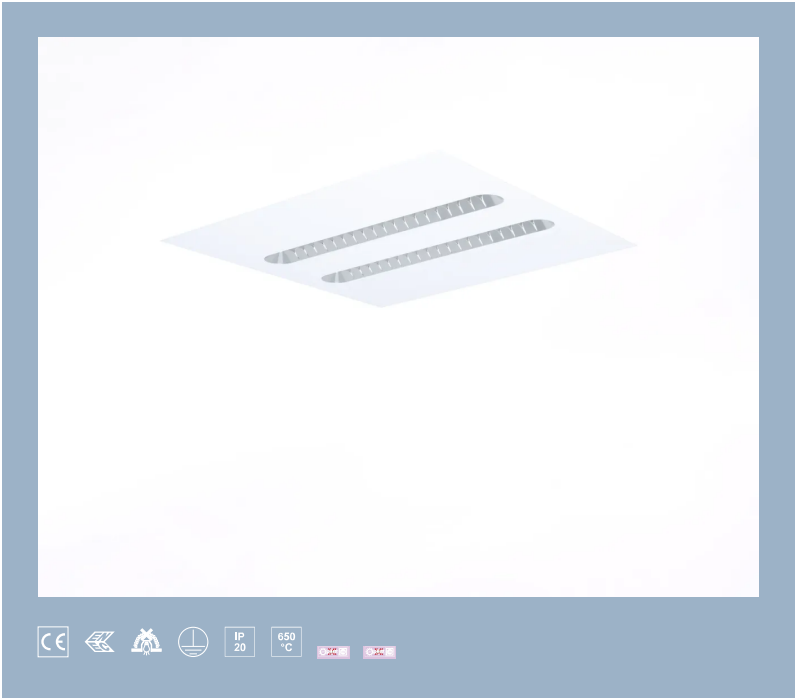


# U3912/LEDN221S



recessed luminaire • square

Application : Education ? Classrooms

light source : LED • 4000 K

optics : Shielded lens • polycarbonate (PC) with aluminium thin film • medium wide-angle

UGR classification : <=16

luminous flux: 2050 lm

luminous efficacy : 138 lm/W

LLMF: 98% @ 50khrs (Tq=25°C)

