



T5/T8 Enhanced Lighting System



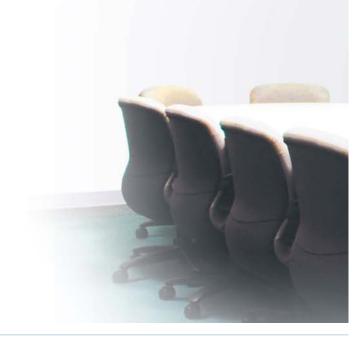


# Improve your lighting

The standard for recessed lighting – Cooper Lighting's accord $^{\text{\tiny M}}$  is the energy efficient T5 or T8 solution to better lighting. The accord $^{\text{\tiny M}}$  redefines lighting by improving on aesthetics, comfort and energy savings.

The accord™ enhances lighting in both the vertical and horizontal zones, eliminating surface shadows commonly found in traditional lighting sources. The accord™ produces a "softer" vertical light making it the ideal lighting solution for schools, hospitals, retail and offices.

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# Improve visual perception The accord<sup>™</sup> evenly distributes light, making the space more pleasing to the eye. • Dark spots (cave effect) associated with parabolics are eliminated.

- Attractive design
  - Smooth, curved surfaces are attractive but subtle.
  - Soft white frosted acrylic lens fills the space with even illumination.
  - High reflectance matte white finish blends into the ceiling for a discreet but efficient fixture.

## **Enhanced space**

• By evenly distributing the light through the space and eliminating the "dark spots", accord™ will make a room feel soft, comfortable and inviting.

## Save money

 The accord<sup>™</sup> is an extremely efficient luminaire that reduces energy consumption by up to 40% (when compared to a standard 18 cell, 3 lamp, T8 parabolic), while providing the right amount of "softer" light.

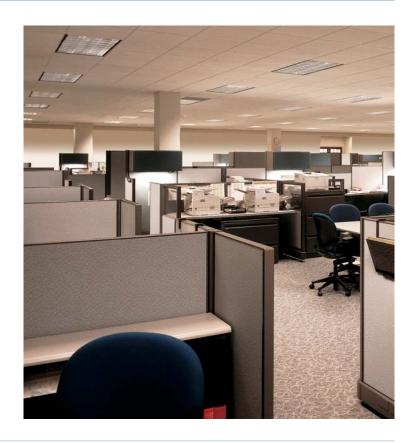
#### **Visual Perception**



## lighting before accord

Parabolics are designed to direct light into the cut-off zone, while restricting light into the shielded or glare zone. In other words, parabolics deliver light to the work plane and suppress high-angle brightness.

Due to the high-angle cutoffs as shown in **Figure 1.**, parabolics can create areas where light is concentrated and areas where there is no light. These areas of minimum light are referred to as "dark spots".





## lighting with accord

To eliminate the "dark spots" and sharp cutoffs created by parabolics, Cooper Lighting designed accord™. The accord™ provides a feeling of spaciousness and does not substantially increase glare, as shown in **Figure 2.** 

The accord<sup>™</sup> provides the following advantages:

- Improved visual perception
- Enhanced space
- Attractive contemporary design
- Significant energy savings

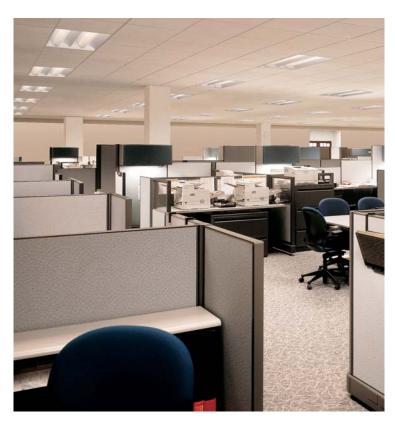
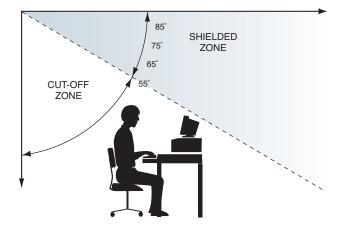




Figure 1. Parabolic Light Distribution



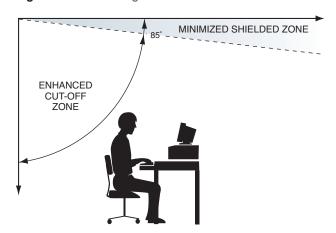
## Improved visual perception

By reducing the "dark spots" and evenly distributing light, accord™ makes it softer on the eyes.

