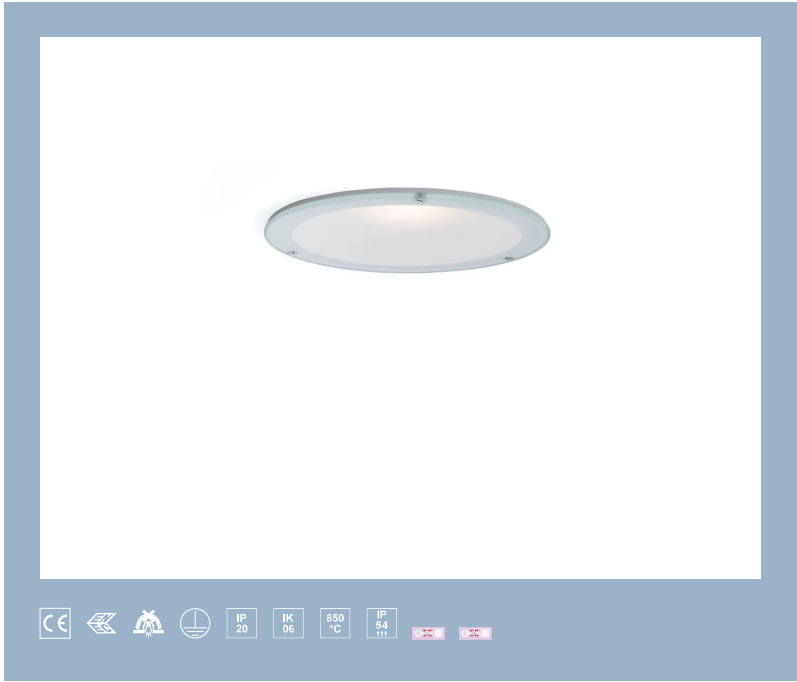


# D90/LEDN20SX1T1



recessed luminaire • round

Application : General office area's, Auditoria, General education area's, Patient rooms, General healthcare area's

housing: polycarbonate

light source : LED • 4000 K

optics : reflector and lens • polycarbonate (PC) with aluminium thin film, satin look • wide-angle

UGR classification : <=19

luminous flux: 2000 lm

luminous efficacy : 108 lm/W

LLMF: 98% @ 50khrs (Tq=25°C)

## Product information

### Mechanical properties

dimensions : 190 mm x 107 mm

cut-out size : 175 mm x 107 mm

colour: RAL9003 - signal white

trim: flat trim

type : individual luminaire

IP: IP20, IP54 from below

IK: IK06

### Electrical properties

driver: not dimmable

power : 18.5 W

voltage : 220-240V

frequency : 50-60Hz AC/DC

photobiological safety : EN 62471: RISK GROUP 1 UNLIMITED

Luminance

luminous flux : 2000 lm

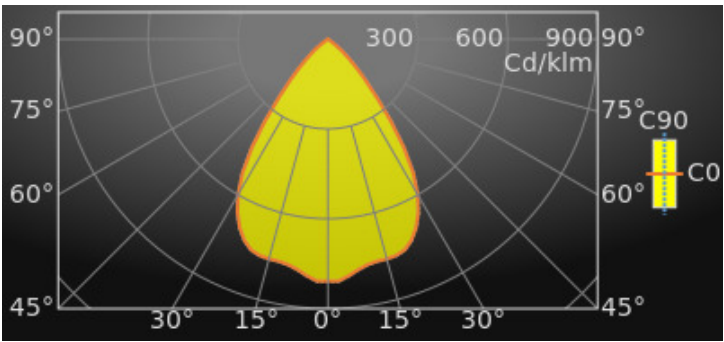
luminous efficacy : 108 lm/W

luminance @ 65° = : 1000 cd/m²

UGR classification =: <=19

luminous area : 0.02 m²

| Average Luminances (Cd/m²) for 2000lm |       |       |       |       |       |
|---------------------------------------|-------|-------|-------|-------|-------|
| Gamma                                 | C0    | C30   | C45   | C60   | C90   |
| 45°                                   | 20140 | 20140 | 20140 | 20140 | 20140 |
| 50°                                   | 9944  | 9944  | 9944  | 9944  | 9944  |
| 55°                                   | 1777  | 1777  | 1777  | 1777  | 1777  |
| 60°                                   | 186   | 186   | 186   | 186   | 186   |
| 65°                                   | 36    | 36    | 36    | 36    | 36    |
| 70°                                   | 3     | 3     | 3     | 3     | 3     |
| 75°                                   | 0     | 0     | 0     | 0     | 0     |
| 80°                                   | 0     | 0     | 0     | 0     | 0     |
| 85°                                   | 0     | 0     | 0     | 0     | 0     |