## Product information

### Mechanical properties

dimensions : 596 mm x 596 mm x 58 mm

cut-out size : 596 mm x 596 mm x 70 mm

shape : module 600

colour: RAL9003 - white

type : individual luminaire

IP: IP20

### Electrical properties

driver: not dimmable

power : 14.9 W

voltage : 220-240V

frequency : 50-60Hz AC

photobiological safety : EN 62471: RISK GROUP 1  
UNLIMITED

## Luminance

luminous flux : 2050 lm

luminous efficacy : 138 lm/W

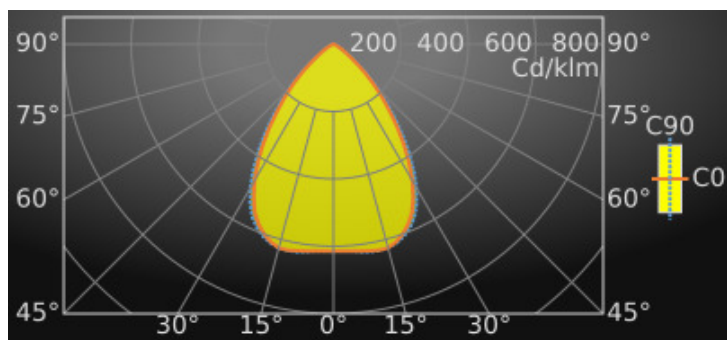
luminance @ 65° = : 1500 cd/m²

UGR classification =: <=16

luminous area : 0.06 m²

Average Luminances (Cd/m²) for 2050lm

| Gamma | C0   | C30   | C45   | C60   | C90  |
|-------|------|-------|-------|-------|------|
| 45°   | 8283 | 11317 | 12469 | 11280 | 8761 |
| 50°   | 5057 | 8027  | 8963  | 7827  | 5352 |
| 55°   | 2529 | 4173  | 6080  | 4430  | 2297 |
| 60°   | 1395 | 2408  | 3024  | 1782  | 1362 |
| 65°   | 465  | 800   | 1245  | 1034  | 996  |
| 70°   | 146  | 305   | 516   | 709   | 752  |
| 75°   | 13   | 54    | 184   | 407   | 558  |
| 80°   | 0    | 1     | 10    | 100   | 445  |
| 85°   | 0    | 0     | 0     | 1     | 308  |



## Classifications

CIE: 784 / 984 / 999 / 1000 / 1000

CIE FLUXCODE : 0.78 / 0.98 / 1.00 / 1.00 / 1.00

BZ: BZ1

CAE: Symmetrical

DIN: A60 (Nach Arbeitsblatt 7)

DIN\_U: Phi u = 1.00

DIN\_SU: Phi su = 0.75

UTE: 1.00 B + 0.00 T

Lifetime Data (Tq=25.0°C)

| Time(khrs) | LLMF(%) | Cx(%) |
|------------|---------|-------|
| 10         | 100     | 2     |
| 20         | 99      | 4     |
| 30         | 99      | 6     |
| 40         | 99      | 8     |
| 50         | 98      | 10    |
| 60         | 98      | 12    |

## Luminous intensities in cd

Intensity for 2050lm

| Gamma | C0     | C45    | C90    |
|-------|--------|--------|--------|
| 0°    | 1259.0 | 1259.0 | 1259.0 |
| 5°    | 1264.6 | 1262.2 | 1263.8 |
| 10°   | 1276.3 | 1289.8 | 1283.6 |
| 15°   | 1283.6 | 1310.5 | 1281.5 |
| 20°   | 1229.3 | 1298.2 | 1246.7 |
| 25°   | 1129.4 | 1236.1 | 1163.7 |
| 30°   | 957.1  | 1117.3 | 1011.0 |
| 35°   | 747.4  | 936.2  | 796.6  |
| 40°   | 529.7  | 733.5  | 569.3  |
| 45°   | 347.9  | 523.7  | 368.0  |
| 50°   | 193.1  | 342.2  | 204.3  |
| 55°   | 86.2   | 207.2  | 78.3   |
| 60°   | 41.4   | 89.8   | 40.5   |
| 65°   | 11.7   | 31.2   | 25.0   |
| 70°   | 3.0    | 10.5   | 15.3   |
| 75°   | 0.2    | 2.8    | 8.6    |
| 80°   | 0.0    | 0.1    | 4.6    |
| 85°   | 0.0    | 0.0    | 1.6    |
| 90°   | 0.0    | 0.0    | 0.0    |

## UGR classification =

Corrected Glare Ratings for a Total Lamp Flux of 2050lm (S = 0.25H)