## **Enhanced space**

By evenly distributing the light through the space and eliminating the "dark spots", accord™ will make a room feel soft, comfortable and inviting.

Figure 2. accord™ Light Distribution



## Attractive contemporary design

- Smooth, curved surfaces are attractive but subtle.
- Soft white frosted acrylic lens fills the space with even illumination.
- Matte white finish blends into the ceiling for a discreet look.

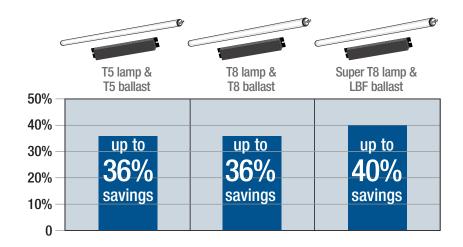
## Significant energy savings

The accord<sup>™</sup> not only improves lighting, but benefits the environment as well, by providing up to 40% energy savings compared to a standard 18 cell, 3 lamp parabolic. The accord<sup>™</sup> also assists in meeting energy regulations such as California's Title 24 and ASHRAE 90.1.

#### **Product Comparison**

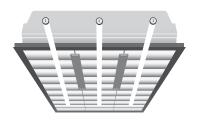
## accord™ maximizes savings

Choose either T5 or T8 technology to best meet your lighting needs. With a multitude of lamp and ballast combinations, the accord™ can deliver the perfect amount of light with a maximum energy savings. New high-efficiency ballast drive T8 lamps with less energy than standard T8 ballast yet producing equal or more lumens. Compared to standard 3 lamp, 18 cell parabolics, the accord™ utilizing high lumen lamps and high efficiency ballasts saves up to 40% on energy costs.



## Parabolic 3 Lamp, 18 Cell

Typical 18-cell parabolic
(3) 32W T8 lamps, 18 fixtures
2 circuit electronic ballast (.87 ballast factor)
88 watts per fixture



# 1.06 Watts/Sq.ft. Horizontal Footcandles Footcandles

## 2 Lamp, T5 accord<sup>™</sup> (2) 28W T5 lamps, 18

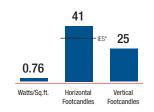
(2) 28W T5 lamps, 18 fixtures step-dim electronic ballast (.95 ballast factor) 63 watts per fixture

 $accord^{\mathsf{m}}$ 

Based on: Room Size: 50' x 30' Ceiling Height: 10' Work Plane: 2.5' Reflectances: 80/50/20



\*IES recommends 30–35 footcandles in open office environments.







## Troffer 4 Lamp

Typical 4 lamp troffer
(4) 32W T8 lamps, 12 fixtures
electronic ballast (.87 ballast factor)
122 watts per fixture

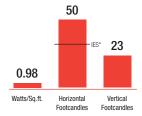


Based on: Room Size: 50' x 30' Ceiling Height: 10' Work Plane: 2.5' Reflectances: 80/50/20

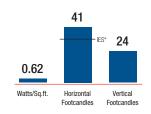
## accord<sup>™</sup> 2 Lamp, T8

accord™
(2) 32W T8 lamps, 12 fixtures
electronic ballast (1.20 ballast factor)
77 watts per fixture





\*IES recommends 30–35 footcandles in open office environments.



## Save energy costs

Appearance and performance make accord<sup>™</sup> the lighting choice. Energy savings makes accord<sup>™</sup> a sound financial decision.

The accord<sup>™</sup> family of products saves up to 40% energy costs when compared to a standard 3 lamp,18 cell parabolic. The dimming feature reduces energy consumption by another 50%.

The accord™ meets and exceeds ASHRAE 90.1 2001 standards by approximately 40%. This provides office space a tax benefit of approximately \$0.60/sq. ft.

**Figure 3.** accord™ Annual Energy Savings vs. 4LT T8 Troffer Systems @ 12 hrs. of Operation Per Day, 365 Days Per Year, No. of Fixtures: 500

#### **2AC-232-HB81H/L8835HL** (3100 Lumens Lamp X 1.17 BF)

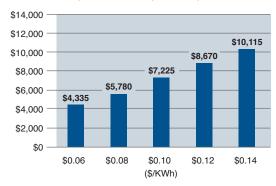


## accord<sup>™</sup>= energy savings

The accord™ is an ideal substitute for 3 lamp T8 systems, 4 lamp T8 systems and inefficient 4 lamp T12 systems. The accord™ is the solution in new construction or remodel applications. The accord™ evenly distributes light making the space more pleasing to the eye, provides light levels that are in accordance with IES recommendations, and reduces energy costs. The accord 's™ step dimming option reduces energy consumption by an additional 50% when activated. The following example illustrates accord 's™ benefits:

**Figure 4.** accord™ Annual Energy Savings vs. 3LT T8 Parabolic @ 12 hrs. of Operation Per Day, 365 Days Per Year, No. of Fixtures: 500

#### **2AC-228T5** (2600 Lumens Lamp X 0.95 BF)







The following example illustrates accord's  $^{\!\scriptscriptstyle\mathsf{TM}}$  energy cost savings:

**Spacing:** 10' x 10'

Maintained Average Illuminance: 49 fc

Based on: Room Size: 60' x 80'
Ceiling Height: 10'
Work Plane: 2.5' Reflectances: 80/50/20

	COST PER kWh										
<b>Hours of Operation</b>		\$0.06		\$0.08		\$0	.10	\$0.12		\$0.14	
Per Day	Per Year	4L T8	3L T8	4L T8	3L T8	4L T8	3L T8	4LT8	3L T8	4L T8	3L T8
12 hrs.	4,380	\$16.03	\$7.88	\$21.37	\$10.51	\$26.72	\$13.14	\$32.06	\$15.76	\$37.41	\$18.36
18 hrs.	6,570	\$24.04	\$11.82	\$32.06	\$15.76	\$40.07	\$19.71	\$48.09	\$23.65	\$56.10	\$27.59
24 hrs.	8,760	\$32.06	\$15.77	\$42.74	\$21.02	\$53.43	\$26.28	\$64.12	\$31.53	\$74.81	\$36.79

2 lamp 32 Watt T8 accord™ Energy Cost Savings vs. 4 lamp and 3 lamp T8 systems

#### **Latest Additions**

### Surface Mount available

Low profile and quality performance — the surface accord<sup>™</sup> is an energy efficient alternative to traditional surface mount fixtures. Designed for areas without a grid-ceiling type system, the accord's<sup>™</sup> low profile is an ideal retro-fit solution.

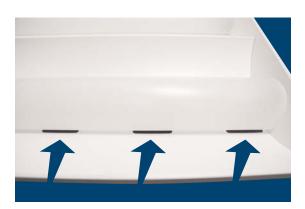
Sleek yet durable – constructed and formed from heavy gauge C.R.S. then painted after fabrication with a matte white polyester powder enamel finish.

- 3-13/16" low profile housing
- Smooth frosted acrylic diffuser
- Tool-less access to ballast from room side
- High reflectance baked matte white reflector
- Available in 2' x 2' and 2' x 4' housings (T5 only)

## **Concealed Air Return**

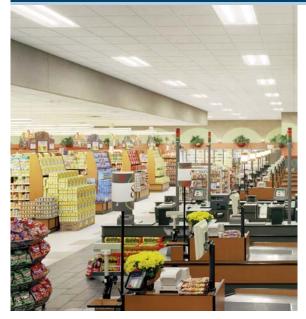
• Available in Recessed, 2' x 2' and 2' x 4'

Enhanced air return system incorporates semi-concealed air vents which provide air flow without altering the aesthetics of the fixture.











## **Aesthetically Improved Design**

Precision engineered, accord's™ smooth frosted acrylic diffuser provides higher optical efficiencies and visual comfort without the need of a diffusing film that can get lost or discolor over time. The smooth frosted diffuser provides improved lumen output while reducing the "shadowing effect" caused by ribbed diffusers.

## **Diffuser Options**



Smooth Design (standard)



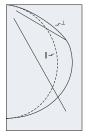
Smooth acrylic diffuser with round perforated insert (2' x 2', 2' x 4' only)



Smooth acrylic diffuser with square perforated insert (2' x 2', 2' x 4' only)

#### **Specifications**

#### accord™ - 1' x 4', T5

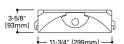


## AC-128T5

Electronic Ballast (1) F28T5/835 Lamp 2600 Lumens Spacing criterion: (II) 1.2 x mounting height, (1) 1.4 x mounting height Efficiency 87.4% Test Report: 241P113 Input Watts: 34 LER=FL64 LPW Yearly Cost of 1000 lumens, 3000 hrs at .08 KHW = \$3.88

