User-replaceable

Battery

Standard battery	• 2x built-in batteries, user-replaceable, air transportable • Autonomy: 180 hrs (minimum intensity) • Total capacity: 216W (2x9Ah/12V) • Deep-cycle VRLA, 12V/9Ah (available worldwide) • Lifespan: 1.200 cycles (designed for 4-5 years)
Cyclon battery (Arctic Pack)	• 1x built-in battery, user-replaceable, air transportable • Autonomy: 100 hrs (minimum intensity) • Total capacity: 120W (10Ah/12V) • Lifespan: 300 cycles (designed for 10-15 years)

Solar Power Supply

- 20W solar panel, separately installed
- Polycrystalline type (optional: monocrystalline)
- Lifespan: 15 years
- MPPT-Temp / Built-in inverter 12-36V/2A

Control & Monitoring

- Wireless mesh type network
- Operating frequency: 868 MHz (optional 2.4GHz or 433 Mhz)
- Operating range: up to 1.5 km, relayed (each light is a repeater)
- Operating Modes:
  Steady / Flashing / Dusk till dawn
  Visible / Infrared (optional) / Visible + Infrared (optional)
- Activation options:
  Via ALCMS Computer Interface (requires UR-201)
  Via UR-201 Control & Monitoring Unit
  Via UR-101 Handheld Controller

Casing & Components

- Materials
  Dome: glass, UV-resistant
  Casing: Lexan polycarbonate, UV-stabilized, color: aviation yellow
  Mounting: galvanized steel (optional: marine grade stainless steel)
  Frangible mounting: aluminum (tested by accredited laboratory)
- Detachable antenna
- Pressure stabilizing valve, transportation fuse
- Battery level indicator
- Carrying handle (optional)
- Casing lifespan: 15 years
- Dimensions (LxWxH): 557 mm x 450 mm x 358 mm
- Weight: 12,4 kg

Safety & Reliability

- Five levels of protection against system failure
- Secondary power supply: backup battery
- Real-time monitoring via ALCMS
  (Airfield Lighting Control and Monitoring System)
- Emergency ON/OFF button

Environmental Conditions

- Temperature range: -20 to 50 °C (-4 to 122 °F)
  Optional: -40 to 80 °C (-40 to 176 °F)
- Ingress protection: IP-67 (tested by accredited laboratory)
- Impact Resistance: IK-10 (tested by accredited laboratory)
- Jet Blast Resistance: 240 kph (tested by accredited laboratory)

