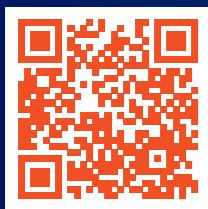


Harnessing technology to keep miners safe

NAUTITECH® is an Australian provider of smart electronic and electrical solutions for OEMs and mine sites in the underground mining industry. We design and manufacture equipment that delivers **Communications** and **Visibility**, supports **Automation**, and provides a platform for **Asset and Condition Monitoring** of underground equipment.

Our core products include **Methane Monitoring** and **Shutdown** systems, **Underground Communications**, **Thermal** and **HD Cameras**, **IS Lights** and **Displays**. We collaborate, test, and research to continually improve what we deliver to our customers.



Scan QR code to watch Nautitech® Cubex IS Longwall Lights



Illuminate hazardous areas underground without the need for flameproof enclosures



Intrinsically safe LED lights

- Fully Intrinsically Safe - safe in **GROUPI, IIB** and **IIIC** hazardous environments
- First controllable IS Flood, Head, and Directional lights in Australia
- Up to 5 times brighter than standard IS lights on the market
- Independent light banks allow customised variations in beam angles, colour and intensity
- Versatile application across Longwall, Development Equipment and RTVs



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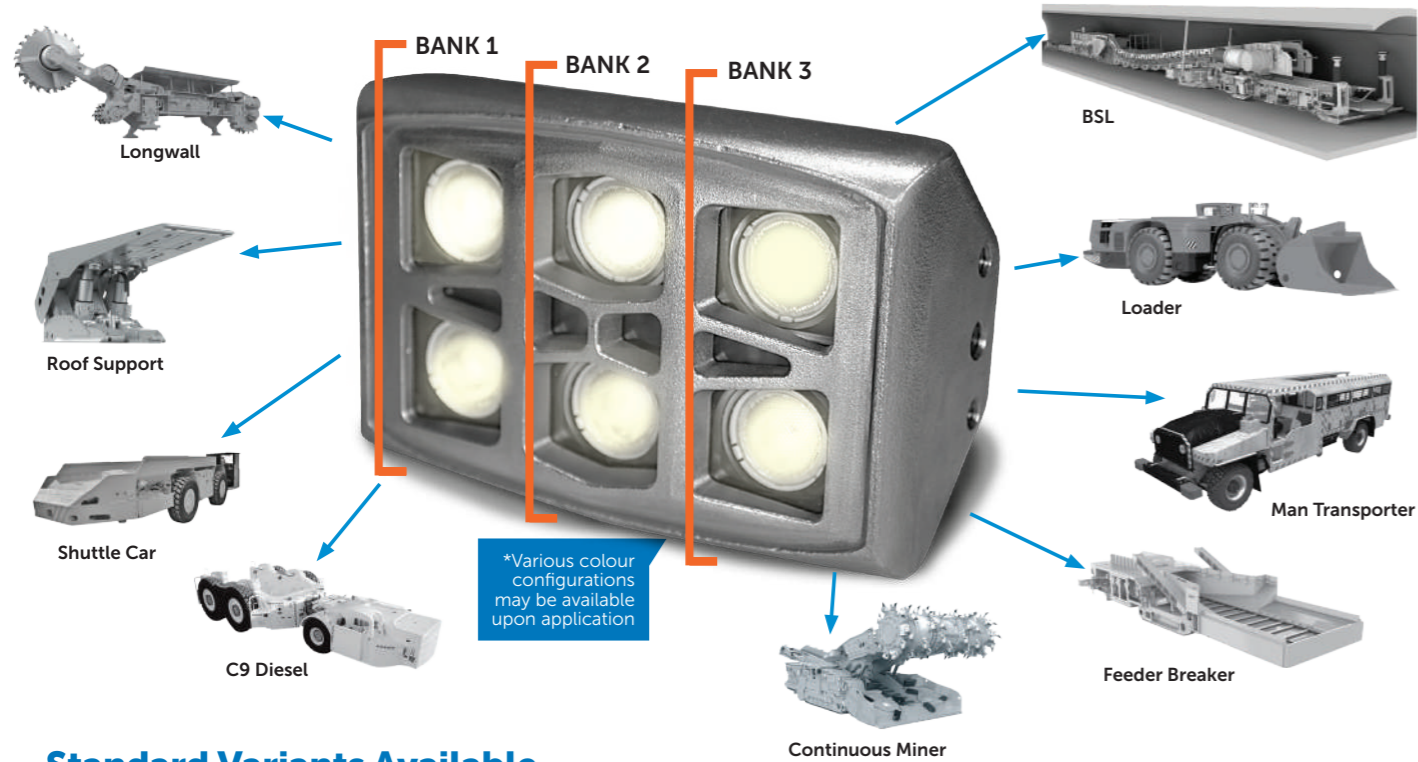
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02/22