Classifications

CIE: 900 / 1000 / 1000 / 1000 / 1000

CIE FLUXCODE : 0.90 / 1.00 / 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 = 0.81

UTE: 1.00 A + 0.00 T

Lifetime Data (Tq=25.0°C)

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

## Luminous intensities in cd

Intensity for 2000lm

| Gamma | C0     | C45    | C90    |
|-------|--------|--------|--------|
| 0°    | 1616.4 | 1616.4 | 1616.4 |
| 5°    | 1587.3 | 1587.3 | 1587.3 |
| 10°   | 1529.0 | 1529.0 | 1529.0 |
| 15°   | 1519.1 | 1519.1 | 1519.1 |
| 20°   | 1497.7 | 1497.7 | 1497.7 |
| 25°   | 1391.1 | 1391.1 | 1391.1 |
| 30°   | 1198.6 | 1198.6 | 1198.6 |
| 35°   | 884.9  | 884.9  | 884.9  |
| 40°   | 507.4  | 507.4  | 507.4  |
| 45°   | 272.2  | 272.2  | 272.2  |
| 50°   | 122.2  | 122.2  | 122.2  |
| 55°   | 19.5   | 19.5   | 19.5   |
| 60°   | 1.8    | 1.8    | 1.8    |
| 65°   | 0.3    | 0.3    | 0.3    |
| 70°   | 0.0    | 0.0    | 0.0    |
| 75°   | 0.0    | 0.0    | 0.0    |
| 80°   | 0.0    | 0.0    | 0.0    |
| 85°   | 0.0    | 0.0    | 0.0    |
| 90°   | 0.0    | 0.0    | 0.0    |

## UGR classification =

Corrected Glare Ratings for a Total Lamp Flux of 2000lm (S = 0.25H)

|                                                                | Room Reflection Factors (%) |       |       |      |      |                |      |       |      |      |
|----------------------------------------------------------------|-----------------------------|-------|-------|------|------|----------------|------|-------|------|------|
|                                                                | Ceiling                     | Walls | Floor | 70   | 70   | 50             | 50   | 30    | 30   | 30   |
|                                                                | 70                          | 70    | 50    | 50   | 30   | 70             | 70   | 50    | 50   | 30   |
|                                                                | 50                          | 30    | 50    | 30   | 30   | 50             | 30   | 50    | 30   | 30   |
|                                                                | 20                          | 20    | 20    | 20   | 20   | 20             | 20   | 20    | 20   | 20   |
| Room Dimensions                                                | Viewed Crosswise            |       |       |      |      | Viewed Endwise |      |       |      |      |
| X = 2H Y = 2H                                                  | 18.8                        | 20.2  | 19.1  | 20.5 | 20.7 | 18.8           | 20.2 | 19.1  | 20.5 | 20.7 |
| Y = 3H                                                         | 18.7                        | 19.9  | 19.0  | 20.2 | 20.5 | 18.7           | 19.9 | 19.0  | 20.2 | 20.5 |
| Y = 4H                                                         | 18.6                        | 19.7  | 18.9  | 20.0 | 20.3 | 18.6           | 19.7 | 18.9  | 20.0 | 20.3 |
| Y = 6H                                                         | 18.5                        | 19.6  | 18.9  | 19.9 | 20.2 | 18.5           | 19.6 | 18.9  | 19.9 | 20.2 |
| Y = 8H                                                         | 18.5                        | 19.5  | 18.9  | 19.8 | 20.1 | 18.5           | 19.5 | 18.9  | 19.8 | 20.1 |
| Y = 12H                                                        | 18.5                        | 19.4  | 18.8  | 19.7 | 20.1 | 18.5           | 19.4 | 18.8  | 19.7 | 20.1 |
| X = 4H Y = 2H                                                  | 18.6                        | 19.8  | 18.9  | 20.0 | 20.3 | 18.6           | 19.8 | 18.9  | 20.0 | 20.3 |
| Y = 3H                                                         | 18.5                        | 19.4  | 18.8  | 19.7 | 20.1 | 18.5           | 19.4 | 18.8  | 19.7 | 20.1 |
| Y = 4H                                                         | 18.4                        | 19.2  | 18.8  | 19.6 | 19.9 | 18.4           | 19.2 | 18.8  | 19.6 | 19.9 |
| Y = 6H                                                         | 18.3                        | 19.0  | 18.7  | 19.4 | 19.8 | 18.3           | 19.0 | 18.7  | 19.4 | 19.8 |
| Y = 8H                                                         | 18.3                        | 18.9  | 18.7  | 19.3 | 19.8 | 18.3           | 18.9 | 18.7  | 19.3 | 19.8 |
| Y = 12H                                                        | 18.2                        | 18.9  | 18.7  | 19.3 | 19.7 | 18.2           | 18.9 | 18.7  | 19.3 | 19.7 |
| X = 8H Y = 4H                                                  | 18.3                        | 18.9  | 18.7  | 19.3 | 19.8 | 18.3           | 18.9 | 18.7  | 19.3 | 19.8 |
| Y = 6H                                                         | 18.2                        | 18.8  | 18.7  | 19.2 | 19.7 | 18.2           | 18.8 | 18.7  | 19.2 | 19.7 |
| Y = 8H                                                         | 18.2                        | 18.7  | 18.6  | 19.1 | 19.6 | 18.2           | 18.7 | 18.6  | 19.1 | 19.6 |
| Y = 12H                                                        | 18.1                        | 18.6  | 18.6  | 19.0 | 19.6 | 18.1           | 18.6 | 18.6  | 19.0 | 19.6 |
| X = 12H Y = 4H                                                 | 18.2                        | 18.9  | 18.7  | 19.3 | 19.7 | 18.2           | 18.9 | 18.7  | 19.3 | 19.7 |
| Y = 6H                                                         | 18.2                        | 18.7  | 18.6  | 19.1 | 19.6 | 18.2           | 18.7 | 18.6  | 19.1 | 19.6 |
| Y = 8H                                                         | 18.1                        | 18.6  | 18.6  | 19.0 | 19.6 | 18.1           | 18.6 | 18.6  | 19.0 | 19.6 |
| UGR Variations with Observer Position for Luminaire Spacings S |                             |       |       |      |      |                |      |       |      |      |
| S = 1.0H                                                       | +3.7                        |       | -16.0 |      |      | +3.7           |      | -16.0 |      |      |
| S = 1.5H                                                       | +6.4                        |       | -36.1 |      |      | +6.4           |      | -36.1 |      |      |
| S = 2.0H                                                       | +8.4                        |       | -48.5 |      |      | +8.4           |      | -48.5 |      |      |