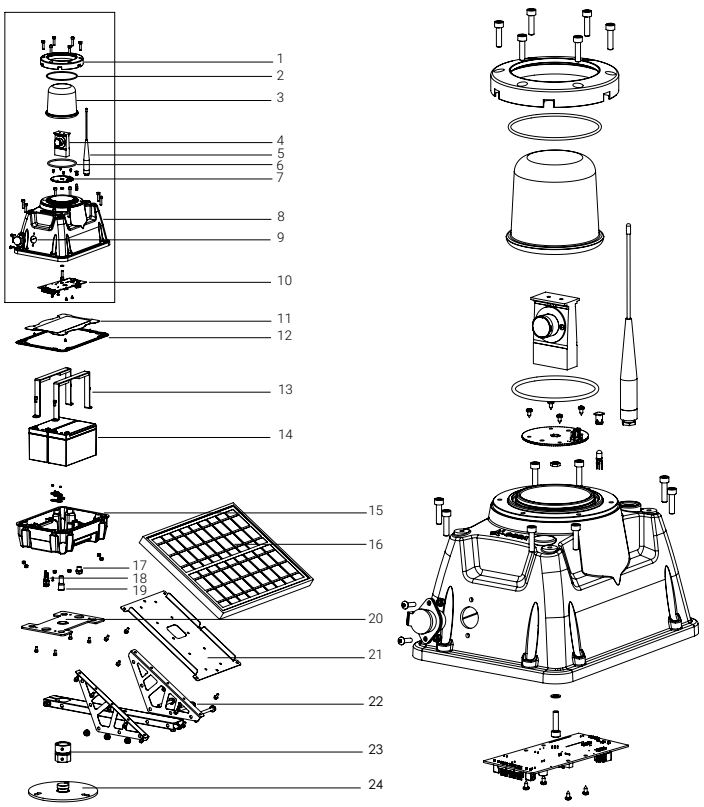
Compliance

Photometric & Chromaticity	ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 5.3.9.8 & clause 5.3.9.9, Appendix 1, Figure A1-1b
Jet Blast Resistance	ICAO, Annex 14th, Volume I, 8th Edition dated July 2018. Doc 9157, Part 6, clause 3.2.2 & clause 4.9.1.
	FAA AC 150/5345-50B dated September 2007, clause 3.2.2
Frangibility	ICAO Doc 9157 AN901 Aerodrome Design Manual Part 6, 1st Edition dated 2006, clause 4.9
	ICAO, Annex 14th, Volume I, 8th Edition dated July 2018, clause 5.3.1.3
	FAA AC 150-5345-46E clause 3.4.2.1
	FAA AC 150/5220-23, clause 3.2
Secondary Power Supply	ICAO, Annex 14th, Volume I, 7th Edition dated July 2016, clause 8.1.8-8.1.9 & clause 8.1.11
CE Declaration of Conformity	2014/53/EU RED Directive, clauses 3.1a, 3.1b, 3.2
	2011/65/EU ROHS Directive, clause 4.1

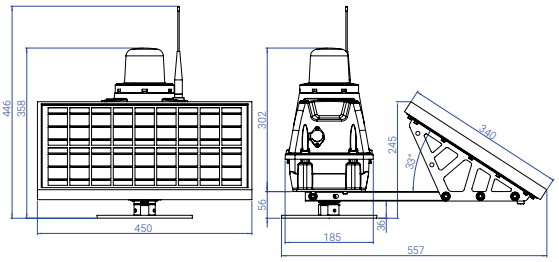
Accredited Laboratory Testing

Photometric & Chromaticity	Intertek Laboratory
Jet Blast Resistance	Warsaw Institute of Aviation The Laboratory of Aerodynamics
Frangibility	Laborex Research Laboratory
Ingress Protection	EMAG Institute of Innovative Technologies
Impact Resistance	Laborex Research Laboratory
Electromagnetic Compatibility	Military Institute of Armament Technology

TECHNICAL DRAWING



1.	Adapter for glass dome
2.	O-ring for the glass dome
3.	Glass dome
4.	LED optics
5.	Radio antenna for wireless control & monitoring
6.	O-ring under the glass dome
7.	PCB board
8.	Casing upper part
9.	Charging port
10.	Micro-computer with integrated radio transceiver
11.	Protective plate
12.	Rubber gasket
13.	Battery holder
14.	2x batteries built-in, VRLA type 12V/9Ah
15.	Casing bottom part
16.	20W Solar panel with standard optimal inclination
17.	Pressure stabilizing valve
18.	Emergency ON/OFF button
19.	Transportation fuse
20.	Mounting plate
21.	Holding frame for solar panel
22.	Holder for solar panel frame
23.	Frangible coupling
24.	Base plate