INTRINSICALLY SAFE LED LIGHTS

Typical Applications: Longwall, BSL, continuous miner, shuttle car, diesel machines, and other mobile machinery

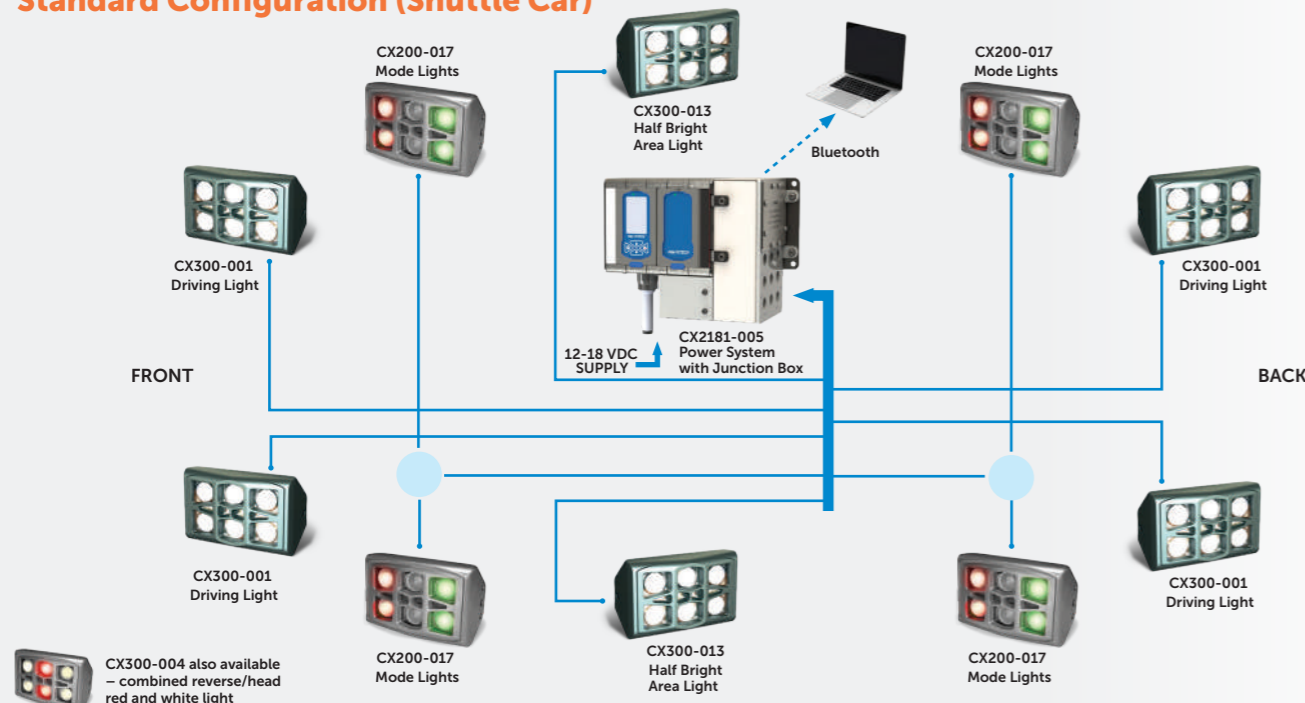


Standard Variants Available

- ✓ Beam angle: 5° to 120°
- ✓ Colours: white, red, green, yellow or blue
- ✓ Operation: flashing, non-flashing, triggered
- ✓ Use as reverse, tail, hazard, signal, traffic, work area, spotlight and floodlight
- ✓ Preset intensity as required

A robust safety plan for GO | NO-GO Zones could include triggered lights to designate safe access or indicate hazardous situations while machinery is in operation

Standard Configuration (Shuttle Car)