## 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                                  | 110                         | 109 | 107 | 104 | 103 | 102 | 100 | 99 | 98 | 93 |
| 2                                        | 102                         | 99  | 96  | 97  | 94  | 92  | 94  | 92 | 90 | 85 |
| 3                                        | 94                          | 90  | 87  | 90  | 87  | 84  | 87  | 85 | 82 | 78 |
| 4                                        | 87                          | 82  | 78  | 84  | 80  | 77  | 81  | 78 | 75 | 72 |
| 5                                        | 81                          | 75  | 71  | 78  | 73  | 70  | 76  | 72 | 69 | 66 |
| 6                                        | 75                          | 69  | 65  | 73  | 68  | 64  | 71  | 67 | 64 | 61 |
| 7                                        | 70                          | 64  | 60  | 68  | 63  | 59  | 67  | 62 | 59 | 56 |
| 8                                        | 65                          | 59  | 55  | 64  | 58  | 55  | 62  | 58 | 54 | 52 |
| 9                                        | 61                          | 55  | 51  | 60  | 54  | 51  | 59  | 54 | 50 | 49 |
| 10                                       | 57                          | 51  | 47  | 56  | 51  | 47  | 55  | 50 | 47 | 45 |

| 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                                  | 71                          | 65  | 68  | 63  | 69  | 64  | 67  | 62  | 62 | 58 |
| 0.80                                      | 82                          | 75  | 77  | 72  | 79  | 73  | 75  | 71  | 71 | 67 |
| 1.00                                      | 89                          | 82  | 83  | 78  | 85  | 80  | 81  | 77  | 77 | 72 |
| 1.25                                      | 98                          | 92  | 90  | 86  | 94  | 89  | 88  | 85  | 85 | 81 |
| 1.50                                      | 103                         | 97  | 93  | 90  | 97  | 93  | 91  | 89  | 88 | 84 |
| 2.00                                      | 109                         | 104 | 97  | 95  | 102 | 99  | 95  | 93  | 92 | 88 |
| 2.50                                      | 113                         | 108 | 100 | 98  | 105 | 102 | 97  | 96  | 94 | 91 |
| 3.00                                      | 117                         | 113 | 102 | 100 | 108 | 106 | 100 | 98  | 97 | 94 |
| 4.00                                      | 119                         | 116 | 103 | 102 | 110 | 107 | 100 | 99  | 98 | 94 |
| 5.00                                      | 122                         | 119 | 104 | 103 | 112 | 110 | 102 | 101 | 99 | 96 |

## Dimensional drawing