|                 | Room Reflection Factors (%)                                    |      |       |      |      |                |      |       |      |      |
|-----------------|----------------------------------------------------------------|------|-------|------|------|----------------|------|-------|------|------|
| Ceiling         | 70                                                             | 70   | 50    | 50   | 30   | 70             | 70   | 50    | 50   | 30   |
| Walls           | 50                                                             | 30   | 50    | 30   | 30   | 50             | 30   | 50    | 30   | 30   |
| Floor           | 20                                                             | 20   | 20    | 20   | 20   | 20             | 20   | 20    | 20   | 20   |
| Room Dimensions | Viewed Crosswise                                               |      |       |      |      | Viewed Endwise |      |       |      |      |
| X = 2H Y = 2H   | 16.8                                                           | 18.3 | 17.1  | 18.6 | 18.8 | 16.7           | 18.3 | 17.0  | 18.5 | 18.8 |
| Y = 3H          | 16.6                                                           | 18.0 | 17.0  | 18.2 | 18.5 | 16.6           | 18.0 | 17.0  | 18.2 | 18.5 |
| Y = 4H          | 16.5                                                           | 17.8 | 16.9  | 18.1 | 18.4 | 16.6           | 17.8 | 16.9  | 18.1 | 18.4 |
| Y = 6H          | 16.5                                                           | 17.6 | 16.8  | 17.9 | 18.2 | 16.5           | 17.6 | 16.9  | 17.9 | 18.3 |
| Y = 8H          | 16.4                                                           | 17.5 | 16.8  | 17.8 | 18.2 | 16.5           | 17.6 | 16.8  | 17.9 | 18.2 |
| Y = 12H         | 16.4                                                           | 17.4 | 16.8  | 17.8 | 18.1 | 16.4           | 17.5 | 16.8  | 17.8 | 18.1 |
| X = 4H Y = 2H   | 16.7                                                           | 17.9 | 17.0  | 18.2 | 18.5 | 16.7           | 17.9 | 17.0  | 18.2 | 18.5 |
| Y = 3H          | 16.6                                                           | 17.6 | 16.9  | 17.9 | 18.3 | 16.6           | 17.6 | 16.9  | 17.9 | 18.3 |
| Y = 4H          | 16.5                                                           | 17.4 | 16.9  | 17.7 | 18.1 | 16.5           | 17.4 | 16.9  | 17.8 | 18.1 |
| Y = 6H          | 16.4                                                           | 17.2 | 16.8  | 17.6 | 18.0 | 16.5           | 17.3 | 16.9  | 17.6 | 18.0 |
| Y = 8H          | 16.4                                                           | 17.1 | 16.8  | 17.5 | 17.9 | 16.4           | 17.2 | 16.9  | 17.6 | 18.0 |
| Y = 12H         | 16.3                                                           | 17.0 | 16.8  | 17.4 | 17.9 | 16.4           | 17.1 | 16.9  | 17.5 | 17.9 |
| X = 8H Y = 4H   | 16.4                                                           | 17.1 | 16.8  | 17.5 | 17.9 | 16.4           | 17.2 | 16.9  | 17.6 | 18.0 |
| Y = 6H          | 16.3                                                           | 16.9 | 16.8  | 17.4 | 17.8 | 16.4           | 17.0 | 16.8  | 17.4 | 17.9 |
| Y = 8H          | 16.3                                                           | 16.8 | 16.8  | 17.3 | 17.8 | 16.3           | 16.9 | 16.8  | 17.3 | 17.8 |
| Y = 12H         | 16.2                                                           | 16.7 | 16.7  | 17.2 | 17.7 | 16.3           | 16.8 | 16.8  | 17.2 | 17.8 |
| X = 12H Y = 4H  | 16.4                                                           | 17.0 | 16.8  | 17.4 | 17.9 | 16.4           | 17.1 | 16.8  | 17.5 | 17.9 |
| Y = 6H          | 16.3                                                           | 16.8 | 16.8  | 17.3 | 17.8 | 16.3           | 16.9 | 16.8  | 17.3 | 17.8 |
| Y = 8H          | 16.2                                                           | 16.7 | 16.7  | 17.2 | 17.7 | 16.3           | 16.8 | 16.8  | 17.2 | 17.8 |
|                 | UGR Variations with Observer Position for Luminaire Spacings S |      |       |      |      |                |      |       |      |      |
| S = 1.0H        | +2.1                                                           |      | -5.2  |      |      | +2.0           |      | -5.3  |      |      |
| S = 1.5H        | +3.3                                                           |      | -11.3 |      |      | +3.3           |      | -9.3  |      |      |
| S = 2.0H        | +5.1                                                           |      | -18.5 |      |      | +5.1           |      | -10.6 |      |      |