Shuttle Illumination Study

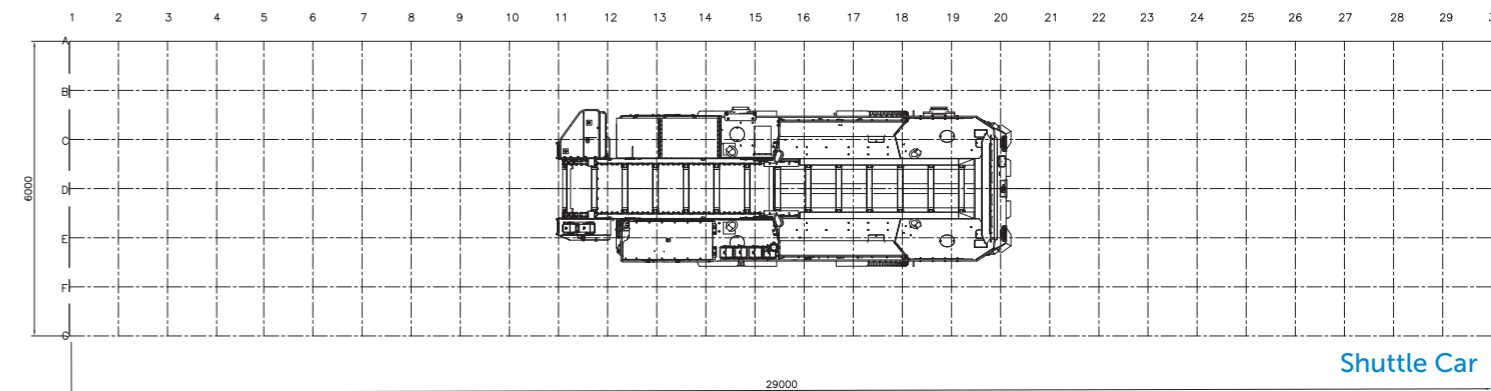
This table illustrates the recorded illumination results at 1.5x stopping distance for a shuttle car travelling at 10km/hr

	STOPPING DISTANCE (m)	1.5X STOPPING DISTANCE (m)	MEASURED LUX INBYE @ 2.1m	MEASURED LUX OUTBYE @ 2.1m
CUBEx IS LED (CX200)	1.4	2.1	64	87
Other FLP Light	1.4	1.4	12	20

* test conducted with only 4 LED lights

Graphical illustration below of variance between Illumination (Shuttle Car with CUBEx IS Lights) - Illumination (Shuttle Car with FLP Lights)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
A	3.8	4.25	4.14	5.15	5.94	5.14	3.81	2.18	0.85	1.84	4.57	1.47	-0.06	4.17	49.7	137.1	17.56	2.33	6.12	3.64	0.63	5.28	4.22	5.9	6	5.27	4.72	3.58	2.54	2
B	2.79	4.74	6.39	6.75	7.3	7.45	12	11.7	5	1.74	14.52	0.85	-0.83	-4.01	-1.05	833.6	5.84	0.03	23.47	0.84	21.1	27.29	23.18	13.2	7.36	6.58	4.57	2.57	0.97	1.15
C	3.93	1.45	7.18	7.52	11.57	14.55	10.85	19.3	20.5	214.1											171.3	55.75	29.02	18.85	8.36	4.63	2.72	1.57	1.16	1.03
D	4.5	5.35	6.17	7.29	10.65	11.87	19.07	35.8	70.9	126.4											16	55.94	19.22	8.05	3.41	2.72	1.99	1.71	1.88	1.32
E	4.84	5.7	7.64	10.02	15.37	20.32	26.42	49.1	81.6	343.6											258.9	54	9.42	7.12	6.55	6	7.5	3.76	2.84	2.27
F	4.3	5	6.42	6.82	8.99	14.16	24.67	34.02	34.4	16.2	-0.6	0.48	4.8	-1.7	-15.5	943.8	13.96	0.2	46.67	-0.2	5.87	8.2	12.18	3.59	1.3	1.29	2.3	2.96	3.65	2.34
G	4.49	5.25	7.9	9.12	12.83	11.82	10.44	7.65	3.2	2.3	4.06	7.45	2.35	1.4	19.32	89.1	31.9	4.78	8.03	3.44	1.2	1.25	2.32	2.69	3.61	1.61	1.31	0.68	1.22	1.4



SPECIFICATIONS

I.S. LIGHTS

I.S. Parameters	
Ui	20V
li	3.2 (CX300 only)
Li	Negligible
Ci	Negligible

- 3 x Independent circuits
- High efficiency, long life
- 1500 lumens (max)
- Colour temperature 2700K-5000K
- IP 67 connector
- Rated from 10.5-20V DC
- -20°C ≤ Ta ≤ +60°C
- Suitable for 12V applications
- Tailor made cables

POWER SUPPLY MODULE (PSM)

Entity Parameters	
Um	90V

- Ex mb [ia] | Mb (Um Applied)
- Ex ia | Ma (Um Withdrawn)
- -20°C < Ta < +60°C
- Rated voltage: 7-18V

LIGHT INTERFACE MODULE (LIM)

Output Parameters	
Uo	20V
Io	1.2 A
Co	2uF
Lo	100uH

- 8 x GPIO ports with dual switches EX ib | Mb
- 1 port with single switch Ex ib | Mb
- Backplane power
- -20°C < Ta < +60°C
- Configuration via Bluetooth
- Crocodile scale enclosure
- IP66