PHOTOMETRIC PERFORMANCE

Yellow

	-10	-9,5	-9	-8,5	-8	-7,5	-7	-6,5	-6	-5,5	-5	-4,5	-4	-3,5	-3	-2,5	-2	-1,5	-1	-0,5	0	0,5	1	1,5	2	2,5	3	3,5	4	4,5	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	c
12°	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	297	297	296	295	295	293	292	-	-	-	-	-												
11,5°	-	-	-	-	-	-	-	-	-	-	-	-	-	-	330	330	331	330	329	329	328	327	326	325	324	323	321	-	-												
11°	-	-	-	-	-	-	-	-	-	-	364	364	365	365	366	366	366	366	366	365	363	363	361	360	358	357	355	354	353												
10,5°	-	-	-	-	-	-	-	-	399	401	402	403	404	405	405	405	406	406	406	405	404	403	401	400	398	396	395	393	391												
10°	-	-	-	-	-	-	-	440	441	443	444	446	448	449	449	449	449	449	449	447	446	445	443	442	440	439	438	435	433												
9,5°	-	-	-	-	-	482	484	487	489	489	491	494	495	494	494	495	494	494	493	492	491	491	489	488	486	484	482	480	479												
9°	-	-	-	-	530	531	533	534	537	539	541	542	542	543	544	544	545	544	544	543	542	541	539	537	535	532	531	528	525												
8,5°	-	-	-	580	581	582	584	586	588	589	592	593	594	595	596	595	595	595	595	593	592	590	589	586	585	582	580	578													
8°	-	-	629	630	630	631	632	633	636	637	640	641	642	643	644	644	644	643	643	643	641	640	637	636	634	633	631	627	625												
7,5°	-	-	677	678	677	678	679	680	682	683	685	686	688	689	689	689	689	689	690	690	689	689	686	685	682	680	678	674	672	670	670	671	671	669	669	669	668	667	665	-	-
7°	-	722	720	719	720	719	719	720	723	724	727	727	729	730	730	731	731	731	731	731	731	731	729	728	726	724	722	719	717	715	714	713	714	713	712	714	713	713	712	709	-
6,5°	-	757	758	758	757	756	756	757	759	760	761	761	763	765	766	768	769	768	769	769	769	768	767	765	764	764	760	756	753	751	751	752	753	753	751	753	753	754	754	751	-
6°	-	787	786	784	783	782	781	782	783	783	787	788	790	792	792	794	796	796	797	797	797	798	797	795	793	791	789	785	783	781	782	782	782	784	785	786	787	787	787	785	-
5,5°	-	808	806	804	801	800	800	799	801	802	806	806	808	810	812	815	817	817	819	820	820	821	819	819	816	815	812	808	806	804	806	808	809	809	809	811	812	815	814	813	-
5°	819	817	816	813	811	810	809	809	810	811	814	814	816	819	821	823	826	827	829	831	831	832	831	830	829	827	824	821	819	817	818	819	822	825	825	826	829	831	829	827	830
4,5°	820	817	815	813	811	810	810	810	811	813	816	816	818	820	822	825	827	828	831	832	834	835	834	833	832	832	829	827	825	823	824	824	827	830	832	836	836	837	836	832	834
4°	808	805	803	800	798	797	796	796	798	801	803	802	804	808	811	815	818	819	822	825	826	827	826	824	823	822	820	818	817	814	815	816	818	820	822	826	826	828	828	826	829
3,5°	790	788	787	783	779	777	776	775	777	779	783	785	788	790	791	794	798	801	805	807	809	809	807	806	805	804	802	799	797	795	796	796	800	804	804	806	807	809	810	807	809
3°	757	755	752	749	748	747	746	746	747	748	751	751	755	758	761	766	769	771	775	776	778	778	779	778	776	776	774	772	771	768	770	771	772	774	775	776	779	781	781	778	782
2,5°	718	716	713	710	708	708	707	706	707	708	712	713	716	719	723	727	731	734	739	741	741	741	741	740	738	739	736	734	734	733	735	733	735	738	740	742	741	741	743	742	740
2°	674	672	670	668	666	665	664	664	665	666	669	670	673	675	679	684	689	693	696	698	699	699	698	697	696	697	696	694	693	691	692	692	693	695	697	699	697	699	698	698	697
1,5°	-	624	623	621	619	618	618	618	619	620	624	625	628	630	633	639	643	646	650	652	652	652	650	649	648	649	648	647	646	645	646	646	646	648	649	652	652	653	651	650	-
1°	-	575	574	572	571	571	570	571	572	573	576	577	580	583	586	591	595	598	602	603	603	601	600	600	599	600	597	596	595	593	595	595	596	597	599	601	600	601	600	598	-
0,5°	-	525	525	524	524	524	524	524	524	525	528	529	532	534	537	542	546	548	551	553	553	551	550	549	548	548	547	546	547	545	546	545	546	547	547	548	547	547	546	546	-
0°	-	-	477	476	477	477	477	477	478	478	481	482	484	487	490	495	498	501	503	504	503	502	500	499	499	499	498	498	498	497	498	497	496	496	496	497	496	496	495	-	-

SP-401 RUNWAY EDGE LIGHT (YELLOW DIRECTION)			
TEST AREA	REQUIRED	RESULTS
AREA 1 BLUE PART	MIN 25 CD MIN. AVG. 50 CD	MIN. 500,03 CD AVG. 744,38 CD
AREA 2 YELLOW PART	MIN. 10 CD	MIN. 476,91 CD
AREA 3 PINK PART	MIN. 5 CD	MIN. 276,95 CD