#### Candlepower

Angle	Along II	45°	Across 1
0	738	738	738
5	734	736	736
10	723	730	732
15	705	718	725
20	679	701	715
25	647	679	702
30	609	654	685
35	565	623	663
40	517	588	635
45	465	548	601
50	411	502	559
55	354	452	511
60	295	396	443
65	236	334	334
70	175	248	221
75	115	154	133
80	60	75	63
85	18	15	11
90	0	1	1



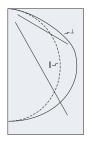
#### Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	585	22.5	25.8
0-40	973	37.4	42.8
0-60	1788	68.8	78.7
0-90	2271	87.4	100.0
0-180	2271	87.4	100.0

#### Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	1768	2084	2285
55	1659	2119	2395
65	1501	2125	2125
75	1195	1600	1382
85	555	463	339

#### accord™ - 1' x 4', T8



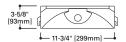
#### AC-132

Electronic Ballast (1) F32T8/835 Lamp 2850 Lumens Spacing criterion: (II) 1.2 x mounting height, (1) 1.4 x mounting height Efficiency 89.8% Test Report: AC-132.IES Input Watts: 30 LER=FL75 LPW Yearly Cost of 1000

lumens, 3000 hrs at .08 KHW = \$5.01

#### Candlepower

Angle	Along II	45°	Across 1
0	798	798	798
5	794	796	797
10	783	789	795
15	764	777	790
20	738	760	783
25	705	739	771
30	665	713	755
35	620	682	735
40	570	647	708
45	516	606	675
50	458	560	634
55	398	507	584
60	337	448	517
65	273	383	403
70	207	296	276
75	142	192	171
80	81	102	89
85	31	31	22
0.0	0	0	0



#### Zonal Lumen Summary

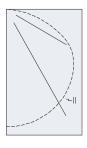
accord™ - 2' x 4', T8

Zone	Lumens	%Lamp	%Fixture
0-30	636	22.3	24.9
0-40	1062	37.3	41.5
0-60	1974	69.2	77.1
0-90	2559	89.8	100.0
0-180	2559	89.8	100.0

#### Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	1963	2305	2568
55	1867	2378	2739
65	1738	2438	2565
75	1476	1996	1777
85	957	957	679

#### accord™ - 2' x 4', T5

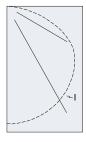


#### 2AC-228T5-UNV-EB81

Electronic Ballast (2) F28T5/835 Lamps 2600 Lumens Spacing criterion: (II) 1.3 x mounting height, (⊥) 1.5 x mounting height Efficiency 87.9% Test Report: 2AC-228T5-UNV-EBT1.IES Input Watts: 58 LER=FL75 LPW Yearly Cost of 1000 lumens, 3000 hrs at .08 KHW = \$2.99

#### Candlepower

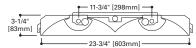
Angle	Along II	45°	Across $\bot$
0	1407	1407	1407
5	1399	1404	1410
10	1381	1390	1399
15	1351	1367	1382
20	1308	1334	1358
25	1253	1292	1326
30	1188	1241	1287
35	1113	1182	1242
40	1029	1115	1189
45	938	1042	1129
50	840	961	1061
55	735	874	983
60	625	779	880
65	509	676	736
70	389	547	565
75	267	392	393
80	153	240	235
85	60	100	98
90	0	0	0



2AC-232-UNV-EB81 Electronic Ballast (2) F32T8/835 Lamps 3100 Lumens Spacing criterion: (II) 1.3 x mounting height, (1) 1.5 x mounting height Efficiency 84.9% Test Report: 2AC-232-UNV-EB81.IES Input Watts: 58 LER=FL80 LPW Yearly Cost of 1000 lumens, 3000 hrs at .08 KHW = \$2.90

#### Candlepower

Angle	Along II	45°	Across 1
0	1613	1613	1613
5	1605	1610	1616
10	1585	1594	1604
15	1550	1568	1585
20	1501	1530	1557
25	1439	1482	1520
30	1365	1424	1476
35	1279	1357	1424
40	1183	1281	1365
45	1079	1197	1297
50	966	1106	1220
55	847	1006	1133
60	722	898	1021
65	589	782	856
70	452	634	663
75	315	456	465
80	187	280	277
85	81	118	113
90	0	0	0



#### Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	585	22.5	25.8
0-40	973	37.4	42.8
0-60	1788	68.8	78.7
0-90	2271	87.4	100.0
0-180	2271	87.4	100.0

#### Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	1768	2084	2285
55	1659	2119	2395
65	1501	2125	2125
75	1195	1600	1382
85	555	463	339

#### $\neg \cap$ [83mm] - 23-3/4" [603mm] -

11-3/4" [298mm] -

#### Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	1279	20.6	24.3
0-40	2127	34.3	40.4
0-60	3942	63.6	74.9
0-90	5266	84.9	100.0
0-180	5266	84.9	100.0

#### Luminance Data

Angle in Deg	0-Deg cd/sm	45-Deg cd/sm	90-Deg cd/sm
45	2186	2425	2628
55	2115	2513	2830
65	1996	2651	2902
75	1743	2524	2574
85	1331	1939	1857



#### accord™ - 2' x 2', T5

#### 2AC-214T5

Electronic Ballast

(2) F14T5/835 Lamps 1350 Lumens Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.4 x mounting height Efficiency 89.4% Test Report: 2AC-214T5.IES Input Watts: 30 LER=FL77 LPW

_	11-3/4	l" [298mı	mJ 🔫	_	
Į	20	9	₹ <u>`</u>		

Yearly Cost of 1000

KHW = \$2.65

- 23-3/4" [603mm]-

lumens, 3000 hrs at .08

#### Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	601	22.3	24.9
0-40	1001	37.1	41.4
0-60	1851	68.6	76.7
0-90	2414	89.4	100.0
0-180	2414	89.4	100.0

#### Luminance Data

70

85

90

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	1872	2176	2399
55	1772	2232	2578
65	1627	2303	2502
75	1376	1985	1838
85	967	1154	1092

Candlepower

741

630

487

374

31

755 753 755 755

471

417

281

37

704

656

544

486

389

35

374

Candlepower

753

641

471

417

281

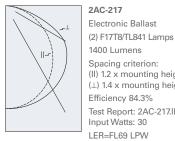
736

682

544

486

#### accord™ - 2' x 2', T8



#### 2AC-217

1400 Lumens Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.4 x mounting height Efficiency 84.3% Test Report: 2AC-217.IES Input Watts: 30 LER=FL69 LPW Yearly Cost of 1000

lumens, 3000 hrs at .08 KHW = \$3.47

#### Candlepower

Angle	Along II	45°	Across 1
0	737	737	737
5	735	735	737
10	724	729	735
15	707	719	729
20	682	703	720
25	652	683	707
30	616	658	690
35	574	628	669
40	527	594	643
45	476	555	613
50	422	511	576
55	366	462	533
60	308	408	475
65	248	349	380
70	188	274	266
75	129	181	169
80	76	99	92
85	32	34	33
90	0	0	0



#### Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	588	21.0	24.9
0-40	979	35.0	41.5
0-60	1813	64.7	76.8
0-90	2360	84.3	100.0
0-180	2360	84.3	100.0

#### Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	1830	2134	2357
55	1735	2190	2526
65	1595	2245	2444
75	1355	1901	1775
85	998	1060	1029

#### accord™ surface - 2' x 2', T5

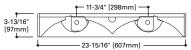


#### 2ACS-214T5

Electronic Ballast (2) F14T5/835 Lamps 1350 Lumens Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.4 x mounting height Efficiency 89.4%

Test Report: 2AC-214T5.IES Input Watts: 30 LER=FL77 LPW

Yearly Cost of 1000 lumens, 3000 hrs at .08 KHW = \$2.65



#### Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	601	22.3	24.9
0-40	1001	37.1	41.4
0-60	1851	68.6	76.7
0-90	2414	89.4	100.0
0-180	2414	89.4	100.0

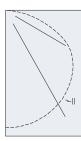
#### Luminance Data

70 75

80

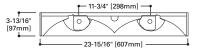
Lummance Data					
Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm		
45	1872	2176	2399		
55	1772	2232	2578		
65	1627	2303	2502		
75	1376	1985	1838		
95	967	115/	1002		

#### accord™ surface - 2' x 4', T5



#### 2ACS-228T5-UNV-EB81 Electronic Ballast

(2) F28T5/835 Lamps 2600 Lumens Spacing criterion: (II) 1.3 x mounting height, (⊥) 1.5 x mounting height Efficiency 87.9% Test Report: 2AC-228T5-UNV-EBT1.IES Input Watts: 58 LER=FL75 LPW Yearly Cost of 1000 lumens, 3000 hrs at .08 KHW = \$2.99



#### Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixture
0-30	585	22.5	25.8
0-40	973	37.4	42.8
0-60	1788	68.8	78.7
0-90	2271	87.4	100.0
0-180	2271	874	100.0