## Colour properties

Correlated Colour Temperature : 4000

Ra: CRI (Ra) 80

Efficiency

| Utilisation Factors according to IES (%) |                             |     |     |     |     |     |    |    |    |    |
|------------------------------------------|-----------------------------|-----|-----|-----|-----|-----|----|----|----|----|
|                                          | Room Reflection Factors (%) |     |     |     |     |     |    |    |    |    |
| Ceiling                                  | 80                          | 80  | 80  | 50  | 50  | 50  | 30 | 30 | 30 | 0  |
| Walls                                    | 50                          | 30  | 10  | 50  | 30  | 10  | 50 | 30 | 10 | 0  |
| Floor                                    | 20                          | 20  | 20  | 20  | 20  | 20  | 20 | 20 | 20 | 0  |
| RCR = 1                                  | 109                         | 107 | 106 | 103 | 101 | 100 | 99 | 98 | 97 | 91 |
| 2                                        | 100                         | 96  | 93  | 94  | 92  | 89  | 91 | 89 | 87 | 83 |
| 3                                        | 91                          | 86  | 83  | 86  | 83  | 80  | 84 | 81 | 78 | 74 |
| 4                                        | 83                          | 78  | 73  | 80  | 75  | 72  | 77 | 74 | 71 | 67 |
| 5                                        | 76                          | 70  | 66  | 73  | 68  | 65  | 71 | 67 | 64 | 61 |
| 6                                        | 70                          | 64  | 59  | 68  | 62  | 58  | 66 | 61 | 58 | 55 |
| 7                                        | 65                          | 58  | 54  | 63  | 57  | 53  | 61 | 56 | 53 | 51 |
| 8                                        | 60                          | 54  | 49  | 58  | 53  | 49  | 57 | 52 | 48 | 46 |
| 9                                        | 56                          | 49  | 45  | 54  | 49  | 45  | 53 | 48 | 44 | 43 |
| 10                                       | 52                          | 46  | 41  | 51  | 45  | 41  | 50 | 45 | 41 | 39 |

| Utilisation Factors according to LiTG (%) |                             |     |     |     |     |     |     |    |    |    |
|-------------------------------------------|-----------------------------|-----|-----|-----|-----|-----|-----|----|----|----|
|                                           | Room Reflection Factors (%) |     |     |     |     |     |     |    |    |    |
| Ceiling                                   | 80                          | 80  | 80  | 50  | 50  | 50  | 50  | 50 | 30 | 0  |
| Walls                                     | 50                          | 30  | 50  | 30  | 50  | 30  | 50  | 30 | 30 | 0  |
| Floor                                     | 30                          | 30  | 10  | 10  | 30  | 30  | 10  | 10 | 10 | 0  |
| k = 0.60                                  | 65                          | 57  | 61  | 56  | 62  | 56  | 60  | 55 | 55 | 50 |
| 0.80                                      | 76                          | 69  | 71  | 66  | 73  | 67  | 70  | 65 | 64 | 60 |
| 1.00                                      | 84                          | 77  | 78  | 73  | 80  | 74  | 76  | 72 | 71 | 66 |
| 1.25                                      | 94                          | 87  | 86  | 81  | 89  | 84  | 84  | 80 | 79 | 75 |
| 1.50                                      | 99                          | 92  | 90  | 86  | 93  | 89  | 87  | 84 | 83 | 79 |
| 2.00                                      | 106                         | 100 | 94  | 91  | 99  | 95  | 92  | 89 | 88 | 84 |
| 2.50                                      | 111                         | 105 | 98  | 95  | 103 | 99  | 95  | 93 | 91 | 88 |
| 3.00                                      | 114                         | 110 | 100 | 98  | 106 | 103 | 98  | 96 | 94 | 91 |
| 4.00                                      | 118                         | 114 | 102 | 100 | 108 | 105 | 99  | 97 | 96 | 92 |
| 5.00                                      | 120                         | 117 | 103 | 102 | 110 | 108 | 100 | 99 | 98 | 94 |

Available accessories

U7H2 *Recessed mounting frame for plaster-board and wooden ceilings M600*

Dimensional drawing