Red

	-10	-9,5	-9	-8,5	-8	-7,5	-7	-6,5	-6	-5,5	-5	-4,5	-4	-3,5	-3	-2,5	-2	-1,5	-1	-0,5	0	0,5	1	1,5	2	2,5	3	3,5	4	4,5	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10
12°	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	37	36	36	35	35	35	35	-	-	-	-	-													
11,5°	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41	41	41	40	40	40	40	40	40	39	40	39	39	-	-													
11°	-	-	-	-	-	-	-	-	-	-	46	46	46	46	46	46	46	46	46	46	45	45	45	45	44	44	43	43	43													
10,5°	-	-	-	-	-	-	-	-	52	52	53	53	52	52	53	52	53	52	52	52	52	51	52	50	50	49	49	49	48													
10°	-	-	-	-	-	-	-	61	60	61	61	62	61	62	61	61	60	60	61	59	59	59	58	58	57	57	56	57	56													
9,5°	-	-	-	-	-	70	71	71	71	71	72	72	71	71	71	71	71	70	70	70	69	68	68	67	67	67	67	65	66													
9°	-	-	-	-	82	83	83	83	84	85	85	84	84	84	83	83	83	81	81	81	81	80	80	78	78	78	77	77	76													
8,5°	-	-	-	95	96	97	98	97	98	99	99	100	99	99	99	99	97	96	95	95	94	94	92	92	91	90	90	90														
8°	-	-	112	112	113	113	113	114	115	116	115	116	115	116	114	115	115	113	113	112	112	110	110	108	108	107	106	106	105													
7,5°	-	-	130	131	130	131	132	132	134	135	134	135	136	135	136	135	134	133	132	130	129	129	128	126	125	125	125	123	122	121	119	118	117	115	113	111	109	107	-	-
7°	-	149	150	150	152	152	154	154	154	155	154	156	157	157	156	155	158	157	156	152	152	150	150	149	148	147	145	143	143	141	139	137	137	136	133	131	129	128	125	123	-
6,5°	-	173	174	175	176	176	178	179	180	179	179	181	180	183	182	181	181	180	178	176	176	172	172	171	169	168	167	165	164	164	162	159	158	157	154	152	151	149	146	143	-
6°	-	195	195	198	199	200	201	203	203	206	207	209	206	208	208	206	205	205	205	203	202	200	198	197	195	194	191	191	190	189	188	184	183	182	177	175	174	171	166	163	-
5,5°	-	221	221	223	225	227	227	230	230	235	233	235	236	238	234	235	235	235	232	232	230	227	226	222	221	220	217	220	216	214	212	208	208	204	202	200	196	192	190	187	-
5°	246	247	248	248	251	252	253	257	259	260	262	262	264	265	263	263	262	260	259	259	259	256	253	251	251	252	248	248	245	243	240	236	236	233	230	226	221	220	217	213	210
4,5°	269	270	272	277	280	280	279	284	287	290	292	292	293	297	294	296	295	292	290	287	288	285	283	281	282	281	279	272	271	274	271	266	264	263	257	252	251	246	241	237	235
4°	295	297	297	300	304	305	308	310	314	318	320	321	322	323	323	324	320	322	319	319	319	316	313	310	311	310	310	307	304	301	300	296	291	288	286	283	278	276	269	264	260
3,5°	320	320	322	324	326	325	332	337	339	342	346	349	351	352	349	352	351	352	346	348	344	344	342	338	339	338	338	336	334	332	330	326	323	321	315	307	305	302	299	295	291
3°	338	340	344	347	353	355	359	361	365	365	367	370	372	379	380	380	378	378	372	370	369	368	369	363	363	362	363	361	361	361	357	351	347	345	343	338	333	330	326	321	317
2,5°	351	356	363	365	369	374	379	386	389	390	390	390	394	395	401	405	399	399	394	394	395	395	396	390	391	389	389	390	387	381	381	380	371	368	370	364	359	352	350	346	341
2°	366	372	372	378	379	387	388	393	400	403	406	414	418	417	415	415	413	418	421	419	413	413	417	414	413	411	410	410	410	407	405	400	401	392	386	383	379	377	371	366	364
1,5°	-	378	383	388	391	398	402	405	409	414	417	423	422	428	427	430	429	434	434	428	429	427	427	426	426	428	423	423	423	418	420	420	414	413	408	401	397	392	392	387	-
1°	-	384	386	393	396	400	408	413	416	420	422	428	433	437	435	437	437	439	439	440	438	437	440	442	442	439	436	433	432	434	437	434	428	427	424	415	410	410	406	401	-
0,5°	-	383	387	393	398	405	406	413	418	422	428	431	434	437	438	444	441	442	444	447	447	446	440	437	440	440	447	447	444	440	443	441	438	433	431	424	421	418	415	412	-
0°	-	-	381	387	392	394	398	407	410	418	423	427	428	431	431	435	438	441	439	442	442	438	436	438	437	439	440	440	440	442	441	440	435	432	429	428	422	423	420	-	-

SP-401 RUNWAY EDGE LIGHT (RED DIRECTION)		
TEST AREA	REQUIRED	RESULTS
AREA 1 BLUE PART	MIN. 20 CD AVG MIN. 50 CD	MIN. 149,79 CD AVERAGE: 328,16 CD
AREA 2 YELLOW PART	MIN. 10 CD	MIN. 76,98 CD
AREA 3 PINK PART	MIN. 5 CD	MIN. 35,06 CD

SHIPPING DATA

Item	Dimensions of Package (LxWxH)	Gross Weight
SP-401 Lighting Unit	630 mm x 270 mm x 380 mm	15 kg
SP-401 Lighting Unit, NO batteries	630 mm x 270 mm x 380 mm	9,8 kg