#### Candlepower

Angle	Along II	45°	Across
)	1407	1407	1407
5	1399	1404	1410
10	1381	1390	1399
15	1351	1367	1382
20	1308	1334	1358
25	1253	1292	1326
30	1188	1241	1287
35	1113	1182	1242
10	1029	1115	1189
15	938	1042	1129
50	840	961	1061
55	735	874	983
60	625	779	880
55	509	676	736
70	389	547	565
75	267	392	393
30	153	240	235
35	60	100	98
90	0	0	0

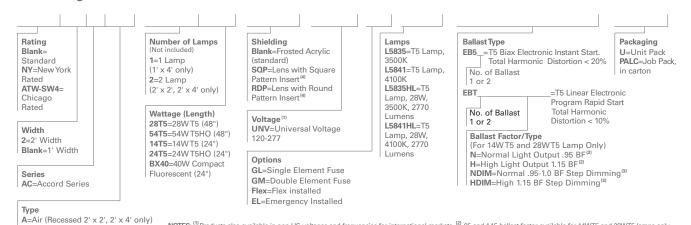
Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	1768	2084	2285
55	1659	2119	2395
65	1501	2125	2125
75	1195	1600	1382
85	555	463	339

### Ordering

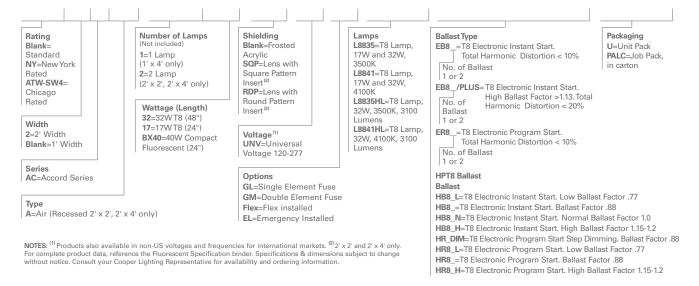
S=Surface (2' x 2', 2' x 4' only)

#### T5 Ordering Information SAMPLE NUMBER: 2AC-228T5-UNV-L5841-EBT1NDIM-U



NOTES: <sup>(1)</sup> Products also available in non-US voltages and frequencies for international markets. <sup>(2)</sup> .95 and 1.15 ballast factor available for 14WT5 and 28WT5 lamps only. <sup>(3)</sup> Step Dimming Ballast available for 14WT5 and 28WT5 lamps only. <sup>(4)</sup> 2' x 2' and 2' x 4' only. For complete product data, reference the Fluorescent Specification binder. Specifications & dimensions subject to change without notice. Consult your Cooper Lighting Representative for availability and ordering information.

#### T8 Ordering Information SAMPLE NUMBER: 2AC-232-UNV-L8841HL-HB81H-U



#### **Sizes**

The accord™ is available in 1' x 4', 2' x 2' and 2' x 4' sizes.

#### **Ballast**

The ballast plays an important role in the accord<sup>™</sup> fixture. It contributes to the high efficiency and lumens/watt. The ballast is offered in an optional step dimming (bi-level) output version.

#### Lamps

The accord™ uses energy efficient T5 or T8 lamp technology from all major lamp manufacturers.





## **Simple Maintenance**

- The ballast is accessible from below through the removable ballast cover. (no tools are required)
- For drywall ceilings, standard framing kit is available. (shipped separately for field installation).
- Lamp maintenance is as simple as removing the refractors.
- The accord 's shallow depth (3-1/4") and structural integrity makes for a quick and easy installation.

## **Energy Savings**

- The accord<sup>™</sup> can provide up to 40% energy savings when compared to a 3 lamp, 18 cell, T8 parabolic.
- The accord™ also exceeds mandated energy regulations such as California's Title 24 and ASHRAE 90.1 2001.
- Step dimming can increase energy savings by as much as 50%.

#### **Cooper Lighting**

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#### The Cooper Lighting Family

Halo

#### Metalux

Lumark
Sure-Lites
Neo-Ray
Corelite
Portfolio

Shaper io

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McGraw-Edison Streetworks Fail-Safe MWS DLS RSA

#### **Domestic Facilities**

Cranbury, New Jersey Elk Grove Village, Illinois Irving, Texas Ontario, California Peachtree City, Georgia

#### **Canadian Facility**

Calgary, Alberta T2E 7V9

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